

# HIGH & MACARTHUR MIXED - USE PROJECT

## APPENDICES



City of Oakland

October 2012

URBAN  
PLANNING  
PARTNERS  
INC.



## Appendix A

Initial Study, Notice of Preparation, and Comment Letters



# **High & MacArthur Mixed Use Project**

INITIAL STUDY

**City of Oakland**

May 18, 2011



# **High & MacArthur Mixed Use Project**

INITIAL STUDY

**City of Oakland**

May 18, 2011



## ENVIRONMENTAL CHECKLIST

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### INITIAL STUDY

1. **Project Title:** High & MacArthur Mixed Use 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:** Lynn Warner, Planner III  
(510) 238-6983  
lwarner@oaklandnet.com
4. **Project Location:** 4311 and 4317 MacArthur Boulevard  
APNs: 030-1982-121, 122, and 123
5. **Project Sponsor Name and Address:** AMG and Associates, LLC  
Alexis Gevorgian  
16633 Ventura Boulevard, Suite 1014  
Encino, CA 91436  
(818) 380-2600
6. **General Plan Designation(s):** Neighborhood Center Mixed Use
7. **Zoning Designation(s):** **Applicable:** C-30 District Thoroughfare  
Commercial Zone; S-4 Design Review  
Combining Zone; and C-31 Special  
Retail Commercial Zone  
**Current:** CN-3 Neighborhood Commercial  
Zone 3 and CN-2 Neighborhood  
Commercial Zone 2
8. **Description of Project:**  
Construct a new mixed use development containing 115 senior apartments,  
approximately 3,446 square feet of ground floor commercial space, and 65  
parking spaces. A more detailed project description is provided below in Item 12.
9. **Surrounding Land Use and Setting:**  
The project site is located at 4311 and 4317 MacArthur at the southwest corner  
of the High Street and MacArthur Boulevard intersection as shown in Figure 1,  
Project Location. The project site includes three parcels totaling 0.93 acres. The

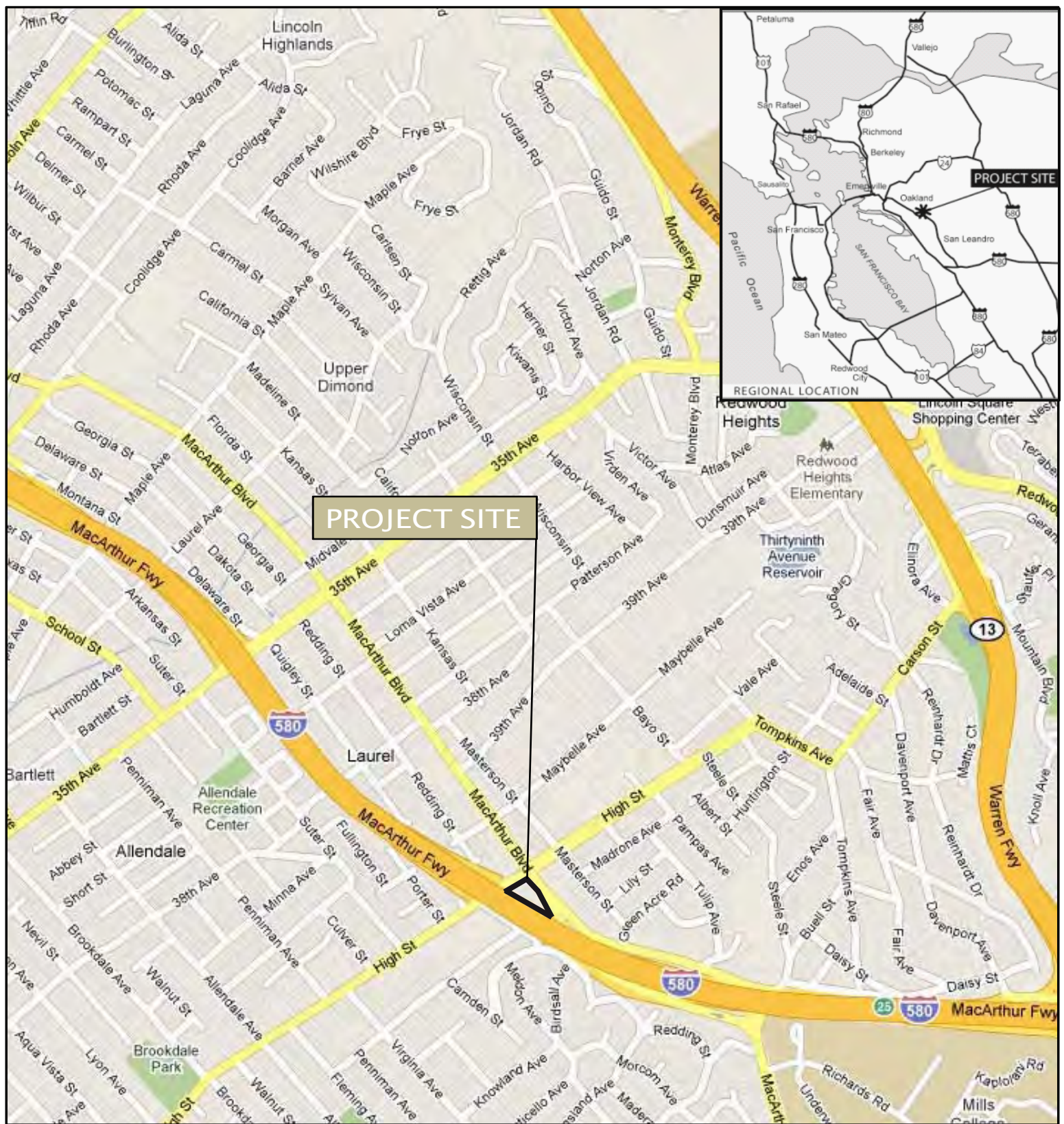


FIGURE 1  
High & MacArthur Mixed-Use Project Initial Study  
Project Location and  
Regional Vicinity Map

project site is vacant except for a billboard, which will be removed as part of this project. The project site is located in Central Oakland, at the edge of the Laurel District, where the Laurel District transitions to the Mills College area. A mix of retail, office, food sales, and residential uses are located to the east; a variety of commercial activities including a post office, occur along MacArthur Boulevard to the north; and Interstate 580 (I-580) freeway borders the project site to the south and southwest.

The General Plan designation for the project site and surrounding parcels is Neighborhood Center Mixed Use. The two parcels adjacent to High Street are zoned C-31 (District Thoroughfare Commercial Zone). The southwest parcel that is adjacent to MacArthur Boulevard is zoned C-30 (Special Retail Commercial Zone) and S-4 (Design Review Combining Zone). The areas located further north along MacArthur Boulevard are also zoned C-31. The areas located further south along MacArthur Boulevard are zoned C-30/S-4. The areas located to the south across I-580 are zoned C-30, R-50 (Medium Density Residential Zone) and R-30 (One-Family Residential Zone). On April 14, 2011, the City adopted an update to the Zoning Ordinance and changed the C-30 zone to the CN-3 Neighborhood Commercial Zone 3, and the C-31 zone to the CN-2 Neighborhood Commercial Zone 2. The proposed project's planning application was deemed complete prior to the April 14, 2011 Zoning Ordinance amendment/update; therefore, the C-30 and C-31 are the applicable zoning designations for the proposed project site.

**10. Actions/permits which may be required, and for which this document provides CEQA clearance, include without limitations (e.g., permits, financing approval, or participation agreement, etc.):**

- Major Conditional Use Permit to allow increase in density for senior housing
- Major Conditional Use Permit to allow ground level parking and loading and to reduce required parking spaces
- Major Variance for building height
- Design Review
- Parcel Map Waiver

**11. Other Public Agencies Interested in the Project:**

- San Francisco Bay Regional Water Quality Control Board (RWQCB)
- Bay Area Air Quality Management District (BAAQMD)
- California Department of Transportation (Caltrans)
- Department of Toxic Substance Control (DTSC)

## **12. Detailed Description of Project and Site:**

The project site is located at the southwest corner of High Street and MacArthur Boulevard on the edge of the Laurel District. The I-580 freeway runs along the south and western edge of the project area. The project site consists of three parcels totaling 0.93 acres in size. The project site is vacant except for a billboard (to be removed as part of project) and was at one time occupied by a PG&E service yard, an auto repair shop, and a market.

The proposed project consists of a five-story mixed use affordable senior housing development with 115 one-bedroom senior apartments, approximately 3,446 square feet of ground floor commercial space, and 65 parking spaces as shown in Figures 2, Site Plan and Figure 3, Elevations.

The commercial space would be in two separate areas with the main commercial area located at the corner of High Street and MacArthur Boulevard. A separate retail area labeled as a “kiosk” on the floor plans would front onto High Street. A residential lobby fronting High Street is proposed between the two commercial spaces.

Parking is proposed on the ground floor behind the commercial spaces with access off MacArthur Boulevard. The parking area would be divided by a security gate into separate areas: one accessible only to residents and the other accessible to residents, visitors, and patrons of the commercial area. The ground level would also include a loading zone on High Street adjacent to the freeway, various mechanical/equipment rooms, and an art feature located at the corner of High Street and MacArthur Boulevard. Above the ground floor uses, the building would include four stories of residential with approximately 28–29 units per floor.

The residential component of the building would be designed around an interior central courtyard. All the units are proposed to be one-bedroom and would average approximately 540 square feet. The maximum building height is 60 feet, with the tallest portion along the High Street elevation as the terrain slopes down from the corner to the freeway.

## **13. Background:**

On December 21, 2010, the Oakland City Council adopted the 2007–2014 Housing Element and certified the Housing Element EIR. The California Department of Housing and Community Development also has certified the Housing Element as being in compliance with the requirements of State law.

High Street



SOURCE: KTG GROUP, INC.  
C:/UPP/P10-005 OAK/PRODUCTS/IS/FIGURES/FIG\_2 (06/14/10, revised 08/30/2010)



FIGURE 3  
High & MacArthur Mixed-Use Project Initial Study  
Elevations

The project site is identified as a planned development site in the Housing Element and the Housing Element EIR. Development of the project site, at a level consistent with the proposed project, was considered in the Housing Element EIR. The High and MacArthur Project EIR may tier off of the analysis included in the Housing Element EIR pursuant to the CEQA Statutes §21093 and §21094 and CEQA Guidelines §15152 and §15385. The Housing Element EIR is available for review at the Community and Economic Development Agency, Planning Division, 250 Frank H. Ogawa Plaza, Suite 3315, Oakland, CA 94612, Monday through Friday, 8:30 a.m. to 5:00 p.m. The Housing Element EIR may also be reviewed on the City's website at:  
<http://www2.oaklandnet.com/Government/o/CEDA/o/hcd/o/HPP/DOWD008428>

## ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

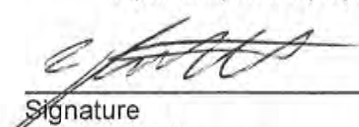
The City of Oakland has determined that a Focused EIR shall be prepared for the proposed project, pursuant to Section 15063 of the CEQA Guidelines. The EIR will only address the potential for the proposed project to result in a significant impact to the environmental factors checked below. This Initial Study discusses each environmental factor, particularly those that are unchecked because they are analyzed fully herein and found to result in less than significant impacts and thus will not be further studied in the Draft EIR.

|                                                                |                                                                        |                                                        |
|----------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------------------------|
| <input checked="" type="checkbox"/> Aesthetics                 | <input type="checkbox"/> Agriculture/Timber                            | <input checked="" type="checkbox"/> Air Quality        |
| <input type="checkbox"/> Biological Resources                  | <input type="checkbox"/> Cultural Resources                            | <input type="checkbox"/> Geology, Soils and Seismicity |
| <input type="checkbox"/> Land Use and Planning                 | <input checked="" type="checkbox"/> Hazards/Hazardous Materials        | <input type="checkbox"/> Hydrology and Water Quality   |
| <input type="checkbox"/> Population and Housing                | <input type="checkbox"/> Mineral Resources                             | <input checked="" type="checkbox"/> Noise              |
| <input checked="" type="checkbox"/> Transportation and Traffic | <input type="checkbox"/> Public Services                               | <input type="checkbox"/> Recreation                    |
| <input type="checkbox"/> Utilities and Service Systems         | <input checked="" type="checkbox"/> Mandatory Findings of Significance |                                                        |

## DETERMINATION

On the basis of this Initial Study:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, 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 revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☒ 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 has been addressed by mitigation measures or Uniformly Applied Development Standards (imposed as Standard Conditions of Approval) based, in part, on CEQA Guidelines section 15183. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed, which include: **certain aesthetics factors (scenic vistas, scenic resources and visual character), air quality, transportation and traffic, hazards/hazardous materials, noise, and mandatory findings.** No other environmental factors will be further studied.
- ☐ 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, no further environmental documentation is required.

  
 Signature  
 Eric Angstadt  
 Deputy Director of Planning and Zoning

Date

5/17/11

## EVALUATION OF ENVIRONMENTAL IMPACTS

The California Environmental Quality Act (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 Environmental Impact Report (EIR) is required.

A “Less than Significant with Mitigation” answer applies where incorporation of a mitigation measure has reduced 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 they reduce the effect to a less-than-significant level.

A “Less than Significant with Standard Condition of Approval” 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 (contained in a separate document) are incorporated into projects as Standard Conditions of Approval regardless of a project’s environmental determination. As applicable, the Standard Conditions of Approval 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 part, pursuant to CEQA Guidelines section 15183. In reviewing project applications, the City determines which of the standard conditions are applied, 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 standard conditions apply to each project; for example, standard conditions related to creek protection permits will only be applied projects on creekside properties.

The Standard Conditions of Approval 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 Standard Conditions, 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 substantial or potentially substantial adverse effect on the environment.

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.

# ENVIRONMENTAL CHECKLIST

## I. Aesthetics

| <i>Topics:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|
| <b>1. AESTHETICS—Would the project:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                               |                                                                               |                                                                                       |                                             |                                     |
| a) Have a substantial adverse effect on a scenic vista? <sup>1</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| b) Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state or locally designated scenic highway?                                                                                                                                                                                                                                                                                                                                                                      | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| c) Substantially degrade the existing visual character or quality of the site and its surroundings?                                                                                                                                                                                                                                                                                                                                                                                                                                                | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| d) Create a new source of substantial light or glare which would substantially and adversely affect day or nighttime views in the area?                                                                                                                                                                                                                                                                                                                                                                                                            | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| e) Introduce landscape that now or in the future cast substantial shadows on existing solar collectors (in conflict with California Public Resources Code Section 25980-25986)?                                                                                                                                                                                                                                                                                                                                                                    | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| 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?                                                                                                                                                                                                                                                                                                                                                               | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| g) Cast a shadow that substantially impairs the beneficial use of any public or quasi-public park, lawn, garden, or open space?                                                                                                                                                                                                                                                                                                                                                                                                                    | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| 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 Historic Resources, Local Register of Historic Resources or a historical resource survey form (DPR Form 523) with a rating of 1-5? | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| 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?                                                                                                                                                                                               | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| j) Create winds exceeding 36 mph for more than 1 hour during daylight hours during the year? <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |

<sup>1</sup> Only impacts to scenic views enjoyed by members of the public generally (but not private views) are potentially significant.

## Discussion

- a-b) The proposed project would include construction of a five-story mixed use building consisting of 115 residential units and ground floor commercial space. The project site is located immediately adjacent to I-580, which is a State-designated Scenic Highway from the I-980/CA-24 interchange in Oakland to the Oakland/San Leandro border; it is also designated as a Scenic Highway in the Scenic Highways Element of the General Plan. I-580 has won several awards for landscaping in this section of Oakland and is known for its spectacular views of the San Francisco Bay, San Francisco, and Oakland.<sup>3</sup> The site is visible from I-580, and construction of the proposed five-story structure may impact these publicly-accessible views. The proposed project may result in a potentially significant impact to scenic vistas. This topic will be fully analyzed in the EIR.
- c) Development on the project site would result in changes to the visual character and quality of the site and its surroundings. The proposed project would be developed on an existing flat and undeveloped parcel. The only structure on the project site is a billboard, which would be removed as a part of this project. The project would alter the site's visual character from an undeveloped lot through the development of a five-story mixed use building consisting of 115 residential units and ground floor commercial space. The proposed building height is taller than most buildings in the area and the community has raised concerns regarding the building height. The proposed project's potential impacts to visual character will be analyzed in the EIR.
- d) The proposed project site is located in a residential and commercial area predominated by small scale commercial and office buildings, a post office, and single-family development. Existing sources of light and glare are associated with those nearby land uses. The project would incrementally increase the level of light generated from the project site by establishing new sources of nighttime interior and exterior lighting typical of a mixed use residential/commercial building and would be visible from, and potentially cast light to, the surrounding neighborhood. However, the effect of the new mixed use building is not expected to be substantial or adversely affect existing day or night views. Implementation of the following Standard Condition of Approval that the City applies to all development projects would reduce lighting impacts of the project to less than significant.

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<sup>2</sup> 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.

<sup>3</sup> California Department of Transportation, [http://www.dot.ca.gov/hq/LandArch/scenic\\_highways/photos/p\\_rte580.htm](http://www.dot.ca.gov/hq/LandArch/scenic_highways/photos/p_rte580.htm), accessed June 2, 2010.

**STANDARD CONDITION AES-1: *Prior to issuance of an electrical or building permit.***

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.

- e-f) No solar collectors or buildings designed for passive solar heating or equipped with photovoltaic or solar water collectors were observed in the immediate vicinity of the project site. The closest solar collectors are located two blocks north and east of the project site.<sup>4</sup> Thus, the proposed project would have no impact from landscape or building induced shadow effects on existing solar collectors or buildings using passive solar heat.
- g-h) No public or quasi-public parks, lawns, gardens, open spaces, or areas of historical significance were observed in the immediate project vicinity that would be impacted by new shadow generated by the proposed project.<sup>5</sup> Therefore, the project would have no impact on such resources.
- i) The variances requested by the proposed project do not conflict with policies and regulations of the General Plan or Uniform Building Code regarding the provision of adequate light related to appropriate uses. Variances sought for this project include building height and for height of buildings adjacent to a residential zone. Despite the requested variances, the building design would not block solar access or overshadow existing uses because it is designed to include building setbacks and the largest heights will be located towards the rear adjacent to I-580 freeway to ensure adequate light to adjacent properties. As a result, this impact would be less than significant.
- j) The proposed mixed use building will not exceed 100 feet in height; therefore, the wind hazards criterion is not applicable to the project. The project would have no impact associated with wind hazards.

## References

California Department of Transportation, [http://www.dot.ca.gov/hq/LandArch/scenic\\_highways/photos/p\\_rte580.htm](http://www.dot.ca.gov/hq/LandArch/scenic_highways/photos/p_rte580.htm). Accessed June 2, 2010.

Urban Planning Partners field observation, June 7, 2010.

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<sup>4</sup> Urban Planning Partners field observation, June 7, 2010.

<sup>5</sup> Ibid.

## II. Agricultural Resources

| <i>Topics:</i>                                                                                                                                                                                                                      | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|
| <b>2. AGRICULTURAL RESOURCES - Would the project:</b>                                                                                                                                                                               |                                               |                                                                               |                                                                                       |                                             |                                     |
| a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?                                                                                                                                                | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| 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?                                                                        | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |

### Discussion

- a-c) The project would be located in an urban area and there are no agricultural or farmland uses within or adjacent to the project site. The project site is designated for residential and commercial uses by the General Plan and the Oakland Zoning Map.<sup>6</sup> Therefore, the project would have no impact on agricultural resources.

### References

City of Oakland, Oakland General Plan, Land Use and Transportation (LUTE) Element, June 1998, as amended.

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<sup>6</sup> City of Oakland, Oakland General Plan, Land Use and Transportation (LUTE) Element, June 1998, as amended.

### III. Air Quality

| <i>Topics:</i>                                                                                                                                                                                                                                                                                                                                                                     | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------|--------------------------|
| <b>3. AIR QUALITY<sup>7</sup>—Would the project:</b>                                                                                                                                                                                                                                                                                                                               |                                               |                                                                               |                                                                                       |                                             |                          |
| a) Conflict with or obstruct implementation of the applicable air quality plan?                                                                                                                                                                                                                                                                                                    | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/> |
| b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?                                                                                                                                                                                                                                                                 | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/> |
| 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)?                                                                                        | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/> |
| d) Expose sensitive receptors to substantial pollutant concentrations?                                                                                                                                                                                                                                                                                                             | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/> |
| e) Frequently create substantial objectionable odors affecting a substantial number of people?                                                                                                                                                                                                                                                                                     | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/> |
| f) Contribute to CO concentrations exceeding the State AAQS of 9 ppm averaged over 8 hours and 20 ppm for 1 hour?                                                                                                                                                                                                                                                                  | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/> |
| 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?                                                                                                                                                                                                                                                  | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/> |
| 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?                                                                                                                                                              | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/> |
| i) Result in ground level concentrations of non-carcinogenic TACs such that the Hazard Index would be greater than 1 for the MEI?                                                                                                                                                                                                                                                  | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/> |
| j) Result in a substantial increase in diesel emissions?                                                                                                                                                                                                                                                                                                                           | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/> |
| <b>Cumulative Impacts</b>                                                                                                                                                                                                                                                                                                                                                          |                                               |                                                                               |                                                                                       |                                             |                          |
| k) Result in any of the above project-specific significant impacts?                                                                                                                                                                                                                                                                                                                | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/> |
| 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. | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/> |
| m) Greenhouse Gas Emission and Global Climate Change Impacts.                                                                                                                                                                                                                                                                                                                      | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/> |

<sup>7</sup> The analysis in the Draft EIR will be based upon the BAAQMD's adopted June 2010 Thresholds and Guidelines.

| <b>Topics:</b>                                                                                                                                                                                                                        | <b>Potentially Significant Impact</b> | <b>Potentially Significant Unless Mitigation Incorporated</b> | <b>Less Than Significant with Standard Conditions of Approval</b> | <b>Less Than Significant Impact</b> | <b>No Impact</b>                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------|-------------------------------------|
| <b>Plan Impacts<sup>8</sup></b>                                                                                                                                                                                                       |                                       |                                                               |                                                                   |                                     |                                     |
| n) Fundamentally conflict with the currently adopted Bay Area Clean Air Plan (CAP) because population growth for the jurisdiction exceeds values in the CAP, based on population projections in ABAG's currently adopted Projections? | <input type="checkbox"/>              | <input type="checkbox"/>                                      | <input type="checkbox"/>                                          | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| o) Fundamentally conflict with the CAP because the rate of increase in vehicle miles traveled (VMT) in the jurisdiction is greater than the rate of increase in population?                                                           | <input type="checkbox"/>              | <input type="checkbox"/>                                      | <input type="checkbox"/>                                          | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| p) Fundamentally conflict with the CAP because the project does not demonstrate reasonable efforts to implement transportation control measures (TCMs) in the CAP?                                                                    | <input type="checkbox"/>              | <input type="checkbox"/>                                      | <input type="checkbox"/>                                          | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

## Discussion

- a-l) The proposed project includes construction of a mixed use building consisting of 115 senior residential units, approximately 3,446 square feet of ground floor commercial space, and 65 parking spaces. The site is located adjacent to the I-580 freeway and could expose new residents to air contaminants. Furthermore, the proposed project would also generate traffic from the residential and commercial uses, as well as construction-equipment, which may result in increased air contaminants. Implementation of the proposed project may result in potentially significant air quality impacts. An analysis of these potential impacts and relevant Standard Conditions of Approval and mitigation measures will be included in the EIR. The EIR will utilize the most current thresholds of significance, based upon the latest Bay Area Air Quality Management District Thresholds and Guidelines.
- m) The EIR will also include an analysis of Greenhouse Gas Emissions and Climate Change impacts.
- n-p) The proposed project does not involve an amendment to the General Plan, a Redevelopment Plan and/or Specific Plan; therefore, no impact would result.

It is also noted that the project site is identified as a planned development site in the Housing Element and the Housing Element EIR, which was certified by the City in December 2010 and included an analysis of Air Quality and Greenhouse Gas Emissions. Development of the project site, at a level consistent with the proposed project, was

<sup>8</sup> This threshold should be analyzed only for Amendments to General Plans, Redevelopment Plans and/or Specific Plans.

considered in the Housing Element EIR. The High and MacArthur Project EIR may tier off of the analysis included in the Housing Element EIR pursuant to the CEQA Statute §21093 and §21094 and CEQA Guidelines §15152 and §15385.

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## IV. Biological Resources

| <i>Topics:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|
| <b>4. BIOLOGICAL RESOURCES—<br/>Would the project:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                               |                                                                               |                                                                                       |                                             |                                     |
| 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?                                                                                                                                                                            | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| 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?                                                                                                                                                                                                                                        | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| 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?                                                                                                                                                                                                                                                           | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| 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 wildlife nursery sites?                                                                                                                                                                                                                                                         | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| e) Fundamentally conflict with any applicable habitat conservation plan or natural community conservation plan?                                                                                                                                                                                                                                                                                                                                                                            | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| f) Fundamentally conflict with the City of Oakland Tree Preservation 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.                      | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| 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 in development-related situations where more than five Monterey pine trees per acre are proposed to be removed are considered to be Protected trees. |                                               |                                                                               |                                                                                       |                                             |                                     |

| <i>Topics:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|
| 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? | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |

## Discussion

- a-b) The project site is a vacant lot that was previously used as a PG&E service yard, an auto repair shop, and a market. The site is flat and consists of mostly dirt and weeds. No riparian habitat or other sensitive natural community exists on the site as it is land locked within an existing urban area and a freeway and contains no vegetation or drainage. There are no 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<sup>9</sup> or U.S. Fish and Wildlife Service.<sup>10</sup> The impact would be less than significant.
- c) The project site is not located within or near any federally protected wetlands; no impact would result from the proposed project.
- d) There is no evidence that native residents or migratory fish or wildlife species use the project site as part of a migratory pattern. The project site is disturbed and has once been used as a PG&E service yard, an auto shop, and a market. The project site is now vacant and is mostly dirt. Development of the project site would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established migratory corridors, or impede the use of native wildlife nursery sites. The impact would be less than significant.

<sup>9</sup> California Department of Fish and Game (CDFG). Wildlife Habitat and Data Analysis Branch, California Natural Diversity Database, data request for the Oakland East 7.5-minute USGS topographic quadrangles. June 2010.

<sup>10</sup> U.S Fish & Wildlife Services, Critical Habitat Portal, <http://crithab.fws.gov/>, accessed June 9, 2010.

- e) The project site is not included in any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. No impact would occur.
- f) The project site is vacant, with the exception of a billboard on-site. The project site is mostly dirt with weeds. There are no biological resources, such as trees, that are protected and preserved under a preservation policy or ordinance. No impact would occur.
- g) The project site is vacant land covered with dirt and weeds. There are no creeks on the project site and no creeks within the immediate vicinity of the project area. No impact would occur.

**References:**

California Department of Fish and Game (CDFG). Wildlife Habitat and Data Analysis Branch, *California Natural Diversity Database*, data request for the Oakland East 7.5-minute USGS topographic quadrangles. June 2010.

U.S Fish & Wildlife Services, Critical Habitat Portal, <http://crithab.fws.gov/>. Accessed June 9, 2010.

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## V. Cultural Resources

| <i>Topics:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------|--------------------------|
| <b>5. CULTURAL RESOURCES—Would the project:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                               |                                                                               |                                                                                       |                                             |                          |
| a) Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5. Specifically, a substantial adverse change includes physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource is “materially impaired.” The significance of a historical resource is “materially impaired” when a project demolishes or materially alters, in any adverse manner, those physical characteristics of the resource that convey its historical significance <u>and</u> 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)? | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/> |
| b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/> |
| c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/> |
| d) Disturb any human remains, including those interred outside of formal cemeteries?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/> |

### Discussion

- a) The project site consists of undeveloped land with no existing structures. The project site is not located in a historic district and there are no historical buildings on the project site or nearby that would be impacted by the proposed project.<sup>11</sup>

Archaeological deposits can qualify as “historical resources” under CEQA (§15064.5(c)). To identify recorded prehistoric and historical archaeological deposits in the project site and the potential for such deposits underlying the project site, a records search was conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System<sup>12</sup> and a literature review was done.

<sup>11</sup> Marvin, Betty, Planner III, Historic Preservation, Oakland Cultural Heritage Research Project. Personal communication with Urban Planning Partners, Inc. September 2, 2010.

<sup>12</sup> The NWIC, an affiliate of the State of California Office of Historic Preservation, is the official state repository of cultural resources records and reports for Alameda County.

The NWIC records search did not identify archaeological deposits in or adjacent to the project site; no project site-specific archaeological studies were on file at the NWIC. The literature review indicates that the project site has been developed since the 1940s with at least two dwellings, various automotive businesses, and, from 1959 through 1994, a PG&E substation.<sup>13,14</sup> All buildings and foundations on the project site were removed by 1994. Soil contamination remediation was conducted at the project site between 1999 and 2004, which included removal of 1.0 to 1.5 feet of topsoil from the entire site, focused removal of contaminated soils to depths of up to 4.0 feet below the original ground surface, and removal of an underground storage tank.<sup>15</sup>

Previous development and soil contamination remediation at the project site has resulted in extensive disturbance of the subsurface environment. For this reason, it is unlikely that intact archaeological deposits exist within the project site. The potential for significant prehistoric and/or historical archaeological deposits, however, cannot be entirely ruled out as these may underlie undisturbed alluvium and fill soils that were not previously disturbed. These deposits, should they exist, may qualify as historical resources under CEQA, in which case their disturbance by the project would materially impair their significance, resulting in a significant impact. Implementation of the following Standard Condition of Approval developed by the City of Oakland would reduce potential project impacts to archaeological deposits that qualify as historical resources to less than significant. This would be done by recovering the scientific data that would otherwise be lost if the deposit were destroyed without appropriate analysis.

**STANDARD CONDITION CULT-1: *Ongoing throughout demolition, grading and/or construction.***

Pursuant to CEQA Guidelines section 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 historical 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 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

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<sup>13</sup> Jonas & Associates, Inc., Phase I Environmental Site Assessment Report Pacific Gas & Electric Company Former High Street Substation. July 19, 1996.

<sup>14</sup> Questa Engineering Corp., Subsurface Investigation of Groundwater and Vadose Zone Soil, 4311-4333 MacArthur Blvd., Oakland, California. November 14, 2006.

<sup>15</sup> Ibid.

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 measure measures recommended by the archaeologist. Should archaeologically-significant materials be recovered, the qualified archaeologist shall recommend appropriate analysis and treatment, and shall prepare a report on the findings for submittal to the Northwest Information Center.

- b) As discussed above at V.a, no archaeological deposits are recorded in or adjacent to the project site, and historical development and soil remediation efforts have minimized the potential that significant, intact archaeological deposits exist. The possibility of encountering subsurface archaeological deposits, however, cannot be entirely discounted. These deposits, should they exist, may qualify as unique archaeological resources under CEQA, in which case their disturbance by the project would materially impair their significance, resulting in a significant impact. Should unique archaeological resources be identified during project ground-disturbing activities, these resources shall be treated according to the City of Oakland's Standard Condition of Approval, listed above as Standard Condition CULT-1. Implementation of this Standard Condition of Approval would mitigate the project's potential impacts to archaeological

resources to less than significant. This would be done by recovering the scientific data that would otherwise be lost if the deposit were destroyed without appropriate analysis.

- c) The project area is underlain by Holocene (present to 10,000 years) and Pleistocene (10,000 to 1.5 million years old) alluvial fan deposits. The Pleistocene alluvial fan deposits are sensitive for significant paleontological resources and underlie the Holocene-aged alluvial fan deposits in the project site at an unknown depth. Pleistocene deposits can locally contain fossils of gastropods and bivalves, and such Pleistocene mega-fauna as horse, camel, bison, sloth, and mammoth.

Dr. Pat Holroyd of the University of California Museum of Paleontology, Berkeley conducted a fossil locality search of the project site on June 29, 2010. No fossil localities are in or adjacent to the project site. However, seven vertebrate fossil localities representing Pleistocene Rancholabrean fauna have been discovered within 4 miles of the project site. These fossil localities were found in the same geologic formation – Late Pleistocene alluvial deposits – that underlies the project site. No unique geologic resources are located in the project site.

It is unlikely that the project would impact paleontological resources since these resources would likely be associated with deeply buried deposits. Based on the presence of fossils within Pleistocene deposits in the vicinity, however, the occurrence of paleontological resources in Pleistocene deposits underlying the project site cannot be discounted, and project ground-disturbing activities below fill soils and Holocene-age deposits has the potential to impact fossils. Implementation of the following Standard Condition of Approval developed by the City of Oakland would reduce potential project impacts to paleontological resources to less than significant.

**STANDARD CONDITION CULT-2: *Ongoing throughout demolition, grading and/or construction.***

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. 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) Prehistoric archaeological sites in the East Bay frequently contain Native American interments. Although Native American remains have not been identified in the project site, there is a possibility that human remains could be associated with archaeological deposits that could underlie undisturbed alluvial and fill soils. Such remains could be uncovered during construction activities that involve ground disturbance. Implementation of the following Standard Condition of Approval developed by the City of Oakland would reduce potential impacts of the project to human remains to less than significant.

**STANDARD CONDITION CULT-3:** *Ongoing throughout demolition, grading and/or construction.*

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.

**References:**

Jonas & Associates, Inc., Phase I Environmental Site Assessment Report Pacific Gas & Electric Company Former High Street Substation. July 19, 1996.

Marvin, Betty, Planner III, Historic Preservation, Oakland Cultural Heritage Research Project. Personal communication with Urban Planning Partners, Inc. September 2, 2010.

Questa Engineering Corp., Subsurface Investigation of Groundwater and Vadose Zone Soil, 4311-4333 MacArthur Blvd., Oakland, California. November 14, 2006.

## VI. Geology and Soils

| <i>Topics:</i>                                                                                                                                                                                                                                                                                                          | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|
| <b>6. GEOLOGY AND SOILS—<br/>Would the project:</b>                                                                                                                                                                                                                                                                     |                                               |                                                                               |                                                                                       |                                             |                                     |
| 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 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 Publication 42 and 117 and PRC § 2690 et. Seq.)? | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| ii) Strong seismic ground shaking?                                                                                                                                                                                                                                                                                      | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| iii) Seismic-related ground failure, including liquefaction, lateral spreading, subsidence, collapse?                                                                                                                                                                                                                   | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| iv) Landslides?                                                                                                                                                                                                                                                                                                         | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| b) Result in substantial soil erosion or the loss of topsoil, creating substantial risks to life, property, or creek/waterways?                                                                                                                                                                                         | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| 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?                                                                                                                                                  | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| d) Be located above a well, pit, swamp, mound, tank vault, or unmarked sewer line, creating substantial risks to life or property?                                                                                                                                                                                      | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| 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?                                                                                                                                                      | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| 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?                                                                                                                                      | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |

### Discussion

- a.i) The project site is not within an Alquist-Priolo Fault Rupture Zone, as designated by the Alquist-Priolo earthquake Fault Zoning Act.<sup>16</sup> Because the project is not located on an active or potentially active fault, the potential for surface fault rupture is low and this impact would be less than significant.
- a.ii) The project site is located in the San Francisco Bay Area, a seismically active region of California with numerous active faults. Seismic activity in the region is

<sup>16</sup> Association of Bay Area Governments (ABAG) Earthquake and Hazards Maps/Info, [www.quake.abag.ca.gov](http://www.quake.abag.ca.gov), accessed June 9, 2010.

dominated by the San Andreas Fault system, which includes San Andreas, Hayward, and Calaveras faults. The project site is located approximately half a mile west of the Hayward Fault. According to the U.S. Geological Survey (USGS) Working Group on Earthquake Probabilities<sup>17</sup>, the probability of one or more earthquakes of Richter magnitude 6.7 or higher occurring in the San Francisco Bay Area for the 30-year period from 2003 to 2032 is 62 percent. Of the Bay Area faults, the Hayward and San Andreas faults are the most likely to experience a major earthquake. The probability of a large Hayward Fault earthquake, occurring in the vicinity of the project site during the 30-year period, is 27 percent; the probability for an earthquake on the San Andreas Fault is 21 percent. In the event of a major earthquake on one of these faults, especially the Hayward Fault (due to its proximity to the project site), the project site would experience substantial ground shaking. The Association of Bay Area Governments (ABAG) has developed Earthquake Shaking Hazard Maps, which predict the potential for ground shaking during major earthquakes on the active fault in the Bay Area.<sup>18</sup> The Shaking Hazard Maps rank degrees of ground shaking intensity based on the Modified Mercalli Intensity (MMI) scale. The MMI scale, originally developed by G. Mercalli in 1902, is commonly used to measure earthquake effects due to ground shaking. It is a useful scale because it describes ground motion in terms of effects observed by people in various type structures during past earthquakes. The MM values for intensities range from MM-I (earthquake not felt by people), through more common, moderate earthquakes at MMI-VI to major catastrophic events at MMI-XII (damage nearly total).<sup>19</sup> Because the site is close to the Hayward Fault, the ground shaking intensity could range from very strong (MMI-VIII moderate damage) to very violent (MMI-X, extreme damage).

The 2007 Uniform Building Code (UBC) locates the entire Bay Area within Seismic Risk Zone 4. Of the four seismic zones, Zone 4 is expected to experience the greatest effects from earthquake ground shaking and, therefore, has the most stringent requirements for seismic design. While building codes assume that some damage will occur during an earthquake, they are designed to prevent loss of life and limb and reduce the potential of structural collapse. The proposed project would be required to comply with the geotechnical and seismic design criteria required for construction in Zone 4 of the UBC, California Building Code (Title 24), and building codes set forth by the City of Oakland. Although ground

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<sup>17</sup> U.S. Geological Society (USGS), Working Group on California Earthquake Probabilities, Summary of Earthquake Probabilities in the San Francisco Bay Region: 2003-2032, 2003, available online at <http://quake.wr.usgs.gov/research/seismology/wg02/>.

<sup>18</sup> Association of Bay Area Governments (ABAG) website: [http://gis.abga.ca.gov/website/shaking\\_prob/viewer.htm](http://gis.abga.ca.gov/website/shaking_prob/viewer.htm), assessed June 2010.

<sup>19</sup> Intensities ranging from IV to X could cause moderate to significant structural damage. The damage level represents the estimated overall level of damage that will occur for various MM intensity levels. Some buildings will experience substantially more damage than this overall level, and others will experience substantially less damage. Not all buildings perform identically in an earthquake. The age, material, type, method of construction, size, and shape of a building all affect its performance.

shaking at the subject site would be substantial during a large earthquake on the Hayward Fault and could be considerable during an earthquake on other Bay Area faults, compliance with the California Building Code, and building code requirements set forth by the City of Oakland, would reduce the seismic hazard so that people would not be exposed to substantial injury and death or property would not undergo significant loss. Furthermore, the standard conditions of approval require preparation of a Soils Report. Compliance the following Standard Condition of Approval together with the building codes provisions for structural design and construction in high earthquake hazard areas would ensure the ground shaking effects at the project site remain less than significant.

**STANDARD CONDITION GEO-1:** *Required as part of the submittal of a tentative tract or tentative parcel map.*

A preliminary soils report for the project site shall be required as part of this project and submitted for review and approval by the Building Services Division. The applicant shall implement the approved report. The soils reports shall be based, at least in part, on information obtained from on-site testing. Specifically the 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 proposed 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 be 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.

- a.iii) Soil liquefaction is primarily associated with saturated soil layers located near the ground surface. Soils that are most susceptible to liquefaction are relatively loose, clean, poorly-graded, fine-grained sands. These soils lose strength during ground shaking and become incapable of supporting overlying structures. Due to the loss of strength, the soil acquires "mobility" sufficient to permit both horizontal and vertical movements. Densification, a closely-related phenomenon,

occurs when ground-shaking causes predominantly granular soils to become compact and occupy less volume, which results in settlement.

The project site is not located within a potential liquefaction zone.<sup>20</sup> Given the project location outside of a potential liquefaction zone, the potential for earthquake induced liquefaction as well as secondary ground failure associated with liquefaction is low. Therefore, the project would not be constructed on geologic materials that are unstable or otherwise prone to collapse. There would be a less-than-significant impact associated with unstable soil.

- a.iv) The project site is relatively flat land surrounded by urban development that is also located on relatively flat land. The City of Oakland General Plan, Safety Element, does not identify this area as being within a potential landslide area. The impacts of this project would be less than significant.
- b) Project construction on the vacant and relatively flat property would include grading and earthmoving activities that could result in some erosion or loss of topsoil. Implementation of the following Standard Condition of Approval that the City applies to all development projects would reduce erosion or loss of soil impacts to a less-than-significant level by eliminating substantial risks to life, property or creeks/waterways.

**STANDARD CONDITION GEO-2: *Prior to any grading activities.***

The project applicant shall obtain a grading permit if required by the Oakland Grading Regulations pursuant to Section 15.04.660 of the Oakland Municipal Code. The grading permit application shall include an erosion and sedimentation control plan. 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.

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<sup>20</sup> Association of Bay Area Governments (ABAG) Earth Quake and Hazards Maps/Info, <http://quake.abag.ca.gov>, accessed June 9, 2010.

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.

*Ongoing throughout grading and construction activities.*

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) The project site is located in a developed commercial area of Oakland. The local soil geology on the site consists of fill material overlying silty clays and Bay Area mud.<sup>21</sup> The site was graded for the previous use as an auto repair shop, PG&E yard and a market and is not located within a potential liquefaction zone or landslide area; however, expansive soils (as defined by Table 18-B-1 of the Building Code) do exist on-site and a geotechnical analysis should be conducted to determine final design parameters.<sup>22</sup> Compliance with the following Standard Condition of Approval would ensure that a Geotechnical Report is prepared and that impacts associated with expansive soils would remain less than significant.

**STANDARD CONDITION GEO-3:** *Required as part of the submittal of a tentative tract or tentative parcel map.*

- 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 by the Building Services Division. Specifically:
- i. 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.
  - ii. The investigations shall determine final design parameters for the walls, foundations, foundation slabs, surrounding related improvements, and infrastructure (utilities, roadways, parking lots, and sidewalks).
  - iii. The investigations shall be reviewed and approved by a registered

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<sup>21</sup> Jonas & Associates, Inc., Phase I Environmental Site Assessment Report Pacific Gas & Electric Company Former High Street Substation. July 19, 1996.

<sup>22</sup> Willard N. Hopkins, CEG, Senior Engineering Geologist, Questa Environmental Corporation. Personal communication with Urban Planning Partners, September 9, 2010.

geotechnical engineer. All recommendations by the project engineer, geotechnical engineer, shall be included in the final design, as approved by the City of Oakland.

- iv. 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.
  - v. 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.
  - vi. Final seismic considerations for the site shall be submitted to and approved by the City of Oakland Building Services Division prior to commencement of the project.
  - vii. A peer review is required for the Geotechnical Report. Personnel reviewing the geologic report shall approve the report, reject it, or withhold approval pending the 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.
- d) The project site is located in a commercially developed area of Oakland. The project site is vacant and relatively flat with no evidence of mounds, pits or swamps. Environmental site assessments for the project site have identified that sediment beneath the site consists of mixtures of unconsolidated silts, sands and fine gravels. The presences of wells, tank vaults, or sewer lines from previous site uses were not identified in the site assessments; however, multiple underground storage tanks (USTs) were identified.<sup>23 24</sup> Analysis of impacts associated with the removal of USTs will be included in the Hazards and Hazardous Materials analysis in the Focused EIR. Implementation of the proposed project would not create substantial risks to life or property due to wells, pits, mounds, swamps or unmarked sewer lines. Therefore, this impact would be less than significant.

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<sup>23</sup> Ibid.

<sup>24</sup> Willard N. Hopkins, CEG, Senior Engineering Geologist, Questa Environmental Corporation. Personal communication with Urban Planning Partners, September 9, 2010.

- e) The project site is not located above a landfill; therefore, implementation of the proposed project would not create substantial risk to life or property related to landfills.
- f) The proposed project does not include the installation of septic tanks or alternative wastewater disposal systems. The project site is located in an urban area and would be required to connect to the existing central sewer system, which provides wastewater collection service for the City of Oakland. Therefore, the project would not require septic tanks or alternative wastewater disposal systems and the project would have no impact on such conditions.

## References

Association of Bay Area Governments (ABAG) website: [http://gis.abga.ca.gov/website/shaking\\_prob/viewer.htm](http://gis.abga.ca.gov/website/shaking_prob/viewer.htm), assessed June 2010.

Association of Bay Area Governments (ABAG) Earth Quake and Hazards Maps/Info, [www.quake.abag.ca.gov](http://www.quake.abag.ca.gov). Accessed June 9, 2010.

Jonas & Associates, Inc., Phase I Environmental Site Assessment Report Pacific Gas & Electric Company Former High Street Substation. July 19, 1996.

JMK Environmental Solutions, Phase II Environmental Site Assessment Report. March 31, 2003.

U.S. Geological Society (USGS), Working Group on California Earthquake Probabilities, Summary of Earthquake Probabilities in the San Francisco Bay Region: 2003–2032, 2003, available online at <http://quake.wr.usgs.gov/research/seismology/wg02/>.

Willard N. Hopkins, CEG, Senior Engineering Geologist, Questa Environmental Corporation. Personal communication with Urban Planning Partners, September 10, 2010.

## VII. Hazards and Hazardous Materials

| <i>Topics:</i>                                                                                                                                                                                                                                | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|
| <b>8. HAZARDS AND HAZARDOUS MATERIALS—<br/>Would the project:</b>                                                                                                                                                                             |                                               |                                                                               |                                                                                       |                                             |                                     |
| a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?                                                                                                       | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| 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?                                               | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?                                                                               | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| 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 it create a significant hazard to the public or the environment? <sup>25</sup>  | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| e) Be 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? | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| 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?                                                                                              | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?                                                                                                                     | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| h) Expose people or structures to a significant risk of loss, injury or death involving fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?                                   | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |

### Discussion

- a) Implementation of the proposed project would result in the construction of a five-story building containing a mixture of residential and commercial uses. Although small quantities of commercially available hazardous materials could be used within the proposed building and in landscaped areas in the project site for cleaning and maintenance, these materials would not be used in sufficient quantities to pose a threat to human or environmental health. All toxic materials used during the construction and operation period would be handled in

<sup>25</sup> The Cortese List is the compiled list of hazardous materials sites, pursuant to the Government Code Section 65962.5.

compliance with hazardous materials regulations. Implementation of the following Standard Condition of Approval would ensure the impact would be less than significant.

**STANDARD CONDITION HAZ-1:** *Prior to issuance of a business license.*

The project applicant shall submit a Hazardous Materials Business Plan for review and approval by Fire Prevention Bureau, Hazardous Materials Unit. Once approved this plan shall be kept on file with the City and will be updated as applicable. The purpose of the Hazardous Materials Business Plan is to ensure that employees are adequately trained to handle the materials and provides information to the Fire Services Division should emergency response be required. The Hazardous Materials Business Plan shall include the following:

- a) The types of hazardous materials or chemicals stored and/or used on site, such as petroleum fuel products, lubricants, solvents, and cleaning fluids.
- b) The location of such hazardous materials.
- c) An emergency response plan including employee training information
- d) A plan that describes the manner in which these materials are handled, transported and disposed.

b-d) The proposed project consists of developing a five-story mixed use senior residential building with ground floor commercial space. Implementation of the proposed project may result in potentially significant hazard and hazardous materials impacts due to the project site's inclusion on the Cortese List. The Cortese list refers to Government Code Section 65962.5. Section C of that code requires a reporting of the presence of "any unauthorized release which escapes from the secondary containment or from the primary containment . . . of the underground tank system." The project site was previously used by PG&E as a service yard and for an auto repair shop; as a result, it is included on the California Environmental Protection Agency's list of leaking underground storage tank sites. An analysis of potential hazard and hazardous materials impacts and relevant mitigation measures will be included in the EIR.

e-f) The project site is not located within two miles of a public airport, and there are no private landing airstrips in the vicinity. The closest public airport is the Oakland International Airport located approximately 8 miles southwest of the project site. Therefore, the project would have no impacts related to airport-related safety hazards to people residing or working at the project site.

- g) Upon review of the City of Oakland's Multi-Hazard Functional Plan, ("City Emergency Plan"), the proposed project would not significantly interfere with emergency response plans or evacuation plans. The proposed project is located within an area that is easily accessible along High Street and MacArthur Boulevard. High Street and MacArthur Boulevard are both listed on the City of Oakland Safety Element of the General Plan Figure 2.1, Public Safety, as emergency evacuation routes<sup>26</sup>. The City of Oakland Fire Services Agency (Fire Department) is responsible for first response 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 the construction process. Therefore, assuming compliance with the City's notification requirements, project construction would not significantly interfere with emergency response plans or evacuation plans, nor adversely affect the City's response and operational procedures in the event of a large scale disaster or emergency. There would be no impact.
- h) The project site is not located adjacent to wildlands and is not located within the City's Wildfire Prevention Assessment District<sup>27</sup>, an area that could potentially expose people and structures to significant risk of loss, injury, or death involving wildland fires. Due to the location of this project within an urban area and not adjacent to wildlands, the project would have no impacts related to wildfire.

It is also noted that the project site is identified as a planned development site in the Housing Element and the Housing Element EIR, which was certified by the City in December 2010 and included an analysis of Transportation/Traffic impacts. Development of the project site, at a level consistent with the proposed project, was considered in the Housing Element EIR. The High and MacArthur Project EIR may tier off of the analysis included in the Housing Element EIR pursuant to the CEQA Statute §21093 and §21094 and CEQA Guidelines §15152 and §15385.

## References

City of Oakland General Plan, Safety Element. Figure 2.1, "Public Safety." November 2004.

City of Oakland, Wildfire Prevention District Map, <http://www.oaklandnet.com/wildfireprevention/>. Accessed June 9, 2010.

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<sup>26</sup> City of Oakland General Plan, Safety Element. Figure 2.1, "Public Safety." November 2004.

<sup>27</sup> City of Oakland, Wildfire Prevention District Map, <http://www.oaklandnet.com/wildfireprevention/>, accessed June 9, 2010.

## VIII. Hydrology and Water Quality

| <i>Topics:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|
| <b>9. HYDROLOGY AND WATER QUALITY—<br/>Would the project:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                               |                                                                               |                                                                                       |                                             |                                     |
| a) Violate any water quality standards or waste discharge requirements?                                                                                                                                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| 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)?                                                                                                                       | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| c) Result in substantial erosion or siltation on- or off-site that would affect the quality of receiving waters?                                                                                                                                                                                                                                                                                                                                                                                                    | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| d) Result in substantial flooding on or off-site?                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| e) Create or contribute substantial runoff which would exceed the capacity of existing or planned stormwater drainage systems?                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| f) Create or contribute substantial runoff which would be an additional source of polluted runoff?                                                                                                                                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| g) Otherwise substantially degrade water quality?                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| 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?                                                                                                                                                                                                                                                                                                     | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| i) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?                                                                                                                                                                                                                                                                                                                                                                                                                 | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| j) Expose people or structures to a substantial risk of loss, injury or death involving flooding?                                                                                                                                                                                                                                                                                                                                                                                                                   | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| k) Result in inundation by seiche, tsunami, or mudflow?                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| 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 stream in a manner that would result in substantial erosion, siltation, or flooding, both on- or off-site?                                                                                                                                                                                                                 | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| 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) | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |

| <i>Topics:</i>                                                                                                                                                                                                      | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------|------------------|
| 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? |                                               |                                                                               |                                                                                       |                                             |                  |

## Discussion

- a) The proposed project has the potential to result in erosion, siltation, and other water quality impacts during project construction and operation. Water quality in surface and groundwater bodies is regulated by the State and Regional Water Quality Control Boards. The project site is under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (RWQCB), which is responsible for implementation of State and federal water quality protection regulations. The RWQCB is responsible for implementing the Water Quality Control Plan (Basin Plan), a master policy document for managing water quality issues in the region. The Basin Plan establishes beneficial water uses for waterways and water bodies within the region.

Runoff water quality is regulated by the National Pollutant Discharge Elimination System (NPDES) Nonpoint Source Program (established through the Clean Water Act); the NPDES program objective is to control and reduce pollutants to water bodies from nonpoint discharges. Locally, the NPDES program is administered by the RWQCB. The RWQCB has conveyed responsibility for implementation of storm water regulations in the vicinity of the project site to the Alameda Countywide Clean Water Program (ACCWP). The ACCWP maintains compliance with the NPDES Permit and promotes storm water pollution prevention within that context. Compliance with the NPDES Permit is mandated by State and federal statutes and regulations.

Participating agencies (including the City of Oakland) must comply with the provisions of the County permit by ensuring that new development and redevelopment projects mitigate water quality impacts to storm water runoff both during construction and operation periods.

Compliance with the following City Standard Conditions of Approval will ensure that new development would have a less-than-significant impact on water quality standards and discharge requirements during project construction and operation.

**STANDARD CONDITION HWQ-1:** *Prior to issuance of a demolition, grading, or construction-related permit.*

The project applicant shall submit an erosion and sedimentation control plan for review and approval by the Building Services Division. All work shall incorporate all applicable "Best Management Practices (BMPs) for the construction industry, and as outlined in the Alameda Countywide Clean Water Program pamphlets, including BMP's for dust, erosion and sedimentation abatement per Chapter Section 15.04 of the Oakland Municipal Code. The measures shall include, but are not limited to, the following:

- a) On sloped properties, the downhill end of the construction area must be protected with silt fencing (such as sandbags, filter fabric, silt curtains, etc.) and hay bales oriented parallel to the contours of the slope (at a constant elevation) to prevent erosion into the street, gutters, stormdrains.
- b) In accordance with an approved erosion control plan, the project applicant shall implement mechanical and vegetative measures to reduce erosion and sedimentation, including appropriate seasonal maintenance. One hundred (100) percent degradable erosion control fabric shall be installed on all graded slopes to protect and stabilize the slopes during construction and before permanent vegetation gets established. All graded areas shall be temporarily protected from erosion by seeding with fast growing annual species. All bare slopes must be covered with staked tarps when rain is occurring or is expected.
- c) Minimize the removal of natural vegetation or ground cover from the site in order to minimize the potential for erosion and sedimentation problems. Maximize the replanting of the area with native vegetation as soon as possible.
- d) Install filter materials acceptable to the Engineering Division at the storm drain inlets nearest to the project site prior to the start of the wet weather season (October 15); site dewatering activities; street washing activities; saw cutting asphalt or concrete; and in order to retain any debris flowing into the City storm drain system. Filter materials shall be maintained and/or replaced as necessary to ensure effectiveness and prevent street flooding.
- e) Ensure that concrete/granite supply trucks or concrete/plaster finishing operations do not discharge wash water into the creek, street gutters, or storm drains.

- f) Direct and locate tool and equipment cleaning so that wash water does not discharge into the street, gutters, or storm drains.
- g) Create a contained and covered area on the site for storage of bags of cement, paints, flammables, oils, fertilizers, pesticides, or any other materials used on the project site that have the potential for being discharged to the storm drain system by the wind or in the event of a material spill. No hazardous waste material shall be stored on site.
- h) Gather all construction debris on a regular basis and place them in a dumpster or other container which is emptied or removed on a weekly basis. When appropriate, use tarps on the ground to collect fallen debris or splatters that could contribute to stormwater pollution.
- i) Remove all dirt, gravel, refuse, and green waste from the sidewalk, street pavement, and storm drain system adjoining the project site. During wet weather, avoid driving vehicles off paved areas and other outdoor work.
- j) Broom sweep the street pavement adjoining the project site on a daily basis. Caked-on mud or dirt shall be scraped from these areas before sweeping. At the end of each workday, the entire site must be cleaned and secured against potential erosion, dumping, or discharge to the street, gutter, storm drains.
- k) All erosion and sedimentation control measures implemented during construction activities, as well as construction site and materials management shall be in strict accordance with the control standards listed in the latest edition of the Erosion and Sediment Control Field Manual published by the Regional Water Quality Board (RWQB).
- l) All erosion and sedimentation control measures shall be monitored regularly by the project applicant. The City may require erosion and sedimentation control measures to be inspected by a qualified environmental consultant (paid for by the project applicant) during or after rain events. If measures are insufficient to control sedimentation and erosion then the project applicant shall develop and implement additional and more effective measures immediately

**STANDARD CONDITION HWQ-2:** *Prior to the issuance of building permit (or other construction related permit).*

The applicant shall comply with the requirements of Provision C.3 of the National Pollutant Discharge Elimination System (NPDES) permit issued to 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:
  - i. All proposed impervious surface on the site;
  - i. Anticipated directional flows of on-site stormwater runoff; and
  - ii. Site design measures to reduce the amount of impervious surface area and directly connected impervious surfaces; and
  - iii. Source control measures to limit the potential for stormwater pollution; and
  - iv. 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.
  - i. Detailed hydraulic sizing calculations for each stormwater treatment measure proposed; and
  - ii. 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.

**STANDARD CONDITION HWQ-3: *Prior to final zoning inspection.***

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.e of the NPDES permit, which provides, in part, for the following.

- a) 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
- b) 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.

The implementation of Standard Condition HAZ-1 will also help minimize impacts to water quality and ground water.

- b) The project will be connected to the City's water supply system. The domestic potable water supply for the City of Oakland and the proposed project area is not provided by groundwater sources, but rather from surface water sources maintained by the East Bay Municipal Utility District (EBMUD). Because groundwater will not be used to supply water for the project, there will be no impact on the East Bay Plain aquifer volume or regional groundwater levels. This project would have a less-than-significant impact.
- c) As noted in Section VIII.a, the construction and post-construction BMPs indicate that stormwater management features would slow the velocity of runoff and allow for the removal of sediments and other pollutants. Therefore, runoff generated by the project would not be expected to cause substantial erosion or siltation on- or off-site. The project would have a less-than-significant impact.
- d-g) The proposed project will result in additional impervious surfaces resulting in an increase in the intensity and amount of runoff from the site during rainstorms. The site is located in an urbanized area, with drain systems in place, and would not be expected to substantially increase downstream flooding risks or exceed the capacity of the existing storm drains. To reduce this impact to a less-than-significant level, the project applicant will be required to implement and comply with the City Standard Conditions of Approval listed in Section VIII.a, above.

- h-j) The project site is located within Zone X on the Federal Emergency Management Agency Flood Insurance Rate Map (FIRM).<sup>28</sup> Zone X is the area determined to be outside the 500-year flood and protected by levee from 100-year flood. This designation is considered a low risk. Therefore, the project would not place any structures within a 100-year flood area or expose people or structures to substantial risk of loss, injury or death involving flooding. The project's impacts related to flooding would be less than significant.
- k) The project site is located in the foothills of eastern Oakland approximately three miles from the San Francisco Bay. The site is not located within an area identified on the California Emergency Management Agency, Tsunami Inundation Map for Emergency Planning.<sup>29</sup> The project site is not located in an area prone to land slides or mudflows as depicted on the ABAG Debris Flow Source Areas and Earthquake-Induced Landslide Hazard maps.<sup>30</sup> The project would have no impact.
- l-m) No creek is located on or near the project site, and the project would not affect any creeks subject to the City of Oakland Creek Protection Ordinance 13.16. As a result, the project would have no impact.

## References

- Federal Emergency Management Administration (FEMA), Flood Insurance Rate Map, 06001C0087G, August 3, 2009.
- State of California Department of Conservation, "Tsunami Inundation Map for Emergency Planning," Oakland East Quadrangle. July 31, 2009.
- Association of Bay Area Governments (ABAG) Land Slide Hazards Maps and Information. <http://www.abag.ca.gov/bayarea/eqmaps/landslide/index.html>. Accessed June 9, 2010.

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<sup>28</sup> Federal Emergency Management Administration (FEMA), Flood Insurance Rate Map, 06001C0087G, August 3, 2009.

<sup>29</sup> State of California Department of Conservation, "Tsunami Inundation Map for Emergency Planning," Oakland East Quadrangle. July 31, 2009.

<sup>30</sup> Association of Bay Area Governments (ABAG), Land Slide Hazards Maps and Information. <http://www.abag.ca.gov/bayarea/eqmaps/landslide/index.html>. Accessed June 9, 2010.

## IX. Land Use and Planning

| <i>Topics:</i>                                                                                                                                                                                                                                                                                                                                                                     | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of<br/>Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|
| <b>10. LAND USE AND LAND USE PLANNING—<br/>Would the project:</b>                                                                                                                                                                                                                                                                                                                  |                                               |                                                                               |                                                                                           |                                             |                                     |
| a) Physically divide an established community?                                                                                                                                                                                                                                                                                                                                     | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| b) Result in a fundamental conflict between adjacent or nearby land uses?                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| 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? | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| d) Fundamentally conflict with any applicable habitat conservation plan or natural community conservation plan?                                                                                                                                                                                                                                                                    | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |

### Discussion

- a) The physical division of an established community would typically involve the construction or removal of large features (such as freeways, roadways or superblock development) that create a barrier between existing neighborhoods, such that access from one neighborhood to another is diminished. The project site is an infill site located within an urban area that is developed with a mix of commercial and residential uses. Although the project site is currently undeveloped, it was previously occupied by a PG&E service yard, an auto repair shop, and a market. Redevelopment of the site with a five-story mixed use building consisting of 115 residential units and ground floor commercial space would not create any barriers between areas surrounding the site particularly given the triangular shape of the site and its adjacency to the I-580. The project would not change access patterns around the project site or otherwise restrict traffic flow on MacArthur Boulevard, High Street, or other streets in the vicinity of the project site. Therefore, the proposed project would not divide an established community and the impact would be less than significant.
- b) Uses surrounding the project site include a mix of neighborhood and service commercial uses and residential. The proposed building height is taller than other buildings in the vicinity, but it will not directly impact the adjacent lots because the project site is situated on a corner lot with no immediately adjacent buildings. Existing residential neighborhoods and commercial zones are located to the north and east of the project site, and the southern border of the project

site is directly adjacent to I-580. The establishment of senior housing and commercial uses on this site would not result in a fundamental conflict with adjacent or nearby land uses as these are other residential uses in the area. Indirect air quality impacts associated with the development proximity to the freeway will be addressed in the EIR.

- c) The General Plan designation is Neighborhood Center Mixed Use. The maximum residential density provided in this land use category is 125 dwelling units per gross acre or 166.67 dwelling units per net acre. This works out to a maximum density of 1 unit per 261 square-foot of lot area. The 40,879 square-foot project site could support a maximum of 156 units. The 115-unit project on the site is well under the maximum allowable density.

The General Plan states that the intent of the designation is to "identify, create, maintain, and enhance mixed use neighborhood commercial centers." Vertical integration of uses, including residential units above street-level commercial space is encouraged."

The following General Plan Land Use and Transportation Policies and Objectives apply to the proposed project:

Objective N3: Encourage the construction, conservation, and enhancement of housing resources in order to meet the current and future needs of the Oakland community.

Policy N3.1 Facilitating Housing Construction

Policy N3.2 Encouraging Infill Development

Policy N3.9 Orienting Residential Development

The project is located immediately south of the Laurel District of Central Oakland. The Land Use Element considers the construction of new housing to be one of the highest priorities in Oakland to meet the demand of a growing population. In addition, the Land Use Element encourages the construction of affordable senior housing to meet a critical need in both the City of Oakland and the region for providing affordable residences for senior citizens. The project meets the objectives listed above by providing 115 new residential units on several underutilized parcels. The Land Use Element of the General Plan identifies the major transportation corridors as appropriate places for high density development. The Land Use Element specifically identifies this section of MacArthur Boulevard as a "grow and change" area. "Grow and change" areas are portions of the City of Oakland that the general plan identified as places able to grow beyond the existing density. They already have various positive factors

such as good access to transportation, connections to city services, and connections to the region. They are often located along major corridors. This project site meets all of those criteria.

On December 21, 2010, the Oakland City Council adopted the 2007–2014 Housing Element and certified the Housing Element EIR. The California Department of Housing and Community Development also has certified the Housing Element as being in compliance with the requirements of State law.

The project site is identified as a planned development site in the Housing Element and the Housing Element EIR. Development of the project site, at a level consistent with the proposed project, was considered in the Housing Element EIR. The proposed project is consistent with the Housing Element and will further the City in meeting its objective to increase housing. The High and MacArthur Project EIR may tier off of the analysis included in the Housing Element EIR pursuant to the CEQA Statutes §21093 and §21094 and CEQA Guidelines §15152 and §15385.

The proposed project meets the referenced objectives, policies, goals, and the general intent of the land use designations and Housing Element. As a result, the project would not conflict with the General Plan. The Zoning and General Plan designations are shown in Figure 4.

The applicable zoning of the project site is split between C–30 District Thoroughfare Commercial Zone & C–31 Special Retail Commercial Zone. The C–30 zone is intended to "create, preserve, and enhance areas with a wide range of retail establishments serving both short and long term needs in convenient locations, and is typically appropriate along major thoroughfares." The C–31 zone is intended to "create, preserve, and enhance areas with a wide range of retail establishments serving both short and long term needs in attractive settings oriented to pedestrian comparison shopping, and is typically appropriate along important shopping streets having a special or particularly pleasant character." The C–31 is generally located on the front of the property (the zoning code defines the High Street frontage as the front and the MacArthur frontage as a "corner side") while the C–30 and S–4 portion is to the rear of the triangular shaped project site.

The City recently updated its Zoning Ordinance. The C–30 zoning changed to CN–3 Neighborhood Commercial Zone 3. The C–31 zoning changed to CN–2 Neighborhood Commercial Zone 2. The new zoning regulations took effect on

April 14, 2011. They will not apply to project applications which have been deemed complete prior to that date, which include the proposed project.<sup>31</sup>

There are two commercial spaces on the project site plan, as shown in Figure 2. The small kiosk space fronting High Street is anticipated to be occupied as newsstand or flower stand. The commercial space located at the corner of High Street and MacArthur Boulevard is anticipated to be used for any number of general retail uses and/or consumer services allowed as permitted in the C-30 and C-31 zone. No food service uses are proposed.

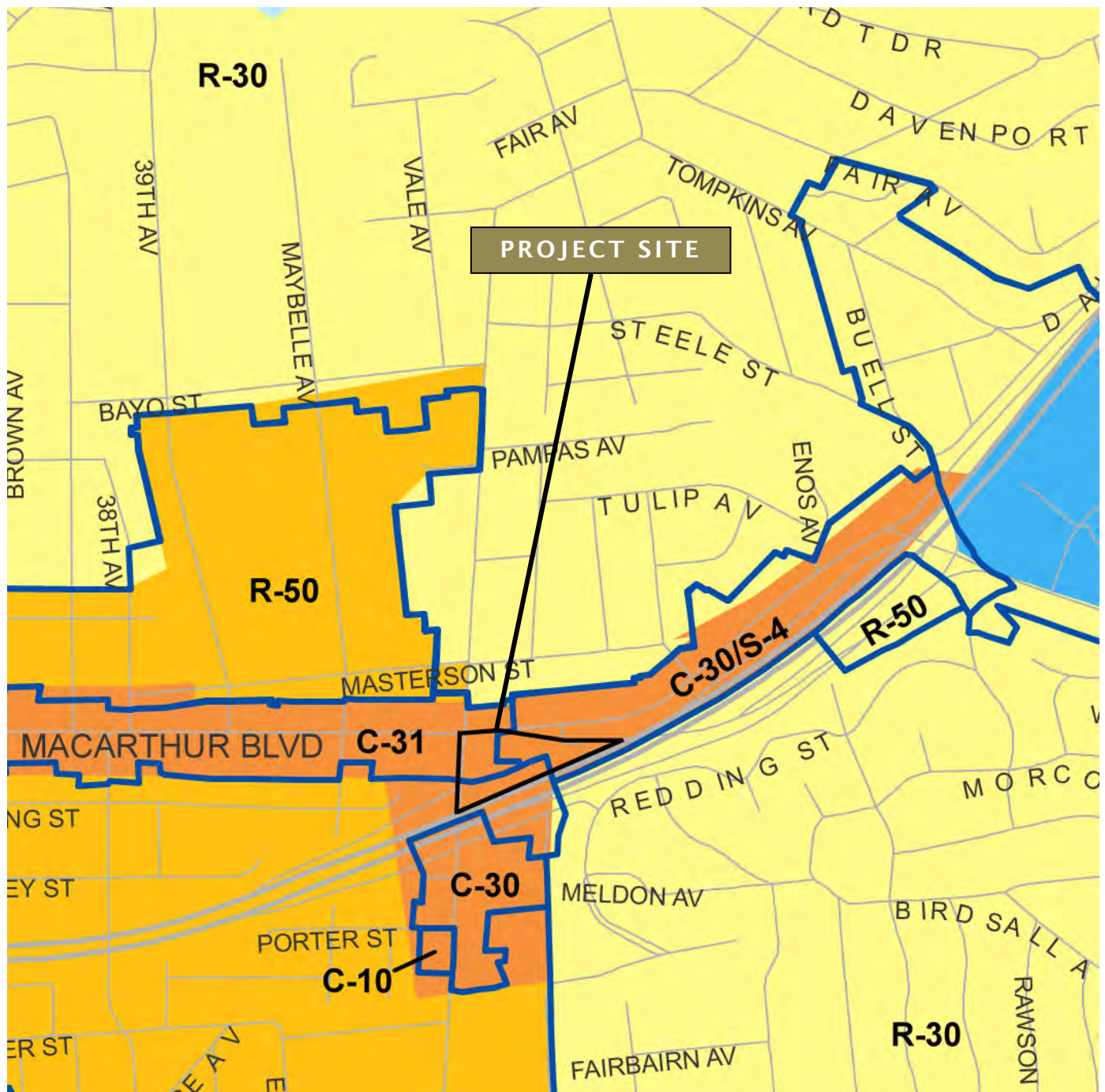
Both zoning districts allow permanent residential uses. The maximum residential density for this zone is set forth in the R-70 regulations. According to the R-70 zone, the maximum residential is 1 unit per 450 square feet, which results in a maximum density of 90 units. Section 17.106.060 of the Oakland Planning Code allows the density for senior housing to exceed the zoning density by up to 75% with a Conditional Use Permit (CUP) which could allow a maximum of 157 units on the property. However, this would exceed the maximum density permitted under the General Plan, which is 155 units. The proposed project would exceed the zoning density requirements by approximately 26%, which is within the permitted range with a CUP.

The S-4 Design Review Combining Zone is an additional zoning designation overlaid on the C-30 portion of the site. The S-4 is intended to create, preserve, and enhance the visual harmony and attractiveness of areas which require special treatment and the consideration of relationships between facilities. In the S-4 zone no building, other than a new Secondary Unit shall be constructed unless plans for such proposal have been approved pursuant to the design review procedure. As this is a residential project it is already subject to design review.

The following table depicts the project's comparison to zoning requirements.

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<sup>31</sup> Oakland City Council Ordinance No. 13064 C.M.S. Adopted March 15, 2011



|                                                                                                                    |                                                                                                                |                                     |                          |
|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|
|  Detached Unit Residential      |  Institutional              | C-10 Local Retail                   | R-20 Low Density         |
|  Mixed Housing Type Residential |  Resource Conservation Area | C-20 Shopping Center                | R-30 One-Family          |
|  Urban Residential              |  Urban Open Space           | C-25 Office Commercial              | R-40 Garden Apartment    |
|  Neighborhood Center Mixed Use  |  Project Site               | C-30 District Thoroughfare          | R-50 Medium Density      |
|  Community Commercial           |  Zoning                     | OS (AF) Athletic Field              | R-60 Medium High Density |
|                                                                                                                    |                                                                                                                | OS (LP) Linear Park                 | R-70 High Density        |
|                                                                                                                    |                                                                                                                | OS (NP) Neighborhood Park           | S-4 Design Review        |
|                                                                                                                    |                                                                                                                | OS (RCA) Resource Conservation Area |                          |
|                                                                                                                    |                                                                                                                | OS (SU) Special Use                 |                          |

Figure 4  
High & MacArthur Mixed-Use Project Initial Study  
Land Use & Zoning Map

**Table 1 Zoning Regulation Comparison Table**

| <b>Criteria</b>                               | <b>Applicable Requirement<br/>C-30 &amp; C-31</b>                                   | <b>Current Requirement<br/>CN-2 &amp; CN-3<sup>a</sup></b>                                                          | <b>Proposed Project</b>                | <b>Comment<sup>b</sup></b>                                                                                                                         |
|-----------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Density                                       | 1 unit per 450 square feet of lot area = 90 units                                   | CN-2: 1 unit per 450 square feet of lot area = 90 units<br>CN-3: 1 unit per 375 square feet of lot area = 108 units | 115 units                              | Exceeds the applicable and current requirements.<br>Major CUP required to exceed maximum density for senior housing under section 17.116.060       |
| Yard – Front (High St.)                       | 0'                                                                                  | Minimum 0'<br>Maximum 10' OR<br>Maximum front yard requirement is 75% of street frontage                            | 0' – 16' 4"                            | Meets the applicable and current requirements.                                                                                                     |
| Yard – Street Side Lot Line (MacArthur Blvd.) | 0'                                                                                  | 0' OR<br>Maximum front yard requirement is 50% of street frontage                                                   | 0' – 8'                                |                                                                                                                                                    |
| Yard – Interior Lot Line                      | 10'                                                                                 | 0'                                                                                                                  | 10'                                    |                                                                                                                                                    |
| Yard – Rear                                   | 15'                                                                                 | 10' – 15'                                                                                                           | 40'                                    |                                                                                                                                                    |
| Yard – Courts                                 | 15'                                                                                 | 18' – 50'                                                                                                           | 43'                                    |                                                                                                                                                    |
| Height – General                              | 40' (C-30)<br>35' (C-31)                                                            | 45' (CN-3)<br>45' (CN-2)                                                                                            | Varies between 47' & 60'. 54' average. | Does not meet the applicable or current requirements. Major Variance is required.                                                                  |
| Height – Adjacent to R-50 Zone                | 30' with allowed increase of 1' height for every additional 1' of setback           | N/A                                                                                                                 | Varies between 47' & 60'. 54' average. | Does not meet the current requirements. Major Variance is required.<br>In new Zoning, the adjacent R-50 zone becomes CN-3 and this will not apply. |
| Open Space                                    | 150 sq.ft./unit = 17,250 sq.ft.                                                     | 150 sq.ft./unit = 17,250 sq.ft                                                                                      | 17,461 sq.ft.*                         | Meets the applicable and current requirements.                                                                                                     |
| Auto Parking                                  | 1 space / unit = 115 spaces.<br>1 space / 600 sq.ft. retail/ commercial = 6 spaces. | Not specified, however parking access must not be from a primary street                                             | 65 automobile spaces                   | Seeks Major Conditional Use Permit under Section 17.116.110 to reduce parking requirement and to allow ground level parking and loading.           |

| Criteria                        | Applicable Requirement<br>C-30 & C-31                                                                                                 | Current Requirement<br>CN-2 & CN-3 <sup>a</sup>                                                    | Proposed Project            | Comment <sup>b</sup>                           |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------|------------------------------------------------|
| Bicycle Parking<br>(long term)  | 1 space / 10 units = long term 12 spaces.<br>1 space for each 12,000 sq. ft retail/commercial (min of 2 spaces) = 2 long term spaces. |                                                                                                    | 14 long-term bicycle spaces | Meets the applicable and current requirements. |
| Bicycle Parking<br>(short term) | 1 space / 20 units = 6 short term spaces.<br>1 space / 5,000 sq. ft. retail; minimum of 2 spaces = 2 spaces                           |                                                                                                    | 8 short-term bicycle spaces |                                                |
| Loading                         | 50,000 – 149,999 sq.ft. residential building = 1 berth                                                                                | Not specified, however access must be on ground floor with the entrance from a non-primary street. | 1 berth                     |                                                |

a The City recently updated its Zoning Ordinance. The current zoning column is included in Table 1 to shown how the project would/would not comply with the newly adopted zoning. The proposed project would not be subject to the newly adopted zoning regulations; therefore the previous zoning regulations would be applicable for the project.

b A Major Variance and a Major Conditional Use Permit are required because the project entails preparation of an Environmental Impact Report.

Sources: City of Oakland Planning Code: [www.oaklandnet.com/government/ceda/revised/OaklandPlanningCode2010-04-15withbookmarks.pdf](http://www.oaklandnet.com/government/ceda/revised/OaklandPlanningCode2010-04-15withbookmarks.pdf); and City of Oakland Planning Code Update: [www2.oaklandnet.com/Government/o/CEDA/o/PlanningZoning/s/LUC/DOWD009051](http://www2.oaklandnet.com/Government/o/CEDA/o/PlanningZoning/s/LUC/DOWD009051)

The project proposes a building height that varies between 47 feet and 60 feet, with an average height of 54 feet. The maximum height allowed on the C-30 zone is 40 feet and the maximum height allowed in the C-31 zone is 35 feet. Additionally, Section 17.108.010 restricts building height to 30 feet with an allowed increase of 1 foot height for every additional 1 foot of setback. The project seeks a minor variance request to achieve the proposed height.

The proposed project includes a CUP for a reduction in the number of parking spaces to be provided. Under Section 17.116 (the parking regulations) 120 spaces are required; 115 for the residential units at a ratio of 1:1 and six for the commercial (3,446 sq. ft. requires parking at 1 space per 600 sq. ft. which works out to 5.7 spaces, rounded up to 6). The regulations, however, allow a further reduction of up to 75 percent of the spaces required for the residential when it's

for a senior apartment project, with the granting of a CUP. That would require 35 spaces (29 residential and six commercial). The applicant is proposing a total of 65 automobile spaces (approximately a 47 percent reduction from the 1:1 ratio), near the midpoint of those two extremes. In addition, three motorcycle parking spaces and one tandem automobile parking space are being provided, but these do not count towards the vehicle parking requirements. A CUP is also required for ground-level parking and loading.

The applicant has proposed a total of 14 long-term and 8 short-term bicycle parking spaces as part of this project. Section 17.117 (bicycle parking ordinance) of the Oakland Planning Code states that 12 long-term bicycle parking spaces are required for residential uses of the project and an additional 2 spaces are required for the commercial spaces proposed in the project for a total of 14 long-term bicycle spaces required. Spaces planned for senior housing use are required at a 10:1 ratio (115 units divided by 10 works out to 11.5 spaces, rounded up to 12). Commercial bicycles spaces are required at 2 per 5,000 square feet of retail/commercial space or a minimum of 2 spaces. Because the project has proposed 3, 446 square feet of retail/commercial, the number of spaces required defaults to the minimum requirement of two spaces. The proposed project is also subject to compliance with the short-term bicycle parking requirements of 1 space per 20 senior housing units plus 1 space per 5,000 square feet of retail/commercial space. At these ratios, 8 short-term bike spaces would be required. The project complies with both the long- and short-term bicycle parking requirements.

The project seeks design review, CUP, and variance approval. The City must determine whether the project meets the applicable findings and criteria that will ensure consistency with the Oakland General Plan, the Oakland Planning Code and Subdivision Regulations, and all other applicable requirements of the Oakland Municipal Code. While the proposed project may have potential physical environmental impacts, all of which will be further studied in the EIR, none of these potential impacts would be caused due to a fundamental conflict with any land use plan, policy, or regulation. Therefore, the project would not fundamentally conflict with applicable land use plans and policy and its impact would be less than significant.

- d) The project site is not located within a habitat conservation plan or natural community conservation plan; therefore, there would be no impact.



## X. Mineral Resources

| <i>Topics:</i>                                                                                                                                                        | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|
| <b>11. MINERAL AND ENERGY RESOURCES—<br/>Would the project:</b>                                                                                                       |                                               |                                                                               |                                                                                       |                                             |                                     |
| 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?                                | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| 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? | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |

### Discussion

- a-b) The project site has no known mineral resources. The project would not require quarrying, mining, dredging, or extraction of locally important mineral resources on site, nor will it deplete any nonrenewable natural resources. Therefore, the project would not impact mineral resources.

## XI. Noise

| <i>Topics:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                        | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of<br/>Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|
| <b>12. NOISE—Would the project result in:</b>                                                                                                                                                                                                                                                                                                                                                                                                         |                                               |                                                                               |                                                                                           |                                             |                                     |
| 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)?                                                                                                                                                                                                                                                                             | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| b) Violate the City of Oakland Noise Ordinance (Oakland Planning Code Section 17.120.050) regarding operational noise?                                                                                                                                                                                                                                                                                                                                | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| c) Violates the City of Oakland Noise Ordinance (Oakland Municipal Code Section 17.120.050) regarding construction noise, except if an acoustical analysis is performed?                                                                                                                                                                                                                                                                              | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| d) Violates the City of Oakland Noise Ordinance (Oakland Municipal Code Section 8.18.020) regarding nuisance of persistent construction-related noise?                                                                                                                                                                                                                                                                                                | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| e) Create a vibration not associated with motor vehicle, trains, and temporary construction or demolition work, which is perceptible without instruments by the average person at or beyond any lot line containing vibration-causing activities, except vibration causing 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)? | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| f) Expose person to or generate rail-related groundbourne vibration in excess of standards established by the Federal Transit Administration?                                                                                                                                                                                                                                                                                                         | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| g) 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)?                                                                                                                                                    | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| h) Result in a 5dBA permanent increase in ambient noise levels in the project vicinity above levels existing without the project?                                                                                                                                                                                                                                                                                                                     | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| i) Conflicts with state land use compatibility guidelines for all specified land uses for determination of acceptability of noise after incorporation of all applicable Standard Conditions of Approval?                                                                                                                                                                                                                                              | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| j) Be located within an airport land use plan and would expose people residing or working in the project area to excessive noise levels?                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| k) Be located within the vicinity of a private airstrip, and would expose people residing or working in the project area to excessive noise levels?                                                                                                                                                                                                                                                                                                   | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |

## Discussion

a-d, g-i)

The proposed project consists of the development of a five-story mixed use building containing 115 senior residential units with approximately 3,446 square feet of ground floor commercial space. The project site's proximity to I-580 and High Street and MacArthur Boulevard, and the associated traffic volumes could expose the proposed uses to noise levels in excess of applicable noise standards. In addition, construction related noise impacts to the neighboring commercial and residential uses could be significant. An analysis of potential noise impacts and necessary mitigation measures will be included in the EIR.

- e) The proposed project consists of residential senior housing. No vibration-causing activities would result from implementation of the project; therefore, the project would have no impact associated with vibration.
- f) The project site is not located adjacent to, or in close proximity to rail activity. Therefore, implementation of the proposed project would not expose persons to rail-related groundbourne vibration.
- j-k) The project is not located within 2 miles of a public airport, and there are no private landing airstrips in the vicinity. The closest public airport is the Oakland International Airport located approximately 8 miles south and west of the project site. Therefore, the project would have no impact as it would not expose persons residing or working at the project site to excessive noise due to proximity to an airport or landing strip.

It is also noted that the project site is identified as a planned development site in the Housing Element and the Housing Element EIR, which was certified by the City in December 2010 and included an analysis of Noise impacts. Development of the project site, at a level consistent with the proposed project, was considered in the Housing Element EIR. The High and MacArthur Project EIR may tier off of the analysis included in the Housing Element EIR pursuant to the CEQA Statute §21093 and §21094 and CEQA Guidelines §15152 and §15385.

## XII. Population and Housing

| <i>Topics:</i>                                                                                                                                                                                                                                                                                                                                                    | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of<br/>Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|
| <b>13. POPULATION AND HOUSING—<br/>Would the project:</b>                                                                                                                                                                                                                                                                                                         |                                               |                                                                               |                                                                                           |                                             |                                     |
| 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? | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| 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?                                                                                                                                                                                   | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere in excess of that contained in the City's Housing Element?                                                                                                                                                                                             | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |

### Discussion

- a) The project would incrementally impact the population by adding an additional 115 senior residential units. However, the units proposed are consistent with the General Plan and zoning designations of this area and consistent with the policies of the City of Oakland General Plan Land Use and Transportation and Housing Elements. The population growth is an incremental growth in persons and housing and the impacts would be considered less than significant.
- a) The project site does not currently contain any residential units. Therefore, the project would not displace housing. The project would increase the housing supply in Oakland by 115 units; therefore, no existing housing units would be displaced and no impact would occur.
- b) The project site does not contain residential population. Therefore, implementation of the project would not displace people and there would be no impact.

### XIII. Public Services

| <i>Topics:</i>                                                                                                                                                                                                                                                                                                                                                                                                       | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|
| <b>14. PUBLIC SERVICES— Would the project:</b>                                                                                                                                                                                                                                                                                                                                                                       |                                               |                                                                               |                                                                                       |                                             |                                     |
| a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, 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: |                                               |                                                                               |                                                                                       |                                             |                                     |
| i) Fire protection?                                                                                                                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| ii) Police Protection?                                                                                                                                                                                                                                                                                                                                                                                               | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| iii) Schools? <sup>32</sup>                                                                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| iv) Other public facilities?                                                                                                                                                                                                                                                                                                                                                                                         | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |

#### Discussion

- a.i) The project site is located within a developed area of Oakland already served by public services. Fire protection and emergency medical response services are provided to the project site by the Oakland Fire Department. The Oakland Fire Department currently has 25 fire stations, the nearest station being Station 17 located at 3344 High Street, approximately ¼-mile from the project site.<sup>33</sup> In accordance with standard City practices, the proposed project would be designed in compliance with Oakland's Building Code, and the Fire Department would further review the project plans at the time of building permit application to ensure that adequate fire and life safety measures are designed into the project and in compliance with all applicable state and city fire safety requirements.

The increased population attributable to this proposed development would result in an incremental increase in the number of emergency medical calls at the project site. This increase would not be substantial given the relatively small percentage of total growth within the context of the surrounding vicinity, and would not require new or physically altered fire facilities.<sup>34</sup> Therefore, the impact would be less than significant.

<sup>32</sup> Although impacts to schools are exempt from CEQA review and mitigation (see SB 50) the impacts should nevertheless be analyzed.

<sup>33</sup> City of Oakland Fire Department, <http://www.oaklandnet.com/fire/operations/>. Accessed June 2, 2010.

<sup>34</sup> Phillip C Basada, Fire Protection Engineer. City of Oakland Fire Department. Personal Communication with Urban Planning Partners. June 14, 2010.



## XIV. Recreation

| <i>Topics:</i>                                                                                                                                                                                 | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------|--------------------------|
| <b>15. RECREATION—Would the project:</b>                                                                                                                                                       |                                               |                                                                               |                                                                                       |                                             |                          |
| a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated? | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/> |
| b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?                         | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/> |

### Discussion

- a-b) The project site is located immediately south of the Laurel District in the City of Oakland. Nearby parks and recreational facilities include McCrea Memorial Park and Leona Heights Park. Residents of the project site would be expected to use local parks and community facilities in Oakland, in addition to regional facilities in the area. The City of Oakland's Office of Aging, Health and Human Services also operates four multi-purpose seniors senior centers located throughout the City of Oakland.<sup>37</sup> Although the project would incrementally increase use of these facilities, this increase in use is not expected to result in substantial physical deterioration of local parks, trails, and community centers. Use of local and regional parks would be distributed over several locations on any given day, and would be commensurate with the relatively low number of residents that would occupy the project site (approximately 115 persons). In addition, use of public facilities by occupants of the project would be marginally reduced due to the provision of private open space on the project site (including an interior courtyard and balconies adjacent to every residential unit). The project would not require the construction or expansion of new recreational facilities that might have an adverse physical effect on the environment. The project impact would be less than significant.

### References

City of Oakland Parks and Recreation Department, <http://www.oaklandnet.com/parks/facilities/senior.asp>. Accessed June 14, 2010.

<sup>37</sup> City of Oakland Parks and Recreation: <http://www.oaklandnet.com/parks/facilities/senior.asp>. Accessed June 14, 2010.

## XV. Transportation/Traffic

| <i>Topics:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of<br/>Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|
| <b>16. TRANSPORTATION / TRAFFIC—</b> Would the project:<br>Cause an increase in traffic which is substantial in relation to the 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: |                                               |                                                                               |                                                                                           |                                             |                                     |
| a) At a study, signalized intersection which is located outside the Downtown area <sup>38</sup> , the project would cause the level of service (LOS) to degrade to worse than LOS D (i.e., E)?                                                                                                                                                                                                                                                                                                                                                            | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| b) 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)?                                                                                                                                                                                                                                                                                                                                                                                               | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| c) 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)?                                                                                                                                                                                                                                                                                             | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| d) 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)?                                                                                                                                                                                                                                                                                                | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| e) 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 delay values cannot be measured accurately)?                                                                                                         | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| f) 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?                                                                                                                                                                                                                                                                                                                                                                                     | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input type="checkbox"/>            |

<sup>38</sup> The downtown Area is defined in the Land Use and Transportation Element of the General Plan as the area generally bounded by West Grand Avenue to the north, Lake Merritt and Channel Park to the east, the Oakland Estuary to the south and I-980/Brush Street to the west.

| <b>Topics:</b>                                                                                                                                                                                                                                                                                                                                        | <b>Potentially<br/>Significant<br/>Impact</b> | <b>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</b> | <b>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of<br/>Approval</b> | <b>Less Than<br/>Significant<br/>Impact</b> | <b>No Impact</b>                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|
| g) For a Congestion Management Program (CMP) required analysis, (i.e., projects that generate 100 or more p.m. peak hour trips) cause a roadway segment on the Metropolitan Transportation System to operate at LOS F or increase the V/C ratio by more than three (3) percent for a roadway segment that would operate at LOS F without the project? | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input checked="" type="checkbox"/>         | <input type="checkbox"/>            |
| <b>Other Thresholds</b>                                                                                                                                                                                                                                                                                                                               |                                               |                                                                               |                                                                                           |                                             |                                     |
| h) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?                                                                                                                                                                                        | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| i) Substantially increase traffic hazards due to motor vehicles, bicycles, or pedestrians due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?                                                                                                                                        | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| j) Result in less than two emergency access routes for streets exceeding 600 feet in length, unless otherwise determined to be acceptable by the Fire Chief, or his/her designee, in specific instances due to climatic, geographic, topographic, or other conditions?                                                                                | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| k) Fundamentally conflict with adopted policies, plans, or programs supporting alternative transportation (e.g. bus turnouts, bicycle routes, pedestrian safety)?                                                                                                                                                                                     | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| <b>Cumulative Impacts</b>                                                                                                                                                                                                                                                                                                                             |                                               |                                                                               |                                                                                           |                                             |                                     |
| l) A project's contribution to cumulative impacts is considered "considerable" (i.e., significant) when the project exceeds at least one of the intersection-related thresholds listed above in threshold #a through #g for years 2015 or 2030.                                                                                                       | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                                  | <input type="checkbox"/>                    | <input type="checkbox"/>            |

## Discussion

- a-l) The proposed project consists of developing a five-story mixed use building that includes 115 senior residential units with approximately 3,446 square feet of ground floor commercial space. The project site is located on the corner of High Street and MacArthur Boulevard, adjacent to the I-580 freeway. The intersection receives high levels of AM and PM peak vehicle trips. The proposed project would not have no impact on Downtown intersections (checklist question b) as it is not located near Downtown; it would not generate more than 100 peak hour trips, thus not requiring a CMA analysis (checklist question g); and it would not result in any impacts to air traffic patterns (checklist questions h). However, implementation of the proposed project may result in potentially significant transportation and traffic impacts related to study intersection located outside of

the Downtown Area, design features, emergency access, and alternative transportation related policies (e.g., bus turnouts, bicycle routes) (checklist questions a, c–f, and i–l). An analysis of potential transportation and traffic impacts and relevant mitigation measures will be included in the EIR.

It is also noted that the project site is identified as a planned development site in the Housing Element and the Housing Element EIR, which was certified by the City in December 2010 and included an analysis of Transportation/Traffic impacts. Development of the project site, at a level consistent with the proposed project, was considered in the Housing Element EIR. The High and MacArthur Project EIR may tier off of the analysis included in the Housing Element EIR pursuant to the CEQA Statute §21093 and §21094 and CEQA Guidelines §15152 and §15385.

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## XVI. Utilities and Service Systems

| <i>Topics:</i>                                                                                                                                                                                                                                                                                                                                                                                                                    | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------|--------------------------|
| <b>17. UTILITIES AND SERVICE SYSTEMS—<br/>Would the project:</b>                                                                                                                                                                                                                                                                                                                                                                  |                                               |                                                                               |                                                                                       |                                             |                          |
| a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?                                                                                                                                                                                                                                                                                                                               | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/> |
| b) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, construction of which could cause significant environmental effects?                                                                                                                                                                                                                                         | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/> |
| 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?                                                                                                                                                             | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/> |
| 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? | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/> |
| 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?                                                                                                                                    | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/> |
| f) Violate applicable federal, state, and local statutes and regulations related to solid waste?                                                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input checked="" type="checkbox"/>                                                   | <input type="checkbox"/>                    | <input type="checkbox"/> |
| g) Violate applicable federal, state and local statutes and regulations relating to energy standards?                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/> |
| 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 or expansion of existing facilities, construction of which could cause significant environmental effects?                             | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input checked="" type="checkbox"/>         | <input type="checkbox"/> |

## Discussion

- a) The East Bay Municipal Utility District (EBMUD) provides wastewater treatment services to approximately 640,000 people within an 83-square mile area of Alameda and Contra Costa counties, including the City of Oakland. EBMUD's main wastewater treatment plant, which provides primary and secondary wastewater treatment, is located southwest of the I-580/Interstate I-80 interchange in Oakland. Currently, the EBMUD plant has the dry weather capacity of 168 million gallons of water per day (mgd). With the current average flow of 80 mgd, the plant is operating at 47.6 percent capacity. Additionally, primary wastewater treatment can be provided for up to 320 mgd.<sup>39</sup>

According to the City of Oakland Sanitary Sewer Design Guidelines, the proposed project would generate approximately 17,562 gallons<sup>40</sup> of wastewater per day (gpd) or approximately 6.9 million gallons per year.<sup>41</sup> The amount of wastewater that is anticipated by the project is not expected to exceed the wastewater treatment requirements of the EBMUD<sup>42</sup>. Furthermore, other than extending the existing infrastructure to the project site, no additional wastewater treatment facilities would need to be constructed to accommodate the proposed project. The project's impact to wastewater and stormwater systems would be less than significant with implementation of the following Standard Condition of Approval:

**STANDARD CONDITION UTIL-1:** *Prior to completing the final design for the project's sewer service.*

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 the affected service providers.

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<sup>39</sup> East Bay Municipal Utility district (EBMUD), "All About EBMUD," Published by the Public Affairs Office, 2007

<sup>40</sup>  $(150 \text{ gpd}/1 \text{ bedroom unit} \times 115 \text{ units}) + (100 \text{ gpd}/1000 \text{ gross sq ft} \times 3,124 \text{ sq ft}) = 17,562 \text{ gallons.}$

<sup>41</sup> City of Oakland, Sanitary Sewer Guidelines, Table 1 – Average Flow Rate on Specific Developments, November 2004. Revised August 2005.

<sup>42</sup> Lee, Diana, P.E. EBMUD Engineering and Planning. Personal communication with Urban Planning Partners. June 2010.

- b) Water supply and treatment, and wastewater treatment are provided to Oakland by EBMUD. As noted in XVI.a, the project site is currently served by sanitary sewer and water lines. Minor connections to these existing lines would be required to serve new structures on the project site.

The most current EBMUD Urban Water Management Plan (2009) has projected that water demand will be approximately 230 MGD in 2040.<sup>43</sup> The increased demand that would result from the proposed project is an insignificant fraction of this anticipated demand; water could be supplied to the project via existing and planned entitlements.

EBMUD's Main Wastewater Treatment Plant (MWWTP) and interceptor system are anticipated to have adequate dry weather capacity to treat the proposed wastewater flows from this project, provided that the project and the wastewater generated by the project meet the requirements of the current EBMUD Wastewater Control Ordinance. However, wet weather flows are a concern. EBMUD has historically operated three Wet Weather Facilities to provide treatment for high wet weather flows that exceed the treatment capacity of the MWWTP. On January 14, 2009, due to Environmental Protection Agency's (EPA) and the State Water Resources Control Board's (SWRCB) re-interpretation of applicable law, the Regional Water Quality Control Board (RWQCB) issued an order prohibiting further discharges from EBMUD's Wet Weather Facilities. Additionally, on July 22, 2009 a Stipulated Order for Preliminary Relief issued by EPA, the SWRCB, and RWQCB became effective. This order requires EBMUD to begin work that will identify problem infiltration/inflow areas, begin to reduce infiltration/inflow through private sewer lateral improvements, and lay the groundwork for future efforts to eliminate discharges from the Wet Weather Facilities.

Currently, there is insufficient information to forecast how these changes will impact allowable wet weather flows in the individual collection system subbasins contributing to the EBMUD wastewater system, including the subbasin in which the proposed project is located. As required by the Stipulated Order, EBMUD is conducting extensive flow monitoring and hydraulic modeling to determine the level of flow reductions that will be needed in order to comply with the new zero-discharge requirement at the Wet Weather Facilities. It is reasonable to assume that a new regional wet weather flow allocation process may occur in the East Bay, but the schedule for implementation of any new flow allocations has not yet been determined. Implementation of City Standard Condition of Approval UTIL-1 will ensure that adequate stormwater and sanitary sewer

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<sup>43</sup> East Bay Municipal Utility District. "Urban Water Management Plan." October, 2009.

infrastructure improvements are implemented, as needed, to serve the project.<sup>44</sup> Specifically, it will ensure that the proposed project will replace or rehabilitate any existing sanitary sewer collection systems, including sewer lateral lines, to reduce infiltration/inflow; ensure any new wastewater collection systems, including sewer lateral lines, for the project are constructed to prevent infiltration/inflow to the maximum extent feasible; and pays sewer mitigation fees required by the City's Public Works Agency. Therefore, this impact would be less than significant.

- c) EBMUD currently supplies water for nearly 1.3 million customers, including the City of Oakland, and is expected to grow to 1.7 million by the year 2040. Per capita daily water use in 2006 averaged 162 gallons. The highest annual water consumption on record was in 1976 at 222 million gallons.<sup>45</sup>

According to the Public Policy Institute of California, per capita water use in California is 232 gallons per day. Implementation of the project would increase the local population by 115 residents. Therefore, a rough estimate of the project's anticipated water demand is 26,680 gallons per day (115 persons x 232 gallon per day). This amount is consistent with EBMUD's future projections and will not be expected to exceed EBMUD's water supply capacity<sup>46</sup>. Because the projected demand comprises less than 0.01 percent of total EBMUD projected water demand, the project's impact on water provisions would be less than significant.

- d) Please see checklist question response a above. The impact would be less than significant with the implementation of Standard Conditions of Approval.
- e-f) The City of Oakland is serviced by the Altamont Landfill located in Livermore, CA. Waste collection is run by Waste Management of Alameda County (WMAC), WMAC collects solid waste from residential, commercial and industrial customers and delivers it to the Davis Transfer Station in San Leandro, where it is then transferred to larger vehicles and hauled to Altamont Landfill. Assembly Bill 939 requires that all cities divert 50 percent of their solid waste from landfills by December 31, 2000. The waste diversion rate in the City of Oakland was 55 percent in 2004<sup>47</sup>. The project sponsor would be required to comply with the City's construction and demolition debris recycling ordinance, which requires

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<sup>44</sup> Ibid

<sup>45</sup> EBMUD, "Water Supply Management Program 2040." <http://www.ebmud.com/our-water/water-supply/long-term-planning/water-supply-management-program-2040>. Accessed June 9, 2010.

<sup>46</sup> Rehnstrom, David. EBMUD Senior Civil Engineer, Water District Planning. Personal communication with Urban Planning Partners. October 2010.

<sup>47</sup> City of Oakland, Public Works Agency. "Zero Waste Strategic Plan." November 2006.

submittal of a plan to divert at least 50 percent of the construction waste generated by the project from landfill disposal.

The following discussion summarizes waste reduction regulations that apply to projects in Oakland:

California Integrated Waste Management Act (AB 939). State-mandated solid waste diversion goals are established in the California Integrated Waste Management Act (AB 939), including source reduction, composting, and recycling. AB 939 required all municipalities in the State to divert at least 50 percent of their waste streams by 2000. Source reduction, which is given the highest priority, is defined as the act of reducing the amount of solid waste generated by waste producers. Recycling and composting are given the next highest priority. AB 939 specifies that all other waste that is not diverted be properly and safely disposed of in a landfill or through incineration.

Alameda County Measure D. Approved by voters in 1990, Measure D established the Alameda County Source Reduction and Recycling Board to coordinate the creation of the Alameda County Source Reduction and Recycling Plan. This Plan established a Countywide goal of achieving a 75 percent solid waste diversion rate from landfills by the year 2010.

Oakland Municipal Code Chapter 15.34. This section of the Oakland Municipal Code requires building permit applications for new construction, demolition, or alterations and additions (with a valuation of \$50,000 or greater) to be accompanied by an approved Waste Reduction and Recycling Plan (WRRP), as noted in Standard condition UTIL-2. The WRRP is required to document the ways that the applicant will reduce the quantity of construction and demolition debris disposed at landfills by 50 percent or more. The City of Oakland will not approve a building permit for a project until the WRRP is approved.

The project applicant, the project design, and occupants of the project site would be required to comply with the waste reduction and recycling regulations outlined above – particularly Oakland Municipal Code Chapter 15.34. Therefore, the project would not be expected to conflict with applicable solid waste regulations. Compliance with this ordinance would result in less than significant short-term impacts on solid waste:

**STANDARD CONDITION UTIL-2:** *Prior to issuance of demolition, grading, or building permit.*

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](http://www.oaklandpw.com/Page39.aspx) or in the Green Building Resource Center. After approval of the plan, the project applicant shall implement the plan.

*Ongoing.* 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 the proposed activity or facility. Changes to 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.

- g-h) The project would increase energy consumption at the project site, but not to a degree that would require construction or expansion of new facilities. The project energy demand will be typical for a project of this scope and nature and will meet or exceed current state and local codes and standards concerning energy consumption, including Title 24 of the California Code of Regulations enforced by the City of Oakland through its building permit review process. The project would have a less-than-significant impact.

## References

City of Oakland, Public Works Agency. "Zero Waste Strategic Plan." November 2006.

City of Oakland, Sanitary Sewer Guidelines, Table 1 – Average Flow Rate on Specific Developments, November 2004. Revised August 2005.

East Bay Municipal Utility district (EBMUD), "All About EBMUD," Published by the Public Affairs Office, 2007.

East Bay Municipal Utility District. "Urban Water Management Plan." October, 2009.

EBMUD, "Water Supply Management Program 2040." <http://www.ebmud.com/our-water/water-supply/long-term-planning/water-supply-management-program-2040>. Accessed June 9, 2010.

Lee, Diana, P.E. EBMUD Engineering and Planning. Personal communication with Urban Planning Partners. June 2010.

Rehnstrom, David. EBMUD Senior Civil Engineer, Water District Planning. Personal communication with Urban Planning Partners. October 2010.

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## XVII. Mandatory Findings of Significance

| <i>Topics:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                            | <i>Potentially<br/>Significant<br/>Impact</i> | <i>Potentially<br/>Significant<br/>Unless<br/>Mitigation<br/>Incorporated</i> | <i>Less Than<br/>Significant<br/>with<br/>Standard<br/>Conditions<br/>of Approval</i> | <i>Less Than<br/>Significant<br/>Impact</i> | <i>No Impact</i>                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------|
| <b>18. MANDATORY FINDINGS OF SIGNIFICANCE—</b>                                                                                                                                                                                                                                                                                                                                                                                                            |                                               |                                                                               |                                                                                       |                                             |                                     |
| 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? | <input type="checkbox"/>                      | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input checked="" type="checkbox"/> |
| b) Does the project have impacts that would be 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.)                                                                                                        | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/>            |
| c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?                                                                                                                                                                                                                                                                                                               | <input checked="" type="checkbox"/>           | <input type="checkbox"/>                                                      | <input type="checkbox"/>                                                              | <input type="checkbox"/>                    | <input type="checkbox"/>            |

### Discussion

- a) As discussed in the preceding chapters, the proposed project does not have the potential to significantly degrade the environment. Section IV, Biological Resources, indicates there is no significant habitat that will be threatened by the proposed project. The project would also have no significant impact to California history or prehistory.
- b) Given the scale of the proposed project and the demand resulting from new population and uses on the site, the incremental effects of the project can reasonably be expected to not be cumulatively considerable. Development of the project site is consistent with the General Plan and zoning designations for the site. However, potential cumulative impacts may result for aesthetics, air quality, geology, greenhouse gas emissions, noise, and traffic, and will be addressed fully in the EIR.
- c) As discussed in Section VII, Hazards and Hazardous Materials and Section XV, Transportation and Traffic, the proposed project may have significant adverse effects on human beings regarding hazards due to contaminated soils and increased traffic at key intersections. As previously indicated throughout this Initial Study, each of these topics, and specifically the potential effects each may have on human beings, will be fully analyzed in the EIR.

The project site is identified as a planned development site in the Housing Element and the Housing Element EIR. Development of the project site, at a level consistent with the proposed project, was considered in the Housing Element EIR. The proposed project is consistent with the Housing Element and will further the City in meeting its objective to increase housing. The High and MacArthur Project EIR may tier off of the analysis included in the Housing Element EIR pursuant to the CEQA Statutes §21093 and §21094 and CEQA Guidelines §15152 and §15385.

---





1600 Franklin Street, Oakland, CA 94612 - Ph. 510/891-4716 - Fax. 510/891-7157

June 17, 2011

Lynn Warner  
Planner III  
City of Oakland  
Community and Economic Development Department  
250 Frank Ogawa Plaza, Suite 3315  
Oakland, Ca. 94612

**Subject: Notice of Preparation (NOP) for Environmental Impact Report (EIR) High and MacArthur Mixed Use Project**

Dear Ms Warner:

Thank you for the opportunity to comment on the Notice of Preparation for the Environmental Impact Report on High and MacArthur Mixed Use Project. AC Transit is supportive of additional housing in this prime transit-oriented location, but has concerns about two of the bus stops that may be impacted.

**Project Description**

The High and MacArthur Mixed Use project is proposed for the southwest corner of MacArthur Boulevard and High Street, adjacent to Interstate 580, at the edge of the Laurel district. The proposal is to build a five-story, 115 unit senior apartment building (market rate and affordable) with 3,446 square feet of retail space and 65 parking spaces.

**AC Transit Service to MacArthur & High**

AC Transit provides a high level of service to MacArthur and High, with direct bus service from there to Downtown Oakland, San Francisco, BART, and other locations. AC Transit operates eight routes that serve this location, in addition to supplemental trips serving schools:

- Line 14 is a local bus route that travels west from the site via High Street to Fruitvale BART, and north and east via a number of streets to Downtown Oakland;
- Line 57 is one of AC Transit's local trunk routes that travels south on MacArthur Boulevard to Foothill Square, and north and west primarily along MacArthur to Emeryville;
- Line 58L is a limited stop local route, operating weekday daytimes only, to Downtown Oakland, primarily via MacArthur Boulevard;
- Line NL is a limited stop Transbay route to San Francisco that also provides limited stop local service in the East Bay, operating seven days a week (one of only three AC Transit Transbay lines operating seven days) primarily along MacArthur Boulevard and Grand/West Grand Avenues;

- Line 805 is an "All-nighter" route (approximately midnight to 5 a.m.) that operates primarily along MacArthur Boulevard and Grand Avenue to Downtown Oakland;
- Lines NX, NX2 and NX3 are Transbay routes that provide weekday commute hour freeway express service to San Francisco.

### **Mixed Use Development at MacArthur and High**

Given the high level of transit service at this location, it is appropriate for additional housing and mixed use development. The City has identified MacArthur Boulevard as an appropriate corridor for transit-oriented development. Residents here will have easy access to stores and services in the Laurel commercial district, and will in turn help strengthen that district.

### **Bus Stops at MacArthur and High**

Additional population here will lead to additional use of bus lines, a positive development. Senior citizens, who will occupy the new building, use transit more than the general population. There will also be more vehicular activity at the intersection. Given these increased needs, it is important that the bus stops at this intersection be properly located and functions smoothly. Therefore, these bus stop issues should be addressed in the Environmental Impact Report.

There is an existing bus stop for southbound lines 57, 58L, NL, and supplemental service along the MacArthur Boulevard edge of the project. Over 10 buses per hour use this stop in the peak hour. Therefore, this bus stop should remain in place and have an adequate length of red curb to accommodate sixty foot long "articulated" buses that are used on this corridor. To safely stop and pull back into traffic, at least eighty feet of red curb are needed.

The more problematic bus stop is located at the intersection across MacArthur from the project, in front of a strip mall. This will be the stop residents will use to access bus service to Downtown Oakland and San Francisco. The stop is served by lines 57, 58L, NX, and NX2. The stop should be relocated to the other side of High Street because of several problems. First, the stop is before the traffic signal (nearside) and buses are likely to be delayed at the signal more than if the stop were located after the intersection (far side). The existing stop is currently inadequate in length. Inadequate stop lengths result in the back end of buses often sticking out into the travel lane and interfering with traffic. Given the configuration of driveways at the strip mall, each time a bus stops, it temporarily blocks the driveway, repeatedly interfering with access to several businesses.

The location of the stop also interferes with access to bus service at this location. Line 14 from Fruitvale BART travels east on High Street, then turns left on MacArthur Boulevard. Because the existing stop is located before the turn, line 14 cannot use it. The current line 14 stops are several hundred feet in either direction from MacArthur and High Street. If the stop were relocated to the far side of the intersection, line 14

could stop there, improving access at this location. AC Transit would be happy to work with the City to relocate this stop.

**Signal Timing**

AC Transit is also concerned about the timing of traffic signals at this intersection. The timing is sub-optimal for the busier street—MacArthur Boulevard—and leads to unnecessary delays that do not benefit any user regardless of mode. This problem will become more important with more activity at the intersection. The City should take this opportunity to improve signal timing at any affected location.

**Parking**

Finally, AC Transit commends the City for the modest level of parking proposed for this project—roughly one space for every two units. We believe that this is appropriate for a senior housing development in a location with strong transit service, and hope that comparable levels of parking will be provided in other Oakland developments.

Thank you for your interest in our comments on this project. We look forward to working with the City to make this location work for transit-oriented development. If you have any questions about our comments please contact Nathan Landau, Long Range Planning at (510) 891-4792.

Sincerely,



Tina Spencer  
Director of Service Development and Planning

cc. Mary King  
Tina Spencer  
Cory LaVigne  
Wil Buller  
Nathan Landau  
Sean DiestLorgion  
Ajay Martin

**DEPARTMENT OF TRANSPORTATION**

111 GRAND AVENUE  
P. O. BOX 23660  
OAKLAND, CA 94623-0660  
PHONE (510) 286-5541  
FAX (510) 286-5559  
TTY 711



*Flex your power!  
Be energy efficient!*

June 14, 2011

ALA580858  
ALA-580-R40.21  
SCH#2011052049

Ms. Lynn Warner  
City of Oakland  
250 Frank H. Ogawa Plaza, Suite 3315  
Oakland, CA 94612

Dear Ms. Warner:

**High and MacArthur Mixed-Use Project – Notice of Preparation**

Thank you for including the California Department of Transportation (Department) in the environmental review process for the High and MacArthur Mixed-Use Project. The following comments are based on the Notice of Preparation. As lead agency, the City of Oakland is responsible for all project mitigation, including any needed improvements to State highways. The project's fair share contribution, financing, scheduling, and implementation responsibilities as well as lead agency monitoring should be fully discussed for all proposed mitigation measures and the project's local traffic mitigation fees should be specifically identified in the environmental document. Any required roadway improvements should be completed prior to issuance of project occupancy permits. An encroachment permit is required when the project involves work in the State's 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 ensure resolution of the Department's CEQA concerns prior to submittal of the encroachment permit application; see the end of this letter for more information regarding the encroachment permit process.

***Traffic Impact Study (TIS)***

The environmental document should include an analysis of the impacts of the proposed project on State highway facilities in the vicinity of the project site in particularly the Interstate 580 on-ramp. Due to its already poor level of service, the project should take special consideration to mitigate any impacts from the proposed project.

The Traffic Impact Study should include the following information:

1. Information on the plan's traffic impacts in terms of trip generation, distribution, and assignment. The assumptions and methodologies used in compiling this information should be addressed. The study should clearly show the percentage of project trips assigned to State facilities.

2. Current Average Daily Traffic (ADT) and AM and PM peak hour volumes on all significantly affected streets, highway segments and intersections.
3. Schematic illustration and level of service (LOS) analysis for the following scenarios: 1) existing, 2) existing plus project, 3) cumulative and 4) cumulative plus project for the roadways and 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. The procedures contained in the 2000 update of the Highway Capacity Manual should be used as a guide for the analysis. We also recommend using the Department's "*Guide for the Preparation of Traffic Impact Studies*;" it is available on the following web site:  
<http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf>.
6. A discussion of Transportation Demand Management (TDM) measures the project would implement. For this particular project, one TDM measure can be to provide reliable routine shuttle services for seniors to nearby retail and services.
7. Mitigation measures should be identified where plan implementation is expected to have a significant impact. Mitigation measures proposed should be fully discussed, including financing, scheduling, implementation responsibilities, and lead agency monitoring.

We look forward to reviewing the TIS, including Technical Appendices, and environmental document for this project. Please send two copies to the address at the top of this letterhead, marked ATTN: Yatman Kwan, Mail Stop #10D.

***Encroachment Permit***

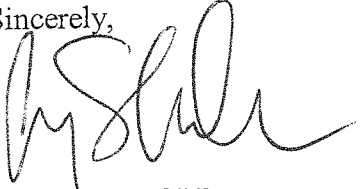
Any work or traffic control within the State ROW requires an encroachment permit that is issued by the Department. Traffic-related mitigation measures will be incorporated into the construction plans during the encroachment permit process. See the following website link for more information: <http://www.dot.ca.gov/hq/traffops/developserv/permits/>

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.

Ms. Lynn Warner/City of Oakland  
June 14, 2011  
Page 3

Should you have any questions regarding this letter, please call Yatman Kwan of my staff at (510) 622-1670.

Sincerely,

A handwritten signature in black ink, appearing to read 'Gary Arnold', with a stylized, cursive script.

GARY ARNOLD  
District Branch Chief  
Local Development - Intergovernmental Review

c: State Clearinghouse

**From:** Craig Cooper [mailto:[craig8727@gmail.com](mailto:craig8727@gmail.com)]  
**Sent:** Thursday, June 02, 2011 11:46 PM  
**To:** Warner, Lynn  
**Subject:** YES on Senior Housing Project at High and MacArthur

I would like to express my full support for the senior housing project at High and MacArthur. The reasons that I support this project are as follows:

1. This is "Smart Growth" (i.e. having high density development) near your transportation and commercial areas.
2. Business in the Laurel will grow with many new customers within walking distance.
3. Crime will be reduced with more people walking and being visible on that corner.
4. The subject parcel is almost impossible to develop and senior housing project is the best use of this property.
5. There is a shortage of senior housing in Oakland.
6. This type of development keeps increased car traffic at a minimum.
7. The current property is blighted and has been blighted for many years.
8. The proposed design for the building is aesthetically pleasing, very well thought-out and a wonderful building for the gateway to the Laurel.

I own a house and have lived in my house in the Laurel neighborhood (about 5 blocks from the proposed project) for over 10 years. I followed this project back in 2006-2007 when it was previously proposed. I was extremely upset when the project did not advance due to a small group of outspoken individuals. Every neighbor I speak with supports the concept of senior housing at High and MacArthur.

PLEASE MOVE THIS PROJECT FORWARD !!!!! WE IN THE LAUREL WANT THIS PROJECT !!!!!

Sincerely,  
Craig Cooper  
3858 Huntington Street, Oakland

## Warner, Lynn

---

**From:** CommunityAction [comact@oaklandvet.com]  
**Sent:** Monday, June 13, 2011 1:35 PM  
**To:** Warner, Lynn; Leila H. Moncharsh; Chan, Ada  
**Subject:** Re: AMG/ High And MacArthur EIR

Thank you for your assistance.

I have contacted the county environmental health department regarding the lack of follow-up to the soil conditions. There is a plume that is being tracked by other property owners; if they have to do monitor wells it is unreasonable to me that Hahn should not be required to also.

There would be concern of course for those living on top, but I also have concern for myself and my employees if soil removal, grading etc were performed without proper assessment of hydrocarbon off gassing.

M Dorsey

Warner, Lynn wrote:

> Dear Ms. Dorsey,

>

> Thank you for your detailed comments on the scope of the EIR. I will  
> forward all of the comments received to the environmental consultant.

>

> I am trying to track down the newest list of planning commissioners  
> for you and will forward it to you when I receive it.

>

> Lynn Warner

>

> -----Original Message-----

> From: CommunityAction [mailto:comact@oaklandvet.com]

> Sent: Thursday, June 09, 2011 3:02 PM

> To: Warner, Lynn; Chan, Ada; leila; Schaaf, Libby

> Subject: AMG/ High And MacArthur EIR

>

> Hi Ms. Warner,

> I am attaching a comment to the scope of the EIR for case CMDV10-312.

> I am having difficulty finding any contact information for planning  
> commissioners, do you have that information? It is not clearly listed  
> on the city website, only the agenda of the commission.

> Thank you,

> Maureen Dorsey

>

>

6/9/11

RE: 4311-4317 MacArthur Blvd. Development

Dear Ms. Warner

I am addressing the notification of an EIR for the proposed development of a 115 units of senior housing. The issues that I believe need to be addressed are as follows:

**1. Site contamination.** The property was only cleared of soil contamination by the State with regards to its Cortese list status and lead in the soil. The remaining issues with regards to the groundwater contamination persist. There were metal objects identified in a survey of this property in 1999, including one under the pavement of MacArthur Blvd. that had been granted to the City for street access when I580 was extended, which have not been removed. Other properties at this intersection are required to maintain and sample several groundwater wells for a plume of hydrocarbon contamination several times a year. Since the underground topography of the groundwater sources cannot be clearly known, the allowance of leaking gas station underground tanks should not be allowed to persist. The Hahn property could be impacting the groundwater of other properties. I have copies of correspondence from the Alameda County Environmental Health Services in December 2006 requesting reports for monitoring well installations. I cannot find any further follow up of this issue except notes dated February 2007 that the Hahns had not paid for the initial report so a further report could not be done by Questa Engineering. As of 2008 no further action had been taken by either the property owner or the developer. There were liens placed against the property for the costs of the initial soil studies.

Site contamination may preclude residential use of this property. The EIR should include not only alternate uses but definitely "no residential use."

**2. Air Quality.** The proposal qualifies as a new use. The Air Quality and Land Use Handbook printed in April 2005 by the California Air Resources Board details specific recommendations on "Siting New Sensitive Land Uses such as Residences...." specifically "Advisory Recommendations for Freeway and High Traffic Roads are: Avoid 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 per day". The concerns in this handbook are not solely the exhaust from diesel trucks, which are restricted by size on scenic I580, but also include the more recent issues with fine particulate pollution from passenger vehicles. Again, the EIR should address a nonresidential alternate use of the property, which would require no variances or conditional use permits since the property is zoned for retail use.

**3. Scenic Highway Designation.** I580 is designated by the State as a scenic highway and documents concerning the negative cumulative impact this proposed project will have on the designation for I508 through Oakland have

been previously submitted and should be on file. The mass of the proposed building and lack of setback from the freeway are significant.

4. **Traffic.** The stated tenant use of the proposal is vague. Initially proposed as subsidized senior housing, later comments from your office indicated it would be market rate and now it appears to be mixed market rate and affordable senior housing. Specifics should be required because density bonuses and parking space requirements are impacted by affordable housing as well as senior housing. Senior use should have a greater evaluation in a traffic study with regards to pedestrian access of this peculiar site. There will be no onsite services for the elderly and the property requires any one living there to cross four lanes at MacArthur, High and a potentially dangerous intersection at Redding and High near Walgreens. The proximity of the freeway on and off ramps significantly impact the car traffic patterns and speed at this site, including the intersection near Walgreens. The previous traffic study did not seem to address the intersection at High and Redding.

5. **Use.** The property is at the gateway to the neighborhood commercial district. The city and county have spent over a million dollars to enhance pedestrian access. The business property owners formed a BID to retain and attract businesses, spending thousands on beautification, enhanced safety and increased marketing events. The area is zoned retail and this property in particular has easy access to significant commuter traffic and visibility. Given that Oakland suffers from retail opportunities and has, from a report by ABAG, more than contributed to the affordable housing stock compared to the rest of the county, this property owner should be encouraged and assisted in developing the property for commercial use. The community many years ago was excited when the owners of Everett and Jones BBQ restaurants expressed interest in purchase of the property and developing another family restaurant with a commercial processing area for their supermarket products. It was unfortunate that due to the contamination and the cleanup required they could not afford to move forward and were not assisted in getting the property acceptable for development.

Thank you for your consideration regarding these concerns.

Sincerely,

  
Maureen Dorsey, DVM  
4258 MacArthur Blvd.  
Oakland, CA 94619  
510-530-1353

cc Planning Commissioners, Libby Schaaf, Leila Moncharsh, Conoco Phillips



**Linda S. Adams**  
Acting Secretary for  
Environmental Protection



## Department of Toxic Substances Control

Deborah O. Raphael, Director  
700 Heinz Avenue  
Berkeley, California 94710-2721



**Edmund G. Brown Jr.**  
Governor

June 2, 2011

Ms. Lynn Warner  
City of Oakland  
Community and Economic Development Agency  
250 Frank H. Ogawa Plaza, Suite 3315  
Oakland, California 94612

Dear Ms. Warner:

Thank you for the opportunity to comment on the Notice of Preparation (NOP) for the draft Environmental Impact Report (EIR) for the High & MacArthur Mixed Use Project (Project). The Project consists of a five-story mixed use affordable senior housing development with 115 one-bedroom senior apartments, ground floor commercial space and 65 parking spaces.

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 activities pertaining to releases of hazardous substances.

The Project Site called Roberts Tires Site (Site) is in the DTSC Envirostor and State Water Resources Control Board Geotracker databases. DTSC conducted remediation for soil contaminated with lead in 2002 and the property owner conducted additional soil remediation for soil contaminated with total petroleum hydrocarbon (TPH) motor oil and TPH diesel in 2004. DTSC referred the Site to the Alameda County Department of Environmental Health since the groundwater at the Site is contaminated with TPH motor oil, TPH diesel, TPH gasoline, benzene, toluene, ethylbenzene and xylene. According to the Geotracker database, the extent of the groundwater contamination has not been determined, and potential risks, threats, and other environmental concerns have not been adequately identified and assessed. Based on the previous environmental investigation reports, there may be multiple underground storage tanks (USTs) remaining at the site.

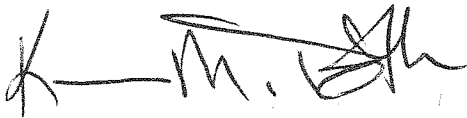
Ms. Lynn Warner  
June 2, 2011  
Page 2

The NOP for the draft EIR under the Geology and Soils Section discusses the presence of USTs and indicates that analysis of impacts associated with the removal of USTs will be included in the Hazards and Hazardous Materials analysis in the Focused EIR. However, since groundwater is contaminated with high levels of benzene and other volatile organic compounds, DTSC recommends further groundwater investigation and remediation under the oversight of the Alameda County Department of Environmental Health, the current lead agency for the Site. Indoor air issues in the proposed residential units also need to be addressed. The remediation activities would then need to be addressed in the California Environmental Quality Act (CEQA) compliance document.

If previously unidentified hazardous substances are encountered, they will need to be addressed as part of this project. For example, if hazardous substances were encountered, the project 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 or demolition 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 or would like to schedule a meeting, please contact Jayantha Randeni at (510) 540-3806. Thank you in advance for your cooperation in this matter.

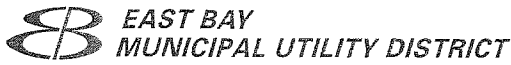
Sincerely,

A handwritten signature in black ink, appearing to read 'K. M. Toth', with a stylized flourish at the end.

Karen M. Toth, P.E., Unit Chief  
Brownfields and Environmental Restoration Program

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

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



June 13, 2011

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

Re: Notice of Preparation of a Draft Environmental Impact Report for the  
High and MacArthur Mixed Use Project, Oakland

Dear Ms. Warner:

East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Notice of Preparation of a Draft Environmental Impact Report for the High and MacArthur Mixed Use Project located in the City of Oakland (City). EBMUD has the following comments.

#### **WATER SERVICE**

EBMUD's 39th Avenue Pressure Zone, with a service elevation between 200 and 325 feet, will serve the proposed development. 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 of providing water service to the proposed development. Engineering and installation of new services requires substantial lead-time, which should be provided for in the project sponsor's development schedule.

The project sponsor should be aware that EBMUD will not inspect, install or maintain pipeline or services in contaminated soil or groundwater (if groundwater is present at any time during the year at the depth piping is to be installed) that must be handled as a hazardous waste or that may pose a health and safety risk to construction or maintenance personnel wearing Level D personal protective equipment. Nor will EBMUD install pipeline or services in areas where groundwater contaminant concentrations exceed specified limits for discharge to the sanitary sewer system and sewage treatment plants. Applicants for EBMUD services requiring excavation in contaminated areas must submit to EBMUD copies of existing information regarding soil and groundwater quality within or adjacent to the project boundary and a legally sufficient, complete and specific written remediation plan establishing the methodology, planning and design of all necessary systems for the removal, treatment, and disposal of contaminated soil and/or groundwater.

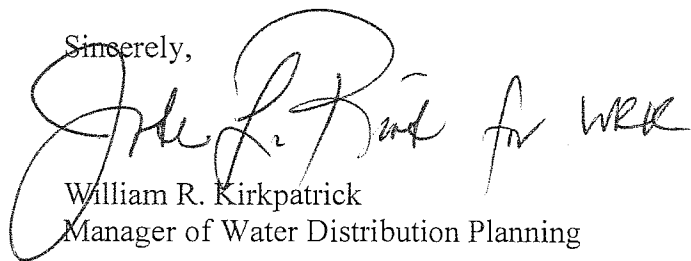
EBMUD will not design the installation of pipelines or services until soil and groundwater quality data and remediation plan are received and reviewed and will not start underground work until remediation has been carried out and documentation of the effectiveness of the remediation has been received and reviewed. If no soil or groundwater quality data exists, or the information supplied by the project sponsor is insufficient, EBMUD may require the project sponsor to perform sampling and analysis to characterize the soil and groundwater that may be encountered during excavation or EBMUD may perform such sampling and analysis at the applicant's expense. If evidence of contamination is discovered during EBMUD work on the project site, work may be suspended until such contamination is adequately characterized and remediated to EBMUD standards.

### **WATER CONSERVATION**

The proposed project presents an opportunity to incorporate water conservation measures. EBMUD would request that the City include in its conditions of approval a requirement that the project sponsor comply with the California Model Water Efficient Landscape Ordinance (Division 2, Title 23, California Code of Regulations, Chapter 2.7, Sections 490 through 495). The project sponsor should be aware that Section 31 of EBMUD's Water Service Regulations requires that water service shall not be furnished for new or expanded service unless all the applicable water-efficiency measures described in the regulation are installed at the project sponsors' expense.

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

Sincerely,

A handwritten signature in black ink, appearing to read "William R. Kirkpatrick for WRK". The signature is fluid and cursive, with the initials "WRK" clearly visible at the end.

William R. Kirkpatrick  
Manager of Water Distribution Planning

WRK:AMW:sb  
sb11\_090.doc

cc.: Alexis Gevorgian  
AMG and Associates, LLC  
16633 Ventura Blvd., Suite 1014  
Encino, CA 91436

## Warner, Lynn

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**From:** Warner, Lynn  
**Sent:** Wednesday, June 01, 2011 12:27 PM  
**To:** 'Rosetta Egan'  
**Subject:** RE: re

Dear Ms. Egan,

Thank you for your comment on the proposed project. It's not my project, and I will not be making any decisions on its approval, I'm merely reviewing it for its required entitlements, but you are more than welcome to express your concerns to the Planning Commission. It sounds like potential air quality impacts are your primary concern, and that will be analyzed as part of the environmental review process for the project and will be studied in the EIR being prepared.

Thank you,

Lynn Warner

-----Original Message-----

**From:** Rosetta Egan [mailto:regan4now@yahoo.com]  
**Sent:** Friday, May 27, 2011 7:19 PM  
**To:** Warner, Lynn  
**Subject:** re

Why oh why are you helping to build senior housing right next to a freeway?  
RIGHT NEXT TO A FREEWAY!!!! The people who live in this proposed structure will not be able to open their windows for fresh air during the day and comfortable sleep at night. I could say more but you know what I would say.  
Obviously, the purpose of his project is to make money, nothing else.  
SHAME ON YOU!!!  
Rosetta Egan

## Warner, Lynn

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**From:** Warner, Lynn  
**Sent:** Wednesday, June 01, 2011 12:36 PM  
**To:** 'Harriette Jensen'  
**Subject:** RE: Proposed Senior Center at High and MacArthur

Dear Ms. Jensen,

Thank you for your comments on the proposed project. Potential impacts of the project on air quality and transportation will be analyzed as part of the environmental review process for the project. I will forward your specific concerns to the environmental consultant who is preparing the EIR on the project.

Thank you,

Lynn Warner

-----Original Message-----

**From:** Harriette Jensen [mailto:hoisingtonweb@yahoo.com]  
**Sent:** Sunday, May 29, 2011 8:07 AM  
**To:** Warner, Lynn  
**Subject:** Proposed Senior Center at High and MacArthur

I am a 70 year old woman, living in the Laurel District, whose main transportation is the bus and, while I'm all for affordable senior housing, I have a couple of concerns about locating it at High and MacArthur.

1. The air next to 580 is extremely unhealthy, full of fumes from the heavy traffic. It is also noisy. Placing a building that faces 3 major traffic corridors is pretty certain to increase health problems for vulnerable seniors. It is also noisy and not all seniors are hard of hearing.

2. The people making right turns from High onto MacArthur (and then the south-going entrance to 580 almost never give right-of-way to pedestrians. I have often got off of the bus at the southwestern corner of High and MacArthur and been unable to enter the pedestrian walkway before the signal to walk finishes. Drivers either do not see pedestrians or they just don't care. I do have arthritis in my ankles and knees and I hesitate to step into traffic as I cannot move fast enough to get out of the way of an oncoming car. I know that I am not the only senior to have this kind of problem.

So, while I would like to see more affordable housing for seniors (and everyone else, for that matter), I would like to see it in a place that does not pose a risk to the residents. There are numerous other uses that could be made for the property that would benefit the neighborhood and I'm sure that there are properties in the neighborhood that would be more appropriate for seniors.

Harriette Jensen  
3690 Madrone Ave.  
Oakland

Old Tennessee Saying:

"When you have the facts on your side, argue the facts. When you have the law on your side, argue the law. When you have neither, holler."-----

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Hoisington/Horsington Family Web Site  
<http://georgia.shnw.net/~hjensen/genealogy/index.php>

## Warner, Lynn

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**From:** Jonelyn [jaw1123@aol.com]  
**Sent:** Monday, June 20, 2011 3:45 PM  
**To:** Warner, Lynn  
**Subject:** Re: MacArthur/High Mixed Use Scoping EIR Comments

Hi Lynn,

Attached please find the document saved in Microsoft Word 2003.

Let me know if you can open it, o.k.!

Jonelyn

-----Original Message-----

**From:** Warner, Lynn <LWarner@oaklandnet.com>  
**To:** Jonelyn <jaw1123@aol.com>  
**Sent:** Mon, Jun 20, 2011 3:14 pm  
**Subject:** RE: MacArthur/High Mixed Use Scoping EIR Comments

Hi Jonelyn,

I have an older version of Microsoft Word and wasn't able to open your document. Is it possible for you to resend it to me in Word 2003?

Thanks,

Lynn

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**From:** Jonelyn [mailto:jaw1123@aol.com]  
**Sent:** Friday, June 17, 2011 4:28 PM  
**To:** Miller, Scott; Warner, Lynn; michael.colbruno@gmail.com; vienv.truong@gmail.com; sgalvez@phi.org; mzmdesignworks@gmail.com  
**Subject:** MacArthur/High Mixed Use Scoping EIR Comments

All,

As promised, I have attached a copy of my EIR scoping comments for the MacArthur/High mixed-use project.

Have a great week-end!  
Jonelyn

6/21/2011

## EIR Scoping Comments

### **Aesthetics**

- The EIR should include photo-simulations of the proposed project from High Street, MacArthur Boulevard and I-580 freeway for an analysis of impacts to the visual character of the area. This is important to illustrate what the building would look like based on the proposed increased height within the area. The proposed height is substantially higher than other commercial and mixed-use developments in the area. The site is also visible from several public viewpoints in and around the Laurel Commercial District.
- The EIR should adequately identify all view corridors in the Laurel Commercial District including I-580.

### **Air Quality**

- The EIR should include an analysis of the reduction of green house gases

### **Hazards and Hazardous Materials**

- The EIR should address what level of site remediation will be performed.

### **Transportation/ Traffic**

- The EIR should include a detailed traffic analysis, including considerations of grade separation, potential vehicle and pedestrian conflicts, adequate sight lines for vehicles and pedestrians, adequate pedestrian safety, vehicle queuing times, traffic signal configuration, bulb-outs, or any proposed changes to lane configuration and widths.
- The EIR should consider designated turning lanes (right-turn only) from the project site onto MacArthur Blvd. and High Street.
- The EIR should identify performance and/or mitigation measures to improve pedestrian and bicycle access to existing transit facilities. Possibly, AC Transit could move existing bus stops to align with the proposed traffic safety measures of the mixed-use development.
- The EIR should focus on pedestrian safety within the proposed development and surrounding residential area.
- The EIR should include traffic congestion and mitigation measures to lessen impacts on High Street and MacArthur Blvd.

### **Land Use/Visual/Massing**

- The EIR should address the overall “departure” from the site’s unique character (open space).

- The EIR should analyze the size of the project site in relation to the planned vehicle and pedestrian population on High Street.
- The EIR should discuss the scale of this project in relation to the Laurel Commercial District and surrounding neighborhood (numbers of units and residents per acre compared to other parts of the Laurel District).
- The EIR should address a sustainable design concept for the buildings.

### **Sustainability**

- The EIR should quantify the carbon footprint from all construction activity planned (including tree removal activities).
- The EIR should address the useful lifespan of the proposed buildings.

### **Open Space/Parks**

- The EIR should identify the overall impacts on open space – density proposed should be calculated for the potential community based on its original outline, not current boundaries of the project.
- The EIR should clarify the definition of green and open space.
- The EIR needs to identify how the open space is being calculated (what is being included?).
- The EIR needs to identify how the project is connecting open space to all buildings including residential areas and the mixed use commercial area.

### **Population/Jobs/Housing**

- The EIR should identify population density and potential for over-crowding, including increased wear-and-tear on common spaces, public resources and infrastructure, traffic, pollution, litter, traffic and congestion.
- Density impacts should be evaluated per the proposed project.
- The EIR should include a cost-benefit analysis for both planned housing and commercial/retail uses.
- The EIR should identify impacts to existing retail and commercial uses as a result of the construction of the proposed new retail and commercial uses.

### **Stormwater**

- The EIR should identify storm water diversion designs and should address whether or not there are planned bio-swales.

## Noise

- The EIR should focus on whether the project would result in the generation of noise levels that would have a potentially significant effect on the residents of the development or surrounding residential developments in the area.
- The EIR should analyze whether or not exterior walls of the residential units adjacent to I-580 need to incorporate resilient channels or staggered stud assemblies as part of the construction to buffer the noise.
- The EIR should specify what buffers are planned for the overall site besides re-orientation of the buildings to lessen the perceived noise impacts.
- The EIR should analyze construction materials like window assemblies that can achieve a sound transmission class (STC) between 28 and higher numbers.

4311-4317 Mac Arthur Blvd.  
Concerns -

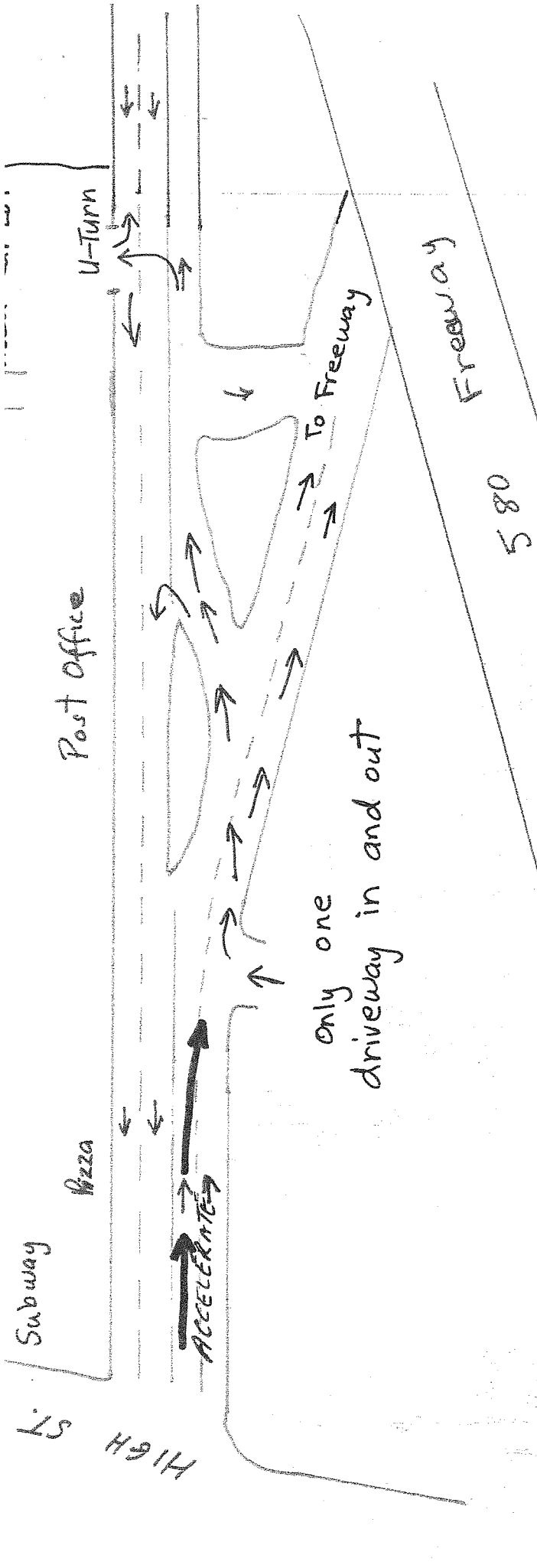
Traffic leaving driveway must turn right onto MacArthur.

Drivers coming from High Street accelerate because of entering underpass and onto Freeway.

Drivers leaving driveway must go right (no business to the right) so they will enter the second lane of traffic to cross over to the island and make a u turn around the island or in my used car lot. I already have about 20 u turns a day now. It is not safe backing out of my business.

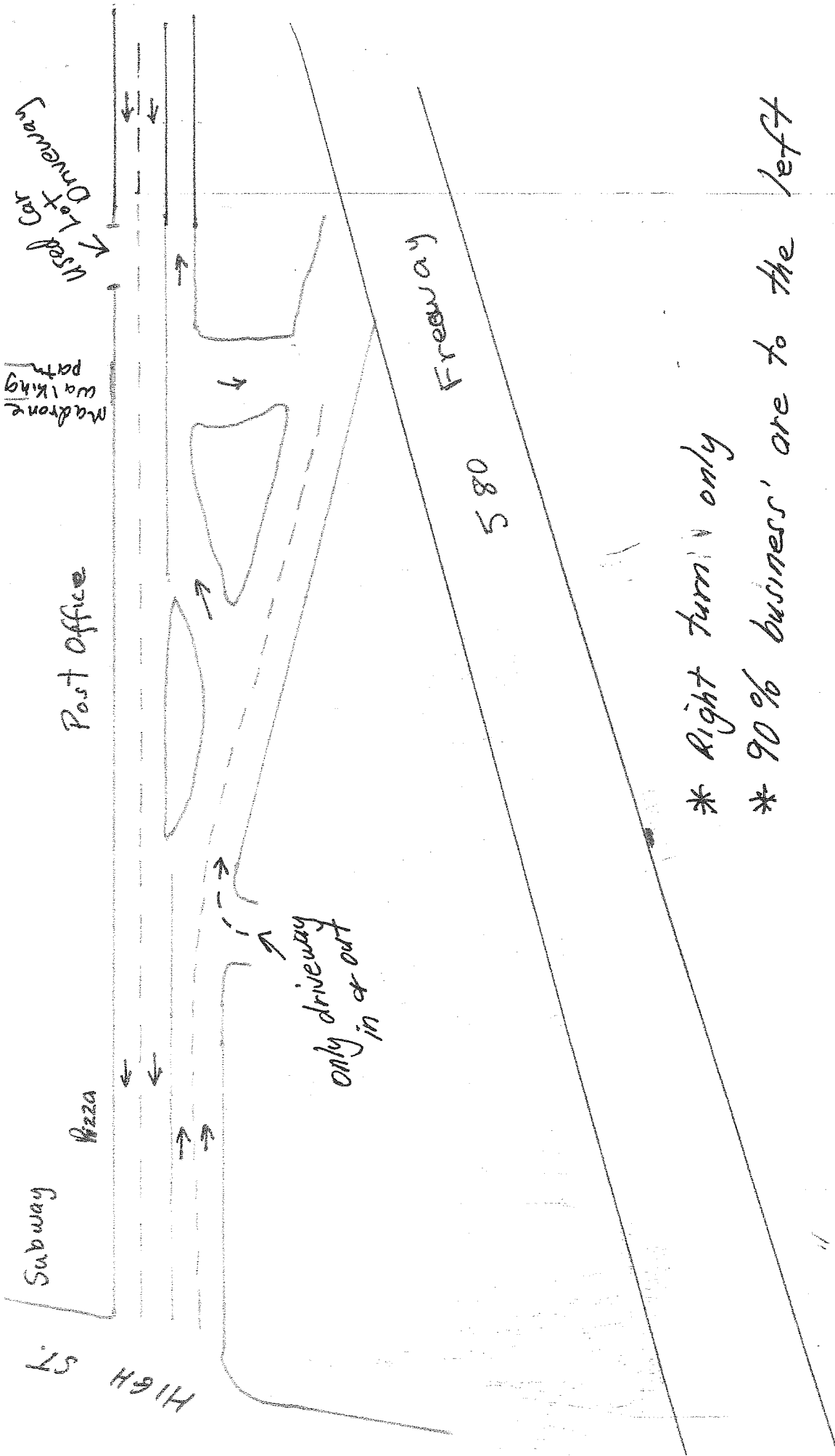
\* These are common sense questions, but money and profit take over common sense. I can explain it to you on the phone.

I wish you would give a copy to each planner.



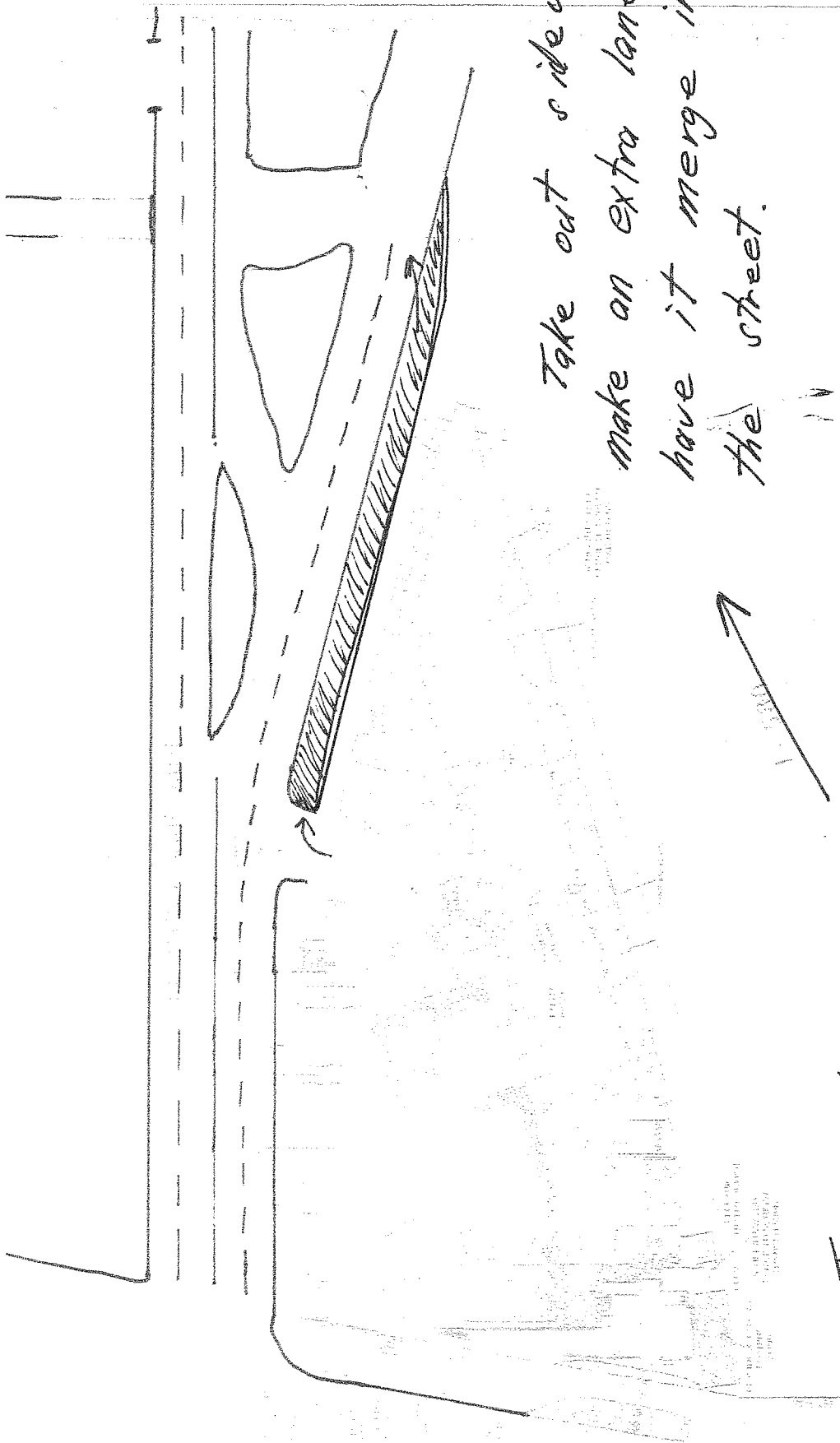
\* Drivers coming from High St. accelerate because of the underpass and going onto the freeway. average speed 30 to 50 mph.

\* Drivers leaving and coming out the one driveway and wanting to go left will cross 2 lanes and make a u turn at the island or in my used car lot.



- \* Right turn only
- \* 90% business' are to the left

1000 West 1st St. at the Project House - 1000 West 1st St.



| Ref. | Year | Location | Sample Size | Study Design    | Findings            |
|------|------|----------|-------------|-----------------|---------------------|
| 1    | 2015 | India    | 1000        | Cross-sectional | Prevalence of 12.5% |
| 2    | 2016 | India    | 500         | Case-control    | OR = 2.1            |
| 3    | 2017 | India    | 2000        | Longitudinal    | Incidence of 8.2%   |
| 4    | 2018 | India    | 1500        | Cohort          | HR = 1.8            |
| 5    | 2019 | India    | 3000        | Case-control    | OR = 3.5            |
| 6    | 2020 | India    | 4000        | Cross-sectional | Prevalence of 15.1% |
| 7    | 2021 | India    | 2500        | Case-control    | OR = 2.8            |
| 8    | 2022 | India    | 1800        | Longitudinal    | Incidence of 9.5%   |
| 9    | 2023 | India    | 2200        | Cohort          | HR = 2.2            |
| 10   | 2024 | India    | 3500        | Case-control    | OR = 3.1            |
| 11   | 2025 | India    | 4500        | Cross-sectional | Prevalence of 16.3% |
| 12   | 2026 | India    | 5500        | Case-control    | OR = 3.3            |
| 13   | 2027 | India    | 6500        | Longitudinal    | Incidence of 10.7%  |
| 14   | 2028 | India    | 7500        | Cohort          | HR = 2.5            |
| 15   | 2029 | India    | 8500        | Case-control    | OR = 3.6            |
| 16   | 2030 | India    | 9500        | Cross-sectional | Prevalence of 17.4% |
| 17   | 2031 | India    | 10500       | Case-control    | OR = 3.8            |
| 18   | 2032 | India    | 11500       | Longitudinal    | Incidence of 11.8%  |
| 19   | 2033 | India    | 12500       | Cohort          | HR = 2.7            |
| 20   | 2034 | India    | 13500       | Case-control    | OR = 3.9            |
| 21   | 2035 | India    | 14500       | Cross-sectional | Prevalence of 18.5% |
| 22   | 2036 | India    | 15500       | Case-control    | OR = 4.1            |
| 23   | 2037 | India    | 16500       | Longitudinal    | Incidence of 12.9%  |
| 24   | 2038 | India    | 17500       | Cohort          | HR = 2.9            |
| 25   | 2039 | India    | 18500       | Case-control    | OR = 4.3            |
| 26   | 2040 | India    | 19500       | Cross-sectional | Prevalence of 19.6% |
| 27   | 2041 | India    | 20500       | Case-control    | OR = 4.5            |
| 28   | 2042 | India    | 21500       | Longitudinal    | Incidence of 13.9%  |
| 29   | 2043 | India    | 22500       | Cohort          | HR = 3.1            |
| 30   | 2044 | India    | 23500       | Case-control    | OR = 4.7            |
| 31   | 2045 | India    | 24500       | Cross-sectional | Prevalence of 20.7% |
| 32   | 2046 | India    | 25500       | Case-control    | OR = 4.9            |
| 33   | 2047 | India    | 26500       | Longitudinal    | Incidence of 14.9%  |
| 34   | 2048 | India    | 27500       | Cohort          | HR = 3.3            |
| 35   | 2049 | India    | 28500       | Case-control    | OR = 5.1            |
| 36   | 2050 | India    | 29500       | Cross-sectional | Prevalence of 21.8% |
| 37   | 2051 | India    | 30500       | Case-control    | OR = 5.3            |
| 38   | 2052 | India    | 31500       | Longitudinal    | Incidence of 15.9%  |
| 39   | 2053 | India    | 32500       | Cohort          | HR = 3.5            |
| 40   | 2054 | India    | 33500       | Case-control    | OR = 5.5            |
| 41   | 2055 | India    | 34500       | Cross-sectional | Prevalence of 22.9% |
| 42   | 2056 | India    | 35500       | Case-control    | OR = 5.7            |
| 43   | 2057 | India    | 36500       | Longitudinal    | Incidence of 16.9%  |
| 44   | 2058 | India    | 37500       | Cohort          | HR = 3.7            |
| 45   | 2059 | India    | 38500       | Case-control    | OR = 5.9            |
| 46   | 2060 | India    | 39500       | Cross-sectional | Prevalence of 23.9% |
| 47   | 2061 | India    | 40500       | Case-control    | OR = 6.1            |
| 48   | 2062 | India    | 41500       | Longitudinal    | Incidence of 17.9%  |
| 49   | 2063 | India    | 42500       | Cohort          | HR = 3.9            |
| 50   | 2064 | India    | 43500       | Case-control    | OR = 6.3            |
| 51   | 2065 | India    | 44500       | Cross-sectional | Prevalence of 24.9% |
| 52   | 2066 | India    | 45500       | Case-control    | OR = 6.5            |
| 53   | 2067 | India    | 46500       | Longitudinal    | Incidence of 18.9%  |
| 54   | 2068 | India    | 47500       | Cohort          | HR = 4.1            |
| 55   | 2069 | India    | 48500       | Case-control    | OR = 6.7            |
| 56   | 2070 | India    | 49500       | Cross-sectional | Prevalence of 25.9% |
| 57   | 2071 | India    | 50500       | Case-control    | OR = 6.9            |
| 58   | 2072 | India    | 51500       | Longitudinal    | Incidence of 19.9%  |
| 59   | 2073 | India    | 52500       | Cohort          | HR = 4.3            |
| 60   | 2074 | India    | 53500       | Case-control    | OR = 7.1            |
| 61   | 2075 | India    | 54500       | Cross-sectional | Prevalence of 26.9% |
| 62   | 2076 | India    | 55500       | Case-control    | OR = 7.3            |
| 63   | 2077 | India    | 56500       | Longitudinal    | Incidence of 20.9%  |
| 64   |      |          |             |                 |                     |

**Cc:** Stoffmacher, Bruce  
**Subject:** Senior Development at High & MacArthur

Hi Lynn,

I am curious to learn more about the senior housing development proposed for High and MacArthur after having read about it in Councilmember Schaaf's newsletter. I coordinate Greenbelt Alliance's team that reviews and potentially endorses infill development projects around the Bay Area so I am curious if this project may be a candidate for endorsement on our part.

Could you send me some information on the project that you have available?

Thank you,  
Marla

--

*Join us for [Bluegrass for the Greenbelt](#) on June 4!*

Marla Wilson  
Sustainable Development Associate

Greenbelt Alliance  
631 Howard St., Suite 510 • San Francisco, CA 94105  
(415) 543-6771 x308 • [mwilson@greenbelt.org](mailto:mwilson@greenbelt.org)

Open Spaces & Vibrant Places  
<http://www.greenbelt.org>

Warner, Lynn

Baseline

Abram  
UrbanCrossroads

From: CommunityAction [comact@oaklandvet.com]  
Sent: Monday, June 13, 2011 1:35 PM  
To: Warner, Lynn; Leila H. Moncharsh; Chan, Ada  
Subject: Re: AMG/ High And MacArthur EIR

Thank you for your assistance.

I have contacted the county environmental health department regarding the lack of follow-up to the soil conditions. There is a plume that is being tracked by other property owners; if they have to do monitor wells it is unreasonable to me that Hahn should not be required to also.

There would be concern of course for those living on top, but I also have concern for myself and my employees if soil removal, grading etc were performed without proper assessment of hydrocarbon off gassing.

M Dorsey

Warner, Lynn wrote:

> Dear Ms. Dorsey,

>  
> Thank you for your detailed comments on the scope of the EIR. I will  
> forward all of the comments received to the environmental consultant.

>  
> I am trying to track down the newest list of planning commissioners  
> for you and will forward it to you when I receive it.

> Lynn Warner

> -----Original Message-----

> From: CommunityAction [mailto:comact@oaklandvet.com]  
> Sent: Thursday, June 09, 2011 3:02 PM  
> To: Warner, Lynn; Chan, Ada; leila; Schaaf, Libby  
> Subject: AMG/ High And MacArthur EIR

> Hi Ms. Warner,

> I am attaching a comment to the scope of the EIR for case CMDV10-312.

> I am having difficulty finding any contact information for planning  
> commissioners, do you have that information? It is not clearly listed  
> on the city website, only the agenda of the commission.

> Thank you,

> Maureen Dorsey

6/9/11

RE: 4311-4317 MacArthur Blvd. Development

Dear Ms. Warner

I am addressing the notification of an EIR for the proposed development of a 115 units of senior housing. The issues that I believe need to be addressed are as follows:

**1. Site contamination.** The property was only cleared of soil contamination by the State with regards to its Cortese list status and lead in the soil. The remaining issues with regards to the groundwater contamination persist. There were metal objects identified in a survey of this property in 1999, including one under the pavement of MacArthur Blvd. that had been granted to the City for street access when I580 was extended, which have not been removed. Other properties at this intersection are required to maintain and sample several groundwater wells for a plume of hydrocarbon contamination several times a year. Since the underground topography of the groundwater sources cannot be clearly known, the allowance of leaking gas station underground tanks should not be allowed to persist. The Hahn property could be impacting the groundwater of other properties. I have copies of correspondence from the Alameda County Environmental Health Services in December 2006 requesting reports for monitoring well installations. I cannot find any further follow up of this issue except notes dated February 2007 that the Hahns had not paid for the initial report so a further report could not be done by Questa Engineering. As of 2008 no further action had been taken by either the property owner or the developer. There were liens placed against the property for the costs of the initial soil studies.

Site contamination may preclude residential use of this property. The EIR should include not only alternate uses but definitely "no residential use."

**2. Air Quality.** The proposal qualifies as a new use. The Air Quality and Land Use Handbook printed in April 2005 by the California Air Resources Board details specific recommendations on "Siting New Sensitive Land Uses such as Residences...."specifically "Advisory Recommendations for Freeway and High Traffic Roads are: Avoid 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 per day". The concerns in this handbook are not solely the exhaust from diesel trucks, which are restricted by size on scenic I580, but also include the more recent issues with fine particulate pollution from passenger vehicles. Again, the EIR should address a nonresidential alternate use of the property, which would require no variances or conditional use permits since the property is zoned for retail use.

**3. Scenic Highway Designation.** I580 is designated by the State as a scenic highway and documents concerning the negative cumulative impact this proposed project will have on the designation for I508 through Oakland have

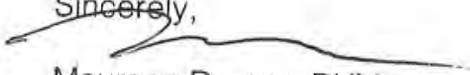
been previously submitted and should be on file. The mass of the proposed building and lack of setback from the freeway are significant.

4. **Traffic.** The stated tenant use of the proposal is vague. Initially proposed as subsidized senior housing, later comments from your office indicated it would be market rate and now it appears to be mixed market rate and affordable senior housing. Specifics should be required because density bonuses and parking space requirements are impacted by affordable housing as well as senior housing. Senior use should have a greater evaluation in a traffic study with regards to pedestrian access of this peculiar site. There will be no onsite services for the elderly and the property requires any one living there to cross four lanes at MacArthur, High and a potentially dangerous intersection at Redding and High near Walgreens. The proximity of the freeway on and off ramps significantly impact the car traffic patterns and speed at this site, including the intersection near Walgreens. The previous traffic study did not seem to address the intersection at High and Redding.

5. **Use.** The property is at the gateway to the neighborhood commercial district. The city and county have spent over a million dollars to enhance pedestrian access. The business property owners formed a BID to retain and attract businesses, spending thousands on beautification, enhanced safety and increased marketing events. The area is zoned retail and this property in particular has easy access to significant commuter traffic and visibility. Given that Oakland suffers from retail opportunities and has, from a report by ABAG, more than contributed to the affordable housing stock compared to the rest of the county, this property owner should be encouraged and assisted in developing the property for commercial use. The community many years ago was excited when the owners of Everett and Jones BBQ restaurants expressed interest in purchase of the property and developing another family restaurant with a commercial processing area for their supermarket products. It was unfortunate that due to the contamination and the cleanup required they could not afford to move forward and were not assisted in getting the property acceptable for development.

Thank you for your consideration regarding these concerns.

Sincerely,

  
Maureen Dorsey, DVM  
4258 MacArthur Blvd.  
Oakland, CA 94619  
510-530-1353

cc Planning Commissioners, Libby Schaaf, Leila Moncharsh, Conoco Phillips

## NATIVE AMERICAN HERITAGE COMMISSION

915 CAPITOL MALL, ROOM 364  
SACRAMENTO, CA 95814  
(916) 653-4082  
(916) 657-5390 - Fax



July 15, 2011

Lynn Warner  
City of Oakland  
250 Frank H. Ogawa Plaza, Suite 3315  
Oakland, CA 94612

RE: SCH# 2011052049 High & MacArthur Mixed Use Project; Alameda County.

Dear Ms. Warner:

The Native American Heritage Commission (NAHC) has reviewed the Notice of Preparation (NOP) referenced above. The California Environmental Quality Act (CEQA) states that any project that causes a substantial adverse change in the significance of an historical resource, which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA Guidelines 15064(b)). To comply with this provision the lead agency is required to assess whether the project will have an adverse impact on historical resources within the area of project effect (APE), and if so to mitigate that effect. To adequately assess and mitigate project-related impacts to archaeological resources, the NAHC recommends the following actions:

- ✓ Contact the appropriate regional archaeological Information Center for a record search. The record search will determine:
  - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
  - If any known cultural resources have already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.
- ✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.
- ✓ Contact the Native American Heritage Commission for:
  - A Sacred Lands File Check. USGS 7.5 minute quadrangle name, township, range and section required.
  - A list of appropriate Native American contacts for consultation concerning the project site and to assist in the mitigation measures. Native American Contacts List attached.
- ✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
  - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
  - Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.
  - Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, CEQA §15064.5(e), and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

Sincerely,

*Katy Sanchez*  
Katy Sanchez  
Program Analyst  
(916) 653-4040

cc: State Clearinghouse

**Native American Contact List**  
**Alameda County**  
**July 15, 2011**

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jmfgmc@sbcglobal.net  
530-243-1633

The Ohlone Indian Tribe  
Andrew Galvan  
PO Box 3152      Ohlone/Costanoan  
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This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed  
SCH# 2011062049 High & MacArthur Mixed Use Project, Alameda County.

**Native American Contact List**  
Alameda County  
July 15, 2011

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Ohlone/Costanoan

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Ohlone/Costanoan

Don Hankins  
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Miwok

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Ohlone/Costanoan  
Northern Valley Yokuts  
Bay Miwok

Amah/Mutsun Tribal Band  
Joseph Mondragon, Tribal Administrator  
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Pacific Grove, CA 94062  
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831-372-7078 - fax

Ohlone/Costanoan

Trina Marine Ruano Family  
Ramona Garibay, Representative  
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510-972-0645-home  
209-688-4753-cell

Ohlone/Costanoan  
Bay Miwok  
Plains Miwok  
Patwin

Amah/Mutsun Tribal Band  
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7273 Rosanna Street  
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Ohlone/Costanoan

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This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH# 2011052049 High & MacArthur Mixed Use Project; Alameda County.

**Warner, Lynn**


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**From:** Miller, Scott  
**Sent:** Thursday, June 16, 2011 3:54 PM  
**To:** Warner, Lynn  
**Subject:** FW: High street and MacArthur Mixed Use Project

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**From:** Kevin Rath [mailto:kevinr@lmi.net]  
**Sent:** Thursday, June 16, 2011 3:47 PM  
**To:** Miller, Scott  
**Subject:** High street and MacArthur Mixed Use Project

Dear Planning Commission:

I would like to respond to the discussion the Commission had on June 15<sup>th</sup>, 2011 regarding the High Street Senior Housing project. The commission's agenda item had to do with the scope of the EIR report. Traffic is one of the items to be reviewed, and commissioners stated that they would like to see "alternatives" studied.

**The EIR must investigate real alternatives, not pie-in-the-sky alternatives to the senior housing project**

In the EIR, the commission has instructed City staff to list alternatives. I hope the city will consider only real, plausible alternatives to the senior housing project. If only real alternatives are considered, it will be apparent that senior housing is the best use for this land. Any alternatives studied must include at least a basic rationale for why the authors think someone would actually build the alternative. I hope the authors keep in mind that it is pretty obvious senior housing has the *least* impact on traffic of any development type. Since traffic is a major concern, it should be front and center in any analysis of alternatives. Let's explore some examples. A retail development would make the MacArthur and High street impossible to navigate. In fact, the City of Oakland has already stated that it is a bad place to locate retail, and the City is right. No one wants fast food there, so the fast food alternative should be rejected out of hand. The land is not zoned for light industrial, but maybe the commission wants to see some kind of self-storage warehouse located at the gateway to the Laurel. Somehow a self-storage warehouse doesn't seem as aesthetically appealing as senior housing and certainly less useful to the community. Market-rate condominiums have been suggested, but I hope no one thinks there is a chance to build condos there, given the state of the condo market. Single-unit housing is also not economically feasible, and the location is not situated in the right place to attract such a project. The proximity of the freeway also makes it undesirable for any educational institution—and we don't really need another school. Day care would need three stories on the top of rental units to be profitable, and the traffic impact would be very high.

If not retail, if not fast food, if not condos, if not a school, if not single unity housing, and if not storage facilities, then what? What are the real alternatives that someone would actually want to build? If a real alternative is found, is there any chance it will have less of an impact on traffic than senior housing? There really aren't any alternatives, and that is why a developer is trying to build senior housing on the lot. Senior housing has the least traffic impact of any alternative proposed during this three-year process. I hope that the EIR studies the traffic impact on all *feasible* alternatives; the conclusion won't be too hard to draw that senior housing is the most logical use for this site.

**High-density housing on transit corridors is a City of Oakland Goal: the Senior Housing Project helps Oakland reach it**

We need senior housing in the Laurel, and this high-density project not only provides new housing for seniors, but also is consistent with the values expressed in the conference Envisioning MacArthur, put on by Mills College and Mayor Jean Quan (at that time a councilmember). I attended that conference, along with 200 other local residents. The emphasis was on building high-density projects along the transportation corridor, which would in turn support the Laurel commercial strip. The senior housing project fits perfectly into those guidelines. This is the last place in the Laurel where senior housing can be built; I would think the planning commission would welcome

such a development, instead of undermining it.

### **Commissioner's comments on sending the project back to design review undercut the planning commission's integrity**

The commission then commented on the design of the building, which has gone through three revisions and has already been approved by the planning commission. After further criticism of the design, there were several comments indicating that the commission may send the project to design review again. The commission's statements about sending the project to design review for the forth time, after approving the project with a 4-0 vote, undermines the planning commission's integrity. How can anyone believe what the planning commission decides if we know they may simply reverse their decision without any new information? Since the approval of the design by the planning commission, *there has been no change in the design*. If there has no change in design, why would the commission change its decision? There is no valid reason, even if new members have been installed.

### **Sending the senior housing project back to design review damages the Laurel community in many ways**

While I applaud the commission's interest in high-quality buildings for the neighborhood in which I live and work, I fear that further deliberations on the design may leave us with no senior housing at all in the Laurel. I am concerned that if the indecision continues and AMG pulls out, we may be left with a development that does not need a conditional use permit, and so will not come before the planning commission. The most likely development in that category will be some type of fast food project; as I understand it, such a development meets all the zoning requirements and will not need approval from the commission.

The indecisiveness on the senior project is damaging the Laurel community, and the constant changes in what the commission wants in this project appears to be a habit with the Oakland planning department. I also own a building a block way from the project (The Laurel Office Center); I must admit I had similar experiences with permitting while we finished our restaurant that is now up and running (Trattoria Laurellinos). After many changes, we installed the façade, and when the final inspector came out, he said the changes to my plan were unnecessary, and apologized for the incompetence shown on my project—incompetence that financially damaged the restaurant owner and myself (as the landlord). The pattern of unclear specifications for development projects is a major reason why Oakland loses out on projects; projects it needs to support our community and to pay the bills for essential services for its residents.

The effect of the planning commission's indecisiveness on the High Street and MacArthur corner is the perpetual presence of vacant lots, dilapidated buildings, and lost potential. The decay affects the entire neighborhood. The indecisiveness also sends a message to all who wish to start organizations and businesses in the Laurel, and the message is not good. Please see the attached email for a detailed description of the southern part of the Laurel I gave to the planning commission years ago, at the first hearing on this project. I spent some time describing the decay. If the planning commission continues their indecisiveness, the southern part of Laurel will continue to remain as I described it in my written testimony dated August 29<sup>th</sup>, 2006. Five years and counting....

### **Specific Comments in the Meeting**

I would like to address specific comments about the design of the senior housing project made by commissioners during the meeting; these comments are paraphrased, but almost word-for-word quotes.

*I would like to see less dense housing, like townhouses.* The height specifications for this parcel have already been adopted and actually allow for five or six stories; this project is only going four stories high. Suggesting that the developer switch to townhouses after approving a four-story senior housing project does not appear to be negotiating in good faith. If the commission wanted only townhouses, then the commission should have vetoed the housing project a long time ago; of course, that would be overstepping the commission's authority since mutely-story housing has already been approved for this site. Such comments suggest there are agendas other than overseeing the development of a project whose height is below the maximum allowed. Discussing preferences for townhouses at the site demonstrates a lack of familiarity with the actual projects which someone would be interested in building there. Give the value of the land and the proximity of the freeway, townhouses simply won't be built on that lot. Townhouses on transit corridors are inconsistent with Oakland's stated intent to encourage high-density housing on transit corridors, and will not generate the kind of business the Laurel commercial strip needs to become healthy.

*This development looks like Kleenex boxes piled up on top of one another. Why do we only get projects that look*

*like this? We are losing the character of Oakland's architecture.* I find it difficult to understand how to reconcile comments such as these with the commission's approval of a condo complex down the street at 35<sup>th</sup> and MacArthur—a building which is much more boxy and lacks any character at all. Why did the commission approve the design of this building, and now balks at one which is much more aesthetically pleasing than the box we have on 35<sup>th</sup> and MacArthur. To make such a comment (several times) may be appropriate at the beginning of the design process, but not after the commission had three chances to redesign the building, and certainly not after approving the design. To answer the question about why these buildings are so common now, we would need to go into the economics of apartment and condo construction. The reason Oakland built their downtown condos with boxy-type designs is the same reason the senior housing project looks a little boxy: the price of housing, and the purchasing power of renters and condo buyers in Oakland do not support the additional costs required to create luxury facades and sprawling, low-density artisan housing in East Oakland. If the commission wishes, I could prepare a document that would further demonstrate design constraints in economically distressed neighborhoods that would answer the commissioner's question in detail.

*It is too dangerous for seniors to walk at that corner.* If we are going to attempt to build green projects that include senior housing, then we need to build senior housing along transit corridors, so seniors don't need to own cars to get around. By definition, if you build senior housing on transit corridors, you will build it on busy streets. The remedy is not to build senior housing only in the suburbs; the remedy is to increase the safety of the street crossings. I hope the EIR will address this issue (I believe it already has).

*I want to see the building split in half.* The building was redesigned at the request of the commissioners, effectively breaking the building in two on the MacArthur side. There is a large opening in the building, comprising 15% of the length of the project on MacArthur. The only way to break it up more would be to put an opening next to the freeway, which would undermine the goal of sound and pollution reduction, ruining the courtyard. Another way to separate the building would be to put walls that extended from the opening to the back. Such a redesign would destroy the courtyard, and lessen the utility of the building. Building walls would destroy the economics of the project, forcing the developer to add on a story just to break even; this additional story would contradict neighborhood requests to keep the building height as low as possible. Such a redesign at this point would kill the project (is that the plan?).

*I really wish we wouldn't have allowed these long corridors, where seniors will have to walk far distances.* If we want to implement the City of Oakland's goal to have high-density housing on transit corridors, then some buildings will be large, such as the block-long senior housing project down the street (Lincoln Court). The distances are similar, and the commission approved this design.

*How much affordable housing is in the project?* How much affordable housing will be included in this project depends upon how quickly this project will be approved. Further delays will make raising money even more difficult, and if interest rates rise before the project is approved, the affordability of all the units will be affected. The longer it takes for approval, the more money seniors will have to spend to rent the units.

*The pollution caused in building the project needs to be investigated.* While there will be some pollution in constructing the project, there would be pollution caused with any construction. The pollution will be temporary and common to any construction project; it should not be a focus of the EIR report. This comment was made, I believe, in response to a speaker; perhaps it was just a comment in passing and not a directive to staff. At any rate, focusing the EIR report on construction pollution is a misguided effort.

### **The planning commission should reaffirm its approval of the project by continuing the EIR process**

The planning commission should continue the EIR process without sending the project back to design review. I was surprised to hear commissioners talk about design review after instructing speakers from the community to stay on the subject of the EIR scope. I urge the committee to refocus its efforts on the EIR and leave the design where it is—approved. Senior housing is the best match for this site and the planning commission has already given its approval. Focusing on the remaining EIR items concentrates our energies on where they should be: making the senior housing project the best Laurel neighbor it can be. As our poll shows, 69% of Laurel residents are for senior housing, and only 11% are against senior housing in the Laurel. The commission has approved the design, and the community is for it.

Let's focus on the next step in giving seniors a home in the Laurel.

Kevin Rath

Executive Director, Manos Home Care, Suite 15, 4173 MacArthur Blvd., Oakland Ca 94619  
Owner and manager of the Laurel Office Center, 4171-4173 MacArthur Blvd., Oakland Ca 94619  
Member, Laurel District Association's Land Use Committee, Laurel Specific Plan Project  
510-499-6136  
kevinr@lmi.net

Kevin Rath  
4606 Tulip Ave  
Oakland CA

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510-499-6135

August 29<sup>th</sup>, 2006

Scott Miller  
Planning Commission

**Summary**

As a Laurel District homeowner who also has an ownership interest in commercial property two blocks away from the current development, I am in complete support of the project as is, and think we should put this development on a fast-track status. The project will bring much-needed foot traffic to the area, and provide an appropriate balance of senior housing to the neighborhood. Experts from model cities have provided clear testimony regarding the relationship between high-density housing, local business development, and improved quality of urban life. The history of MacArthur and High Street is mostly one of big ideas that don't materialize, bad ideas that have been blocked, and failed development projects. Some vocal residents argue that we should wait for "market-rate" development proposals for the corner in question. If these critics have their way, we will be waiting forever while the intersection continues to deteriorate. Some critics have labeled this project a "low-income" development, fostering stereotypes of starving seniors scouring our neighborhood for poverty-rate meals and purchases. A clear analysis shows these seniors will have disposable income and will provide some of the foot traffic and neighborhood spending the Laurel District needs. I believe that most of the Laurel residents feel the same way.

I am writing this letter of support for the Senior Housing Project at 4311 & 4317 MacArthur Boulevard. I wholeheartedly and without reservation support this project as it has been submitted to the planning board.

*My Involvement in the Laurel.* A large part of my life and most of my financial assets are invested in the Laurel District, and I also have a lot of experience in the Laurel District's economic development issues. In 1990, I started working in the Laurel and also bought a house here—four blocks away from the proposed development. I still live in that house. I have a 50% interest in the building at 4173 MacArthur Blvd, The Laurel Office Center. That building is one block from the proposed development. I was also one of the founding members of the Laurel District Association, and have been involved in several community events and issues during my sixteen years of work here. The consortium of companies I assist in managing from the Laurel Office Center provide 250 jobs, and many employees are residents of the Laurel. The Laurel Office Center currently comprises 30% of the office space for this district.

## **This Senior Housing is Not Low-Income Housing**

Some people in the neighborhood have tagged this development as low-income housing, claiming that rents will only be \$400 to \$600 per month, and that such a development is not helpful to the neighborhood.

First of all, the planning commission should ignore all arguments against this development which refer to it as "low-income" housing. It is illegal to discriminate against low-income housing according to State Code Section 65008.

However, since many people in the community are obviously opposed to senior housing because it is subsidized, let's examine how poor these seniors will be. This apartment complex will be able to charge up to \$880 per month for a studio, and up to \$942 per month for a one-bedroom (See HUD maximum rent guidelines for 60% of median income). Seniors who can afford this type of rent are not the type of seniors who are living on minimal social security investments. In fact, since this is not an assisted living center, even if seniors are charged \$600 per month, they will be living on high social security payments, assistance from family members, and/or savings and investments. Doesn't sound like low-income tenants at the senior housing projects I visit (i.e. Satellite Senior housing, etc.) Subsidized housing does not imply that the residents will be low-income. These seniors will have disposable income, although more limited than families that can afford \$500,000 homes. These seniors, unlike many of the families that can afford \$500,000 homes in the Laurel, *will spend their disposable income in our neighborhood*. One resident stated that she was afraid there would be senior discount meal times in our restaurants. Is this a reason to oppose this development? I don't think so. We want people to go to our restaurants. These seniors will increase the foot traffic so that there will be people actually eating in the restaurants and shopping in our stores.

## **The fantasy of Market Rate Housing Next to Highway 580**

I suspect that the real reason this development is tagged by some vocal opponents as "low-income" is because of what they really want. To quote Ms. Dorsey of the Laurel District Association:

"We'd like market rate owner-occupied housing," (Mont clarion, 9/22/06)

Here we have the problem. It appears that many people think that we have a choice: We can have a market-rate condo complex built, with studios starting at \$300,000, and two-bedrooms coming in at \$500,000, or we can have this low-income senior housing built. If we accept the condo complex, hundreds of yuppies will be strolling down the street filling our restaurants, cafes, and shops, setting up offices and new businesses in the Laurel District. Or we can have hundreds of poor seniors filling a couple of restaurants and coffee shops at senior discount times.

The choice doesn't exist. **No one is going to build market-rate housing five feet from 580 in East Oakland.** At least one developer has told me that in several conversations. Some good neighbors are getting the Laurel District mixed up with downtown San Francisco. We are not going to get a Rincon development in our neighborhood. If someone was going to build it, they would have built it by now—especially given the current housing market! The proposed development is not low-income senior housing, it is affordable housing, and we should accept this proposal as the best thing we can get given the property's location and the disastrous history of this corner. Please see the next three pages of my letter which documents how almost nothing has happened in 15 years, and how this lack of progress is screwing up the Laurel District. Nothing will ever happen if we continue to trash realistic projects such as the one currently proposed.

### **Wake up from the Fantasy and Let's Get High St. & MacArthur Going**

High Street and MacArthur need a development, and this is the best development anyone has offered. Unlike a previous proposal, which centered around a fast food chain that would devalue property and bring nothing to the Laurel except bad food and litter, we have an opportunity to get some housing in, with some retail. Let's stop daydreaming and accept the development as is, so we can jumpstart development at the southern end of the Laurel District.

### **Character of the Neighborhood**

Do we really want to torpedo all developments except for yuppie condominiums and half-a-million dollar homes? What will happen to neighbors who can't afford these prices? Do we want our neighborhood to be completely homogeneous, or do we want to allow for variations in income, age, race and gender? If I wanted to live in a gated community with people who can all afford \$500k homes and who can all drive cars to their work, well, maybe I could do that. But I don't want to do that, and I don't want the Laurel to look like that. I don't think the majority of Laurel residents want the Laurel to look like that either. The Laurel District doesn't have to exclusively cater to market-rate, owner-occupied housing in order to be successful and pleasant. What it *does need is high-density housing*. Please see below for my opinion about high-density housing, supported by experts who have built the best-designed city in the continent (Vancouver).

### **Complaints about Cars and Parking are Contradictory**

The most ironic part of the criticisms is the comments on parking. On the one hand, people have criticized the housing as low-income. On the other hand, people have said there is not enough parking. If these seniors are so low-income, then how can they all afford cars? The critics can't have it both ways, but in reality the project stands on firm ground. Many seniors choose not to own cars even if they can, provided there is public transportation and local shops where they can purchase their goods. The Laurel has both, and will continue to increase the prosperity of our business district if we build high-density housing. Comments about home health care aides jamming the Laurel with parked cars reveal a profound ignorance about home health aids—if the job doesn't

require a car, then home care aides will take the bus. The nice thing is that they can take the bus to High Street and MacArthur. The development will create jobs and more foot traffic—exactly what we want in the Laurel. As to the comments about the parking being on the first floor: the parking lot will look better than 90% of the current Laurel District parking lot construction which is exposed and facing the street (this included our building).

### **History of MacArthur and High Street Intersection.**

Let's review what has happened since 1990 on the High Street and MacArthur intersection. I shall go corner by corner. Excuse me for being extremely detailed and somewhat boring, but I think it is crucial to put this development into the context of this intersection; it explains why I am so thrilled at the possibility of this development actually being built.

*North East.* Let's start with the northeast corner, with the Phillips 76. The gas station has been there since (and prior to) 1990, but there was a time when the station shut down, and was vacant for almost a year. The station was revived and now continues to thrive as a gas station and auto repair shop. I get my oil changed there, and some employees get their car repaired there. On the opposite corner, the northwest corner, there was a shell gasoline station.

*North West.* When the laws regarding the replacing gasoline tanks for gas stations were enacted, the Shell station was abandoned, and continues to be an ugly barren lot with a chain link fence around it. Adjacent to the empty lot now sits an abandoned church, which in turn is adjacent to an abandoned restaurant (Daniel's), which is in turn connected to a self-serve car wash, which is in turn connected to Giant Burger and another office for rent. This chain of underused real estate was supposed to be developed into a one-block state-of-the-art complex. The design was presented on November 5<sup>th</sup>, 2005 during the Envisioning MacArthur conference. After that, nothing has happened, despite the efforts of Councilmember Quan's office. The result of this stalled effort has only been more abandoned buildings; at least Daniel's Restaurant served the community. Now all we have is empty lots and a building for rent or sale (or whatever).

*South East.* The strip mall in this corner has their parking lot in the front, with stores lined along the back end. We have a fast food chain (Subway Sandwiches), a video store, a dry cleaning service, and a pizza place primarily serving to-go customers. These stores have been around for while; this small strip mall has been 100% occupied, and was joined a few years ago by the post office, an ugly building without any windows next to the strip mall (thank you, federal government).

*South West.* Now we come to the corner under consideration. This corner previously had a tire shop, a corner liquor store and low-end deli, and a PG&E substation. The corner liquor store was shut down years ago for selling marijuana and for not paying its business taxes. The tire store burned down. The PG&E substation closed and I believe was sold off during its bankruptcy. At any rate, the neighborhood watched as each business

folded. Then different entities either leased or bought the property, with lots of rumors over what was going to happen. Well, *nothing happened, and nothing happened for a long time*. We still have an abandoned lot with a chain link fence. Sometimes the chain link fence falls down, and I watch to see how long it takes for someone to put the chain link fence back up.

**I am waiting for something besides chain link fences, strip malls, empty lots and abandoned buildings on MacArthur and High Street. Fortunately, we have the beginnings of a solution.**

### **Envisioning MacArthur**

During this 16-year saga of chain linked fences, empty lots, gasoline stations, and strip malls, we had a conference about envisioning MacArthur Blvd. Someone by the name of Gordon Price, who was a major player in setting the framework for the City of Vancouver, usually named as the best designed city in the Northern Hemisphere. This man had one major message for the Laurel: high buildings = open space and small business development. Buildings with lots of stories provide enough customers for small businesses to thrive. He underscored the fact that most cities underestimate number of people and the density needed for small businesses to flourish. *We need density. We need buildings with as many stories as we can get. Only then will we get the businesses we want in the Laurel District.*

### **The Proposed Development is Good for Everyone**

*It is Better than an empty lot.* Filling one empty lot with people is a good start. Waiting for a better development will give us another few years of the empty lot experience.

*We will tell the community the Laurel is open for business..* If we approve this project, we will also be sending the following message to developers: we are ready to take the next step. If we don't approve this project, we are saying: "Stay away from the Laurel because we will kill your project with a pie-in-the-sky wish list."

*We will see Increased Foot Traffic.* The development will increase foot traffic with many new neighbors in walking distance from stores.

*Increased Foot Traffic Reduces Crime.* Where there are lots of people walking about, there is less crime.

*Increased foot traffic means increase business.* We will have more people shopping in the district. These seniors will shop and eat in the Laurel.

*Retail is on the bottom.* The developers have modified their proposal to put retail on the first floor, as requested. Their modifications have been met with more requests.

*The Parking is hidden.* The parking is hidden, with only a front entrance that can be seen. This is the style that some of the best condos in San Francisco use. Isn't that enough?

Any requests that go beyond what some of the best developments in S.F. use make me want to ask what the hidden agenda is behind the outrageous demands. Requests to build a subterranean garage borders on the bizarre. Who will ever want to build something here after they hear these types of demands?

*The building conforms to all building codes.* There is not one building code in the City of Oakland that this development violates. Enough said. Objections to building codes should be handled by the planning department. If they are O.K. with the plan, then it is the objector's responsibility to specify what part of the code it violates. Stating code "31" isn't enough.

*The building is the right size.* The building brings relief to the neighborhood by providing a sound wall to block the noise of the freeway. It also blocks the sight of the freeway. Why would anyone want to make it smaller—so they can see the freeway?? This is a beautiful building, and I would rather look at this building than stare at highway 580, hear the traffic noise and breathe the soot that blows off of the monstrosity.

*We will get good neighbors.* I have heard a few people talk about how the residents will be low-income seniors that will somehow tarnish our neighborhood. These apartments are affordable, not "low-income." The apartments are for active seniors who will spend money and time on the streets of the Laurel. It is the height of hypocrisy to cry out for affordable housing while at the same time criticizing a development that actually achieves these goals. **I think the majority of the people in the Laurel do support these types of developments, and will support this project if presented with all the facts.**

*The project implements the Conference Vision.* This project puts some teeth into the talk about development presented in the Envisioning MacArthur Blvd conference. We finally have a project that conforms to this vision on the table. We need to make sure Oakland puts this on a fast track, instead of throwing up roadblocks.

## Conclusion

The proposed development will:

- Improve the aesthetics of MacArthur and High
- Block the noise, soot, and sight of 580
- Get rid of an empty lot that is an eye-sore at the entrance of the Laurel
- Increase foot traffic
- Reduce crime
- Increase business for our local stores
- Create affordable housing
- Improve property values
- Remove an empty lot
- Stimulate redevelopment at the intersection
- Give us a beautiful building
- Implements the vision outlined in our conference last year

I believe the residents of the Laurel are sick and tired of the string of empty lots and abandoned buildings at the intersection of MacArthur and High Street. We want something more than another gas station or strip mall and someone has actually gone through the trouble to provide us with something more. The Laurel community needs to step up to the plate, endorse the project, and thank the developers for their thoughtful approach to our neighborhood. Let's do it, and do it now before the backers of this project change their minds. Let's do it now before more businesses close their doors. Let's just do it.

Sincerely,

Kevin Rath

# Laurel Residents Speak Out in Favor of Senior Housing at High St.

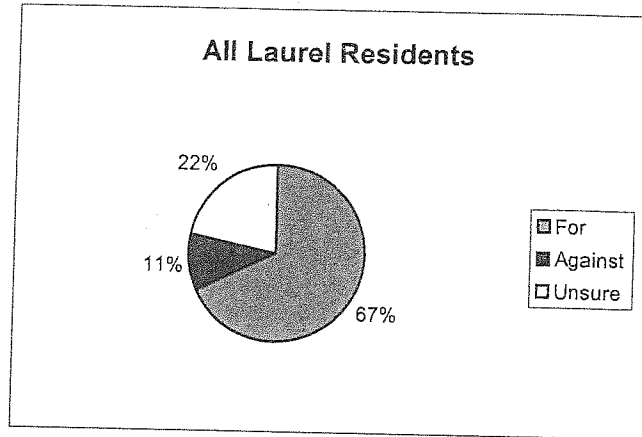
**Laurel Residents want senior housing at High & MacArthur by a factor of Six to One**

Based on a Random Survey of 102 residents in the 94619 zip code

All Respondents were asked, "Do you want affordable seinior housing in th Laurel District?"

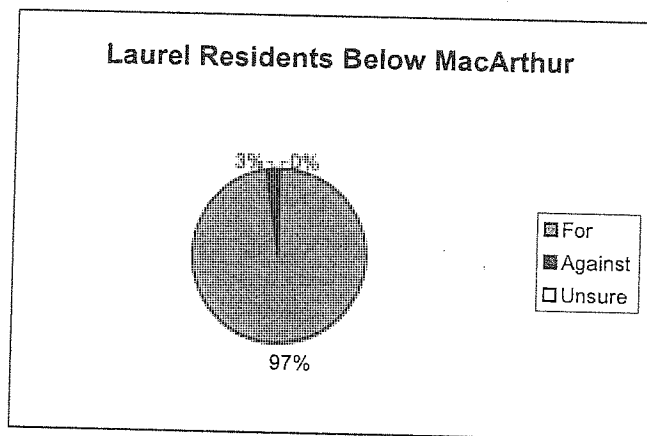
## All Laurel District Residents

|         |    |
|---------|----|
| For     | 69 |
| Against | 11 |
| Unsure  | 22 |



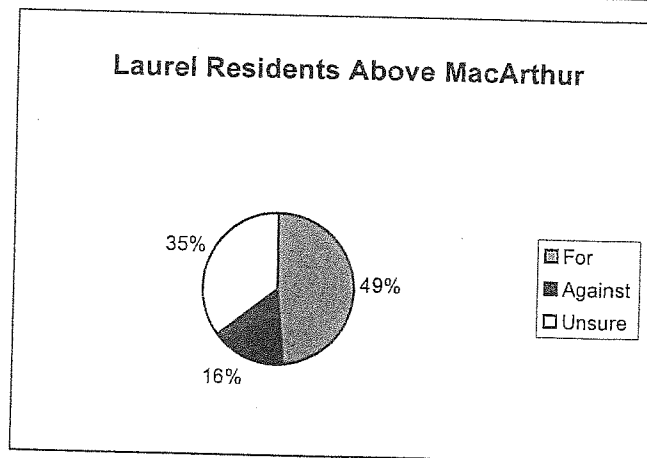
## Living Below MacArthur

|         |    |
|---------|----|
| For     | 39 |
| Against | 1  |
| Unsure  | 0  |



## Living Above MacArthur

|         |    |
|---------|----|
| For     | 30 |
| Against | 10 |
| Unsure  | 22 |



Polling subjects are over 18 years of age and were selected randomly.  
Poll performed by Manos Home Care

**Warner, Lynn**

---

**From:** Warner, Lynn  
**Sent:** Thursday, June 09, 2011 10:54 AM  
**To:** 'Paige Ripley'  
**Subject:** RE: High and Macarthur Mixed Use Project (115 senior housing units)

Hi Paige,

I do not believe that the developer is proposing to sell the units at this time. These units will be for independent seniors and will not have an assisted living arrangement.

Lynn Warner

---

**From:** Paige Ripley [mailto:pringley@metrostudy.com]  
**Sent:** Wednesday, June 08, 2011 2:29 PM  
**To:** Warner, Lynn  
**Subject:** High and Macarthur Mixed Use Project (115 senior housing units)

Hello,

My name is Paige Ripley with Metrostudy and I would like to know if the 115 senior housing units proposed for the High and Macarthur Mixed Use Project are proposed to be for-sale for individual ownership? Is this going to be an assisted-living type of arrangement?

Thank you for your time,  
Paige Ripley

Research Assistant  
Metrostudy  
5001 California Ave. Suite 210  
Bakersfield, Ca 93309  
Ph. (661)325-2956

[www.metrostudy.com](http://www.metrostudy.com)  
Housing Starts Here

6/9/2011

**Warner, Lynn**

---

**From:** Warner, Lynn  
**Sent:** Monday, June 06, 2011 12:27 PM  
**To:** 'b toy'  
**Cc:** chris\_hwang@yahoo.com; Stanley, Jennifer; Patton, Jason; rebecca.saltzman@gmail.com; Miller, Scott  
**Subject:** RE: Presentation Request for High & MacArthur Project

Dear Mr. Toy,

This project will have a scoping meeting for the Environmental Impact Report (EIR) before the Planning Commission on June 15<sup>th</sup>. If you are interested in providing any comments on the scope of the EIR the end of the comment period is June 16<sup>th</sup>. Potential transportation impacts will be fully analyzed in the EIR, including compliance with the City's Bicycle and Pedestrian Master Plans, as well as with the bicycle parking requirements.

The staff report for the Planning Commission meeting will be available later this week and includes the project plans. Please let me know if you have any further questions.

Thanks,

Lynn Warner

---

**From:** b toy [mailto:btmapper@yahoo.com]  
**Sent:** Thursday, May 26, 2011 4:56 PM  
**To:** Warner, Lynn  
**Cc:** chris\_hwang@yahoo.com; Stanley, Jennifer; Patton, Jason; rebecca.saltzman@gmail.com  
**Subject:** Presentation Request for High & MacArthur Project

Dear Ms. Warner,

I'm on the city's Bicycle & Pedestrian Advisory Committee. I would like to arrange a presentation of the High & MacArthur Mixed Use Project at an upcoming committee meeting. I think the committee would be interested in learning more about the project, including any sidewalk improvements and bike parking. Of particular note, the project is situated along bikeway and pedestrian improvements in the LAAMMPS plan.

<http://www.oaklandnet.com/government/ceda/lammmps.asp>

The BPAC meets every third Thursday of the month from 5:30pm to 7:30pm. You may contact the Committee Chair, Chris Hwang, or city staff (all copied) with questions on bringing this to a meeting.

Thank you.

Brian Toy  
 596-4300

6/6/2011

**Cc:** Stoffmacher, Bruce  
**Subject:** Senior Development at High & MacArthur

Hi Lynn,

I am curious to learn more about the senior housing development proposed for High and MacArthur after having read about it in Councilmember Schaaf's newsletter. I coordinate Greenbelt Alliance's team that reviews and potentially endorses infill development projects around the Bay Area so I am curious if this project may be a candidate for endorsement on our part.

Could you send me some information on the project that you have available?

Thank you,  
Marla

--

*Join us for Bluegrass for the Greenbelt on June 4!*

Marla Wilson  
Sustainable Development Associate

Greenbelt Alliance  
631 Howard St., Suite 510 • San Francisco, CA 94105  
(415) 543-6771 x308 • [mwilson@greenbelt.org](mailto:mwilson@greenbelt.org)

Open Spaces & Vibrant Places  
<http://www.greenbelt.org>

## Warner, Lynn

---

**From:** Warner, Lynn  
**Sent:** Tuesday, May 31, 2011 12:53 PM  
**To:** 'Renaïs Winter and Doug Stone'  
**Subject:** RE: Sr Housing Project at High and MacArthur

Dear Renaïs,

The site is still on a remediation list to have the hazardous materials contamination cleaned up. Hazardous materials is one of the issues that will be studied in the EIR on the project. Remediation would have to be completed prior to any type of project being built on the site.

The current plans for the site are for a five-story building (four stories of residential units over parking and commercial space), and they are available for review in the project file here in my office. Or alternatively, you can see them in the staff report for the June 15th Planning Commission once the report is available, which should be sometime during the week of June 6th.

Please let me know if you would like additional information. Feel free to call me at 238-6983.

Thanks,

Lynn Warner

-----Original Message-----

**From:** Renaïs Winter and Doug Stone [mailto:winterstone@mindspring.com]  
**Sent:** Sunday, May 29, 2011 2:31 PM  
**To:** Warner, Lynn  
**Subject:** Sr Housing Project at High and MacArthur

Dear Lynn,

I would like to know more about the Sr. Housing Project now going through EIR. The last I remember about the site was that it was on a clean up list for tanks still underground at the site and under the street. I would also like to know how I could view the final design/height. I had heard that it was now four stories instead of six.

Thank you for your assistance.

Renaïs Winter

## Warner, Lynn

---

**From:** Komodo [komodotoyz@aol.com]  
**Sent:** Thursday, June 16, 2011 6:53 PM  
**To:** Warner, Lynn  
**Subject:** Senior Housing EIR

Dear Lynn,

Thank you for the opportunity to voice my concerns regarding the Senior Housing Building at High Street and MacArthur Blvd.

The site location is listed on the Cortese List, which indicates definitive issues of toxic compounds hazardous to our health, and poses additional health hazards with ground water contamination and runoff. The most stringent requirements should be upheld in no uncertain terms, to protect the health of the community at large and possible future residents, particularly seniors who immune systems are already at higher risk.

The requirement for an Environmental Impact Report should have been required from the start. The EIR cannot and should not be overlooked simply because it proposes affordable housing to seniors, when in fact, it can be harmful to them. Developers must be required to do the right thing and not hide behind tactics of benefiting seniors with affordable housing, while building directly on top of toxic compounds. It is very difficult to digest why this was allowed to pass through in the first place.

When the California Air Quality Board sites that particulate matter from freeway pollutants and exhaust can be mitigated by building no closer than 500 feet away from the freeway, I am perplexed at why a building just 35 feet away is even being entertained.

Thank you for assuring all of us that live and work close to this site and are ultimately the ones exposed to all the health hazards, that the most stringent testing, researching impacts, both short and long term, and the critical clean up of these toxins are required and enforced before further development of any kind is allowed on this site.

Most sincerely,

Lease Wong

**High & MacArthur Mixed Use Project EIR**  
**Scoping Session Notes**  
**June 15, 2011**

Alexis Gevorgian, project applicant

- Project has been in process for more than 4 years
- Previously approved by the Planning Commission; appealed to City Council
- City Council denied project on technicality
- No project changes from first Planning Commission approval

Kevin Rath

- Lives 3 blocks from project site
- Operates a non-profit in the laurel district
- 90% of area residents are supportive
- Project will reduce crime in area
- Doesn't want to see a McDonalds get built on the project site

Commissioner Whales

- Submitted a list of comment/items under separate cover

Commissioner Zayas-Mart

- Include bike and pedestrian analysis
- Include project alternatives
- Concern over design of building

Commissioner Colbruno

- Concern over design of building
- Historic quality of neighborhood
- Consider visual character

Neighborhood resident

- Overall supportive of project
- Concerned about adequate parking
- Project residents will increase parking demand
- Sound issues for residents from the freeway; and large building will amplify freeway noise toward the hills
- Location not ideal because of freeway and potential health issues

## Sanjeev Honda

- AC Transit cuts in service
- Intersection operations
- Trucks use 580 illegally
- Parking adequacy within the project and surrounding neighborhood
- Traffic congestion and air quality impacts

## Appendix B

### Air Quality and Greenhouse Gas Emissions



## URBEMIS 2007 INPUT/OUTPUT CRITERIA POLLUTANTS

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: U:\UcJobs\\_07100-07500\07100\07195\URBEMIS\07195-01.urb924

Project Name: High St. MacArthur

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

3/7/2011 10:40:47 AM

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

|                                   | <u>ROG</u> | <u>NOx</u> | <u>CO</u> | <u>SO2</u> | <u>PM10 Dust</u> | <u>PM10 Exhaust</u> | <u>PM10</u> | <u>PM2.5 Dust</u> | <u>PM2.5 Exhaust</u> | <u>PM2.5</u> |
|-----------------------------------|------------|------------|-----------|------------|------------------|---------------------|-------------|-------------------|----------------------|--------------|
| 2011 TOTALS (lbs/day unmitigated) | 43.32      | 23.50      | 33.46     | 0.02       | 0.11             | 1.64                | 1.75        | 0.04              | 1.51                 | 1.55         |

AREA SOURCE EMISSION ESTIMATES

|                               | <u>ROG</u> | <u>NOx</u> | <u>CO</u> | <u>SO2</u> | <u>PM10</u> | <u>PM2.5</u> |
|-------------------------------|------------|------------|-----------|------------|-------------|--------------|
| TOTALS (lbs/day, unmitigated) | 8.56       | 1.57       | 8.86      | 0.00       | 0.02        | 0.02         |
| TOTALS (lbs/day, mitigated)   | 8.55       | 1.42       | 8.79      | 0.00       | 0.02        | 0.02         |
| Percent Reduction             | 0.12       | 9.55       | 0.79      | NaN        | 0.00        | 0.00         |

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

|                               | <u>ROG</u> | <u>NOx</u> | <u>CO</u> | <u>SO2</u> | <u>PM10</u> | <u>PM2.5</u> |
|-------------------------------|------------|------------|-----------|------------|-------------|--------------|
| TOTALS (lbs/day, unmitigated) | 3.96       | 3.42       | 36.11     | 0.04       | 6.12        | 1.17         |
| TOTALS (lbs/day, mitigated)   | 3.60       | 2.98       | 31.38     | 0.03       | 5.32        | 1.02         |
| Percent Reduction             | 9.09       | 12.87      | 13.10     | 25.00      | 13.07       | 12.82        |

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

|                               | <u>ROG</u> | <u>NOx</u> | <u>CO</u> | <u>SO2</u> | <u>PM10</u> | <u>PM2.5</u> |
|-------------------------------|------------|------------|-----------|------------|-------------|--------------|
| TOTALS (lbs/day, unmitigated) | 12.52      | 4.99       | 44.97     | 0.04       | 6.14        | 1.19         |
| TOTALS (lbs/day, mitigated)   | 12.15      | 4.40       | 40.17     | 0.03       | 5.34        | 1.04         |
| Percent Reduction             | 2.96       | 11.82      | 10.67     | 25.00      | 13.03       | 12.61        |

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

[illegible]

3/7/2011 10:40:47 AM

|                                |              |       |              |             |             |             |             |             |             |             |
|--------------------------------|--------------|-------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Time Slice 9/1/2011-12/30/2011 | <u>43.32</u> | 22.90 | <u>33.46</u> | <u>0.02</u> | <u>0.11</u> | <u>1.64</u> | <u>1.75</u> | <u>0.04</u> | <u>1.51</u> | <u>1.55</u> |
| Active Days: 87                |              |       |              |             |             |             |             |             |             |             |
| Asphalt 09/01/2011-12/30/2011  | 1.89         | 11.38 | 8.79         | 0.00        | 0.01        | 0.98        | 0.99        | 0.00        | 0.90        | 0.91        |
| Paving Off-Gas                 | 0.01         | 0.00  | 0.00         | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        |
| Paving Off Road Diesel         | 1.83         | 11.26 | 6.91         | 0.00        | 0.00        | 0.98        | 0.98        | 0.00        | 0.90        | 0.90        |
| Paving On Road Diesel          | 0.00         | 0.02  | 0.01         | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        |
| Paving Worker Trips            | 0.06         | 0.10  | 1.87         | 0.00        | 0.01        | 0.00        | 0.01        | 0.00        | 0.00        | 0.01        |
| Building 06/01/2011-12/30/2011 | 1.84         | 11.49 | 24.17        | 0.02        | 0.10        | 0.66        | 0.76        | 0.04        | 0.60        | 0.64        |
| Building Off Road Diesel       | 1.11         | 8.51  | 4.68         | 0.00        | 0.00        | 0.54        | 0.54        | 0.00        | 0.50        | 0.50        |
| Building Vendor Trips          | 0.15         | 1.99  | 1.56         | 0.00        | 0.02        | 0.07        | 0.09        | 0.01        | 0.07        | 0.07        |
| Building Worker Trips          | 0.58         | 0.99  | 17.94        | 0.02        | 0.08        | 0.04        | 0.13        | 0.03        | 0.04        | 0.07        |
| Coating 06/01/2011-12/30/2011  | 39.58        | 0.03  | 0.49         | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        |
| Architectural Coating          | 39.56        | 0.00  | 0.00         | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        |
| Coating Worker Trips           | 0.02         | 0.03  | 0.49         | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        |

Phase Assumptions

Phase: Mass Grading 1/1/2011 - 2/28/2011 - Type Your Description Here

Total Acres Disturbed: 0.93

Maximum Daily Acreage Disturbed: 0.23

Fugitive Dust Level of Detail: Default

0 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

**3/7/2011 10:40:47 AM**

Phase: Trenching 3/1/2011 - 5/1/2011 - Type Your Description Here

Off-Road Equipment:

- 2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
- 1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Paving 9/1/2011 - 12/30/2011 - Default Paving Description

Acres to be Paved: 0.23

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

Phase: Building Construction 6/1/2011 - 12/30/2011 - 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
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 6/1/2011 - 12/30/2011 - 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

3/7/2011 10:40:47 AM

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

| <u>Source</u>                 | <u>ROG</u> | <u>NOx</u> | <u>CO</u> | <u>SO2</u> | <u>PM10</u> | <u>PM2.5</u> |
|-------------------------------|------------|------------|-----------|------------|-------------|--------------|
| Natural Gas                   | 0.11       | 1.47       | 0.64      | 0.00       | 0.00        | 0.00         |
| Hearth - No Summer Emissions  |            |            |           |            |             |              |
| Landscape                     | 1.17       | 0.10       | 8.22      | 0.00       | 0.02        | 0.02         |
| Consumer Products             | 5.63       |            |           |            |             |              |
| Architectural Coatings        | 1.65       |            |           |            |             |              |
| TOTALS (lbs/day, unmitigated) | 8.56       | 1.57       | 8.86      | 0.00       | 0.02        | 0.02         |

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

| <u>Source</u>                | <u>ROG</u> | <u>NOx</u> | <u>CO</u> | <u>SO2</u> | <u>PM10</u> | <u>PM2.5</u> |
|------------------------------|------------|------------|-----------|------------|-------------|--------------|
| Natural Gas                  | 0.10       | 1.32       | 0.57      | 0.00       | 0.00        | 0.00         |
| Hearth - No Summer Emissions |            |            |           |            |             |              |
| Landscape                    | 1.17       | 0.10       | 8.22      | 0.00       | 0.02        | 0.02         |
| Consumer Products            | 5.63       |            |           |            |             |              |
| Architectural Coatings       | 1.65       |            |           |            |             |              |
| TOTALS (lbs/day, mitigated)  | 8.55       | 1.42       | 8.79      | 0.00       | 0.02        | 0.02         |

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%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

| Source                        | ROG  | NOX  | CO    | SO2  | PM10 | PM25 |
|-------------------------------|------|------|-------|------|------|------|
| Retirement community          | 3.38 | 2.84 | 30.27 | 0.03 | 5.15 | 0.98 |
| Strip mall                    | 0.58 | 0.58 | 5.84  | 0.01 | 0.97 | 0.19 |
| TOTALS (lbs/day, unmitigated) | 3.96 | 3.42 | 36.11 | 0.04 | 6.12 | 1.17 |

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

| Source                      | ROG  | NOX  | CO    | SO2  | PM10 | PM25 |
|-----------------------------|------|------|-------|------|------|------|
| Retirement community        | 3.05 | 2.43 | 25.85 | 0.02 | 4.40 | 0.84 |
| Strip mall                  | 0.55 | 0.55 | 5.53  | 0.01 | 0.92 | 0.18 |
| TOTALS (lbs/day, mitigated) | 3.60 | 2.98 | 31.38 | 0.03 | 5.32 | 1.02 |

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2012 Temperature (F): 85 Season: Summer

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 |
| Retirement community | 0.79    | 3.48      | dwelling units | 115.00    | 400.20      | 2,995.60  |
| Strip mall           |         | 44.30     | 1000 sq ft     | 3.12      | 138.22      | 563.54    |
|                      |         |           |                |           | 538.42      | 3,559.14  |

| <u>Vehicle Fleet Mix</u>            |              |              |          |        |
|-------------------------------------|--------------|--------------|----------|--------|
| Vehicle Type                        | Percent Type | Non-Catalyst | Catalyst | Diesel |
| Light Auto                          | 53.8         | 0.7          | 99.1     | 0.2    |
| Light Truck < 3750 lbs              | 12.8         | 1.6          | 95.3     | 3.1    |
| Light Truck 3751-5750 lbs           | 19.8         | 0.5          | 99.5     | 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          | 59.4         | 40.6     | 0.0    |
| School Bus                          | 0.1          | 0.0          | 0.0      | 100.0  |
| Motor Home                          | 0.6          | 0.0          | 83.3     | 16.7   |

| <u>Travel Conditions</u>  |             |           |            |            |          |          |
|---------------------------|-------------|-----------|------------|------------|----------|----------|
|                           | 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       |            |          |          |

|                                       | <u>Travel Conditions</u> |           |            |            |          |          |
|---------------------------------------|--------------------------|-----------|------------|------------|----------|----------|
|                                       | Residential              |           |            | Commercial |          |          |
|                                       | Home-Work                | Home-Shop | Home-Other | Commute    | Non-Work | Customer |
| % of Trips - Commercial (by land use) |                          |           |            |            |          |          |
| Strip mall                            |                          |           |            | 2.0        | 1.0      | 97.0     |

Urbemis 2007 Version 9.2.4

Combined Winter Emissions Reports (Pounds/Day)

File Name: U:\UcJobs\\_07100-07500\07100\07195\URBEMIS\07195-01.urb924

Project Name: High St. MacArthur

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

3/7/2011 10:40:59 AM

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

|                                   | <u>ROG</u> | <u>NOx</u> | <u>CO</u> | <u>SO2</u> | <u>PM10 Dust</u> | <u>PM10 Exhaust</u> | <u>PM10</u> | <u>PM2.5 Dust</u> | <u>PM2.5 Exhaust</u> | <u>PM2.5</u> |
|-----------------------------------|------------|------------|-----------|------------|------------------|---------------------|-------------|-------------------|----------------------|--------------|
| 2011 TOTALS (lbs/day unmitigated) | 43.32      | 23.50      | 33.46     | 0.02       | 0.11             | 1.64                | 1.75        | 0.04              | 1.51                 | 1.55         |

AREA SOURCE EMISSION ESTIMATES

|                               | <u>ROG</u> | <u>NOx</u> | <u>CO</u> | <u>SO2</u> | <u>PM10</u> | <u>PM2.5</u> |
|-------------------------------|------------|------------|-----------|------------|-------------|--------------|
| TOTALS (lbs/day, unmitigated) | 7.39       | 1.47       | 0.64      | 0.00       | 0.00        | 0.00         |
| TOTALS (lbs/day, mitigated)   | 7.38       | 1.32       | 0.57      | 0.00       | 0.00        | 0.00         |
| Percent Reduction             | 0.14       | 10.20      | 10.94     | NaN        | NaN         | NaN          |

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

|                               | <u>ROG</u> | <u>NOx</u> | <u>CO</u> | <u>SO2</u> | <u>PM10</u> | <u>PM2.5</u> |
|-------------------------------|------------|------------|-----------|------------|-------------|--------------|
| TOTALS (lbs/day, unmitigated) | 3.55       | 5.10       | 39.18     | 0.03       | 6.12        | 1.17         |
| TOTALS (lbs/day, mitigated)   | 3.10       | 4.44       | 34.09     | 0.02       | 5.32        | 1.02         |
| Percent Reduction             | 12.68      | 12.94      | 12.99     | 33.33      | 13.07       | 12.82        |

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

|                               | <u>ROG</u> | <u>NOx</u> | <u>CO</u> | <u>SO2</u> | <u>PM10</u> | <u>PM2.5</u> |
|-------------------------------|------------|------------|-----------|------------|-------------|--------------|
| TOTALS (lbs/day, unmitigated) | 10.94      | 6.57       | 39.82     | 0.03       | 6.12        | 1.17         |
| TOTALS (lbs/day, mitigated)   | 10.48      | 5.76       | 34.66     | 0.02       | 5.32        | 1.02         |
| Percent Reduction             | 4.20       | 12.33      | 12.96     | 33.33      | 13.07       | 12.82        |

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

[illegible]

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|                                |              |       |              |             |             |             |             |             |             |             |
|--------------------------------|--------------|-------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Time Slice 9/1/2011-12/30/2011 | <u>43.32</u> | 22.90 | <u>33.46</u> | <u>0.02</u> | <u>0.11</u> | <u>1.64</u> | <u>1.75</u> | <u>0.04</u> | <u>1.51</u> | <u>1.55</u> |
| Active Days: 87                |              |       |              |             |             |             |             |             |             |             |
| Asphalt 09/01/2011-12/30/2011  | 1.89         | 11.38 | 8.79         | 0.00        | 0.01        | 0.98        | 0.99        | 0.00        | 0.90        | 0.91        |
| Paving Off-Gas                 | 0.01         | 0.00  | 0.00         | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        |
| Paving Off Road Diesel         | 1.83         | 11.26 | 6.91         | 0.00        | 0.00        | 0.98        | 0.98        | 0.00        | 0.90        | 0.90        |
| Paving On Road Diesel          | 0.00         | 0.02  | 0.01         | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        |
| Paving Worker Trips            | 0.06         | 0.10  | 1.87         | 0.00        | 0.01        | 0.00        | 0.01        | 0.00        | 0.00        | 0.01        |
| Building 06/01/2011-12/30/2011 | 1.84         | 11.49 | 24.17        | 0.02        | 0.10        | 0.66        | 0.76        | 0.04        | 0.60        | 0.64        |
| Building Off Road Diesel       | 1.11         | 8.51  | 4.68         | 0.00        | 0.00        | 0.54        | 0.54        | 0.00        | 0.50        | 0.50        |
| Building Vendor Trips          | 0.15         | 1.99  | 1.56         | 0.00        | 0.02        | 0.07        | 0.09        | 0.01        | 0.07        | 0.07        |
| Building Worker Trips          | 0.58         | 0.99  | 17.94        | 0.02        | 0.08        | 0.04        | 0.13        | 0.03        | 0.04        | 0.07        |
| Coating 06/01/2011-12/30/2011  | 39.58        | 0.03  | 0.49         | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        |
| Architectural Coating          | 39.56        | 0.00  | 0.00         | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        |
| Coating Worker Trips           | 0.02         | 0.03  | 0.49         | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        | 0.00        |

Phase Assumptions

Phase: Mass Grading 1/1/2011 - 2/28/2011 - Type Your Description Here

Total Acres Disturbed: 0.93

Maximum Daily Acreage Disturbed: 0.23

Fugitive Dust Level of Detail: Default

0 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

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Phase: Trenching 3/1/2011 - 5/1/2011 - Type Your Description Here

Off-Road Equipment:

- 2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
- 1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Paving 9/1/2011 - 12/30/2011 - Default Paving Description

Acres to be Paved: 0.23

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

Phase: Building Construction 6/1/2011 - 12/30/2011 - 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
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 6/1/2011 - 12/30/2011 - 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

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

| <u>Source</u>                     | <u>ROG</u> | <u>NOx</u> | <u>CO</u> | <u>SO2</u> | <u>PM10</u> | <u>PM2.5</u> |
|-----------------------------------|------------|------------|-----------|------------|-------------|--------------|
| Natural Gas                       | 0.11       | 1.47       | 0.64      | 0.00       | 0.00        | 0.00         |
| Hearth                            | 0.00       | 0.00       | 0.00      | 0.00       | 0.00        | 0.00         |
| Landscaping - No Winter Emissions |            |            |           |            |             |              |
| Consumer Products                 | 5.63       |            |           |            |             |              |
| Architectural Coatings            | 1.65       |            |           |            |             |              |
| TOTALS (lbs/day, unmitigated)     | 7.39       | 1.47       | 0.64      | 0.00       | 0.00        | 0.00         |

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

| <u>Source</u>                     | <u>ROG</u> | <u>NOx</u> | <u>CO</u> | <u>SO2</u> | <u>PM10</u> | <u>PM2.5</u> |
|-----------------------------------|------------|------------|-----------|------------|-------------|--------------|
| Natural Gas                       | 0.10       | 1.32       | 0.57      | 0.00       | 0.00        | 0.00         |
| Hearth                            | 0.00       | 0.00       | 0.00      | 0.00       | 0.00        | 0.00         |
| Landscaping - No Winter Emissions |            |            |           |            |             |              |
| Consumer Products                 | 5.63       |            |           |            |             |              |
| Architectural Coatings            | 1.65       |            |           |            |             |              |
| TOTALS (lbs/day, mitigated)       | 7.38       | 1.32       | 0.57      | 0.00       | 0.00        | 0.00         |

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%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

| Source                        | ROG  | NOX  | CO    | SO2  | PM10 | PM25 |
|-------------------------------|------|------|-------|------|------|------|
| Retirement community          | 2.83 | 4.24 | 32.33 | 0.03 | 5.15 | 0.98 |
| Strip mall                    | 0.72 | 0.86 | 6.85  | 0.00 | 0.97 | 0.19 |
| TOTALS (lbs/day, unmitigated) | 3.55 | 5.10 | 39.18 | 0.03 | 6.12 | 1.17 |

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Mitigated

| Source                      | ROG  | NOX  | CO    | SO2  | PM10 | PM25 |
|-----------------------------|------|------|-------|------|------|------|
| Retirement community        | 2.42 | 3.62 | 27.61 | 0.02 | 4.40 | 0.84 |
| Strip mall                  | 0.68 | 0.82 | 6.48  | 0.00 | 0.92 | 0.18 |
| TOTALS (lbs/day, mitigated) | 3.10 | 4.44 | 34.09 | 0.02 | 5.32 | 1.02 |

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2012 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 |
| Retirement community | 0.79    | 3.48      | dwelling units | 115.00    | 400.20      | 2,995.60  |
| Strip mall           |         | 44.30     | 1000 sq ft     | 3.12      | 138.22      | 563.54    |
|                      |         |           |                |           | 538.42      | 3,559.14  |

| <u>Vehicle Fleet Mix</u>            |              |              |          |        |
|-------------------------------------|--------------|--------------|----------|--------|
| Vehicle Type                        | Percent Type | Non-Catalyst | Catalyst | Diesel |
| Light Auto                          | 53.8         | 0.7          | 99.1     | 0.2    |
| Light Truck < 3750 lbs              | 12.8         | 1.6          | 95.3     | 3.1    |
| Light Truck 3751-5750 lbs           | 19.8         | 0.5          | 99.5     | 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          | 59.4         | 40.6     | 0.0    |
| School Bus                          | 0.1          | 0.0          | 0.0      | 100.0  |
| Motor Home                          | 0.6          | 0.0          | 83.3     | 16.7   |

| <u>Travel Conditions</u>  |             |           |            |            |          |          |
|---------------------------|-------------|-----------|------------|------------|----------|----------|
|                           | 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       |            |          |          |

|                                       | <u>Travel Conditions</u> |           |            |            |          |          |
|---------------------------------------|--------------------------|-----------|------------|------------|----------|----------|
|                                       | Residential              |           |            | Commercial |          |          |
|                                       | Home-Work                | Home-Shop | Home-Other | Commute    | Non-Work | Customer |
| % of Trips - Commercial (by land use) |                          |           |            |            |          |          |
| Strip mall                            |                          |           |            | 2.0        | 1.0      | 97.0     |

## CONSTRUCTION SCREEN3 DPM Output

12/15/11

14:34:49

\*\*\* SCREEN3 MODEL RUN \*\*\*  
\*\*\* VERSION DATED 96043 \*\*\*

C:\Documents and Settings\hqureshi\Desktop\07195 Screen3\DPM.scr

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = AREA  
EMISSION RATE (G/(S-M\*\*2)) = 0.244112E-05  
SOURCE HEIGHT (M) = 5.0000  
LENGTH OF LARGER SIDE (M) = 61.3480  
LENGTH OF SMALLER SIDE (M) = 61.3480  
RECEPTOR HEIGHT (M) = 1.8000  
URBAN/RURAL OPTION = URBAN

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.

THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M\*\*4/S\*\*3; MOM. FLUX = 0.000 M\*\*4/S\*\*2.

\*\*\* FULL METEOROLOGY \*\*\*

\*\*\*\*\*  
\*\*\* SCREEN DISCRETE DISTANCES \*\*\*  
\*\*\*\*\*

\*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING  
DISTANCES \*\*\*

| DIST<br>(M) | CONC<br>(UG/M**3) | STAB | U10M<br>(M/S) | USTK<br>(M/S) | MIX HT<br>(M) | PLUME<br>HT (M) | MAX DIR<br>(DEG) |
|-------------|-------------------|------|---------------|---------------|---------------|-----------------|------------------|
| 50.         | 14.31             | 4    | 1.0           | 1.0           | 320.0         | 5.00            | 45.              |

\*\*\*\*\*  
\*\*\* SUMMARY OF SCREEN MODEL RESULTS \*\*\*  
\*\*\*\*\*

| CALCULATION<br>PROCEDURE | MAX CONC<br>(UG/M**3) | DIST TO<br>MAX (M) | TERRAIN<br>HT (M) |
|--------------------------|-----------------------|--------------------|-------------------|
| SIMPLE TERRAIN           | 14.31                 | 50.                | 0.                |

\*\*\*\*\*  
\*\* REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS \*\*  
\*\*\*\*\*

12/21/11

10:03:19

\*\*\* SCREEN3 MODEL RUN \*\*\*  
\*\*\* VERSION DATED 96043 \*\*\*

C:\Documents and Settings\hqureshi\Desktop\07195 Screen3PM25.scr

SIMPLE TERRAIN INPUTS:

SOURCE TYPE = AREA  
EMISSION RATE (G/(S-M\*\*2)) = 0.226676E-05  
SOURCE HEIGHT (M) = 5.0000  
LENGTH OF LARGER SIDE (M) = 61.3480  
LENGTH OF SMALLER SIDE (M) = 61.3480  
RECEPTOR HEIGHT (M) = 1.8000  
URBAN/RURAL OPTION = URBAN

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.  
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

MODEL ESTIMATES DIRECTION TO MAX CONCENTRATION

BUOY. FLUX = 0.000 M\*\*4/S\*\*3; MOM. FLUX = 0.000 M\*\*4/S\*\*2.

\*\*\* STABILITY CLASS 1 ONLY \*\*\*  
\*\*\* ANEMOMETER HEIGHT WIND SPEED OF 2.33 M/S ONLY \*\*\*

\*\*\*\*\*  
\*\*\* SCREEN DISCRETE DISTANCES \*\*\*  
\*\*\*\*\*

\*\*\* TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING  
DISTANCES \*\*\*

| DIST<br>(M) | CONC<br>(UG/M**3) | STAB | U10M<br>(M/S) | USTK<br>(M/S) | MIX HT<br>(M) | PLUME<br>HT (M) | MAX DIR<br>(DEG) |
|-------------|-------------------|------|---------------|---------------|---------------|-----------------|------------------|
| 50.         | 4.322             | 1    | 2.3           | 2.3           | 745.6         | 5.00            | 45.              |

\*\*\*\*\*  
\*\*\* SUMMARY OF SCREEN MODEL RESULTS \*\*\*  
\*\*\*\*\*

| CALCULATION<br>PROCEDURE | MAX CONC<br>(UG/M**3) | DIST TO<br>MAX (M) | TERRAIN<br>HT (M) |
|--------------------------|-----------------------|--------------------|-------------------|
| SIMPLE TERRAIN           | 4.322                 | 50.                | 0.                |

\*\*\*\*\*  
\*\* REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS \*\*  
\*\*\*\*\*

| PM10        |                  |
|-------------|------------------|
| 0.08        | tons per year    |
| 0.009187345 | Grams per second |
| 2.44112E-06 | g/sec/m2         |

| Area Conversion |                |
|-----------------|----------------|
| 0.93            | Area (acres)   |
| 3,763.58        | Square Meters  |
| 61.34799484     | Dimensions (m) |

|             |                  |
|-------------|------------------|
| PM2.5       |                  |
| 0.07        | tons per year    |
| 0.008531106 | Grams per second |
| 2.26676E-06 | g/sec/m2         |

|                 |                |
|-----------------|----------------|
| Area Conversion |                |
| 0.93            | Area (acres)   |
| 3,763.58        | Square Meters  |
| 61.34799484     | Dimensions (m) |

## HRA METHODOLOGY DETAILS

APPENDIX B  
Methodology for Health Risk Assessment

**Toxic Air Contaminants – Project Construction**

Construction would also increase diesel particulate matter (DPM), but the toxic effects of the DPM would be minimal, and less than significant, because the construction would be temporary and would not last over the long-term timeframes used in DPM Health Risk Analyses (e.g., continuous exposure over a 70-year period).

Construction activity that uses traditional diesel-powered equipment such as bulldozers, generators and cranes all contribute to both cancer and non-cancer health risks. Long-term exposure to diesel particulate matter (DPM) poses the highest cancer risk, but even short term exposure (such as during a construction period) at high concentrations can pose a risk for cancer or non-cancer health concerns. Due to the variable nature of construction activity, the generation of TAC emissions would be temporary, especially considering the short amount of time such equipment is typically within an influential distance that would result in the exposure of sensitive receptors to substantial concentrations.

The following table illustrates the construction equipment assumptions and duration of each construction phase:

| Activity                         | Water Trucks | Other/Miscellaneous | Grader | Rubber Tired Dozer | Tractor / Loader / Backhoe | Excavator | Pavers | Cement Mixer | Rollers | Forklift | Cranes |
|----------------------------------|--------------|---------------------|--------|--------------------|----------------------------|-----------|--------|--------------|---------|----------|--------|
| Mass Grading – 2 Months          | 1            |                     | 1      | 1                  | 1                          |           |        |              |         |          |        |
| Trenching – 2 Months             |              | 1                   |        |                    | 1                          | 2         |        |              |         |          |        |
| Building Construction – 6 Months |              |                     |        |                    | 1                          |           |        |              |         | 2        | 1      |
| Paving – 2 Months                |              |                     |        |                    | 1                          |           | 1      | 4            | 1       |          |        |

Screening tables published by BAAQMD for evaluation of air toxic risks from construction activities indicate that for a less than 1-acre residential land use construction site (such as the proposed project), a distance of at least 311 feet (95 meters) from sensitive receptors would be reasonably assured to result in less than significant levels of risk (BAAQMD, May 2010).

Sensitive receptors near the project site include residences along High Street that are within 311 feet (95 meters) of the project site. Each of these sensitive receptors is closer than 311 feet (or 95 meters) from the project site. Therefore, the BAAQMD's screening tables cannot be used to "screen out" the potential that construction-period health risks would not be significant.

## APPENDIX B Methodology for Health Risk Assessment

### Methodology

BAAQMD recommends that the same community risk and hazard thresholds of significance for project operations be applied to construction.<sup>10</sup> However, BAAQMD suggests associated impacts should be addressed on a case-by-case basis, taking into consideration the specific construction related characteristics of each project and proximity to off-site receptors, as applicable.

The methods used in the following analysis of health risks associated with DPM from project related construction activities are consistent with CEQA Guidelines and BAAQMD health risk guidance, which includes by reference *Air Toxics Hot Spots Program Risk Assessment Guidelines* published by the OEHHA.<sup>1</sup> The health risk assessment includes three primary calculations, each of which are based on conservative (i.e., worst case) assumptions; (1) an estimate of construction-period DPM emission; (2) a calculation of DPM concentrations at the maximum exposed individual; and (3) an estimate of excess cancer risk and chronic health risks.

### *DPM Emissions*

Consistent with BAAQMD recommended methodology, PM<sub>10</sub> from exhaust has been used as a surrogate for DPM. The total DPM emissions resulting from project construction activity has been calculated using the Urban Land Use Emissions Model (URBEMIS). Input and assumptions used in the URBEMIS model for the project's construction period effects have been calculated based on the following construction period assumptions:

- The assumed construction schedule is as proposed based on information from the project applicant which assumes construction activity would last the duration of approximately one year (twelve months).
- Assumptions regarding the types of diesel equipment to be used during the construction period are based on URBEMIS defaults (see table above).
- Emission rates from all off-road diesel engines are assumed to comply with City of Oakland Standard Conditions of Approval which require that the off-road equipment (more than 50 horsepower) achieve a project wide fleet-average 20 percent NO<sub>x</sub> reduction and a 45 percent particulate matter (PM) reduction compared to the most recent California Air Resources Board (CARB) fleet average.

The estimated average annual emissions generated by this equipment (assuming daily operating load factors and construction periods) are approximately 0.05 metric tons of DPM per year, averaged across the construction period.

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<sup>1</sup> Office of Health & Environmental Assessment (OEHHA), 2003.

APPENDIX B  
Methodology for Health Risk Assessment

This was converted to grams/second/square meter (using a conversion factor of 1 short ton per year = 0.0287475637 g/s) then dividing the project area (0.93 acres = 3,763.58 m<sup>2</sup>), resulting in an emission rate of 3.94063E-07 g/s/m<sup>2</sup>.

This emission rate was entered into SCREEN3 with the same parameters as discussed above, resulting in a maximum 1-hour output of 2.672 µg/m<sup>3</sup>. The maximum 1-hour concentration from the SCREEN3 output was converted to an annual average concentration as discussed below.

The following methodology was used to calculate cancer risk and chronic health effects, as outlined in the BAAQMD's Screening Tables for Air Toxics Evaluation During Construction Version 1.0, May 2010:

Cancer risks were calculated following the OEHHA's *Air Toxics Hot Spots Program Risk Assessment Guidelines* (OEHHA 2003). For the purposes of this analysis, cancer risk was assumed to occur exclusively through the inhalation pathway. To estimate cancer risk, the inhalation dose was calculated using this equation and recommended OEHHA default values:

$$Dose = \frac{(C_{air})(DBR)(A)(EF)(ED)(1 \times 10^{-6})}{AT}$$

where

Dose = Dose through inhalation (mg/kg/d).

C<sub>air</sub> = Concentration in air (µg/m<sup>3</sup>), annual average from air dispersion model.

DBR = Daily breathing rate (L/kg body weight-day), 302.

A = Inhalation absorption factor, 1.

EF = Exposure frequency (250 days), from URBEMIS modeling.

ED = Exposure duration (1 year), from URBEMIS modeling.

1X 10<sup>-6</sup> = Micrograms to milligrams conversion.

AT = Averaging time, 25,550 days.

Using the inhalation dose, the cancer risk was estimated according to the following equation:

$$Cancer\ Risk = (Dose)(Cancer\ Potency)(1 \times 10^6)$$

where

Cancer Risk = Excess cancers per million people exposed

Dose = Dose through inhalation (mg/kg/d)

Cancer Potency = Cancer potency factor for substance (kg-day/mg) (1.1)

1 x 10<sup>6</sup> = Conversion factor

For cancer risk, the District has adopted OEHHA updated guidance for calculating cancer risk that accounts for the possible differences in risk associated with early-in-life exposures (OEHHA

APPENDIX B  
Methodology for Health Risk Assessment

2009). The OEHHA recommends using ASFs to weight exposures that occur early in life for prenatal, postnatal, and juvenile exposures such that a factor of 10 is used for the third trimester to age 2 years, and a factor of 3 for ages 2 through 15 years to account for potential increased sensitivity to carcinogens during childhood. For analysis purposes, the ASF applied to this project is 1.7.

The calculation of non-cancer risks was done following the OEHHA's *Air Toxics Hot Spots Program Risk Assessment Guidelines* (OEHHA 2003). Non-cancer risks were determined following the OEHHA methodology shown here:

*Step 1: Calculate the inhalation chronic hazard quotient for DPM.*

$$[\text{Chronic Hazard Quotient}] = \frac{[\text{Annual Avg. Concentration}]}{[\text{Chronic REL (5 for DPM)}]}$$

*Therefore:*

$$[\text{Chronic Hazard Quotient}] = \frac{0.30523}{5}$$

*Airborne DPM Concentrations*

The SCREEN3 air dispersion model was used to calculate the anticipated maximum 1-hour concentration of DPM at off-site sensitive receptor locations. This model conservatively assumes the worst case meteorology for assessing emission concentrations over time, and provides estimated concentrations at varying distances. The result of the SCREEN3 model for a 1-hour concentration was then scaled to derive an annual average ground-level concentration for the maximum exposed individual (MEI) calculated to occur at a distance of 70 meters (~230 feet) from the site, it should be noted that SCREEN3 automated distances were utilized and include distances from 20m to 1,000m as a conservative measure. In order to estimate the annual average concentration, the 1-hour concentration of DPM is multiplied first by a factor to convert the 1-hour concentration to an 8-hour concentration, then the 8-hour concentration is annualized based on the number of total hours of operation over the year are expected. This methodology is available in the *Air Toxics Hot Spots Program Risk Assessment Guidelines* published by the OEHHA (Appendix H).<sup>2</sup> The guideline states that the annual average concentration should be calculated as follows:

$$(\text{cannual}) = (\text{c1-hr})(0.5) (2000\text{hrs [8hoursper day} \times 250 \text{ days)}/8760\text{hrs [total hours per year]})$$

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<sup>2</sup> Office of Health & Environmental Assessment (OEHHA), 2003.

APPENDIX B  
Methodology for Health Risk Assessment

where

$C_{\text{annual}}$  = Concentration in air ( $\mu\text{g}/\text{m}^3$ ), annual average.

$C_{1\text{-hr}}$  = Concentration in air ( $\mu\text{g}/\text{m}^3$ ), as output by the SCREEN3 model ( $2.672 \mu\text{g}/\text{m}^3$ ).

Therefore:

$$(c_{\text{annual}}) = (2.672) (0.5) (2000\text{hrs}/8760\text{hrs})$$

$$(c_{\text{annual}}) = 0.305023$$

Since the construction equipment operates all over the site, for the purposes of this analysis, consistent with the BAAQMD's *Screening Tables for Air Toxics Evaluation During Construction Version 1.0, May 2010* guidance document, emissions are modeled as an area source encompassing the project site area. The SCREEN3 input parameters are shown in the following Table.

**SCREEN3 Input Parameters**

|                                     |   |             |
|-------------------------------------|---|-------------|
| Source Type                         | = | Area Source |
| Emission Rate (g/s/m <sup>2</sup> ) | = | 3.94063E-07 |
| Source Height (m)                   | = | 5.0         |
| Length of Side (m)                  | = | 61.3480     |
| Length of Side (m)                  | = | 61.3480     |
| Receptor Height (m)                 | = | 1.80        |
| Urban/Rural Option                  | = | Urban       |

$\text{g/s/m}^2$  = grams per second per meter squared

m = meters

Source: Urban Crossroads, Inc. 2011

#### *Health Risk to Adjacent Residences*

Consistent with BAAQMD's recommended methodology, OHHEA's inhalation cancer risk and inhalation chronic hazard equations were used to calculate the potential risks to sensitive receptors due to these construction-period concentrations of diesel particulate matter (DPM). The Health Risk Assessment (HRA) found that the maximum exposed individual could be exposed to the following health risk levels:

- **Acute Impacts:** The only TAC expected to be emitted in any substantial quantity is diesel exhaust particulate. 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 the rulemaking on *Identifying Particulate Emissions*

APPENDIX B  
Methodology for Health Risk Assessment

*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 lungs are 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. Therefore, the potential for short-term acute exposure from project-related toxic emissions would be less than significant.

- **Carcinogenic Impacts:** The results of the HRA indicated that the maximum exposed inhalation cancer risk over a 70 year averaging time would be an inhalation cancer risk of 0.95 in 1 million which does not exceed the threshold of 10 in 1 million. OEHHA age sensitivity factors (ASF) are used to add age-specific weighting factors in calculating cancer risks from exposures of infants, children and adolescents to reflect their special sensitivity to carcinogens. OEHHA recommends weighting cancer risk by a factor of 10 for exposures that occur from the third trimester of pregnancy to two years of age, by a factor of 3 for exposures that occur from two years through fifteen years of age, and by a factor of 1 for exposures that occur from fifteen through the full 70-year exposure.<sup>3</sup> The recommended ASF for lifetime exposure is 1.7. Applying these age sensitivity factors results in an averaged age sensitive inhalation cancer risk of 1.6 in 1 million. This risk level also does not exceed the threshold of 10 in a million and therefore the potential for increased cancer risk would be less than significant.
- **Chronic Impacts:** The results of the HRA indicate that the maximum chronic hazard index would be a chronic non-cancer inhalation index of 0.06, which is less than the threshold of an index of 1. Therefore, the potential for chronic exposure would be less than significant.

The analysis above assumes that the project would be subject to the City's SCA AIR-1, including the enhanced measures in order to ensure a less than significant impact.

**PM2.5 – Project Construction**

Total PM2.5 emissions from URBEMIS equal 0.048 short tons per year.

This was converted to grams/second/square meter (using a conversion factor of 1 short ton per year = 0.0287475637 g/s) then dividing the project area (0.93 acres = 3,763.58 m<sup>2</sup>), resulting in an emission rate of 4.425E-07 g/s/m<sup>2</sup>.

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<sup>3</sup> BAAQMD, Recommended Methods for Screening and Modeling Local Risks and Hazards, May 2010, pg. 60

## APPENDIX B Methodology for Health Risk Assessment

This emission rate was entered into SCREEN3 with the same parameters as discussed above, resulting in a maximum 1-hour output of  $2.481 \mu\text{g}/\text{m}^3$ .

The maximum 1-hour concentration from the SCREEN3 output was converted to an annual average concentration as discussed above; the resulting annual average concentration is  $0.28 \mu\text{g}/\text{m}^3$  which is less than the threshold of  $0.3 \mu\text{g}/\text{m}^3$ .

### **Toxic Air Contaminants – Project Operations**

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 vulnerable populations from the adverse health impacts of traffic-related emissions. The guidelines are not regulatory, nor are they binding on local agencies. Specifically, the 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 per day." Sensitive uses include residences, day care centers, playgrounds and medical facilities. The proposed project would place residential uses within approximately 60 feet of the nearest edge of the I-580 freeway. However, the CARB Air Quality Land Use Handbook 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 Handbook also acknowledges that the relative risk from site to site can vary greatly, and that to determine actual risk near a particular facility, a site-specific analysis (e.g., health risk assessment) is necessary.

### **Health Risk Assessment Conclusions**

According to California Air Resources Board (ARB), 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 non-cancer 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 multi-pathway cancer risk from the speciated components. For this reason, there will be few situations where an analysis of multi-pathway risk is necessary.

To estimate the potential cancer risk associated with diesel engine exhaust, a dispersion model is used to translate an emission rate from a source location to a concentration at a receptor

## APPENDIX B Methodology for Health Risk Assessment

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 USEPA dispersion model ISCST3. In addition to examining the risks from diesel exhaust particulate, this assessment includes the exhaust from gasoline-fueled vehicles. The analysis provides a detailed estimate of concentrations considering site and source geometry, source strength, distance to receptor, effects on plume distribution, and site specific meteorological data.

The Health Risk Assessment (HRA) found that future residents living at the project site would be exposed to the following health risk levels:

### *Carcinogenic Impacts*

The results of the HRA indicated that the maximum exposed individual (MEI) inhalation cancer risk associated with living at the proposed project for 70 years would be an inhalation cancer risk of 3.55 in 1,000,000, which is less than the threshold of 10 in 1,000,000. The inhalation cancer risk for 30-year exposure would be 1.53 in 1,000,000 and child risk levels (a nine-year exposure duration) would be 0.81 in 1,000,000. Therefore, the potential for carcinogenic exposure would be less than significant.

### *Acute Emission Impacts*

The only TAC expected to be emitted in any substantial quantity is diesel exhaust particulate. 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 the 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 lungs are 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. Therefore, the potential for short-term acute exposure from project-related toxic emissions would be less than significant.

### *Chronic Impacts*

The maximum chronic hazard index would be 0.00137 for the 70, 30, and 9 year exposure scenario. Therefore, the potential for chronic exposure would be less than significant.

## APPENDIX B Methodology for Health Risk Assessment

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 nine-year exposure scenario are for the first nine 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 nine-year exposure duration is higher than for the 30-year and 70-year (adult) exposure durations.

The modeling assumptions include individual inhalation of 100 percent outdoor air at that location for 70 years while residing outside the residence 350 days every year for 24-hours each day. The HRA results indicate an exposure 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 in California.

The HRA was conducted without the consideration of the proposed central ventilation/filtration system. This system, which is included as part of the project, would have a minimum efficiency reporting value (MERV) of 13, an efficiency consistent with the ASHRAE 52.2 standards.

Because individuals spend most of their time indoors, the addition of such an upgraded HVAC system (as required under SCA AIR-2 and AIR-3) would significantly improve indoor air quality in the dwelling units on the project site and further reduce the potential for any increased health risk.

### **PM2.5 – Project Operations**

The predicted PM2.5 exposure to future residents of the Project is estimated to be 0.00687  $\mu\text{g}/\text{m}^3$  which is less than the threshold of 0.3  $\mu\text{g}/\text{m}^3$

## ISCST3 Dispersion Model Output DPM Concentration

**A1**  
**RESIDENTIAL EXPOSURE SCENARIO (70-YEAR)**

| Source<br>(a) | Maximum Concentration |                | Weight Fraction<br>(d) | Contaminant<br>(e) | Carcinogenic Risk     |                           |             | Noncarcinogenic Hazards |                           |              |
|---------------|-----------------------|----------------|------------------------|--------------------|-----------------------|---------------------------|-------------|-------------------------|---------------------------|--------------|
|               | (ug/m3)<br>(b)        | (mg/m3)<br>(c) |                        |                    | URF<br>(ug/m3)<br>(f) | CPF<br>(mg/kg/day)<br>(g) | RISK<br>(h) | REL<br>(ug/m3)<br>(i)   | RfD<br>(mg/kg/day)<br>(j) | Index<br>(k) |
| Diesel        | 0.00687               | 6.9E-06        | 1.00E+00               | Particulates       | 3.0E-04               | 1.1E+00                   | 3.55        | 5.0E+00                 | 1.4E-03                   | 1.4E-03      |

E= 10<sup>X</sup>, i.e. E-02 = 10<sup>-2</sup>

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**A2**

**RESIDENTIAL EXPOSURE SCENARIO (30-YEAR)**

| Source<br>(a) | Maximum Concentration |                | Weight Fraction<br>(d) | Contaminant<br>(e) | Carcinogenic Risk     |                           |             | Noncarcinogenic Hazards |                           |              |
|---------------|-----------------------|----------------|------------------------|--------------------|-----------------------|---------------------------|-------------|-------------------------|---------------------------|--------------|
|               | (ug/m3)<br>(b)        | (mg/m3)<br>(c) |                        |                    | URF<br>(ug/m3)<br>(f) | CPF<br>(mg/kg/day)<br>(g) | RISK<br>(h) | REL<br>(ug/m3)<br>(i)   | RfD<br>(mg/kg/day)<br>(j) | Index<br>(k) |
| Diesel        | 0.00687               | 6.9E-06        | 1.00E+00               | Particulates       | 3.0E-04               | 1.1E+00                   | 1.52        | 5.0E+00                 | 1.4E-03                   | 1.4E-03      |

E= 10<sup>X</sup>, i.e. E-02 = 10<sup>-2</sup>

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**A3**

**RESIDENTIAL EXPOSURE SCENARIO (9-YEAR)**

| Source<br>(a) | Maximum Concentration |                | Weight Fraction<br>(d) | Contaminant<br>(e) | Carcinogenic Risk     |                           |             | Noncarcinogenic Hazards |                           |              |
|---------------|-----------------------|----------------|------------------------|--------------------|-----------------------|---------------------------|-------------|-------------------------|---------------------------|--------------|
|               | (ug/m3)<br>(b)        | (mg/m3)<br>(c) |                        |                    | URF<br>(ug/m3)<br>(f) | CPF<br>(mg/kg/day)<br>(g) | RISK<br>(h) | REL<br>(ug/m3)<br>(i)   | RfD<br>(mg/kg/day)<br>(j) | Index<br>(k) |
| Diesel        | 0.00687               | 6.9E-06        | 1.00E+00               | Particulates       | 3.0E-04               | 1.1E+00                   | 0.81        | 5.0E+00                 | 1.4E-03                   | 1.4E-03      |

E= 10<sup>X</sup>, i.e. E-02 = 10<sup>-2</sup>

U:\UcJobs\07100-07500\07100\07195\07195-HRA Tables.xls\A3

```

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** Lakes Environmental Software Inc.
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  AVERTIME ANNUAL
  POLLUTID DPM
  TERRHGTS FLAT
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  RUNORNOT RUN
CO FINISHED
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** ISCST3 Source Pathway
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** Line Source represented by Separated Volume Sources
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SURFDATA 1804 2000  
UAIRDATA 1804 2000  
ME FINISHED  
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\*\*\*\*\*  
\*\* ISCST3 Output Pathway  
\*\*\*\*\*  
\*\*  
\*\*

OU STARTING  
\*\* Auto-Generated Plotfiles  
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OU FINISHED

\*\*\*\*\*  
\*\*\* SETUP Finishes Successfully \*\*\*  
\*\*\*\*\*

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\*\*\*      15:50:38

\*\*MODELOPTs:

PAGE    1

CONC                      URBAN FLAT    FLGPOL

NOCALM                                    NOCMPL

\*\*\*      MODEL SETUP OPTIONS

SUMMARY      \*\*\*

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\*\*Simple Terrain Model is Selected

\*\*Model Is Setup For Calculation of Average CONCentration Values.

-- SCAVENGING/DEPOSITION LOGIC --

\*\*Model Uses NO DRY DEPLETION.    DDPLETE =    F

\*\*Model Uses NO WET DEPLETION.    WDPLETE =    F

\*\*NO WET SCAVENGING Data Provided.

\*\*NO GAS DRY DEPOSITION Data Provided.

\*\*Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations

\*\*Model Uses URBAN Dispersion.

\*\*Model Uses User-Specified Options:

1. Final Plume Rise.
2. Stack-tip Downwash.
3. Buoyancy-induced Dispersion.
4. Not Use Calms Processing Routine.
5. Not Use Missing Data Processing Routine.
6. Default Wind Profile Exponents.
7. Default Vertical Potential Temperature Gradients.

\*\*Model Assumes Receptors on FLAT Terrain.

\*\*Model Accepts FLAGPOLE Receptor Heights.

\*\*Model Calculates ANNUAL Averages Only

\*\*This Run Includes:      18 Source(s);      1 Source Group(s); and      74  
Receptor(s)

\*\*The Model Assumes A Pollutant Type of:    DPM

\*\*Model Set To Continue RUNning After the Setup Testing.

\*\*Output Options Selected:

Model Outputs Tables of ANNUAL Averages by Receptor

Model Outputs External File(s) of High Values for Plotting

(PLOTFILE Keyword)

\*\*Misc. Inputs: Anem. Hgt. (m) = 10.00 ; Decay Coef. = 0.000  
; Rot. Angle = 0.0  
Emission Units = GRAMS/SEC  
; Emission Rate Unit Factor = 0.10000E+07  
Output Units = MICROGRAMS/M\*\*3

\*\*Approximate Storage Requirements of Model = 1.2 MB of RAM.

\*\*Input Runstream File: DPM.INP

\*\*Output Print File: DPM.OUT

| NUMBER EMISSION RATE |          |               |      |          |           | BASE     | RELEASE  |
|----------------------|----------|---------------|------|----------|-----------|----------|----------|
| INIT.                | INIT.    | EMISSION RATE |      |          |           |          |          |
| SOURCE               | PART.    | (GRAMS/SEC)   |      | X        | Y         | ELEV.    | HEIGHT   |
| SY                   | SZ       | SCALAR        | VARY |          |           |          |          |
| ID                   | CATS.    |               |      | (METERS) | (METERS)  | (METERS) | (METERS) |
| (METERS)             | (METERS) |               | BY   |          |           |          |          |
| -----                |          |               |      |          |           |          |          |
| -----                |          |               |      |          |           |          |          |
| L0000001             | 0        | 0.26667E-04   |      | 571299.9 | 4182219.0 | 0.0      | 3.00     |
| 27.77                | 6.15     |               |      |          |           |          |          |
| L0000002             | 0        | 0.26667E-04   |      | 571243.1 | 4182237.5 | 0.0      | 3.00     |
| 27.77                | 6.15     |               |      |          |           |          |          |
| L0000003             | 0        | 0.26667E-04   |      | 571186.3 | 4182256.0 | 0.0      | 3.00     |
| 27.77                | 6.15     |               |      |          |           |          |          |
| L0000004             | 0        | 0.26667E-04   |      | 571129.6 | 4182274.8 | 0.0      | 3.00     |
| 27.77                | 6.15     |               |      |          |           |          |          |
| L0000005             | 0        | 0.26667E-04   |      | 571074.5 | 4182297.5 | 0.0      | 3.00     |
| 27.77                | 6.15     |               |      |          |           |          |          |
| L0000006             | 0        | 0.26667E-04   |      | 571020.4 | 4182322.8 | 0.0      | 3.00     |
| 27.77                | 6.15     |               |      |          |           |          |          |
| L0000007             | 0        | 0.26667E-04   |      | 570967.9 | 4182351.3 | 0.0      | 3.00     |
| 27.77                | 6.15     |               |      |          |           |          |          |
| L0000008             | 0        | 0.26667E-04   |      | 570916.1 | 4182380.8 | 0.0      | 3.00     |
| 27.77                | 6.15     |               |      |          |           |          |          |
| L0000009             | 0        | 0.26667E-04   |      | 570865.1 | 4182411.8 | 0.0      | 3.00     |
| 27.77                | 6.15     |               |      |          |           |          |          |
| L0000010             | 0        | 0.26667E-04   |      | 570815.4 | 4182445.0 | 0.0      | 3.00     |
| 27.77                | 6.15     |               |      |          |           |          |          |
| L0000011             | 0        | 0.26667E-04   |      | 570765.1 | 4182477.0 | 0.0      | 3.00     |
| 27.77                | 6.15     |               |      |          |           |          |          |
| L0000012             | 0        | 0.26667E-04   |      | 570714.8 | 4182509.3 | 0.0      | 3.00     |
| 27.77                | 6.15     |               |      |          |           |          |          |
| L0000013             | 0        | 0.26667E-04   |      | 570664.4 | 4182541.3 | 0.0      | 3.00     |
| 27.77                | 6.15     |               |      |          |           |          |          |
| L0000014             | 0        | 0.26667E-04   |      | 570613.9 | 4182573.3 | 0.0      | 3.00     |
| 27.77                | 6.15     |               |      |          |           |          |          |
| L0000015             | 0        | 0.26667E-04   |      | 570563.8 | 4182605.8 | 0.0      | 3.00     |
| 27.77                | 6.15     |               |      |          |           |          |          |

|          |      |             |          |           |     |      |
|----------|------|-------------|----------|-----------|-----|------|
| L0000016 | 0    | 0.26667E-04 | 570513.8 | 4182638.3 | 0.0 | 3.00 |
| 27.77    | 6.15 |             |          |           |     |      |
| L0000017 | 0    | 0.26667E-04 | 570467.9 | 4182676.3 | 0.0 | 3.00 |
| 27.77    | 6.15 |             |          |           |     |      |
| L0000018 | 0    | 0.26667E-04 | 570423.6 | 4182716.3 | 0.0 | 3.00 |
| 27.77    | 6.15 |             |          |           |     |      |

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\*\*MODELOPTs:

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CONC URBAN FLAT FLGPOL

NOCALM NOCMPL

\*\*\* SOURCE IDs DEFINING SOURCE

GROUPS \*\*\*

GROUP ID

SOURCE IDs

ALL L0000001, L0000002, L0000003, L0000004, L0000005, L0000006,  
L0000007, L0000008, L0000009, L0000010, L0000011, L0000012,

L0000013, L0000014, L0000015, L0000016, L0000017, L0000018,

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\*\*MODELOPTs:

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CONC

URBAN FLAT FLGPOL

NOCALM

NOCMPL

\*\*\* DISCRETE CARTESIAN

RECEPTORS \*\*\*

(X-COORD, Y-COORD, ZELEV,

ZFLAG)

(METERS)

|                                   |             |
|-----------------------------------|-------------|
| ( 570932.0, 4182414.5, 0.0, 1.5); | ( 570940.1, |
| 4182414.5, 0.0, 1.5);             |             |
| ( 570923.9, 4182421.5, 0.0, 1.5); | ( 570932.0, |
| 4182421.5, 0.0, 1.5);             |             |
| ( 570940.1, 4182421.5, 0.0, 1.5); | ( 570907.8, |
| 4182428.3, 0.0, 1.5);             |             |
| ( 570915.8, 4182428.3, 0.0, 1.5); | ( 570923.9, |
| 4182428.3, 0.0, 1.5);             |             |
| ( 570932.0, 4182428.3, 0.0, 1.5); | ( 570940.1, |
| 4182428.3, 0.0, 1.5);             |             |
| ( 570899.7, 4182435.3, 0.0, 1.5); | ( 570907.8, |
| 4182435.3, 0.0, 1.5);             |             |
| ( 570915.8, 4182435.3, 0.0, 1.5); | ( 570923.9, |
| 4182435.3, 0.0, 1.5);             |             |
| ( 570932.0, 4182435.3, 0.0, 1.5); | ( 570883.5, |
| 4182442.0, 0.0, 1.5);             |             |
| ( 570891.6, 4182442.0, 0.0, 1.5); | ( 570899.7, |
| 4182442.0, 0.0, 1.5);             |             |
| ( 570907.8, 4182442.0, 0.0, 1.5); | ( 570915.8, |
| 4182442.0, 0.0, 1.5);             |             |
| ( 570923.9, 4182442.0, 0.0, 1.5); | ( 570875.4, |
| 4182449.0, 0.0, 1.5);             |             |
| ( 570883.5, 4182449.0, 0.0, 1.5); | ( 570891.6, |
| 4182449.0, 0.0, 1.5);             |             |
| ( 570899.7, 4182449.0, 0.0, 1.5); | ( 570907.8, |
| 4182449.0, 0.0, 1.5);             |             |
| ( 570915.8, 4182449.0, 0.0, 1.5); | ( 570923.9, |
| 4182449.0, 0.0, 1.5);             |             |
| ( 570875.4, 4182455.8, 0.0, 1.5); | ( 570883.5, |
| 4182455.8, 0.0, 1.5);             |             |
| ( 570891.6, 4182455.8, 0.0, 1.5); | ( 570899.7, |
| 4182455.8, 0.0, 1.5);             |             |
| ( 570907.8, 4182455.8, 0.0, 1.5); | ( 570915.8, |
| 4182455.8, 0.0, 1.5);             |             |
| ( 570923.9, 4182455.8, 0.0, 1.5); | ( 570843.1, |
| 4182462.8, 0.0, 1.5);             |             |
| ( 570851.2, 4182462.8, 0.0, 1.5); | ( 570859.3, |
| 4182462.8, 0.0, 1.5);             |             |

|                        |      |       |             |
|------------------------|------|-------|-------------|
| ( 570867.4, 4182462.8, | 0.0, | 1.5); | ( 570875.4, |
| 4182462.8,             | 0.0, | 1.5); |             |
| ( 570883.5, 4182462.8, | 0.0, | 1.5); | ( 570891.6, |
| 4182462.8,             | 0.0, | 1.5); |             |
| ( 570899.7, 4182462.8, | 0.0, | 1.5); | ( 570907.8, |
| 4182462.8,             | 0.0, | 1.5); |             |
| ( 570915.8, 4182462.8, | 0.0, | 1.5); | ( 570843.1, |
| 4182469.5,             | 0.0, | 1.5); |             |
| ( 570851.2, 4182469.5, | 0.0, | 1.5); | ( 570859.3, |
| 4182469.5,             | 0.0, | 1.5); |             |
| ( 570867.4, 4182469.5, | 0.0, | 1.5); | ( 570875.4, |
| 4182469.5,             | 0.0, | 1.5); |             |
| ( 570883.5, 4182469.5, | 0.0, | 1.5); | ( 570891.6, |
| 4182469.5,             | 0.0, | 1.5); |             |
| ( 570899.7, 4182469.5, | 0.0, | 1.5); | ( 570907.8, |
| 4182469.5,             | 0.0, | 1.5); |             |
| ( 570915.8, 4182469.5, | 0.0, | 1.5); | ( 570851.2, |
| 4182476.5,             | 0.0, | 1.5); |             |
| ( 570859.3, 4182476.5, | 0.0, | 1.5); | ( 570867.4, |
| 4182476.5,             | 0.0, | 1.5); |             |
| ( 570875.4, 4182476.5, | 0.0, | 1.5); | ( 570883.5, |
| 4182476.5,             | 0.0, | 1.5); |             |
| ( 570891.6, 4182476.5, | 0.0, | 1.5); | ( 570899.7, |
| 4182476.5,             | 0.0, | 1.5); |             |
| ( 570907.8, 4182476.5, | 0.0, | 1.5); | ( 570859.3, |
| 4182483.3,             | 0.0, | 1.5); |             |
| ( 570867.4, 4182483.3, | 0.0, | 1.5); | ( 570875.4, |
| 4182483.3,             | 0.0, | 1.5); |             |
| ( 570883.5, 4182483.3, | 0.0, | 1.5); | ( 570891.6, |
| 4182483.3,             | 0.0, | 1.5); |             |
| ( 570899.7, 4182483.3, | 0.0, | 1.5); | ( 570875.4, |
| 4182490.3,             | 0.0, | 1.5); |             |
| ( 570883.5, 4182490.3, | 0.0, | 1.5); | ( 570891.6, |
| 4182490.3,             | 0.0, | 1.5); |             |
| ( 570883.5, 4182497.0, | 0.0, | 1.5); | ( 570891.6, |
| 4182497.0,             | 0.0, | 1.5); |             |

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\*\*MODELOPTs:

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CONC                      URBAN FLAT    FLGPOL

NOCALM                                      NOCMPL

                                 \* SOURCE-RECEPTOR COMBINATIONS FOR WHICH  
 CALCULATIONS MAY NOT BE PERFORMED \*  
                                  LESS THAN 1.0 METER OR 3\*ZLB IN DISTANCE, OR  
 WITHIN OPEN PIT SOURCE

|           | SOURCE    | - - RECEPTOR LOCATION - - |             |
|-----------|-----------|---------------------------|-------------|
| DISTANCE  | ID        | XR (METERS)               | YR (METERS) |
| (METERS)  |           |                           |             |
| - - - - - | - - - - - | - - - - -                 | - - - - -   |
|           | L0000008  | 570932.0                  | 4182414.5   |
| -22.41    | L0000008  | 570940.1                  | 4182414.5   |
| -18.33    | L0000008  | 570923.9                  | 4182421.5   |
| -18.21    | L0000008  | 570932.0                  | 4182421.5   |
| -15.97    | L0000008  | 570940.1                  | 4182421.5   |
| -12.44    | L0000008  | 570907.8                  | 4182428.3   |
| -11.47    | L0000008  | 570915.8                  | 4182428.3   |
| -12.20    | L0000008  | 570923.9                  | 4182428.3   |
| -11.57    | L0000008  | 570932.0                  | 4182428.3   |
| -9.62     | L0000008  | 570940.1                  | 4182428.3   |
| -6.51     | L0000008  | 570899.7                  | 4182435.3   |
| -2.78     | L0000008  | 570907.8                  | 4182435.3   |
| -4.57     | L0000008  | 570915.8                  | 4182435.3   |
| -5.20     | L0000008  | 570923.9                  | 4182435.3   |
| -4.65     | L0000008  | 570932.0                  | 4182435.3   |
| -2.94     | L0000009  | 570923.9                  | 4182421.5   |
| -0.03     |           |                           |             |

|        |          |          |           |
|--------|----------|----------|-----------|
| -13.94 | L0000009 | 570907.8 | 4182428.3 |
| -6.34  | L0000009 | 570915.8 | 4182428.3 |
| -17.86 | L0000009 | 570899.7 | 4182435.3 |
| -10.98 | L0000009 | 570907.8 | 4182435.3 |
| -3.78  | L0000009 | 570915.8 | 4182435.3 |
| -24.28 | L0000009 | 570883.5 | 4182442.0 |
| -19.49 | L0000009 | 570891.6 | 4182442.0 |
| -13.73 | L0000009 | 570899.7 | 4182442.0 |
| -7.39  | L0000009 | 570907.8 | 4182442.0 |
| -0.62  | L0000009 | 570915.8 | 4182442.0 |
| -21.04 | L0000009 | 570875.4 | 4182449.0 |
| -18.14 | L0000009 | 570883.5 | 4182449.0 |
| -13.99 | L0000009 | 570891.6 | 4182449.0 |
| -8.85  | L0000009 | 570899.7 | 4182449.0 |
| -3.05  | L0000009 | 570907.8 | 4182449.0 |
| -14.50 | L0000009 | 570875.4 | 4182455.8 |
| -12.00 | L0000009 | 570883.5 | 4182455.8 |
| -8.34  | L0000009 | 570891.6 | 4182455.8 |
| -3.72  | L0000009 | 570899.7 | 4182455.8 |
| -4.19  | L0000009 | 570843.1 | 4182462.8 |
| -6.85  | L0000009 | 570851.2 | 4182462.8 |
| -8.38  | L0000009 | 570859.3 | 4182462.8 |
| -8.65  | L0000009 | 570867.4 | 4182462.8 |
| -7.66  | L0000009 | 570875.4 | 4182462.8 |

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\*\*MODELOPTs:

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CONC                      URBAN FLAT    FLGPOL

NOCALM                                      NOCMPL

                                 \* SOURCE-RECEPTOR COMBINATIONS FOR WHICH  
 CALCULATIONS MAY NOT BE PERFORMED \*  
                                  LESS THAN 1.0 METER OR 3\*ZLB IN DISTANCE, OR  
 WITHIN OPEN PIT SOURCE

| DISTANCE  | SOURCE    | - - RECEPTOR LOCATION - -  |
|-----------|-----------|----------------------------|
| (METERS)  | ID        | XR (METERS)    YR (METERS) |
| - - - - - | - - - - - | - - - - -                  |
| -5.48     | L0000009  | 570883.5    4182462.8      |
| -2.23     | L0000009  | 570891.6    4182462.8      |
| -0.31     | L0000009  | 570851.2    4182469.5      |
| -1.66     | L0000009  | 570859.3    4182469.5      |
| -1.91     | L0000009  | 570867.4    4182469.5      |
| -1.03     | L0000009  | 570875.4    4182469.5      |
| 0.92      | L0000009  | 570883.5    4182469.5      |
| 0.43      | L0000010  | 570875.4    4182449.0      |
| -26.82    | L0000010  | 570843.1    4182462.8      |
| -19.79    | L0000010  | 570851.2    4182462.8      |
| -12.43    | L0000010  | 570859.3    4182462.8      |
| -4.82     | L0000010  | 570867.4    4182462.8      |
| -22.73    | L0000010  | 570843.1    4182469.5      |
| -16.37    | L0000010  | 570851.2    4182469.5      |
| -9.51     | L0000010  | 570859.3    4182469.5      |
| -2.28     | L0000010  | 570867.4    4182469.5      |

|        |          |          |           |
|--------|----------|----------|-----------|
| -12.06 | L0000010 | 570851.2 | 4182476.5 |
| -5.74  | L0000010 | 570859.3 | 4182476.5 |
| -1.55  | L0000010 | 570859.3 | 4182483.3 |

| STABILITY  |            | WIND SPEED CATEGORY |            |
|------------|------------|---------------------|------------|
| CATEGORY   | 1          | 2                   | 3          |
| 4          | 5          | 6                   |            |
|            | A          | .15000E+00          | .15000E+00 |
| .15000E+00 | .15000E+00 | .15000E+00          |            |

|            |            |            |            |            |
|------------|------------|------------|------------|------------|
|            | B          | .15000E+00 | .15000E+00 | .15000E+00 |
| .15000E+00 | .15000E+00 | .15000E+00 |            |            |
|            | C          | .20000E+00 | .20000E+00 | .20000E+00 |
| .20000E+00 | .20000E+00 | .20000E+00 |            |            |
|            | D          | .25000E+00 | .25000E+00 | .25000E+00 |
| .25000E+00 | .25000E+00 | .25000E+00 |            |            |
|            | E          | .30000E+00 | .30000E+00 | .30000E+00 |
| .30000E+00 | .30000E+00 | .30000E+00 |            |            |
|            | F          | .30000E+00 | .30000E+00 | .30000E+00 |
| .30000E+00 | .30000E+00 | .30000E+00 |            |            |

\*\*\* VERTICAL POTENTIAL

TEMPERATURE GRADIENTS \*\*\*

(DEGREES KELVIN PER

METER)

|            | STABILITY<br>CATEGORY | 1          | 2          | WIND SPEED CATEGORY<br>3 |
|------------|-----------------------|------------|------------|--------------------------|
| 4          | 5                     | 6          |            |                          |
|            | A                     | .00000E+00 | .00000E+00 | .00000E+00               |
| .00000E+00 | .00000E+00            | .00000E+00 |            |                          |
|            | B                     | .00000E+00 | .00000E+00 | .00000E+00               |
| .00000E+00 | .00000E+00            | .00000E+00 |            |                          |
|            | C                     | .00000E+00 | .00000E+00 | .00000E+00               |
| .00000E+00 | .00000E+00            | .00000E+00 |            |                          |
|            | D                     | .00000E+00 | .00000E+00 | .00000E+00               |
| .00000E+00 | .00000E+00            | .00000E+00 |            |                          |
|            | E                     | .20000E-01 | .20000E-01 | .20000E-01               |
| .20000E-01 | .20000E-01            | .20000E-01 |            |                          |
|            | F                     | .35000E-01 | .35000E-01 | .35000E-01               |
| .35000E-01 | .35000E-01            | .35000E-01 |            |                          |

05/09/11

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**MODELOPTs:

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NOCALM

YEAR: 2000

|        |        |     |    | FLOW    | SPEED  | TEMP  | STAB  | MIXING | HEIGHT (M) | USTAR  | M-O |
|--------|--------|-----|----|---------|--------|-------|-------|--------|------------|--------|-----|
| LENGTH |        |     |    | Z-0     | IPCODE | PRATE |       |        |            |        |     |
| YR     | MN     | DAY | HR | VECTOR  | (M/S)  | (K)   | CLASS | RURAL  | URBAN      | (M/S)  | (M) |
| (M)    |        |     |    | (mm/HR) |        |       |       |        |            |        |     |
| 00     | 01     | 01  | 01 | 3.0     | 2.55   | 283.5 | 4     | 300.0  | 300.0      | 0.0000 |     |
| 0.0    | 0.0000 |     |    | 0       | 0.00   |       |       |        |            |        |     |
| 00     | 01     | 01  | 02 | 355.0   | 1.83   | 283.3 | 5     | 300.0  | 300.0      | 0.0000 |     |
| 0.0    | 0.0000 |     |    | 0       | 0.00   |       |       |        |            |        |     |
| 00     | 01     | 01  | 03 | 94.5    | 1.97   | 283.2 | 6     | 300.0  | 300.0      | 0.0000 |     |
| 0.0    | 0.0000 |     |    | 0       | 0.00   |       |       |        |            |        |     |
| 00     | 01     | 01  | 04 | 152.6   | 3.89   | 282.3 | 5     | 300.0  | 300.0      | 0.0000 |     |
| 0.0    | 0.0000 |     |    | 0       | 0.00   |       |       |        |            |        |     |
| 00     | 01     | 01  | 05 | 164.1   | 4.47   | 281.8 | 4     | 300.0  | 300.0      | 0.0000 |     |
| 0.0    | 0.0000 |     |    | 0       | 0.00   |       |       |        |            |        |     |
| 00     | 01     | 01  | 06 | 172.0   | 5.01   | 281.9 | 4     | 300.0  | 300.0      | 0.0000 |     |
| 0.0    | 0.0000 |     |    | 0       | 0.00   |       |       |        |            |        |     |
| 00     | 01     | 01  | 07 | 178.7   | 2.73   | 282.0 | 4     | 300.0  | 300.0      | 0.0000 |     |
| 0.0    | 0.0000 |     |    | 0       | 0.00   |       |       |        |            |        |     |
| 00     | 01     | 01  | 08 | 148.7   | 2.19   | 282.0 | 4     | 300.0  | 300.0      | 0.0000 |     |
| 0.0    | 0.0000 |     |    | 0       | 0.00   |       |       |        |            |        |     |
| 00     | 01     | 01  | 09 | 133.5   | 2.37   | 281.8 | 4     | 300.0  | 300.0      | 0.0000 |     |
| 0.0    | 0.0000 |     |    | 0       | 0.00   |       |       |        |            |        |     |
| 00     | 01     | 01  | 10 | 153.8   | 1.92   | 282.0 | 3     | 300.0  | 300.0      | 0.0000 |     |
| 0.0    | 0.0000 |     |    | 0       | 0.00   |       |       |        |            |        |     |
| 00     | 01     | 01  | 11 | 351.9   | 1.25   | 282.8 | 2     | 300.0  | 300.0      | 0.0000 |     |
| 0.0    | 0.0000 |     |    | 0       | 0.00   |       |       |        |            |        |     |
| 00     | 01     | 01  | 12 | 53.1    | 2.15   | 283.1 | 1     | 300.0  | 300.0      | 0.0000 |     |
| 0.0    | 0.0000 |     |    | 0       | 0.00   |       |       |        |            |        |     |
| 00     | 01     | 01  | 13 | 112.2   | 2.59   | 282.9 | 2     | 300.0  | 300.0      | 0.0000 |     |
| 0.0    | 0.0000 |     |    | 0       | 0.00   |       |       |        |            |        |     |

|             |       |      |       |   |       |       |        |
|-------------|-------|------|-------|---|-------|-------|--------|
| 00 01 01 14 | 127.9 | 1.92 | 283.3 | 3 | 300.0 | 300.0 | 0.0000 |
| 0.0 0.0000  | 0     | 0.00 |       |   |       |       |        |
| 00 01 01 15 | 104.2 | 1.70 | 284.3 | 2 | 300.0 | 300.0 | 0.0000 |
| 0.0 0.0000  | 0     | 0.00 |       |   |       |       |        |
| 00 01 01 16 | 125.0 | 7.29 | 284.5 | 3 | 300.0 | 300.0 | 0.0000 |
| 0.0 0.0000  | 0     | 0.00 |       |   |       |       |        |
| 00 01 01 17 | 119.0 | 8.72 | 284.6 | 4 | 300.0 | 300.0 | 0.0000 |
| 0.0 0.0000  | 0     | 0.00 |       |   |       |       |        |
| 00 01 01 18 | 126.9 | 7.64 | 284.0 | 4 | 300.0 | 300.0 | 0.0000 |
| 0.0 0.0000  | 0     | 0.00 |       |   |       |       |        |
| 00 01 01 19 | 130.0 | 6.97 | 283.8 | 4 | 300.0 | 300.0 | 0.0000 |
| 0.0 0.0000  | 0     | 0.00 |       |   |       |       |        |
| 00 01 01 20 | 124.8 | 5.99 | 283.6 | 4 | 300.0 | 300.0 | 0.0000 |
| 0.0 0.0000  | 0     | 0.00 |       |   |       |       |        |
| 00 01 01 21 | 111.9 | 5.50 | 283.4 | 4 | 300.0 | 300.0 | 0.0000 |
| 0.0 0.0000  | 0     | 0.00 |       |   |       |       |        |
| 00 01 01 22 | 126.9 | 5.10 | 283.0 | 4 | 300.0 | 300.0 | 0.0000 |
| 0.0 0.0000  | 0     | 0.00 |       |   |       |       |        |
| 00 01 01 23 | 133.0 | 6.44 | 282.8 | 4 | 300.0 | 300.0 | 0.0000 |
| 0.0 0.0000  | 0     | 0.00 |       |   |       |       |        |
| 00 01 01 24 | 155.4 | 4.74 | 282.3 | 4 | 300.0 | 300.0 | 0.0000 |
| 0.0 0.0000  | 0     | 0.00 |       |   |       |       |        |

\*\*\* NOTES: STABILITY CLASS 1=A, 2=B, 3=C, 4=D, 5=E AND 6=F.  
FLOW VECTOR IS DIRECTION TOWARD WHICH WIND IS BLOWING.

05/09/11

**\*\*MODELOPTS:**

CONC                                  URBAN FLAT    FLGPOL

\*\*\* THE ANNUAL ( 1 YRS) AVERAGE

INCLUDING SOURCE(S) : L0000001,

\*\*\* DISCRETE CARTESIAN

MICROGRAMS/M\*\*3

\*\* CONC OF DPM IN  
\*\*

| (M)       | X-COORD (M) | Y-COORD (M) | CONC | X-COORD |
|-----------|-------------|-------------|------|---------|
| 570932.00 | 4182414.50  | 0.00609     |      |         |
| 570940.06 | 4182414.50  | 0.00615     |      |         |
| 570923.94 | 4182421.50  | 0.00479     |      |         |
| 570932.00 | 4182421.50  | 0.00608     |      |         |
| 570940.06 | 4182421.50  | 0.00618     |      |         |
| 570907.75 | 4182428.25  | 0.00495     |      |         |
| 570915.81 | 4182428.25  | 0.00485     |      |         |
| 570923.94 | 4182428.25  | 0.00547     |      |         |
| 570932.00 | 4182428.25  | 0.00604     |      |         |
| 570940.06 | 4182428.25  | 0.00611     |      |         |
| 570899.69 | 4182435.25  | 0.00507     |      |         |
| 570907.75 | 4182435.25  | 0.00493     |      |         |
| 570915.81 | 4182435.25  | 0.00480     |      |         |
| 570923.94 | 4182435.25  | 0.00564     |      |         |
| 570932.00 | 4182435.25  | 0.00596     |      |         |
| 570883.50 | 4182442.00  | 0.00613     |      |         |
| 570891.56 | 4182442.00  | 0.00605     |      |         |
| 570899.69 | 4182442.00  | 0.00579     |      |         |
| 570907.75 | 4182442.00  | 0.00549     |      |         |
| 570915.81 | 4182442.00  | 0.00528     |      |         |
| 570923.94 | 4182442.00  | 0.00639     |      |         |
| 570875.44 | 4182449.00  | 0.00478     |      |         |
| 570883.50 | 4182449.00  | 0.00615     |      |         |
| 570891.56 | 4182449.00  | 0.00619     |      |         |
| 570899.69 | 4182449.00  | 0.00604     |      |         |
| 570907.75 | 4182449.00  | 0.00588     |      |         |
| 570915.81 | 4182449.00  | 0.00653     |      |         |
| 570923.94 | 4182449.00  | 0.00681     |      |         |

|           |            |            |         |
|-----------|------------|------------|---------|
|           | 570875.44  | 4182455.75 | 0.00541 |
| 570883.50 | 4182455.75 | 0.00610    |         |
|           | 570891.56  | 4182455.75 | 0.00615 |
| 570899.69 | 4182455.75 | 0.00605    |         |
|           | 570907.75  | 4182455.75 | 0.00646 |
| 570915.81 | 4182455.75 | 0.00681    |         |
|           | 570923.94  | 4182455.75 | 0.00687 |
| 570843.13 | 4182462.75 | 0.00515    |         |
|           | 570851.19  | 4182462.75 | 0.00503 |
| 570859.25 | 4182462.75 | 0.00491    |         |
|           | 570867.38  | 4182462.75 | 0.00480 |
| 570875.44 | 4182462.75 | 0.00561    |         |
|           | 570883.50  | 4182462.75 | 0.00601 |
| 570891.56 | 4182462.75 | 0.00605    |         |
|           | 570899.69  | 4182462.75 | 0.00658 |
| 570907.75 | 4182462.75 | 0.00680    |         |
|           | 570915.81  | 4182462.75 | 0.00683 |
| 570843.13 | 4182469.50 | 0.00572    |         |
|           | 570851.19  | 4182469.50 | 0.00501 |
| 570859.25 | 4182469.50 | 0.00487    |         |
|           | 570867.38  | 4182469.50 | 0.00474 |
| 570875.44 | 4182469.50 | 0.00568    |         |
|           | 570883.50  | 4182469.50 | 0.00592 |
| 570891.56 | 4182469.50 | 0.00677    |         |
|           | 570899.69  | 4182469.50 | 0.00683 |
| 570907.75 | 4182469.50 | 0.00680    |         |
|           | 570915.81  | 4182469.50 | 0.00668 |
| 570851.19 | 4182476.50 | 0.00590    |         |
|           | 570859.25  | 4182476.50 | 0.00571 |
| 570867.38 | 4182476.50 | 0.00605    |         |
|           | 570875.44  | 4182476.50 | 0.00668 |
| 570883.50 | 4182476.50 | 0.00685    |         |
|           | 570891.56  | 4182476.50 | 0.00685 |
| 570899.69 | 4182476.50 | 0.00675    |         |
|           | 570907.75  | 4182476.50 | 0.00661 |
| 570859.25 | 4182483.25 | 0.00586    |         |
|           | 570867.38  | 4182483.25 | 0.00664 |
| 570875.44 | 4182483.25 | 0.00685    |         |
|           | 570883.50  | 4182483.25 | 0.00681 |
| 570891.56 | 4182483.25 | 0.00671    |         |
|           | 570899.69  | 4182483.25 | 0.00656 |
| 570875.44 | 4182490.25 | 0.00678    |         |
|           | 570883.50  | 4182490.25 | 0.00665 |
| 570891.56 | 4182490.25 | 0.00649    |         |
|           | 570883.50  | 4182497.00 | 0.00643 |
| 570891.56 | 4182497.00 | 0.00624    |         |

\*\*\* ISCST3 - VERSION 02035 \*\*\*      \*\*\* C:\Documents and  
 Settings\hqureshi\Desktop\07195 HRA\7195\DPM.isc      \*\*\*      05/09/11  
                                          \*\*\*

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\*\*MODELOPTs:

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CONC                            URBAN FLAT    FLGPOL

NOCALM                                            NOCMPL

\*\*\* THE SUMMARY OF MAXIMUM

ANNUAL (    1 YRS) RESULTS \*\*\*

MICROGRAMS/M\*\*3                            \*\* CONC OF DPM            IN  
                                          \*\*

| NETWORK<br>GROUP ID<br>YR, ZELEV, ZFLAG) | OF TYPE               | AVERAGE CONC<br>GRID-ID | RECEPTOR (XR,          |
|------------------------------------------|-----------------------|-------------------------|------------------------|
| ALL                                      | 1ST HIGHEST VALUE IS  | 0.00687 AT (            | 570923.94, 4182455.75, |
| 0.00,                                    | 1.50) DC NA           |                         |                        |
|                                          | 2ND HIGHEST VALUE IS  | 0.00685 AT (            | 570875.44, 4182483.25, |
| 0.00,                                    | 1.50) DC NA           |                         |                        |
|                                          | 3RD HIGHEST VALUE IS  | 0.00685 AT (            | 570891.56, 4182476.50, |
| 0.00,                                    | 1.50) DC NA           |                         |                        |
|                                          | 4TH HIGHEST VALUE IS  | 0.00685 AT (            | 570883.50, 4182476.50, |
| 0.00,                                    | 1.50) DC NA           |                         |                        |
|                                          | 5TH HIGHEST VALUE IS  | 0.00683 AT (            | 570899.69, 4182469.50, |
| 0.00,                                    | 1.50) DC NA           |                         |                        |
|                                          | 6TH HIGHEST VALUE IS  | 0.00683 AT (            | 570915.81, 4182462.75, |
| 0.00,                                    | 1.50) DC NA           |                         |                        |
|                                          | 7TH HIGHEST VALUE IS  | 0.00681 AT (            | 570883.50, 4182483.25, |
| 0.00,                                    | 1.50) DC NA           |                         |                        |
|                                          | 8TH HIGHEST VALUE IS  | 0.00681 AT (            | 570915.81, 4182455.75, |
| 0.00,                                    | 1.50) DC NA           |                         |                        |
|                                          | 9TH HIGHEST VALUE IS  | 0.00681 AT (            | 570923.94, 4182449.00, |
| 0.00,                                    | 1.50) DC NA           |                         |                        |
|                                          | 10TH HIGHEST VALUE IS | 0.00680 AT (            | 570907.75, 4182462.75, |
| 0.00,                                    | 1.50) DC NA           |                         |                        |

\*\*\* RECEPTOR TYPES:    GC = GRIDCART  
                              GP = GRIDPOLR  
                              DC = DISCCART  
                              DP = DISCPOLR  
                              BD = BOUNDARY

\*\*\* ISCST3 - VERSION 02035 \*\*\* \*\*\* C:\Documents and  
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\*\*\*

05/09/11

\*\*\* 15:50:38

\*\*MODELOPTs:

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CONC URBAN FLAT FLGPOL

NOCALM NOCMPL

\*\*\* Message Summary : ISCST3 Model Execution \*\*\*

----- Summary of Total Messages -----

A Total of 0 Fatal Error Message(s)  
A Total of 0 Warning Message(s)  
A Total of 4 Informational Message(s)  
  
A Total of 4 Calm Hours Identified

\*\*\*\*\* FATAL ERROR MESSAGES \*\*\*\*\*  
\*\*\* NONE \*\*\*

\*\*\*\*\* WARNING MESSAGES \*\*\*\*\*  
\*\*\* NONE \*\*\*

\*\*\*\*\*  
\*\*\* ISCST3 Finishes Successfully \*\*\*  
\*\*\*\*\*

## BGM & GHG CALCULATIONS

**URBEMIS TON TO METRIC TON CONVERSION**

1 Ton = **0.90718474** metric tons

**CONSTRUCTION**

From Urbemis metric tons

|           |        |                        |
|-----------|--------|------------------------|
|           | 381.49 | 346.0819065 CO2        |
| CH4 ratio | 0.0006 | 4.360632021 CH4 (CO2e) |
| N2O ratio | 0.0003 | 32.1856173 N2O (CO2e)  |

8.65 CO2 Amortized over 40yrs

0.11 CH4 (CO2e) Amortized over 40yrs

0.80 N2O (CO2e) Amortized over 40yrs

9.57 Total CO2e Amortized over 40yrs

---

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: U:\UcJobs\\_07100-07500\07100\07195\URBEMIS\07195-01.urb924

Project Name: High St. MacArthur

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

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

|                                    | <u>CO2</u> |
|------------------------------------|------------|
| 2011                               | 381.49     |
| Mass Grading 01/01/2011-02/28/2011 | 48.16      |
| Mass Grading Dust                  | 0.00       |
| Mass Grading Off Road Diesel       | 46.07      |
| Mass Grading On Road Diesel        | 0.00       |
| Mass Grading Worker Trips          | 2.09       |
| Trenching 03/01/2011-05/01/2011    | 47.17      |
| Trenching Off Road Diesel          | 44.93      |
| Trenching Worker Trips             | 2.24       |

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|                                |        |
|--------------------------------|--------|
| Building 06/01/2011-12/30/2011 | 232.06 |
| Building Off Road Diesel       | 68.34  |
| Building Vendor Trips          | 32.97  |
| Building Worker Trips          | 130.74 |
| Coating 06/01/2011-12/30/2011  | 3.60   |
| Architectural Coating          | 0.00   |
| Coating Worker Trips           | 3.60   |
| Asphalt 09/01/2011-12/30/2011  | 50.50  |
| Paving Off-Gas                 | 0.00   |
| Paving Off Road Diesel         | 42.60  |
| Paving On Road Diesel          | 0.14   |
| Paving Worker Trips            | 7.76   |

Phase Assumptions

Phase: Mass Grading 1/1/2011 - 2/28/2011 - Type Your Description Here

Total Acres Disturbed: 0.93

Maximum Daily Acreage Disturbed: 0.23

Fugitive Dust Level of Detail: Default

0 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: Trenching 3/1/2011 - 5/1/2011 - Type Your Description Here

Page: 3

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Off-Road Equipment:

- 2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
- 1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Paving 9/1/2011 - 12/30/2011 - Default Paving Description

Acres to be Paved: 0.23

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

Phase: Building Construction 6/1/2011 - 12/30/2011 - 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
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Architectural Coating 6/1/2011 - 12/30/2011 - 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

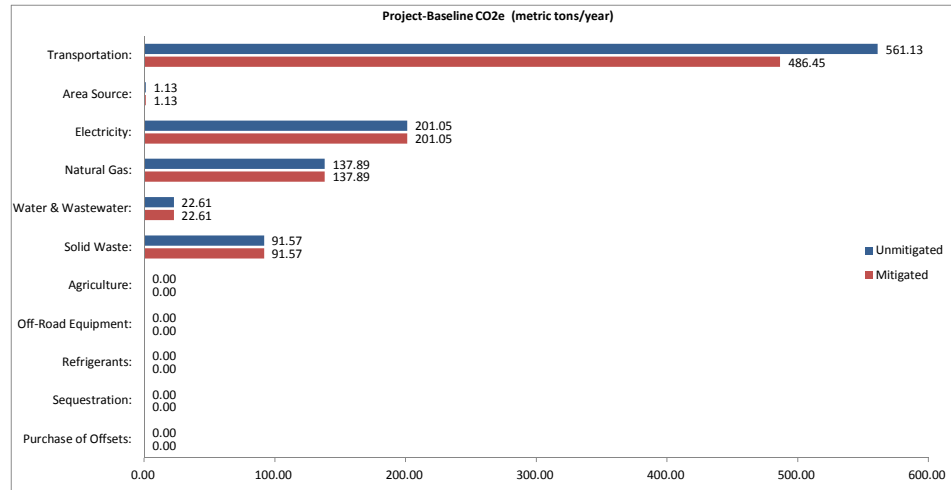
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

## Summary Results

Project Name: High St. MacArthur  
 Project and Baseline Years: 2012 N/A

| Results              | Unmitigated Project-Baseline CO2e (metric tons/year) | Mitigated Project-Baseline CO2e (metric tons/year) |
|----------------------|------------------------------------------------------|----------------------------------------------------|
| Transportation:      | 561.13                                               | 486.45                                             |
| Area Source:         | 1.13                                                 | 1.13                                               |
| Electricity:         | 201.05                                               | 201.05                                             |
| Natural Gas:         | 137.89                                               | 137.89                                             |
| Water & Wastewater:  | 22.61                                                | 22.61                                              |
| Solid Waste:         | 91.57                                                | 91.57                                              |
| 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                                               |
| <b>Total:</b>        | <b>1,015.40</b>                                      | <b>940.72</b>                                      |

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*:     |                  |                  |                  | 561.13            | 55.26%     |
| Area Source:         | 1.13             | 0.00             | 0.00             | 1.13              | 0.11%      |
| Electricity:         | 200.73           | 0.00             | 0.00             | 201.05            | 19.80%     |
| Natural Gas:         | 137.54           | 0.01             | 0.00             | 137.89            | 13.58%     |
| Water & Wastewater:  | 22.58            | 0.00             | 0.00             | 22.61             | 2.23%      |
| Solid Waste:         | 0.67             | 4.33             | N/A              | 91.57             | 9.02%      |
| 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:               |                  |                  |                  | 1,015.40          | 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 air conditioners]) Finally, CO2e is adjusted to account for the low carbon fuels rule.

| 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%      |

| Mitigated            | CO2 (metric tpy) | CH4 (metric tpy) | N2O (metric tpy) | CO2e (metric tpy) | % of Total |
|----------------------|------------------|------------------|------------------|-------------------|------------|
| Transportation*:     |                  |                  |                  | 486.45            | 51.71%     |
| Area Source:         | 1.13             | 0.00             | 0.00             | 1.13              | 0.12%      |
| Electricity:         | 200.73           | 0.00             | 0.00             | 201.05            | 21.37%     |
| Natural Gas:         | 137.54           | 0.01             | 0.00             | 137.89            | 14.66%     |
| Water & Wastewater:  | 22.58            | 0.00             | 0.00             | 22.61             | 2.40%      |
| Solid Waste:         | 0.67             | 4.33             | N/A              | 91.57             | 9.73%      |
| 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:               |                  |                  |                  | 940.72            | 100.00%    |

***Mitigation Measures Selected:***

**Transportation:** Go to the following tab: [Transp. Detail Mit](#) for a list of the transportation mitigation measures selected (in URBEMIS)

**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 been 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.

## Transportation

Baseline is Currently: OFF

| Target Year:                                             |  | 2012    | 2011     | Project-Baseline |
|----------------------------------------------------------|--|---------|----------|------------------|
| Unmitigated Transportation                               |  | Project | Baseline |                  |
| Operational Emissions from URBEMIS (CO2 tons/year)       |  | 606.86  | 0.00     |                  |
| Metric Ton Adjustment (CO2 metric tons/year)             |  | 550.69  | 0.00     |                  |
| Pavley Regulation Adjustment (CO2 metric tons/year):     |  | 535.00  | 0.00     |                  |
| US EPA Adjustment (CO2e metric tons/year):               |  | 563.16  | 0.00     |                  |
| Low Carbon Fuels Rule Adjustment (CO2e metric tons/year) |  | 561.13  | 0.00     |                  |
| Total (CO2e metric tons/year):                           |  |         |          | <b>561.13</b>    |

| Target Year:                                         |  | 2012    | 2011     | Project-Baseline |
|------------------------------------------------------|--|---------|----------|------------------|
| Mitigated Transportation                             |  | Project | Baseline |                  |
| Operational Vehicles from URBEMIS (CO2 tons/year):   |  | 526.10  | 0.00     |                  |
| Metric Ton Adjustment (CO2 metric tons/year):        |  | 477.40  | 0.00     |                  |
| Pavley Regulation Adjustment (CO2 metric tons/year): |  | 463.80  | 0.00     |                  |
| US EPA Adjustment (CO2e metric tons/year):           |  | 488.21  | 0.00     |                  |
| Low Carbon Fuels Adjustment (CO2e metric tons/year): |  | 486.45  | 0.00     |                  |
| Total (CO2e metric tons/year):                       |  |         |          | <b>486.45</b>    |

The BGM User's Manual describes in detail each step used to convert URBEMIS's transportation CO2 emissions to total CO2e. These steps include converting from English to Metric units, adjusting for the Pavley Rule, converting CO2 to CO2e, and adjusting for the Low Carbon Fuels Rule.

### Reference

U.S. EPA assumption that GHG emissions from other pollutants - CH4, N2O, and hydrofluorocarbons (HFCs) from leaking air conditioners account for 5 percent of emissions from vehicles, after accounting for global warming potential of each GHG.

Jump to the Following Transportation Related Tabs:

[Transportation Detail for Operational Mitigation](#)  
[Land Use Detail](#)

|                                            | Don't Need to Adjust this amt | Unadjusted Amount Affected by Pavley | Adjusted | Adusted | Adusted | Adusted | Adjusted | Adjusted  |
|--------------------------------------------|-------------------------------|--------------------------------------|----------|---------|---------|---------|----------|-----------|
|                                            | Not Affected by Pavley        | LDA/ LDT1/ LDT2/ MDV                 | LDA      | LDT1    | LDT2    |         | MDV      | 4 totaled |
| Pavley Calculations - Project Unmitigated  | 92.14                         | 458.55                               | 221.30   | 66.61   | 104.46  |         | 50.49    | 442.86    |
| Pavley Calculations - Baseline Unmitigated | 0.00                          | 0.00                                 | 0.00     | 0.00    | 0.00    |         | 0.00     | 0.00      |
| Pavley Calculations - Project Mitigated    | 79.88                         | 397.53                               | 191.85   | 57.74   | 90.56   |         | 43.77    | 383.92    |
| Pavley Calculations - Baseline Mitigated   | 0.00                          | 0.00                                 | 0.00     | 0.00    | 0.00    |         | 0.00     | 0.00      |

Pavley Adjustment

| Year | % LDA CO2 Emissions | % LDT1 CO2 Emissions | % LDT2 CO2 Emissions | % MDV CO2 Emissions | % LDA/LDT1/LDT2/MDV | % everything else |
|------|---------------------|----------------------|----------------------|---------------------|---------------------|-------------------|
| 2009 | 41.59%              | 12.33%               | 19.61%               | 9.71%               | 83.26%              | 16.74%            |
| 2010 | 41.72%              | 12.39%               | 19.54%               | 9.61%               | 83.26%              | 16.74%            |
| 2011 | 41.83%              | 12.45%               | 19.50%               | 9.50%               | 83.27%              | 16.73%            |
| 2012 | 41.89%              | 12.50%               | 19.47%               | 9.40%               | 83.27%              | 16.73%            |
| 2013 | 41.94%              | 12.56%               | 19.46%               | 9.32%               | 83.28%              | 16.72%            |
| 2014 | 41.98%              | 12.62%               | 19.46%               | 9.27%               | 83.33%              | 16.67%            |
| 2015 | 42.00%              | 12.67%               | 19.47%               | 9.24%               | 83.38%              | 16.62%            |
| 2016 | 42.05%              | 12.76%               | 19.50%               | 9.23%               | 83.54%              | 16.46%            |
| 2017 | 42.02%              | 12.81%               | 19.51%               | 9.21%               | 83.55%              | 16.45%            |
| 2018 | 41.98%              | 12.84%               | 19.52%               | 9.21%               | 83.55%              | 16.45%            |
| 2019 | 41.95%              | 12.87%               | 19.53%               | 9.21%               | 83.57%              | 16.43%            |
| 2020 | 41.92%              | 12.89%               | 19.55%               | 9.22%               | 83.59%              | 16.41%            |
| 2025 | 41.92%              | 12.96%               | 19.67%               | 9.28%               | 83.82%              | 16.18%            |
| 2030 | 42.15%              | 13.03%               | 19.76%               | 9.32%               | 84.26%              | 15.74%            |
| 2035 | 42.21%              | 13.11%               | 19.80%               | 9.35%               | 84.47%              | 15.53%            |
| 2040 | 42.24%              | 13.14%               | 19.90%               | 9.44%               | 84.72%              | 15.28%            |

|                             |                              |                           |                           | 12.00  | 13.00  | 14.00  | 15.00  | 16.00  |
|-----------------------------|------------------------------|---------------------------|---------------------------|--------|--------|--------|--------|--------|
| % CO2<br>Reduction -<br>LDA | % CO2<br>Reduction -<br>LDT1 | % CO2 Reduction -<br>LDT2 | % CO2<br>Reduction<br>MDV | LDA    |        |        |        |        |
| 0.00%                       | 0.00%                        | 0.07%                     | 0.08%                     | 0.0000 | 0.0000 | 0.0006 | 0.0007 | 0.0013 |
| 0.35%                       | 0.25%                        | 0.45%                     | 0.48%                     | 0.0020 | 0.0022 | 0.0036 | 0.0044 | 0.0122 |
| 1.75%                       | 1.34%                        | 1.31%                     | 1.29%                     | 0.0102 | 0.0117 | 0.0106 | 0.0117 | 0.0442 |
| 4.07%                       | 3.27%                        | 2.60%                     | 2.44%                     | 0.0237 | 0.0286 | 0.0209 | 0.0221 | 0.0953 |
| 6.31%                       | 5.26%                        | 3.88%                     | 3.61%                     | 0.0366 | 0.0460 | 0.0313 | 0.0328 | 0.1466 |
| 8.48%                       | 7.26%                        | 5.17%                     | 4.83%                     | 0.0492 | 0.0634 | 0.0416 | 0.0438 | 0.1980 |
| 10.74%                      | 9.38%                        | 6.54%                     | 6.17%                     | 0.0623 | 0.0819 | 0.0527 | 0.0560 | 0.2529 |
| 12.96%                      | 11.56%                       | 7.94%                     | 7.54%                     | 0.0751 | 0.1008 | 0.0639 | 0.0684 | 0.3082 |
| 15.03%                      | 13.58%                       | 9.27%                     | 8.88%                     | 0.0871 | 0.1184 | 0.0746 | 0.0806 | 0.3608 |
| 16.94%                      | 15.43%                       | 10.54%                    | 10.16%                    | 0.0983 | 0.1345 | 0.0848 | 0.0923 | 0.4099 |
| 18.72%                      | 17.13%                       | 11.74%                    | 11.40%                    | 0.1087 | 0.1492 | 0.0945 | 0.1035 | 0.4559 |
| 20.37%                      | 18.69%                       | 12.89%                    | 12.59%                    | 0.1183 | 0.1628 | 0.1037 | 0.1143 | 0.4990 |
| 26.87%                      | 24.86%                       | 17.60%                    | 17.42%                    | 0.1560 | 0.2164 | 0.1414 | 0.1581 | 0.6719 |
| 30.60%                      | 28.71%                       | 20.63%                    | 20.47%                    | 0.1770 | 0.2497 | 0.1655 | 0.1856 | 0.7779 |
| 32.38%                      | 31.17%                       | 22.43%                    | 22.29%                    | 0.1871 | 0.2708 | 0.1799 | 0.2021 | 0.8400 |
| 33.27%                      | 32.61%                       | 23.60%                    | 23.53%                    | 0.1922 | 0.2832 | 0.1890 | 0.2131 | 0.8775 |

Step 1 - Figure out year

Step 2- Emissions from HDVs, etc. do not change

Step 3 - Adjust emissions from LDA's, etc. individually

Step 4 - Add Step 2 and Step 3 emissions

Low Carbon Fuels Standards

| Year | % Reduction<br>Gasoline and<br>Diesel Fuel | % Reduction<br>Tank to<br>Wheels |
|------|--------------------------------------------|----------------------------------|
| 2010 | 0.00                                       | 0.00                             |
| 2011 | 0.25                                       | 0.18                             |
| 2012 | 0.50                                       | 0.36                             |
| 2013 | 1.00                                       | 0.72                             |
| 2014 | 1.50                                       | 1.08                             |
| 2015 | 2.50                                       | 1.80                             |
| 2016 | 3.50                                       | 2.52                             |
| 2017 | 5.00                                       | 3.60                             |
| 2018 | 6.50                                       | 4.68                             |
| 2019 | 8.00                                       | 5.76                             |
| 2020 | 10.00                                      | 7.20                             |
| 2021 | 10.00                                      | 7.20                             |
| 2022 | 10.00                                      | 7.20                             |
| 2023 | 10.00                                      | 7.20                             |
| 2024 | 10.00                                      | 7.20                             |
| 2025 | 10.00                                      | 7.20                             |
| 2026 | 10.00                                      | 7.20                             |
| 2027 | 10.00                                      | 7.20                             |
| 2028 | 10.00                                      | 7.20                             |
| 2029 | 10.00                                      | 7.20                             |
| 2030 | 10.00                                      | 7.20                             |
| 2031 | 10.00                                      | 7.20                             |
| 2032 | 10.00                                      | 7.20                             |
| 2033 | 10.00                                      | 7.20                             |
| 2034 | 10.00                                      | 7.20                             |
| 2035 | 10.00                                      | 7.20                             |
| 2036 | 10.00                                      | 7.20                             |
| 2037 | 10.00                                      | 7.20                             |
| 2038 | 10.00                                      | 7.20                             |
| 2039 | 10.00                                      | 7.20                             |
| 2040 | 10.00                                      | 7.20                             |

Source:

Final Regulation Order

Subchapter 10. Climate Change

Article 4. Regulations to Achieve Greenhouse Gas Reductions

Subarticle 7. Low Carbon Fuel Standard

Section 95482. Average Carbon Intensity Requirements for Gasoline and Diesel

## Area Source

Baseline is currently: OFF

| Unmitigated Area Source                                    |         |          | Project-Baseline |
|------------------------------------------------------------|---------|----------|------------------|
|                                                            | Project | Baseline |                  |
| Landscaping Emissions from URBEMIS (CO2 metric tons/year): | 1.134   | 0.000    |                  |
| Hearth Emissions from URBEMIS (CO2 metric tons/year):      | 0.000   | 0.000    |                  |
| Wood Burning Fireplaces (N2O metric tons/year):            | 0.000   | 0.000    |                  |
| Natural Gas Fireplaces (N2O metric tons/year):             | 0.000   | 0.000    |                  |
| Wood Burning Stoves (CH4 metric tons/year):                | 0.000   | 0.000    |                  |
| Natural Gas Fireplaces (CH4 metric tons/year):             | 0.000   | 0.000    |                  |
| Total (CO2e metric tons/year):                             | 1.134   | 0.000    | 1.134            |
| Total (CO2e metric tons/year):                             |         |          |                  |

| Mitigated Area Source                                      |         |          | Project-Baseline |
|------------------------------------------------------------|---------|----------|------------------|
|                                                            | Project | Baseline |                  |
| Landscaping Emissions from URBEMIS (CO2 metric tons/year): | 1.134   | 0.000    |                  |
| Hearth Emissions from URBEMIS (CO2 metric tons/year):      | 0.000   | 0.000    |                  |
| Wood Burning Fireplaces (N2O metric tons/year):            | 0.000   | 0.000    |                  |
| Natural Gas Fireplaces (N2O metric tons/year):             | 0.000   | 0.000    |                  |
| Wood Burning Stoves (CH4 metric tons/year):                | 0.000   | 0.000    |                  |
| Natural Gas Fireplaces (CH4 metric tons/year):             | 0.000   | 0.000    |                  |
| Total (CO2e metric tons/year):                             | 1.134   | 0.000    | 1.134            |
| Total (CO2e metric tons/year):                             |         |          |                  |

The URBEMIS area source calculations include five separate categories: 1) natural gas fuel combustion, 2) hearth fuel combustion, 3) landscape maintenance equipment, 4) consumer products, and 5) architectural coatings. This Area Source tab imports CO2 emissions calculated by URBEMIS for hearths and landscape maintenance equipment only. BGM then calculates N2O and CH4 emissions for woodstoves and fireplaces and uses the resulting emissions to calculate CO2e. The consumer products and architectural coatings categories within URBEMIS do not generate GHG emissions and, consequently, are not used by BGM. Also, URBEMIS' estimate of CO2 from natural gas fuel combustion is not used by BGM. Instead, BGM calculates natural gas use and the resulting CO2 emissions in the Electricity and Natural Gas tab.

Electricity and Natural Gas

Baseline is currently: OFF

| Unmitigated Electricity   |         |          |                  |
|---------------------------|---------|----------|------------------|
|                           | Project | Baseline | Project-Baseline |
| CO2 metric tons/year CO2: | 200.732 | 0.000    |                  |
| CH4 metric tons/year CH4: | 0.002   | 0.000    |                  |
| N2O metric tons/year:     | 0.001   | 0.000    |                  |
| CO2e metric tons/year:    | 201.054 | 0.000    |                  |
| CO2e metric tons/year:    |         |          | 201.05           |

| Unmitigated Natural Gas |         |          |                  |
|-------------------------|---------|----------|------------------|
|                         | Project | Baseline | Project-Baseline |
| CO2 metric tons/year:   | 137.54  | 0.000    |                  |
| CH4 metric tons/year:   | 0.01    | 0.000    |                  |
| N2O metric tons/year:   | 0.00    | 0.000    |                  |
| CO2e metric tons/year:  | 137.89  | 0.000    |                  |
| CO2e metric tons/year:  |         |          | 137.89           |

Project Climate Zone Location:

Zone 4

Zone 5

| Mitigated Electricity     |         |          |                  |
|---------------------------|---------|----------|------------------|
|                           | Project | Baseline | Project-Baseline |
| CO2 metric tons/year CO2: | 200.732 | 0.000    |                  |
| CH4 metric tons/year CH4: | 0.002   | 0.000    |                  |
| N2O metric tons/year:     | 0.001   | 0.000    |                  |
| CO2e metric tons/year:    | 201.054 | 0.000    |                  |
| CO2e metric tons/year:    |         |          | 201.05           |

| Mitigated Natural Gas  |         |          |                  |
|------------------------|---------|----------|------------------|
|                        | Project | Baseline | Project-Baseline |
| CO2 metric tons/year:  | 137.540 | 0.000    |                  |
| CH4 metric tons/year:  | 0.013   | 0.000    |                  |
| N2O metric tons/year:  | 0.000   | 0.000    |                  |
| CO2e metric tons/year: | 137.893 | 0.000    |                  |
| CO2e metric tons/year: |         |          | 137.89           |

\*\*\* Select Mitigation Measures on the Mitigation Tab ==> [Mitigation](#)



For detailed climate zone map see:  
<http://capabilities.itron.com/CeusWeb/FCZMap.aspx>

PROJECT Residential:

Clear All User Overrides

|                           | Number of units (from URBEMIS) | Estimated Electricity Use/Year (kwh/ residence) | Total Residential Electricity Use (mwh /year) | User Override of Residential Electricity Use (mwh/year) | CO2 (metric tons/year) | CH4 (metric tons/yr) | N2O (metric tons/yr) | Estimated Natural Gas Use (MMBtu/residence/year) | Estimated Natural Gas use (MM Btu/year) | User Override of Natural Gas Use (MM Btu/year) |
|---------------------------|--------------------------------|-------------------------------------------------|-----------------------------------------------|---------------------------------------------------------|------------------------|----------------------|----------------------|--------------------------------------------------|-----------------------------------------|------------------------------------------------|
| Single Family Residential | 115.000                        | 7,415.000                                       | 852.725                                       | 509.910                                                 | 186.136                | 0.0016               | 0.0009               | 49.600                                           | 5,704.000                               | 2,587.500                                      |
| Multi Family Residential  | 0.000                          | 4,434.000                                       | 0.000                                         |                                                         | 0.000                  | 0.0000               | 0.0000               | 22.500                                           | 0.000                                   |                                                |

PROJECT Residential:

|                           | CO2 (metric<br>tons/yr) | CH4 (metric<br>tons/yr) | N2O (metric<br>tons/yr) | Elec Use | Gas Use  |
|---------------------------|-------------------------|-------------------------|-------------------------|----------|----------|
| Single Family Residential | 137.044                 | 0.013                   | 0.000                   | 509.91   | 2,587.50 |
| Multi Family Residential  | 0.000                   | 0.000                   | 0.000                   | 0.00     | 0.00     |

Residential Energy Use from California Statewide Residential Appliance Saturation Study, Tables 2-9, 2-13,2-15,2-4,2-5,2-23,2-24  
See also Executive Summary for Natural Gas Use by Building Age

PROJECT Nonresidential:

| Land Use Type                     | Square Footage<br>(1,000) from URBEMIS | Estimated Electricity<br>Use/Year<br>(Megawatt-hours) | User Override of<br>Electricity Use/Year<br>(Megawatt-hours) | CO2 (metric<br>tons/yr) | CH4 (metric tons/yr) | N2O (metric tons/yr) | Estimated Natural<br>Gas Use/Year (MM<br>Btu) | User Override of<br>Natural Gas Use (MM<br>Btu/Year) | CO2 (metric<br>tons/yr) | CH4 (metric<br>tons/yr) | N2O (metric<br>tons/yr) | Elect Use | Gas Use |
|-----------------------------------|----------------------------------------|-------------------------------------------------------|--------------------------------------------------------------|-------------------------|----------------------|----------------------|-----------------------------------------------|------------------------------------------------------|-------------------------|-------------------------|-------------------------|-----------|---------|
| Day-Care Center                   | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Elementary School                 | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Junior High School                | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| High School                       | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Junior College                    | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| University/College                | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Library                           | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Place of Worship                  | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| City Park                         | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Racquet Club                      | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Racquetball/Health                | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Quality Restaurant                | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| High Turnover/Sit-Down Restaurant | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Fast Food w/Drive Through         | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Fast Food w/o Drive Through       | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Hotel                             | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Motel                             | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Free-Standing Discount Store      | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Free-Standing Discount Superstore | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Discount Club                     | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Regional Shopping Center          | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Electronic Superstore             | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Home Improvement Superstore       | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Strip Mall                        | 3.12                                   | 39.99                                                 |                                                              | 14.60                   | 0.0001               | 0.0001               | 9.38                                          |                                                      | 0.50                    | 0.00005                 | 0.00000                 | 39.99     | 9.38    |
| Hardware/Paint Store              | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Supermarket                       | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Convenience Market                | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Convenience Market w/gas pumps    | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Gasoline Service Station          | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Bank w/Drive Through              | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| General Office Building           | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Office Park                       | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Government Office Building        | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Government Civic Center           | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Pharmacy w/Drive Through          | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Pharmacy w/o Drive Through        | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Medical Office Building           | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Hospital                          | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Warehouse                         | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| General Light Industry            | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| General Heavy Industry            | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Industrial Park                   | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |
| Manufacturing                     | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 | 0.00      | 0.00    |

BASELINE Residential:

|                           | Number of units (from<br>URBEMIS) | Estimated<br>Electricity Use/Year<br>(kwh/ residence) | Total Residential<br>Electricity Use (mwh<br>/year) | User Override of<br>Residential<br>Electricity Use<br>(mwh/year) | CO2 (metric tons/year) | CH4 (metric tons/yr) | N2O (metric tons/yr) | Estimated Natural Gas<br>Use<br>(MMBtu/residence/ye<br>ar) | Estimated<br>Natural Gas use<br>(MM Btu/year) | User Override of<br>Natural Gas Use<br>(MM Btu/year) | CO2 (metric<br>tons/yr) | CH4 (metric<br>tons/yr) | N2O (metric<br>tons/yr) |
|---------------------------|-----------------------------------|-------------------------------------------------------|-----------------------------------------------------|------------------------------------------------------------------|------------------------|----------------------|----------------------|------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------|-------------------------|-------------------------|-------------------------|
| Single Family Residential | 0.000                             | 7,415.000                                             | 0.000                                               |                                                                  | 0.000                  | 0.0000               | 0.0000               | 49.600                                                     | 0.000                                         |                                                      | 0.000                   | 0.000                   | 0.000                   |
| Multi Family Residential  | 0.000                             | 4,434.000                                             | 0.000                                               |                                                                  | 0.000                  | 0.0000               | 0.0000               | 22.500                                                     | 0.000                                         |                                                      | 0.000                   | 0.000                   | 0.000                   |

|        |          |             |
|--------|----------|-------------|
| 549.90 | 2,596.88 | Unmitigated |
| 549.90 | 2,596.88 | Mitigated   |
| 549.90 | 2,596.88 | Mitigated % |

|                                   |                                                 |                                    |                                       |                                     |                                     |                                     |                             |                             |                             |
|-----------------------------------|-------------------------------------------------|------------------------------------|---------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------------------------|-----------------------------|-----------------------------|
|                                   |                                                 |                                    |                                       |                                     |                                     |                                     |                             |                             |                             |
| Land Use Type                     | User Provided Blank Land Use Data: Project Data |                                    |                                       |                                     |                                     |                                     |                             |                             |                             |
| Day-Care Center                   | Land Use Name                                   | Electricity Use/Year<br>(MWH/Year) | Natural Gas Use/Year<br>(MM Btu/Year) | Electricity CO2<br>(metric tons/yr) | Electricity CH4<br>(metric tons/yr) | Electricity N2O<br>(metric tons/yr) | Gas CO2 (metric<br>tons/yr) | Gas CH4 (metric<br>tons/yr) | Gas N2O (metric<br>tons/yr) |
| Elementary School                 |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Junior High School                |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| High School                       |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Junior College                    |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| University/College                |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Library                           |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Place of Worship                  |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| City Park                         |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Racquet Club                      |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Racquetball/Health                |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Quality Restaurant                |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| High Turnover/Sit-Down Restaurant |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Fast Food w/Drive Through         |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Fast Food w/o Drive Through       |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Hotel                             |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Motel                             |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Free-Standing Discount Store      |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Free-Standing Discount Superstore |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Discount Club                     |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Regional Shopping Center          |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Electronic Superstore             |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Home Improvement Superstore       |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Strip Mall                        |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Hardware/Paint Store              |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Supermarket                       |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Convenience Market                |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Convenience Market w/gas pumps    |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Gasoline Service Station          |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Bank w/Drive Through              |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| General Office Building           |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Office Park                       |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Government Office Building        |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Government Civic Center           |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Pharmacy w/Drive Through          |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Pharmacy w/o Drive Through        |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Medical Office Building           |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Hospital                          |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Warehouse                         |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| General Light Industry            |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| General Heavy Industry            |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Industrial Park                   |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Manufacturing                     |                                                 |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |

BASELINE Nonresidential:

| Land Use Type                     | Square Footage<br>(1,000) from URBEMIS | Estimated Electricity<br>Use/Year<br>(Megawatt-hours) | User Override of<br>Electricity Use/Year<br>(Megawatt-hours) | CO2 (metric<br>tons/yr) | CH4 (metric tons/yr) | N2O (metric tons/yr) | Estimated Natural<br>Gas Use/Year (MM<br>Btu) | User Override of<br>Natural Gas Use (MM<br>Btu/Year) | CO2 (metric<br>tons/yr) | CH4 (metric<br>tons/yr) | N2O (metric<br>tons/yr) |
|-----------------------------------|----------------------------------------|-------------------------------------------------------|--------------------------------------------------------------|-------------------------|----------------------|----------------------|-----------------------------------------------|------------------------------------------------------|-------------------------|-------------------------|-------------------------|
| Day-Care Center                   | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Elementary School                 | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Junior High School                | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| High School                       | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Junior College                    | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| University/College                | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Library                           | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Place of Worship                  | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| City Park                         | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Racquet Club                      | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Racquetball/Health                | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Quality Restaurant                | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| High Turnover/Sit-Down Restaurant | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Fast Food w/Drive Through         | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Fast Food w/o Drive Through       | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Hotel                             | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Motel                             | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Free-Standing Discount Store      | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Free-Standing Discount Superstore | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Discount Club                     | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Regional Shopping Center          | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Electronic Superstore             | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Home Improvement Superstore       | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Strip Mall                        | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Hardware/Paint Store              | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Supermarket                       | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Convenience Market                | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Convenience Market w/gas pumps    | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Gasoline Service Station          | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Bank w/Drive Through              | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| General Office Building           | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Office Park                       | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Government Office Building        | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Government Civic Center           | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Pharmacy w/Drive Through          | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Pharmacy w/o Drive Through        | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Medical Office Building           | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Hospital                          | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Warehouse                         | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| General Light Industry            | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| General Heavy Industry            | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Industrial Park                   | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |
| Manufacturing                     | 0.00                                   | 0.00                                                  |                                                              | 0.00                    | 0.0000               | 0.0000               | 0.00                                          |                                                      | 0.00                    | 0.00000                 | 0.00000                 |

|                                   |                                                  |                                    |                                       |                                     |                                     |                                     |                             |                             |                             |
|-----------------------------------|--------------------------------------------------|------------------------------------|---------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------------------------|-----------------------------|-----------------------------|
|                                   |                                                  |                                    |                                       |                                     |                                     |                                     |                             |                             |                             |
| Land Use Type                     | User Provided Blank Land Use Data: Baseline Data |                                    |                                       |                                     |                                     |                                     |                             |                             |                             |
| Day-Care Center                   | Land Use Name                                    | Electricity Use/Year<br>(MWH/Year) | Natural Gas Use/Year<br>(MM Btu/Year) | Electricity CO2<br>(metric tons/yr) | Electricity CH4<br>(metric tons/yr) | Electricity N2O<br>(metric tons/yr) | Gas CO2 (metric<br>tons/yr) | Gas CH4 (metric<br>tons/yr) | Gas N2O (metric<br>tons/yr) |
| Elementary School                 |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Junior High School                |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| High School                       |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Junior College                    |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| University/College                |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Library                           |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Place of Worship                  |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| City Park                         |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Racquet Club                      |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Racquetball/Health                |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Quality Restaurant                |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| High Turnover/Sit-Down Restaurant |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Fast Food w/Drive Through         |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Fast Food w/o Drive Through       |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Hotel                             |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Motel                             |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Free-Standing Discount Store      |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Free-Standing Discount Superstore |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Discount Club                     |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Regional Shopping Center          |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Electronic Superstore             |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Home Improvement Superstore       |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Strip Mall                        |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Hardware/Paint Store              |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Supermarket                       |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Convenience Market                |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Convenience Market w/gas pumps    |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Gasoline Service Station          |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Bank w/Drive Through              |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| General Office Building           |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Office Park                       |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Government Office Building        |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Government Civic Center           |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Pharmacy w/Drive Through          |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Pharmacy w/o Drive Through        |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Medical Office Building           |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Hospital                          |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Warehouse                         |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| General Light Industry            |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| General Heavy Industry            |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Industrial Park                   |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |
| Manufacturing                     |                                                  |                                    |                                       | 0.00                                | 0.00000                             | 0.00000                             | 0.00                        | 0.00000                     | 0.00000                     |

Greenhouse Gas Emission Factors

|             | CO2                | CH4            | N2O           |
|-------------|--------------------|----------------|---------------|
| Electricity | 804.54             | 0.0067         | 0.0037        |
| Units       | lbs CO2/mwh        | lbs CH4/mwh    | lbs N2O/MWH   |
| Natural Gas | 53.06              | 0.005          | 0.0001        |
| Units       | CO2 (kg CO2/MMBtu) | CH4 (kg/MMBtu) | N2O(kg/MMBtu) |

Source: Climate Action Registry General Reporting Protocol, Version 3.1, January, 2009.

Source: Climate Action Registry General Reporting Protocol, Version 3.1, January, 2009.

| Summary                     | Climate Zone 4<br>Summary |                            | Climate Zone 5<br>Summary |                            |
|-----------------------------|---------------------------|----------------------------|---------------------------|----------------------------|
|                             | Electric (kwh/sf)         | Natural Gas (MM<br>Btu/sf) | Electric (kwh/sf)         | Natural Gas (MM<br>Btu/sf) |
| All Commercial              | 13.64                     | 0.02949                    | 13.19                     | 0.03169                    |
| Small Office (<30,000 sf)   | 17.37                     | 0.00975                    | 14.49                     | 0.02999                    |
| Large Office (>= 30,000 sf) | 23.51                     | 0.02639                    | 15.25                     | 0.02328                    |
| Restaurant                  | 35.97                     | 0.21255                    | 31.41                     | 0.17108                    |
| Retail                      | 12.82                     | 0.00301                    | 12.65                     | 0.00551                    |
| Food Store                  | 44.34                     | 0.02577                    | 40.26                     | 0.04135                    |
| Refrigerated Warehouse      | 10.12                     | 0.00388                    | 24.86                     | 0.01869                    |
| Unrefrigerated Warehouse    | 4.26                      | 0.00440                    | 4.56                      | 0.00169                    |
| School                      | 6.65                      | 0.02271                    | 5.51                      | 0.01958                    |
| College                     | 9.75                      | 0.02754                    | 12.70                     | 0.04185                    |
| Health                      | 23.03                     | 0.11871                    | 18.40                     | 0.11073                    |
| Lodging                     | 9.33                      | 0.04695                    | 10.03                     | 0.03915                    |
| Miscellaneous               | 9.81                      | 0.02965                    | 8.98                      | 0.02724                    |
| All Offices                 | 21.35                     | 0.02052                    | 15.14                     | 0.02426                    |
| All Warehouses              | 5.82                      | 0.00426                    | 7.71                      | 0.00433                    |

## Water and Wastewater

Baseline is currently: OFF

| Unmitigated Water and Wastewater |         |          |                  |
|----------------------------------|---------|----------|------------------|
|                                  | Project | Baseline | Project-Baseline |
| CO2 metric tons/year:            | 22.5765 | 0.0000   |                  |
| CH4 metric tons/year:            | 0.0002  | 0.0000   |                  |
| N2O metric tons/year:            | 0.0001  | 0.0000   |                  |
| CO2e metric tons/year:           | 22.6127 | 0.0000   |                  |
| CO2e metric tons/year:           |         |          | <b>22.61</b>     |

Clear All User Overrides

|                              | User Override of Model Estimates (af/yr) | Model Estimate (af/yr) | Total Gallons/year | Indoor Gallons/Year | Outdoor Gallons/year | Mitigated Indoor Gallons/Year | Mitigated Outdoor Gallons/year | Total Mitigated kwh/year |
|------------------------------|------------------------------------------|------------------------|--------------------|---------------------|----------------------|-------------------------------|--------------------------------|--------------------------|
| Baseline Water Demand        |                                          | 0.00                   | 0                  | 0.00                | 0.00                 | 0.00                          | 0.00                           |                          |
| Project Water Demand         |                                          | 40.37                  | 13,155,385         | 8,269,746.90        | 4,885,637.64         | 8,269,746.90                  | 4,885,637.64                   |                          |
| Net Increase in Water Demand |                                          | 40.37                  | 13,155,385         | 8,269,746.90        | 4,885,637.64         | 8,269,746.90                  | 4,885,637.64                   |                          |
|                              |                                          |                        |                    |                     |                      | 44747.60                      | 17099.73                       | 61,847.33                |

| Household Size |              |
|----------------|--------------|
| Single Family  | Multi-family |
| 2.94           | 2.65         |

| Land Use Type             | Square feet per employee |          |
|---------------------------|--------------------------|----------|
| 1 Warehouse               |                          | 1,700.00 |
| 2 Public Assembly         |                          | 1,300.00 |
| 3 Lodging                 |                          | 1,300.00 |
| 4 Food Sales              |                          | 1,000.00 |
| 5 Retail and Service      |                          | 900.00   |
| 6 Education               |                          | 766.00   |
| 7 Public Order and Safety |                          | 750.00   |
| 8 Food Service            |                          | 600.00   |
| 9 Other                   |                          | 550.00   |
| 10 Health Care            |                          | 500.00   |
| 11 Office                 |                          | 400.00   |

Energy Information Administration Special Topics 1995 Building Activities Other, Square feet per employee.  
[http://www.eia.doe.gov/emeu/consumptionbriefs/cbecs/pbawebbsite/office/office\\_howmanyempl.htm](http://www.eia.doe.gov/emeu/consumptionbriefs/cbecs/pbawebbsite/office/office_howmanyempl.htm)

| PROJECT             |       |
|---------------------|-------|
| % indoor water use  | 0.629 |
| % outdoor water use | 0.371 |
| Total               | 1.00  |

| BASELINE            |       |
|---------------------|-------|
| % indoor water use  | 0.000 |
| % outdoor water use | 0.000 |
| Total               | 0.00  |

|                                |          |          |
|--------------------------------|----------|----------|
| Project Water Demand - Indoor  | 44747.60 | kwh/year |
| Project Water Demand - Outdoor | 17099.73 | kwh/year |
| Total                          | 61847.33 | kwh/year |

|                           |      |          |
|---------------------------|------|----------|
| Baseline Demand - Indoor  | 0.00 | kwh/year |
| Baseline Demand - Outdoor | 0.00 | kwh/year |
| Total                     | 0.00 | kwh/year |

| Greenhouse Gas Emission Factors | CO2    | CH4    | N2O    |
|---------------------------------|--------|--------|--------|
| Electricity                     | 804.54 | 0.0067 | 0.0037 |
| Units                           | #/mwh  | #/mwh  | #/mwh  |

from California Climate Action Registry, 2009

| Table ES-1. Recommended revised water-energy proxies |                            |                            |                            |                            |
|------------------------------------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
|                                                      | Indoor Uses                |                            | Outdoor Uses               |                            |
|                                                      | Northern California kWh/MG | Southern California kWh/MG | Northern California kWh/MG | Southern California kWh/MG |
| Water Supply and Conveyance                          | 2.117                      | 9.727                      | 2.117                      | 9.727                      |
| Water Treatment                                      | 111                        | 111                        | 111                        | 111                        |
| Water Distribution                                   | 1.272                      | 1.272                      | 1.272                      | 1.272                      |
| Wastewater Treatment                                 | 1.911                      | 1.911                      | 0                          | 0                          |
| Regional Total                                       | 5.411                      | 13.022                     | 3.500                      | 11.111                     |

from Navigant, 2006

|                        |            |
|------------------------|------------|
| Gallons Per Acre Foot: | 325,900.00 |
|------------------------|------------|





Solid Waste

Baseline is currently: OFF

| Unmitigated Solid Waste                     |         |          |                    |
|---------------------------------------------|---------|----------|--------------------|
|                                             | Project | Baseline | Project - Baseline |
| Truck Haul CO2 (metric tons/year):          | 0.67    | 0.00     |                    |
| Truck Haul CH4 (metric tons/year):          | 0.0000  | 0.0000   |                    |
| Truck Haul CO2e (metric tons/year):         | 0.67    | 0.00     |                    |
| Landfill Offgasing (CO2e metric tons/year): | 90.90   | 0.00     |                    |
| Total Solid Waste (CO2e metric tons/year):  | 91.57   | 0.00     |                    |
| Total Solid Waste (CO2e metric tons/year):  |         |          | 91.57              |

Project Landfill disposal option:

Select 1 of 3 options

- ☐ Landfilling only
- ☒ Landfilling with Flaring to Burn Methane
- ☐ Landfilling with Energy Recovery

Clear All User Overrides

| Project                                         | Defaults | User Override |
|-------------------------------------------------|----------|---------------|
| Average Round Trip Truck Haul Distance (miles): | 40.00    |               |
| Solid Waste Truck Capacity (tons):              | 15.00    |               |
| Round Trips/Year:                               | 9.47     |               |
| Miles per Year:                                 | 378.77   |               |

| Mitigated Solid Waste                       |         |          |                    |
|---------------------------------------------|---------|----------|--------------------|
|                                             | Project | Baseline | Project - Baseline |
| Truck Haul CO2 (metric tons/year):          | 0.67    | 0.00     |                    |
| Truck Haul CH4 (metric tons/year):          | 0.0000  | 0.0000   |                    |
| Truck Haul CO2e (metric tons/year):         | 0.67    | 0.00     |                    |
| Landfill Offgasing (CO2e metric tons/year): | 90.90   | 0.00     |                    |
| Total Solid Waste (CO2e metric tons/year):  | 91.57   | 0.00     |                    |
| Total Solid Waste (CO2e metric tons/year):  |         |          | 91.57              |

\*\*\* Select Mitigation Measures on the Mitigation Tab ==>

[Mitigation](#)

Baseline Landfill disposal option:

Select 1 of 3 options

- ☐ Landfilling only
- ☒ Landfilling with Flaring to Burn Methane
- ☐ Landfilling with Energy Recovery

| Baseline                                    | Defaults | User Override |
|---------------------------------------------|----------|---------------|
| Avg Round Trip Truck Haul Distance (miles): | 40.00    |               |
| Solid Waste Truck Capacity (tons):          | 15.00    |               |
| Round Trips/Year:                           | 0.00     |               |
| Miles per Year:                             | 0.00     |               |





| WARM Emission Factors                                          |                          |                       |                               |
|----------------------------------------------------------------|--------------------------|-----------------------|-------------------------------|
|                                                                | Landfilling, No Recovery | Landfilling w/Flaring | Landfilling w/Energy Recovery |
| Mixed Solid Waste                                              | 3.10                     | 0.64                  | 0.30                          |
| Emissions (from EMFAC2007, 35 mph for Heavy-Heavy Duty Trucks) |                          |                       |                               |
| Year                                                           | CO2 (grams/mile)         | CH4 (grams/mile)      |                               |
| 2005                                                           | 1,723.50                 | 0.06                  |                               |
| 2006                                                           | 1,733.00                 | 0.06                  |                               |
| 2007                                                           | 1,740.80                 | 0.06                  |                               |
| 2008                                                           | 1,748.40                 | 0.05                  |                               |
| 2009                                                           | 1,755.80                 | 0.05                  |                               |
| 2010                                                           | 1,763.00                 | 0.05                  |                               |
| 2011                                                           | 1,769.30                 | 0.04                  |                               |
| 2012                                                           | 1,775.00                 | 0.04                  |                               |
| 2013                                                           | 1,780.40                 | 0.04                  |                               |
| 2014                                                           | 1,785.10                 | 0.03                  |                               |
| 2015                                                           | 1,789.20                 | 0.03                  |                               |
| 2016                                                           | 1,792.90                 | 0.03                  |                               |
| 2017                                                           | 1,796.20                 | 0.03                  |                               |
| 2018                                                           | 1,799.00                 | 0.02                  |                               |
| 2019                                                           | 1,801.60                 | 0.02                  |                               |
| 2020                                                           | 1,803.60                 | 0.02                  |                               |
| 2025                                                           | 1,809.70                 | 0.02                  |                               |
| 2030                                                           | 1,812.10                 | 0.01                  |                               |
| 2035                                                           | 1,813.40                 | 0.01                  |                               |
| 2040                                                           | 1,813.80                 | 0.01                  |                               |

| Low Carbon Fuels Standards |                                            |                               |
|----------------------------|--------------------------------------------|-------------------------------|
| Year                       | % Reduction<br>Gasoline and Diesel<br>Fuel | % Reduction Tank<br>to Wheels |
| 2010                       | 0.00                                       | 0.00                          |
| 2011                       | 0.25                                       | 0.18                          |
| 2012                       | 0.50                                       | 0.36                          |
| 2013                       | 1.00                                       | 0.72                          |
| 2014                       | 1.50                                       | 1.08                          |
| 2015                       | 2.50                                       | 1.80                          |
| 2016                       | 3.50                                       | 2.52                          |
| 2017                       | 5.00                                       | 3.60                          |
| 2018                       | 6.50                                       | 4.68                          |
| 2019                       | 8.00                                       | 5.76                          |
| 2020                       | 10.00                                      | 7.20                          |
| 2021                       | 10.00                                      | 7.20                          |
| 2022                       | 10.00                                      | 7.20                          |
| 2023                       | 10.00                                      | 7.20                          |
| 2024                       | 10.00                                      | 7.20                          |
| 2025                       | 10.00                                      | 7.20                          |
| 2026                       | 10.00                                      | 7.20                          |
| 2027                       | 10.00                                      | 7.20                          |
| 2028                       | 10.00                                      | 7.20                          |
| 2029                       | 10.00                                      | 7.20                          |
| 2030                       | 10.00                                      | 7.20                          |
| 2031                       | 10.00                                      | 7.20                          |
| 2032                       | 10.00                                      | 7.20                          |
| 2033                       | 10.00                                      | 7.20                          |
| 2034                       | 10.00                                      | 7.20                          |
| 2035                       | 10.00                                      | 7.20                          |
| 2036                       | 10.00                                      | 7.20                          |
| 2037                       | 10.00                                      | 7.20                          |
| 2038                       | 10.00                                      | 7.20                          |
| 2039                       | 10.00                                      | 7.20                          |
| 2040                       | 10.00                                      | 7.20                          |

Source:

Final Regulation Order

Subchapter 10. Climate Change

Article 4. Regulations to Achieve Greenhouse Gas Reductions

Subarticle 7. Low Carbon Fuel Standard

Section 95482. Average Carbon Intensity Requirements for Gasoline and Diesel

Agriculture

Baseline is currently: OFF

| Agriculture            |         |          |                    |
|------------------------|---------|----------|--------------------|
|                        | Project | Baseline | Project - Baseline |
| CO2 metric tons/year:  | 0.000   | 0.00     |                    |
| CH4 metric tons/year:  | 0.000   | 0.00     |                    |
| N2O metric tons/year:  | 0.000   | 0.00     |                    |
| CO2e metric tons/year: | 0.00    | 0.00     |                    |
| CO2e metric tons/year: |         |          | 0.00               |

| PROJECT Animals          | Animals | Enteric Fermentation<br>Methane Emissions<br>(metric tons/year) | Manure Emission Rates<br>(metric tons methane per<br>year) | Manure Emission<br>Rates (metric tons<br>N2O/year) |
|--------------------------|---------|-----------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------|
| Beef Cattle              |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Beef Replacement Heifers |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Steers                   |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Bulls                    |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Milk Cows                |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Dry Cows                 |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Heifers, 15-24 months    |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Heifers, 7-14 months     |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Heifers, 4-6 months      |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Calves                   |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Chickens (fryers)        |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Goats, Hogs, Pigs        |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Sheeps and Lambs         |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Turkeys                  |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Totals                   | 0       | 0.00                                                            | 0.00                                                       | 0.00                                               |

Clear All User Inputs

| BASELINE Animals         | Animals | Enteric Fermentation<br>Methane Emissions<br>(metric tons/year) | Manure Emission<br>Rates (metric tons<br>methane per year) | Manure Emission<br>Rates (metric tons<br>N2O/year) |
|--------------------------|---------|-----------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------|
| Beef Cattle              |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Beef Replacement Heifers |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Steers                   |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Bulls                    |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Milk Cows                |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Dry Cows                 |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Heifers, 15-24 months    |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Heifers, 7-14 months     |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Heifers, 4-6 months      |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Calves                   |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Chickens (fryers)        |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Goats, Hogs, Pigs        |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Sheeps and Lambs         |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Turkeys                  |         | 0.00                                                            | 0.0000                                                     | 0.0000                                             |
| Totals                   | 0       | 0.00                                                            | 0.00                                                       | 0.00                                               |

| <b>PROJECT</b> Agricultural Equipment | gallons/year | CO2 (metric tons/yr) | CH4 (metric tons/yr) | N2O (metric tons/yr) | CO2e (metric tons/year) |
|---------------------------------------|--------------|----------------------|----------------------|----------------------|-------------------------|
| Gasoline                              |              | 0.00                 | 0.00                 | 0.00                 | 0.00                    |
| Diesel Fuel                           |              | 0.00                 | 0.00                 | 0.00                 | 0.00                    |
| Propane                               |              | 0.00                 | 0.0000               | 0.0000               | 0.00                    |
|                                       |              | 0.00                 | 0.00                 | 0.00                 | 0.00                    |

| <b>PROJECT</b> Stationary Combustion | gallons/year | CO2 (metric tons/yr) | CH4 (metric tons/yr) | N2O (metric tons/yr) | CO2e (metric tons/year) |
|--------------------------------------|--------------|----------------------|----------------------|----------------------|-------------------------|
| Gasoline                             |              | 0.00                 | 0.0000               | 0.0000               | 0.00                    |
| Diesel Fuel                          |              | 0.00                 | 0.0000               | 0.0000               | 0.00                    |
| Propane                              |              | 0.00                 | 0.0000               | 0.0000               | 0.00                    |
|                                      |              | 0.00                 | 0.0000               | 0.0000               | 0.00                    |

| <b>PROJECT</b> Electricity         | kwh/year | CO2 (metric tons/yr) | CH4 (metric tons/yr) | N2O (metric tons/yr) | CO2e (metric tons/year) |
|------------------------------------|----------|----------------------|----------------------|----------------------|-------------------------|
| Electricity Consumption (kwh/year) |          | 0.0000               | 0.0000               | 0.0000               | 0.00                    |

| <b>PROJECT</b> Fertilizer   | Tons/year | CO2 (metric tons/yr) | CH4 (metric tons/yr) | N2O (metric tons/yr) | CO2e (metric tons/year) |
|-----------------------------|-----------|----------------------|----------------------|----------------------|-------------------------|
| Fertilizer Used (tons/year) |           | 0.00                 | 0.00                 | 0.00                 | 0.00                    |

Note: GHG emissions associated with water use assumed to be accounted for in the fuel and electricity consumption.

| <b>BASELINE</b> Agricultural Equipment | gallons/year | CO2 (metric tons/yr) | CH4 (metric tons/yr) | N2O (metric tons/yr) | CO2e (metric tons/year) |
|----------------------------------------|--------------|----------------------|----------------------|----------------------|-------------------------|
| Gasoline                               |              | 0.00                 | 0.00                 | 0.00                 | 0.00                    |
| Diesel Fuel                            |              | 0.00                 | 0.00                 | 0.00                 | 0.00                    |
| Propane                                |              | 0.00                 | 0.0000               | 0.0000               | 0.00                    |
|                                        |              | 0.00                 | 0.00                 | 0.00                 | 0.00                    |

| <b>BASELINE</b> Stationary Combustion | gallons/year | CO2 (metric tons/yr) | CH4 (metric tons/yr) | N2O (metric tons/yr) | CO2e (metric tons/year) |
|---------------------------------------|--------------|----------------------|----------------------|----------------------|-------------------------|
| Gasoline                              |              | 0.00                 | 0.00                 | 0.00                 | 0.00                    |
| Diesel Fuel                           |              | 0.00                 | 0.00                 | 0.00                 | 0.00                    |
| Propane                               |              | 0.00                 | 0.00                 | 0.00                 | 0.00                    |
|                                       |              | 0.00                 | 0.0000               | 0.0000               | 0.00                    |

| <b>BASELINE</b> Electricity        | kwh/year | CO2 (metric tons/yr) | CH4 (metric tons/yr) | N2O (metric tons/yr) | CO2e (metric tons/year) |
|------------------------------------|----------|----------------------|----------------------|----------------------|-------------------------|
| Electricity Consumption (kwh/year) |          | 0.0000               | 0.0000               | 0.0000               | 0.00                    |

| <b>BASELINE</b> Fertilizer  | Tons/year | CO2 (metric tons/yr) | CH4 (metric tons/yr) | N2O (metric tons/yr) | CO2e (metric tons/year) |
|-----------------------------|-----------|----------------------|----------------------|----------------------|-------------------------|
| Fertilizer Used (tons/year) |           | 0.00                 | 0.00                 | 0.00                 | 0.00                    |

| Animal Type              | Enteric Fermentation Emission Rates (metric tons CH4/head/yr) | Manure Emission Rates (metric tons CH4/head/yr) | Manure Emission Rates (metric tons N2O/head/yr) |
|--------------------------|---------------------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| Beef Cattle              | 0.085556                                                      | 0.002158                                        | 0.000000                                        |
| Beef Replacement Heifers | 0.066208                                                      | 0.001914                                        | 0.000000                                        |
| Steers                   | 0.033349                                                      | 0.001470                                        | 0.000000                                        |
| Bulls                    | 0.053000                                                      | 0.002793                                        | 0.000000                                        |
| Milk Cows                | 0.116520                                                      | 0.164125                                        | 0.000738                                        |
| Dry Cows                 | 0.116520                                                      | 0.165125                                        | 0.000738                                        |
| Heifers, 15-24 months    | 0.067047                                                      | 0.002210                                        | 0.001620                                        |
| Heifers, 7-14 months     | 0.042376                                                      | 0.002210                                        | 0.001620                                        |
| Heifers, 4-6 months      | 0.042376                                                      | 0.002210                                        | 0.001620                                        |
| Calves                   | 0.042376                                                      | 0.002210                                        | 0.001620                                        |
| Chickens (fryers)        | 0.000000                                                      | 0.000018                                        | 0.000002                                        |
| Goats, Hogs, Pigs        | 0.001500                                                      | 0.028228                                        | 0.000141                                        |
| Sheeps and Lambs         | 0.008000                                                      | 0.000781                                        | 0.000002                                        |
| Turkeys                  | 0.000000                                                      | 0.000086                                        | 0.000010                                        |

| Low Carbon Fuels Standards |                                      |                            |
|----------------------------|--------------------------------------|----------------------------|
| Year                       | % Reduction Gasoline and Diesel Fuel | % Reduction Tank to Wheels |
| 2010                       | 0.00                                 | 0.00                       |
| 2011                       | 0.25                                 | 0.18                       |
| 2012                       | 0.50                                 | 0.36                       |
| 2013                       | 1.00                                 | 0.72                       |
| 2014                       | 1.50                                 | 1.08                       |
| 2015                       | 2.50                                 | 1.80                       |
| 2016                       | 3.50                                 | 2.52                       |
| 2017                       | 5.00                                 | 3.60                       |
| 2018                       | 6.50                                 | 4.68                       |
| 2019                       | 8.00                                 | 5.76                       |
| 2020                       | 10.00                                | 7.20                       |
| 2021                       | 10.00                                | 7.20                       |
| 2022                       | 10.00                                | 7.20                       |
| 2023                       | 10.00                                | 7.20                       |
| 2024                       | 10.00                                | 7.20                       |
| 2025                       | 10.00                                | 7.20                       |
| 2026                       | 10.00                                | 7.20                       |
| 2027                       | 10.00                                | 7.20                       |
| 2028                       | 10.00                                | 7.20                       |
| 2029                       | 10.00                                | 7.20                       |
| 2030                       | 10.00                                | 7.20                       |
| 2031                       | 10.00                                | 7.20                       |
| 2032                       | 10.00                                | 7.20                       |
| 2033                       | 10.00                                | 7.20                       |
| 2034                       | 10.00                                | 7.20                       |
| 2035                       | 10.00                                | 7.20                       |
| 2036                       | 10.00                                | 7.20                       |
| 2037                       | 10.00                                | 7.20                       |
| 2038                       | 10.00                                | 7.20                       |
| 2039                       | 10.00                                | 7.20                       |
| 2040                       | 10.00                                | 7.20                       |

Source:  
Final Regulation Order  
Subchapter 10. Climate Change  
Article 4. Regulations to Achieve Greenhouse Gas Reductions  
Subarticle 7. Low Carbon Fuel Standard  
Section 95482. Average Carbon Intensity Requirements for Gasoline and Diesel

| Table C.3, CCAR | Table c.6, CCAR | Table C.6, CCAR |
|-----------------|-----------------|-----------------|
| CO2             | CH4             | N2O             |
| kg/gallon       | grams/gallon    | grams/gallon    |
| 8.81            | 1.26            | 0.22            |
| 10.15           | 1.44            | 0.26            |
| 5.74            | 0.09            | 0.41            |

| Table C.7, CCAR | Table C.9, CCAR | Table C.9, CCAR |
|-----------------|-----------------|-----------------|
| kg/gallon       | kg/gallon       | kg/gallon       |
| 8.8100          | 0.0014          | 0.0001          |
| 10.1500         | 0.0015          | 0.0001          |
| 5.7400          | 0.0010          | 0.0001          |

| Table E.1, CCAR CAMX<br>(#/MWh) | Table E.2, CCAR<br>(#/MWh) | Table E.2, CCAR(#,MWh) |
|---------------------------------|----------------------------|------------------------|
| 878.7100                        | 0.0067                     | 0.0037                 |

|         |                                                                   |
|---------|-------------------------------------------------------------------|
| 0.01425 | metric tons N2O per ton organic and synthetic fertilizers applied |
|---------|-------------------------------------------------------------------|

Off-Road Equipment

Baseline is currently: OFF

| Off-Road Equipment     |          |             |         |       |                        |          |             |         |       |                    |
|------------------------|----------|-------------|---------|-------|------------------------|----------|-------------|---------|-------|--------------------|
| Project                |          |             |         |       | Baseline               |          |             |         |       | Project - Baseline |
|                        | Gasoline | Diesel Fuel | Propane | Total |                        | Gasoline | Diesel Fuel | Propane | Total |                    |
| CO2 metric tons/year:  | 0.0000   | 0.0000      | 0.0000  | 0.00  | CO2 metric tons/year:  | 0.0000   | 0.0000      | 0.0000  | 0.00  |                    |
| CH4 metric tons/year:  | 0.0000   | 0.0000      | 0.0000  | 0.00  | CH4 metric tons/year:  | 0.0000   | 0.0000      | 0.0000  | 0.00  |                    |
| N2O metric tons/year:  | 0.0000   | 0.0000      | 0.0000  | 0.00  | N2O metric tons/year:  | 0.0000   | 0.0000      | 0.0000  | 0.00  |                    |
| CO2e metric tons/year: | 0.0000   | 0.0000      | 0.0000  | 0.00  | CO2e metric tons/year: | 0.0000   | 0.0000      | 0.0000  | 0.00  |                    |
| CO2e metric tons/year: |          |             |         |       |                        |          |             |         |       | 0.00               |

Off-Road Equipment (typically used in commercial and industrial activities, e.g., forklifts, compressors, etc.)  
(This does not include landscape maintenance equipment, which is accounted for in the area source calculations.)

| PROJECT Fuel Use | Total Gallons Used per Year |
|------------------|-----------------------------|
| Gasoline         |                             |
| Diesel Fuel      |                             |
| Propane          |                             |

Clear All User Inputs

| BASELINE Fuel Use | Total Gallons Used per Year |
|-------------------|-----------------------------|
| Gasoline          |                             |
| Diesel Fuel       |                             |
| Propane           |                             |

| Table C.3, CCAR<br>CO2<br>kg/gallon | Table c.6, CCAR<br>CH4<br>grams/gallon | Table C.6, CCAR<br>N2O<br>grams/gallon |
|-------------------------------------|----------------------------------------|----------------------------------------|
| 8.81                                | 0.50                                   | 0.22                                   |
| 10.15                               | 0.58                                   | 0.26                                   |
| 5.74                                | 0.09                                   | 0.41                                   |

Low Carbon Fuel Standard

| Year | % Reduction Gasoline and<br>Diesel Fuel | % Reduction Tank<br>to Wheels |
|------|-----------------------------------------|-------------------------------|
| 2010 | 0.00                                    | 0.00                          |
| 2011 | 0.25                                    | 0.18                          |
| 2012 | 0.50                                    | 0.36                          |
| 2013 | 1.00                                    | 0.72                          |
| 2014 | 1.50                                    | 1.08                          |
| 2015 | 2.50                                    | 1.80                          |
| 2016 | 3.50                                    | 2.52                          |
| 2017 | 5.00                                    | 3.60                          |
| 2018 | 6.50                                    | 4.68                          |
| 2019 | 8.00                                    | 5.76                          |
| 2020 | 10.00                                   | 7.20                          |
| 2021 | 10.00                                   | 7.20                          |
| 2022 | 10.00                                   | 7.20                          |
| 2023 | 10.00                                   | 7.20                          |
| 2024 | 10.00                                   | 7.20                          |
| 2025 | 10.00                                   | 7.20                          |
| 2026 | 10.00                                   | 7.20                          |
| 2027 | 10.00                                   | 7.20                          |
| 2028 | 10.00                                   | 7.20                          |
| 2029 | 10.00                                   | 7.20                          |
| 2030 | 10.00                                   | 7.20                          |
| 2031 | 10.00                                   | 7.20                          |
| 2032 | 10.00                                   | 7.20                          |
| 2033 | 10.00                                   | 7.20                          |
| 2034 | 10.00                                   | 7.20                          |
| 2035 | 10.00                                   | 7.20                          |
| 2036 | 10.00                                   | 7.20                          |
| 2037 | 10.00                                   | 7.20                          |
| 2038 | 10.00                                   | 7.20                          |
| 2039 | 10.00                                   | 7.20                          |
| 2040 | 10.00                                   | 7.20                          |

Source:  
 Final Regulation Order  
 Subchapter 10. Climate Change  
 Article 4. Regulations to Achieve Greenhouse Gas Reductions  
 Subarticle 7. Low Carbon Fuel Standard  
 Section 95482. Average Carbon Intensity Requirements for Gasoline and Diesel

Refrigerants

Baseline is currently: OFF

| Unmitigated Refrigerants                     |         |          |                    |
|----------------------------------------------|---------|----------|--------------------|
|                                              | Project | Baseline | Project - Baseline |
| Refrigeration Systems CO2e metric tons/year: | 0.00    | 0.00     |                    |
| AC Systems CO2e metric tons/year:            | 0.00    | 0.00     |                    |
| Total Refrigerants CO2e metric tons/year:    | 0.00    | 0.00     |                    |
|                                              |         |          | 0.00               |

| Mitigated Refrigerants                       |         |          |                    |
|----------------------------------------------|---------|----------|--------------------|
|                                              | Project | Baseline | Project - Baseline |
| Refrigeration Systems CO2e metric tons/year: | 0.00    | 0.00     |                    |
| AC Systems CO2e metric tons/year:            | 0.00    | 0.00     |                    |
| Total Refrigerants CO2e metric tons/year:    | 0.00    | 0.00     |                    |
|                                              |         |          | 0.00               |

\*\*\* Select Mitigation Measures on the Mitigation Tab ==> [Mitigation](#)

|                               | Refrigerant Charge (pounds) | Leakage Rate (pounds/year) | User Override of Leakage Rate (pounds/year) | Default GWP (weighted average) | User Override of GWP | CO2e (metric tons/year) |
|-------------------------------|-----------------------------|----------------------------|---------------------------------------------|--------------------------------|----------------------|-------------------------|
| PROJECT Refrigeration Systems |                             |                            |                                             |                                |                      |                         |
| Centralized                   |                             | 0.00                       |                                             | 2,663.60                       |                      | 0.00                    |
| Cold Storage                  |                             | 0.00                       |                                             | 2,430.12                       |                      | 0.00                    |
| Process Cooling               |                             | 0.00                       |                                             | 2,018.92                       |                      | 0.00                    |
| Refrigerant Condensing Units  |                             | 0.00                       |                                             | 2,087.30                       |                      | 0.00                    |
| PROJECT AC Systems            |                             |                            |                                             |                                |                      |                         |
| Centrifugal Chiller (large)   |                             | 0.00                       |                                             | 1,495.17                       |                      | 0.00                    |
| Centrifugal Chiller (medium)  |                             | 0.00                       |                                             | 1,495.17                       |                      | 0.00                    |
| Packaged Chiller (medium)     |                             | 0.00                       |                                             | 1,495.17                       |                      | 0.00                    |
| Unitary AC (small)            |                             | 0.00                       |                                             | 1,575.12                       |                      | 0.00                    |

\* If user knows type of refrigerant proposed, then the default GWP value should be used to override the default value

|                                | Refrigerant Charge (pounds) | Leakage Rate (pounds/year) | User Override of Leakage Rate (pounds/year) | Default GWP (weighted average) | User Override of GWP | CO2e (metric tons/year) |
|--------------------------------|-----------------------------|----------------------------|---------------------------------------------|--------------------------------|----------------------|-------------------------|
| BASELINE Refrigeration Systems |                             |                            |                                             |                                |                      |                         |
| Centralized                    |                             | 0.00                       |                                             | 2,594.06                       |                      | 0.00                    |
| Cold Storage                   |                             | 0.00                       |                                             | 2,438.02                       |                      | 0.00                    |
| Process Cooling                |                             | 0.00                       |                                             | 2,120.76                       |                      | 0.00                    |
| Refrigerant Condensing Units   |                             | 0.00                       |                                             | 2,065.05                       |                      | 0.00                    |
| BASELINE AC Systems            |                             |                            |                                             |                                |                      |                         |
| Centrifugal Chiller (large)    |                             | 0.00                       |                                             | 1,513.40                       |                      | 0.00                    |
| Centrifugal Chiller (medium)   |                             | 0.00                       |                                             | 1,513.40                       |                      | 0.00                    |
| Packaged Chiller (medium)      |                             | 0.00                       |                                             | 1,513.40                       |                      | 0.00                    |
| Unitary AC (small)             |                             | 0.00                       |                                             | 1,561.35                       |                      | 0.00                    |

\* If user knows type of refrigerant proposed, then the default GWP value should be used to override the default value

| Average Leak Rates (Annual   | Default       |
|------------------------------|---------------|
| Refrigeration Systems        | Leak Rate (%) |
| Centralized                  | 10.00         |
| Cold Storage                 | 10.00         |
| Process Cooling              | 7.00          |
| Refrigerant Condensing Units | 5.00          |
| AC Systems                   |               |
| Centrifugal Chiller (large)  | 2.00          |
| Centrifugal Chiller (medium) | 1.00          |
| Packaged Chiller (medium)    | 3.50          |
| Unitary AC (small)           | 5.00          |

Refrigerant Losses: Based Primarily on Appendix B: California Facilities and GHG Emissions Inventory - High Global Warming Potential Stationary Source Refrigerant Management Program

|                               |       |          |          |          |          |          |          |          |          |          |          |          |
|-------------------------------|-------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Refrigerant Distribution      |       |          |          |          |          |          |          |          |          |          |          |          |
| Centralized Systems           | GWP   | 2,010.00 | 2,011.00 | 2,012.00 | 2,013.00 | 2,014.00 | 2,015.00 | 2,016.00 | 2,017.00 | 2,018.00 | 2,019.00 | 2,020.00 |
| HCFC-22                       | 1,500 | 42.20    |          |          |          |          |          |          |          |          |          | 3.00     |
| R-404A                        | 3,260 | 39.70    |          |          |          |          |          |          |          |          |          | 65.20    |
| R-507                         | 3,300 | 18.10    |          |          |          |          |          |          |          |          |          | 31.80    |
| Weighted GWP                  |       | 2,524.52 | 2,594.06 | 2,663.60 | 2,733.14 | 2,802.68 | 2,872.22 | 2,941.76 | 3,011.30 | 3,080.84 | 3,150.38 | 3,219.92 |
| Cold Storage                  |       |          |          |          |          |          |          |          |          |          |          |          |
| CFC-12                        | 8,100 | 2.00     |          |          |          |          |          |          |          |          |          | 0.00     |
| HCFC-22                       | 1,500 | 56.60    |          |          |          |          |          |          |          |          |          | 28.10    |
| R-404A                        | 3,260 | 26.20    |          |          |          |          |          |          |          |          |          | 54.20    |
| R-502                         | 4,500 | 6.60     |          |          |          |          |          |          |          |          |          | 0.00     |
| R-507                         | 3,300 | 8.60     |          |          |          |          |          |          |          |          |          | 17.70    |
| Weighted GWP                  |       | 2,445.92 | 2,438.02 | 2,430.12 | 2,422.22 | 2,414.32 | 2,406.42 | 2,398.52 | 2,390.62 | 2,382.72 | 2,374.82 | 2,366.92 |
| Process Cooling               |       |          |          |          |          |          |          |          |          |          |          |          |
| CFC-11                        | 3,800 | 1.00     |          |          |          |          |          |          |          |          |          | 0.00     |
| CFC-12                        | 8,100 | 15.60    |          |          |          |          |          |          |          |          |          | 0.00     |
| HCFC-22                       | 1,500 | 22.00    |          |          |          |          |          |          |          |          |          | 11.00    |
| HCFC-123                      | 90    | 23.30    |          |          |          |          |          |          |          |          |          | 29.40    |
| HFC-134A                      | 1,300 | 33.30    |          |          |          |          |          |          |          |          |          | 44.50    |
| R-401A                        | 970   | 0.40     |          |          |          |          |          |          |          |          |          | 0.30     |
| R-404a                        | 3,260 | 2.70     |          |          |          |          |          |          |          |          |          | 8.80     |
| R-410A                        | 1,725 | 0.90     |          |          |          |          |          |          |          |          |          | 3.40     |
| R-507                         | 3,300 | 0.90     |          |          |          |          |          |          |          |          |          | 2.60     |
| Weighted GWP                  |       | 2,222.60 | 2,120.76 | 2,018.92 | 1,917.08 | 1,815.24 | 1,713.40 | 1,611.56 | 1,509.72 | 1,407.88 | 1,306.04 | 1,204.20 |
| Refrigerated Condensing Units |       |          |          |          |          |          |          |          |          |          |          |          |
| CFC-12                        | 8,100 | 2.20     |          |          |          |          |          |          |          |          |          | 0.00     |
| HCFC-22                       | 1,500 | 30.40    |          |          |          |          |          |          |          |          |          | 7.30     |
| HFC-134a                      | 1,300 | 40.40    |          |          |          |          |          |          |          |          |          | 44.50    |
| R-404a                        | 3,260 | 19.00    |          |          |          |          |          |          |          |          |          | 33.30    |
| R-507                         | 3,300 | 8.00     |          |          |          |          |          |          |          |          |          | 14.90    |
| Weighted GWP                  |       | 2,042.80 | 2,065.05 | 2,087.30 | 2,109.54 | 2,131.79 | 2,154.04 | 2,176.29 | 2,198.54 | 2,220.78 | 2,243.03 | 2,265.28 |
| Chillers                      |       |          |          |          |          |          |          |          |          |          |          |          |
| CFC-11                        | 3,800 | 2.60     |          |          |          |          |          |          |          |          |          | 0.00     |
| CFC-12                        | 8,100 | 0.90     |          |          |          |          |          |          |          |          |          | 0.00     |
| HCFC-22                       | 1,500 | 73.80    |          |          |          |          |          |          |          |          |          | 32.30    |
| HCFC-123                      | 90    | 6.80     |          |          |          |          |          |          |          |          |          | 8.20     |
| CFC-114                       | 9,300 | 0.10     |          |          |          |          |          |          |          |          |          | 0.00     |
| HFC-134A                      | 1,300 | 14.10    |          |          |          |          |          |          |          |          |          | 32.30    |
| HFC-236fa                     | 6,300 | 0.40     |          |          |          |          |          |          |          |          |          | 0.10     |
| R-407a                        | 1,526 | 1.00     |          |          |          |          |          |          |          |          |          | 18.20    |
| R-410a                        | 1,725 | 0.10     |          |          |          |          |          |          |          |          |          | 8.90     |
| R-500                         | 6,010 | 0.20     |          |          |          |          |          |          |          |          |          | 0.00     |
| Weighted GWP                  |       | 1,531.63 | 1,513.40 | 1,495.17 | 1,476.94 | 1,458.71 | 1,440.48 | 1,422.25 | 1,404.02 | 1,385.79 | 1,367.57 | 1,349.34 |
| Unitary AC                    |       |          |          |          |          |          |          |          |          |          |          |          |
| HCFC-22                       | 1,500 | 78.40    |          |          |          |          |          |          |          |          |          | 15.00    |
| HFC-134a                      | 1,300 | 0.10     |          |          |          |          |          |          |          |          |          | 0.70     |
| R-407a                        | 1,526 | 0.30     |          |          |          |          |          |          |          |          |          | 1.50     |
| R-410a                        | 1,725 | 21.20    |          |          |          |          |          |          |          |          |          | 82.80    |
| Weighted GWP                  |       | 1,547.58 | 1,561.35 | 1,575.12 | 1,588.89 | 1,602.66 | 1,616.43 | 1,630.21 | 1,643.98 | 1,657.75 | 1,671.52 | 1,685.29 |

## Mitigation

Baseline is currently: OFF

### Mitigation Category

|                           |                                         |                                            |                                 |                      |
|---------------------------|-----------------------------------------|--------------------------------------------|---------------------------------|----------------------|
| Electricity & Natural Gas | Check=On                                | Mitigation Options                         | MMBtu/year Reduced              |                      |
|                           | <input type="checkbox"/>                | Solar Water Heater                         | 5000                            |                      |
|                           | <input type="checkbox"/>                | Tankless Water Heater                      | 5000                            |                      |
|                           |                                         |                                            |                                 |                      |
|                           |                                         |                                            | kwh/year reduced                | MMBtu/year Increased |
|                           | <input type="checkbox"/>                | Cool Roofs/Green Roofs                     | 5000                            | 2                    |
|                           |                                         |                                            | % Increase In Energy Efficiency |                      |
|                           | <input type="checkbox"/>                | Increase Energy Efficiency Beyond Title 24 | 10                              |                      |
|                           |                                         |                                            | kwh/year generated              |                      |
|                           | <input type="checkbox"/>                | Onsite Renewable Energy Systems - Solar    | 5000                            |                      |
| <input type="checkbox"/>  | Onsite Renewable Energy Systems - Wind  | 5000                                       |                                 |                      |
| <input type="checkbox"/>  | Onsite Renewable Energy Systems - Other | 5000                                       |                                 |                      |

|                          |                          |                              |
|--------------------------|--------------------------|------------------------------|
| Water and Wastewater     |                          | % Reduction Outdoor Use      |
|                          | <input type="checkbox"/> | Drought Tolerant Landscaping |
|                          |                          | % Reduction Indoor Use       |
| <input type="checkbox"/> | Low Flush Toilets        | 20                           |

|             |                          |                                                |
|-------------|--------------------------|------------------------------------------------|
| Solid Waste |                          | Solid Waste Reduction %                        |
|             | <input type="checkbox"/> | Reduce Solid Waste by the Following Percentage |
|             |                          | 10                                             |

|              |                          |                              |
|--------------|--------------------------|------------------------------|
| Refrigerants |                          | % Reduction                  |
|              | <input type="checkbox"/> | Use Ammonia of CFCs or HCFCs |
|              |                          | 50                           |

|                   |                          |                                     |
|-------------------|--------------------------|-------------------------------------|
| Offsets / Credits |                          | Metric Tons CO2e/Year               |
|                   | <input type="checkbox"/> | Purchase Emission Offsets / Credits |
|                   |                          | 5000                                |

|                      | Unmitigated Project-Baseline Emissions<br>CO2e/year | Mitigated Project-Baseline Emissions<br>CO2e/year |
|----------------------|-----------------------------------------------------|---------------------------------------------------|
| Transportation       | 561.13                                              | 486.45                                            |
| Area Sources         | 1.13                                                | 1.13                                              |
| Electricity          | 201.05                                              | 201.05                                            |
| Natural Gas          | 137.89                                              | 137.89                                            |
| Water and Wastewater | 22.61                                               | 22.61                                             |
| Solid Waste          | 91.57                                               | 91.57                                             |
| Ag                   | 0.00                                                | 0.00                                              |
| Off-Road Equipment   | 0.00                                                | 0.00                                              |
| Refrigerants         | 0.00                                                | 0.00                                              |
| Sequestration        | N/A                                                 | 0.00                                              |
| Emission Credits     | N/A                                                 | 0.00                                              |
| Totals               | 1,015.40                                            | 940.72                                            |

**Calculations for Mitigation Selections**

|                                              |   |
|----------------------------------------------|---|
|                                              | 0 |
|                                              | 0 |
|                                              | 0 |
| Change in Natural Gas Use (MMBtu/year)       | 0 |
|                                              | 0 |
|                                              | 0 |
|                                              | 0 |
| Change in Electricity Use (kwh/year)         | 0 |
| Percentage Reduction in Elec and Nat Gas Use | 0 |
| % Reduction Outdoor H2O Use                  | 0 |
| % Reduction Indoor Water Use                 | 0 |
| Solid Waste Reduction %                      | 0 |
| % Reduction in CFC/HCFC Use                  | 0 |

Carbon Sequestration

|                                    |      |
|------------------------------------|------|
| Project Year:                      | 2012 |
| Emissions (CO2e metric tons/year): | 0.00 |

| Gas            | Type            | Unit of Measure | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|----------------|-----------------|-----------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Carbon dioxide | Total Storage   | metric tons     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Carbon dioxide | Annual Increase | metric tons     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| Year | Number of Trees Planted |        |      |          |        |      |
|------|-------------------------|--------|------|----------|--------|------|
|      | Hardwoods               |        |      | Conifers |        |      |
|      | Fast                    | Medium | Slow | Fast     | Medium | Slow |
| 2010 |                         |        |      |          |        |      |
| 2011 |                         |        |      |          |        |      |
| 2012 |                         |        |      |          |        |      |
| 2013 |                         |        |      |          |        |      |
| 2014 |                         |        |      |          |        |      |
| 2015 |                         |        |      |          |        |      |
| 2016 |                         |        |      |          |        |      |
| 2017 |                         |        |      |          |        |      |
| 2018 |                         |        |      |          |        |      |
| 2019 |                         |        |      |          |        |      |
| 2020 |                         |        |      |          |        |      |
| 2021 |                         |        |      |          |        |      |
| 2022 |                         |        |      |          |        |      |
| 2023 |                         |        |      |          |        |      |
| 2024 |                         |        |      |          |        |      |

Clear All User Inputs

| A. Species Characteristics                           |                       | B. Carbon Sequestered in Reporting Year |                            |                           |                    |                           |                         |                      | C. Total Carbon Sequestered in Reporting Year |        |
|------------------------------------------------------|-----------------------|-----------------------------------------|----------------------------|---------------------------|--------------------|---------------------------|-------------------------|----------------------|-----------------------------------------------|--------|
| Name                                                 | Tree Type<br>(H OR C) | Growth Rate<br>(S,M, or F)              | Tree Age<br>Reporting Year | No. Planted<br>(At Age 0) | Survival<br>Factor | No. of Trees<br>Surviving | Seq. Rate<br>(lbs/tree) | Carbon Seq.<br>(lbs) |                                               | (tons) |
| Fast-growth hardwoods                                | H                     | F                                       | 0                          | 0                         | 0.873              | 0.0                       | 2.7                     | 0.0                  | 0.00                                          |        |
| Med-growth hardwoods                                 | H                     | M                                       | 0                          | 0                         | 0.873              | 0.0                       | 1.9                     | 0.0                  | 0.00                                          |        |
| Slow-growth hardwoods                                | H                     | S                                       | 0                          | 0                         | 0.873              | 0.0                       | 1.3                     | 0.0                  | 0.00                                          |        |
| Fast-growth conifers                                 | C                     | F                                       | 0                          | 0                         | 0.873              | 0.0                       | 1.4                     | 0.0                  | 0.00                                          |        |
| Med-growth conifers                                  | C                     | M                                       | 0                          | 0                         | 0.873              | 0.0                       | 1.0                     | 0.0                  | 0.00                                          |        |
| Slow-growth conifers                                 | C                     | S                                       | 0                          | 0                         | 0.873              | 0.0                       | 0.7                     | 0.0                  | 0.00                                          |        |
| Total Carbon Sequestered in Reporting Year           |                       |                                         |                            |                           |                    |                           |                         |                      | 0.00                                          |        |
| Total CO2 Sequestered in Reporting Year (C x 3.6667) |                       |                                         |                            |                           |                    |                           |                         | 0.0                  | 0.00                                          |        |

| A. Species Characteristics                           |                       |                            | B                        | C                         | D                  | E                         | F                       | G                    |        |
|------------------------------------------------------|-----------------------|----------------------------|--------------------------|---------------------------|--------------------|---------------------------|-------------------------|----------------------|--------|
| Name                                                 | Tree Type<br>(H OR C) | Growth Rate<br>(S,M, or F) | Tree Age<br>Reporting Yr | No. Planted<br>(At Age 0) | Survival<br>Factor | No. of Trees<br>Surviving | Seq. Rate<br>(lbs/tree) | Carbon Seq.<br>(lbs) | (tons) |
| Fast-growth hardwoods                                | H                     | F                          | 0                        | 0                         | 0.873              | 0.0                       | 2.7                     | 0.0                  | 0.00   |
| Med-growth hardwoods                                 | H                     | M                          | 0                        | 0                         | 0.873              | 0.0                       | 1.9                     | 0.0                  | 0.00   |
| Slow-growth hardwoods                                | H                     | S                          | 0                        | 0                         | 0.873              | 0.0                       | 1.3                     | 0.0                  | 0.00   |
| Fast-growth conifers                                 | C                     | F                          | 0                        | 0                         | 0.873              | 0.0                       | 1.4                     | 0.0                  | 0.00   |
| Med-growth conifers                                  | C                     | M                          | 0                        | 0                         | 0.873              | 0.0                       | 1.0                     | 0.0                  | 0.00   |
| Slow-growth conifers                                 | C                     | S                          | 0                        | 0                         | 0.873              | 0.0                       | 0.7                     | 0.0                  | 0.00   |
| Fast-growth hardwoods                                | H                     | F                          | 1                        | 0                         | 0.798              | 0.0                       | 4                       | 0.0                  | 0.00   |
| Med-growth hardwoods                                 | H                     | M                          | 1                        | 0                         | 0.798              | 0.0                       | 2.7                     | 0.0                  | 0.00   |
| Slow-growth hardwoods                                | H                     | S                          | 1                        | 0                         | 0.798              | 0.0                       | 1.6                     | 0.0                  | 0.00   |
| Fast-growth conifers                                 | C                     | F                          | 1                        | 0                         | 0.798              | 0.0                       | 2.2                     | 0.0                  | 0.00   |
| Med-growth conifers                                  | C                     | M                          | 1                        | 0                         | 0.798              | 0.0                       | 1.5                     | 0.0                  | 0.00   |
| Slow-growth conifers                                 | C                     | S                          | 1                        | 0                         | 0.798              | 0.0                       | 0.9                     | 0.0                  | 0.00   |
| Total Carbon Sequestered in Reporting Year           |                       |                            |                          |                           |                    |                           |                         | 0.0                  | 0.00   |
| Total CO2 Sequestered in Reporting Year (C x 3.6667) |                       |                            |                          |                           |                    |                           |                         | 0.0                  | 0.00   |

| A. Species Characteristics                           |                    |                         | B                     | C                      | D               | E                      | F                    | G           |        |
|------------------------------------------------------|--------------------|-------------------------|-----------------------|------------------------|-----------------|------------------------|----------------------|-------------|--------|
| Name                                                 | Tree Type (H OR C) | Growth Rate (S,M, or F) | Tree Age Reporting Yr | No. Planted (At Age 0) | Survival Factor | No. of Trees Surviving | Seq. Rate (lbs/acre) | Carbon Seq. |        |
|                                                      |                    |                         |                       |                        |                 |                        |                      | (lbs)       | (tons) |
| Fast-growth hardwoods                                | H                  | F                       | 0                     | 0                      | 0.873           | 0.0                    | 2.7                  | 0.0         | 0.00   |
| Med-growth hardwoods                                 | H                  | M                       | 0                     | 0                      | 0.873           | 0.0                    | 1.9                  | 0.0         | 0.00   |
| Slow-growth hardwoods                                | H                  | S                       | 0                     | 0                      | 0.873           | 0.0                    | 1.3                  | 0.0         | 0.00   |
| Fast-growth conifers                                 | C                  | F                       | 0                     | 0                      | 0.873           | 0.0                    | 1.4                  | 0.0         | 0.00   |
| Med-growth conifers                                  | C                  | M                       | 0                     | 0                      | 0.873           | 0.0                    | 1.0                  | 0.0         | 0.00   |
| Slow-growth conifers                                 | C                  | S                       | 0                     | 0                      | 0.873           | 0.0                    | 0.7                  | 0.0         | 0.00   |
| Fast-growth hardwoods                                | H                  | F                       | 1                     | 0                      | 0.798           | 0.0                    | 4                    | 0.0         | 0.00   |
| Med-growth hardwoods                                 | H                  | M                       | 1                     | 0                      | 0.798           | 0.0                    | 2.7                  | 0.0         | 0.00   |
| Slow-growth hardwoods                                | H                  | S                       | 1                     | 0                      | 0.798           | 0.0                    | 1.6                  | 0.0         | 0.00   |
| Fast-growth conifers                                 | C                  | F                       | 1                     | 0                      | 0.798           | 0.0                    | 2.2                  | 0.0         | 0.00   |
| Med-growth conifers                                  | C                  | M                       | 1                     | 0                      | 0.798           | 0.0                    | 1.5                  | 0.0         | 0.00   |
| Slow-growth conifers                                 | C                  | S                       | 1                     | 0                      | 0.798           | 0.0                    | 0.9                  | 0.0         | 0.00   |
| Fast-growth hardwoods                                | H                  | F                       | 2                     | 0                      | 0.736           | 0.0                    | 5.4                  | 0.0         | 0.00   |
| Med-growth hardwoods                                 | H                  | M                       | 2                     | 0                      | 0.736           | 0.0                    | 3.5                  | 0.0         | 0.00   |
| Slow-growth hardwoods                                | H                  | S                       | 2                     | 0                      | 0.736           | 0.0                    | 2.0                  | 0.0         | 0.00   |
| Fast-growth conifers                                 | C                  | F                       | 2                     | 0                      | 0.736           | 0.0                    | 3.1                  | 0.0         | 0.00   |
| Med-growth conifers                                  | C                  | M                       | 2                     | 0                      | 0.736           | 0.0                    | 2.0                  | 0.0         | 0.00   |
| Slow-growth conifers                                 | C                  | S                       | 2                     | 0                      | 0.736           | 0.0                    | 1.1                  | 0.0         | 0.00   |
| Total Carbon Sequestered in Reporting Year           |                    |                         |                       |                        |                 |                        |                      | 0.0         | 0.00   |
| Total CO2 Sequestered in Reporting Year (C x 3.6667) |                    |                         |                       |                        |                 |                        |                      | 0.0         | 0.00   |

| A. Species Characteristics                           |                       |                            | B                          | C                         | D                  | E                         | F                       | G           |        |
|------------------------------------------------------|-----------------------|----------------------------|----------------------------|---------------------------|--------------------|---------------------------|-------------------------|-------------|--------|
| Name                                                 | Tree Type<br>(H OR C) | Growth Rate<br>(S,M, or F) | Tree Age<br>Reporting Year | No. Planted<br>(At Age 0) | Survival<br>Factor | No. of Trees<br>Surviving | Seq. Rate<br>(lbs/FR C) | Carbon Seq. |        |
|                                                      |                       |                            |                            |                           |                    |                           |                         | (lbs)       | (tons) |
| Fast-growth hardwoods                                | H                     | F                          | 0                          | 0                         | 0.873              | 0.0                       | 2.7                     | 0.0         | 0.00   |
| Med-growth hardwoods                                 | H                     | M                          | 0                          | 0                         | 0.873              | 0.0                       | 1.9                     | 0.0         | 0.00   |
| Slow-growth hardwoods                                | H                     | S                          | 0                          | 0                         | 0.873              | 0.0                       | 1.3                     | 0.0         | 0.00   |
| Fast-growth conifers                                 | C                     | F                          | 0                          | 0                         | 0.873              | 0.0                       | 1.4                     | 0.0         | 0.00   |
| Med-growth conifers                                  | C                     | M                          | 0                          | 0                         | 0.873              | 0.0                       | 1.0                     | 0.0         | 0.00   |
| Slow-growth conifers                                 | C                     | S                          | 0                          | 0                         | 0.873              | 0.0                       | 0.7                     | 0.0         | 0.00   |
| Fast-growth hardwoods                                | H                     | F                          | 1                          | 0                         | 0.798              | 0.0                       | 4                       | 0.0         | 0.00   |
| Med-growth hardwoods                                 | H                     | M                          | 1                          | 0                         | 0.798              | 0.0                       | 2.7                     | 0.0         | 0.00   |
| Slow-growth hardwoods                                | H                     | S                          | 1                          | 0                         | 0.798              | 0.0                       | 1.6                     | 0.0         | 0.00   |
| Fast-growth conifers                                 | C                     | F                          | 1                          | 0                         | 0.798              | 0.0                       | 2.2                     | 0.0         | 0.00   |
| Med-growth conifers                                  | C                     | M                          | 1                          | 0                         | 0.798              | 0.0                       | 1.5                     | 0.0         | 0.00   |
| Slow-growth conifers                                 | C                     | S                          | 1                          | 0                         | 0.798              | 0.0                       | 0.9                     | 0.0         | 0.00   |
| Fast-growth hardwoods                                | H                     | F                          | 2                          | 0                         | 0.736              | 0.0                       | 5.4                     | 0.0         | 0.00   |
| Med-growth hardwoods                                 | H                     | M                          | 2                          | 0                         | 0.736              | 0.0                       | 3.5                     | 0.0         | 0.00   |
| Slow-growth hardwoods                                | H                     | S                          | 2                          | 0                         | 0.736              | 0.0                       | 2.0                     | 0.0         | 0.00   |
| Fast-growth conifers                                 | C                     | F                          | 2                          | 0                         | 0.736              | 0.0                       | 3.1                     | 0.0         | 0.00   |
| Med-growth conifers                                  | C                     | M                          | 2                          | 0                         | 0.736              | 0.0                       | 2.0                     | 0.0         | 0.00   |
| Slow-growth conifers                                 | C                     | S                          | 2                          | 0                         | 0.736              | 0.0                       | 1.1                     | 0.0         | 0.00   |
| Fast-growth hardwoods                                | H                     | F                          | 3                          | 0                         | 0.706              | 0.0                       | 6.9                     | 0.0         | 0.00   |
| Med-growth hardwoods                                 | H                     | M                          | 3                          | 0                         | 0.706              | 0.0                       | 4.3                     | 0.0         | 0.00   |
| Slow-growth hardwoods                                | H                     | S                          | 3                          | 0                         | 0.706              | 0.0                       | 2.4                     | 0.0         | 0.00   |
| Fast-growth conifers                                 | C                     | F                          | 3                          | 0                         | 0.706              | 0.0                       | 4.1                     | 0.0         | 0.00   |
| Med-growth conifers                                  | C                     | M                          | 3                          | 0                         | 0.706              | 0.0                       | 2.5                     | 0.0         | 0.00   |
| Slow-growth conifers                                 | C                     | S                          | 3                          | 0                         | 0.706              | 0.0                       | 1.4                     | 0.0         | 0.00   |
| Total Carbon Sequestered in Reporting Year           |                       |                            |                            |                           |                    |                           |                         | 0.0         | 0.00   |
| Total CO2 Sequestered in Reortning Year (C x 3.6667) |                       |                            |                            |                           |                    |                           |                         | 0.0         | 0.00   |

| A. Species Characteristics                           |                       |                            | B                          | C                         | D                  | E                         | F                       | G           |        |
|------------------------------------------------------|-----------------------|----------------------------|----------------------------|---------------------------|--------------------|---------------------------|-------------------------|-------------|--------|
| Name                                                 | Tree Type<br>(H OR C) | Growth Rate<br>(S,M, or F) | Tree Age<br>Reporting Year | No. Planted<br>(At Age 0) | Survival<br>Factor | No. of Trees<br>Surviving | Seq. Rate<br>(lbs/tree) | Carbon Seq. |        |
|                                                      |                       |                            |                            |                           |                    |                           |                         | (lbs)       | (tons) |
| Fast-growth hardwoods                                | H                     | F                          | 0                          | 0                         | 0.873              | 0.0                       | 2.7                     | 0.0         | 0.00   |
| Med-growth hardwoods                                 | H                     | M                          | 0                          | 0                         | 0.873              | 0.0                       | 1.9                     | 0.0         | 0.00   |
| Slow-growth hardwoods                                | H                     | S                          | 0                          | 0                         | 0.873              | 0.0                       | 1.3                     | 0.0         | 0.00   |
| Fast-growth conifers                                 | C                     | F                          | 0                          | 0                         | 0.873              | 0.0                       | 1.4                     | 0.0         | 0.00   |
| Med-growth conifers                                  | C                     | M                          | 0                          | 0                         | 0.873              | 0.0                       | 1.0                     | 0.0         | 0.00   |
| Slow-growth conifers                                 | C                     | S                          | 0                          | 0                         | 0.873              | 0.0                       | 0.7                     | 0.0         | 0.00   |
| Fast-growth hardwoods                                | H                     | F                          | 1                          | 0                         | 0.798              | 0.0                       | 4                       | 0.0         | 0.00   |
| Med-growth hardwoods                                 | H                     | M                          | 1                          | 0                         | 0.798              | 0.0                       | 2.7                     | 0.0         | 0.00   |
| Slow-growth hardwoods                                | H                     | S                          | 1                          | 0                         | 0.798              | 0.0                       | 1.6                     | 0.0         | 0.00   |
| Fast-growth conifers                                 | C                     | F                          | 1                          | 0                         | 0.798              | 0.0                       | 2.2                     | 0.0         | 0.00   |
| Med-growth conifers                                  | C                     | M                          | 1                          | 0                         | 0.798              | 0.0                       | 1.5                     | 0.0         | 0.00   |
| Slow-growth conifers                                 | C                     | S                          | 1                          | 0                         | 0.798              | 0.0                       | 0.9                     | 0.0         | 0.00   |
| Fast-growth hardwoods                                | H                     | F                          | 2                          | 0                         | 0.736              | 0.0                       | 5.4                     | 0.0         | 0.00   |
| Med-growth hardwoods                                 | H                     | M                          | 2                          | 0                         | 0.736              | 0.0                       | 3.5                     | 0.0         | 0.00   |
| Slow-growth hardwoods                                | H                     | S                          | 2                          | 0                         | 0.736              | 0.0                       | 2.0                     | 0.0         | 0.00   |
| Fast-growth conifers                                 | C                     | F                          | 2                          | 0                         | 0.736              | 0.0                       | 3.1                     | 0.0         | 0.00   |
| Med-growth conifers                                  | C                     | M                          | 2                          | 0                         | 0.736              | 0.0                       | 2.0                     | 0.0         | 0.00   |
| Slow-growth conifers                                 | C                     | S                          | 2                          | 0                         | 0.736              | 0.0                       | 1.1                     | 0.0         | 0.00   |
| Fast-growth hardwoods                                | H                     | F                          | 3                          | 0                         | 0.706              | 0.0                       | 6.9                     | 0.0         | 0.00   |
| Med-growth hardwoods                                 | H                     | M                          | 3                          | 0                         | 0.706              | 0.0                       | 4.3                     | 0.0         | 0.00   |
| Slow-growth hardwoods                                | H                     | S                          | 3                          | 0                         | 0.706              | 0.0                       | 2.4                     | 0.0         | 0.00   |
| Fast-growth conifers                                 | C                     | F                          | 3                          | 0                         | 0.706              | 0.0                       | 4.1                     | 0.0         | 0.00   |
| Med-growth conifers                                  | C                     | M                          | 3                          | 0                         | 0.706              | 0.0                       | 2.5                     | 0.0         | 0.00   |
| Slow-growth conifers                                 | C                     | S                          | 3                          | 0                         | 0.706              | 0.0                       | 1.4                     | 0.0         | 0.00   |
| Fast-growth hardwoods                                | H                     | F                          | 4                          | 0                         | 0.678              | 0.0                       | 8.5                     | 0.0         | 0.00   |
| Med-growth hardwoods                                 | H                     | M                          | 4                          | 0                         | 0.678              | 0.0                       | 5.2                     | 0.0         | 0.00   |
| Slow-growth hardwoods                                | H                     | S                          | 4                          | 0                         | 0.678              | 0.0                       | 2.8                     | 0.0         | 0.00   |
| Fast-growth conifers                                 | C                     | F                          | 4                          | 0                         | 0.678              | 0.0                       | 5.2                     | 0.0         | 0.00   |
| Med-growth conifers                                  | C                     | M                          | 4                          | 0                         | 0.678              | 0.0                       | 3.1                     | 0.0         | 0.00   |
| Slow-growth conifers                                 | C                     | S                          | 4                          | 0                         | 0.678              | 0.0                       | 1.6                     | 0.0         | 0.00   |
| Total Carbon Sequestered in Reporting Year           |                       |                            |                            |                           |                    |                           |                         | 0.0         | 0.00   |
| Total CO2 Sequestered in Reporting Year (C x 3.6667) |                       |                            |                            |                           |                    |                           |                         | 0.0         | 0.00   |

| A. Species Characteristics                           |                       |                            | B                          | C                         | D                  | E                         | F                       | G                           |      |
|------------------------------------------------------|-----------------------|----------------------------|----------------------------|---------------------------|--------------------|---------------------------|-------------------------|-----------------------------|------|
| Name                                                 | Tree Type<br>(H OR C) | Growth Rate<br>(S,M, or F) | Tree Age<br>Reporting Year | No. Planted<br>(At Age 0) | Survival<br>Factor | No. of Trees<br>Surviving | Seq. Rate<br>(lbs/tree) | Carbon Seq.<br>(lbs) (tons) |      |
| Fast-growth hardwoods                                | H                     | F                          | 0                          | 0                         | 0.873              | 0.0                       | 2.7                     | 0.0                         | 0.00 |
| Med-growth hardwoods                                 | H                     | M                          | 0                          | 0                         | 0.873              | 0.0                       | 1.9                     | 0.0                         | 0.00 |
| Slow-growth hardwoods                                | H                     | S                          | 0                          | 0                         | 0.873              | 0.0                       | 1.3                     | 0.0                         | 0.00 |
| Fast-growth conifers                                 | C                     | F                          | 0                          | 0                         | 0.873              | 0.0                       | 1.4                     | 0.0                         | 0.00 |
| Med-growth conifers                                  | C                     | M                          | 0                          | 0                         | 0.873              | 0.0                       | 1.0                     | 0.0                         | 0.00 |
| Slow-growth conifers                                 | C                     | S                          | 0                          | 0                         | 0.873              | 0.0                       | 0.7                     | 0.0                         | 0.00 |
| Fast-growth hardwoods                                | H                     | F                          | 1                          | 0                         | 0.798              | 0.0                       | 4                       | 0.0                         | 0.00 |
| Med-growth hardwoods                                 | H                     | M                          | 1                          | 0                         | 0.798              | 0.0                       | 2.7                     | 0.0                         | 0.00 |
| Slow-growth hardwoods                                | H                     | S                          | 1                          | 0                         | 0.798              | 0.0                       | 1.6                     | 0.0                         | 0.00 |
| Fast-growth conifers                                 | C                     | F                          | 1                          | 0                         | 0.798              | 0.0                       | 2.2                     | 0.0                         | 0.00 |
| Med-growth conifers                                  | C                     | M                          | 1                          | 0                         | 0.798              | 0.0                       | 1.5                     | 0.0                         | 0.00 |
| Slow-growth conifers                                 | C                     | S                          | 1                          | 0                         | 0.798              | 0.0                       | 0.9                     | 0.0                         | 0.00 |
| Fast-growth hardwoods                                | H                     | F                          | 2                          | 0                         | 0.736              | 0.0                       | 5.4                     | 0.0                         | 0.00 |
| Med-growth hardwoods                                 | H                     | M                          | 2                          | 0                         | 0.736              | 0.0                       | 3.5                     | 0.0                         | 0.00 |
| Slow-growth hardwoods                                | H                     | S                          | 2                          | 0                         | 0.736              | 0.0                       | 2.0                     | 0.0                         | 0.00 |
| Fast-growth conifers                                 | C                     | F                          | 2                          | 0                         | 0.736              | 0.0                       | 3.1                     | 0.0                         | 0.00 |
| Med-growth conifers                                  | C                     | M                          | 2                          | 0                         | 0.736              | 0.0                       | 2.0                     | 0.0                         | 0.00 |
| Slow-growth conifers                                 | C                     | S                          | 2                          | 0                         | 0.736              | 0.0                       | 1.1                     | 0.0                         | 0.00 |
| Fast-growth hardwoods                                | H                     | F                          | 3                          | 0                         | 0.706              | 0.0                       | 6.9                     | 0.0                         | 0.00 |
| Med-growth hardwoods                                 | H                     | M                          | 3                          | 0                         | 0.706              | 0.0                       | 4.3                     | 0.0                         | 0.00 |
| Slow-growth hardwoods                                | H                     | S                          | 3                          | 0                         | 0.706              | 0.0                       | 2.4                     | 0.0                         | 0.00 |
| Fast-growth conifers                                 | C                     | F                          | 3                          | 0                         | 0.706              | 0.0                       | 4.1                     | 0.0                         | 0.00 |
| Med-growth conifers                                  | C                     | M                          | 3                          | 0                         | 0.706              | 0.0                       | 2.5                     | 0.0                         | 0.00 |
| Slow-growth conifers                                 | C                     | S                          | 3                          | 0                         | 0.706              | 0.0                       | 1.4                     | 0.0                         | 0.00 |
| Fast-growth hardwoods                                | H                     | F                          | 4                          | 0                         | 0.678              | 0.0                       | 8.5                     | 0.0                         | 0.00 |
| Med-growth hardwoods                                 | H                     | M                          | 4                          | 0                         | 0.678              | 0.0                       | 5.2                     | 0.0                         | 0.00 |
| Slow-growth hardwoods                                | H                     | S                          | 4                          | 0                         | 0.678              | 0.0                       | 2.8                     | 0.0                         | 0.00 |
| Fast-growth conifers                                 | C                     | F                          | 4                          | 0                         | 0.678              | 0.0                       | 5.2                     | 0.0                         | 0.00 |
| Med-growth conifers                                  | C                     | M                          | 4                          | 0                         | 0.678              | 0.0                       | 3.1                     | 0.0                         | 0.00 |
| Slow-growth conifers                                 | C                     | S                          | 4                          | 0                         | 0.678              | 0.0                       | 1.6                     | 0.0                         | 0.00 |
| Fast-growth hardwoods                                | H                     | F                          | 5                          | 0                         | 0.658              | 0.0                       | 10.1                    | 0.0                         | 0.00 |
| Med-growth hardwoods                                 | H                     | M                          | 5                          | 0                         | 0.658              | 0.0                       | 6.1                     | 0.0                         | 0.00 |
| Slow-growth hardwoods                                | H                     | S                          | 5                          | 0                         | 0.658              | 0.0                       | 3.2                     | 0.0                         | 0.00 |
| Fast-growth conifers                                 | C                     | F                          | 5                          | 0                         | 0.658              | 0.0                       | 6.4                     | 0.0                         | 0.00 |
| Med-growth conifers                                  | C                     | M                          | 5                          | 0                         | 0.658              | 0.0                       | 3.7                     | 0.0                         | 0.00 |
| Slow-growth conifers                                 | C                     | S                          | 5                          | 0                         | 0.658              | 0.0                       | 1.9                     | 0.0                         | 0.00 |
| Total Carbon Sequestered in Reporting Year           |                       |                            |                            |                           |                    |                           |                         | 0.0                         | 0.00 |
| Total CO2 Sequestered in Reporting Year (C x 3.6667) |                       |                            |                            |                           |                    |                           |                         | 0.0                         | 0.00 |



















## [Transportation](#)

### **Operational Mitigation Residential**

#### Residential Local-Serving Retail Mitigation

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Percent Reduction in Trips is 2% (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 Presence of Local-Serving Retail checkbox was selected.

#### Residential Transit Service Mitigation

---

Percent Reduction in Trips is 0.35% (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 Daily Weekday Buses Stopping Within 1/4 Mile of Site is 31

The Number of Daily Rail or Bus Rapid Transit Stops Within 1/2 Mile of Site is 0

The Number of Dedicated Daily Shuttle Trips is 0

#### Residential Pedestrian/Bicycle Friendliness Mitigation

---

Percent Reduction in Trips is 3.04% (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 Intersections per Square Mile is 16

The Percent of Streets with Sidewalks on One Side is 0%

The Percent of Streets with Sidewalks on Both Sides is 100%

The Percent of Arterials/Collectors with Bike Lanes or where Suitable,  
Direct Parallel Routes Exist is 0%

## Transportation Detail for Operational Mitigation

### Operational NonResidential Mitigation

#### Non-Residential Local-Serving Retail Mitigation

---

Percent Reduction in Trips is 2%

Inputs Selected:

The Presence of Local-Serving Retail checkbox was selected.

#### Non-Residential Transit Service Mitigation

---

Percent Reduction in Trips is 0.35%

Inputs Selected:

The Number of Daily Weekday Buses Stopping Within 1/4 Mile of Site is 31

The Number of Daily Rail or Bus Rapid Transit Stops Within 1/2 Mile of Site is 0

The Number of Dedicated Daily Shuttle Trips is 0

#### Non-Residential Pedestrian/Bicycle Friendliness Mitigation

---

Percent Reduction in Trips is 3.04%

Inputs Selected:

The Number of Intersections per Square Mile is 16

The Percent of Streets with Sidewalks on One Side is 0%

The Percent of Streets with Sidewalks on Both Sides is 100%

The Percent of Arterials/Collectors with Bike Lanes or where Suitable,  
Direct Parallel Routes Exist is 0%

**Operational Annual Miscellaneous Detail**

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2012 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Land Use Detail

| Land Use Description | Units | UnitType       | Acreage | Trip Rate Unmitigated | Total Trips Unmitigated | Total VMT Unmitigated | Trip Rate Mitigated | Total Trips Mitigated | Total VMT Mitigated |
|----------------------|-------|----------------|---------|-----------------------|-------------------------|-----------------------|---------------------|-----------------------|---------------------|
| Retirement community | 115   | dwelling units | 0.79    | 3.48                  | 400.2                   | 2995.6                | 2.96                | 340.96                | 2552.2              |
| Strip mall           | 3.12  | 1000 sq ft     |         | 44.3                  | 138.22                  | 563.54                | 41.92               | 130.78                | 533.21              |

## Appendix C

### Noise



Outdoor sound. The following comments on internal structural changes where appropriate for the building. It is noted that sound levels at the inner courtyard will be significantly reduced by the shielding effect of the buildings and are considered to be consistent with the objectives of the Noise Element.

Exterior-to-interior sound. The following measures are recommended to achieve requirements and objectives for exterior-to-interior sound levels. The measures are based on the current plans and information provided by e-mail. For this purposes, the dwelling "stacks" are identified by letters on Figure 1. Stucco exterior wall finish is assumed to be 3/4" or 7/8" thick. The window ratings and wall improvements quoted are in conjunction with use of a solid parapet at all roof edges with a minimum height of two feet as reported by the architect. The parapet is assumed to be solid with no openings

Where acoustically rated windows are specified (as they are at all locations), sliding glass doors also need to be acoustically rated but can use a sound insulation rating three STC points lower than the corresponding windows as a result of shielding by the recommended solid deck railings where these occur.

In general, windows are assumed to occur on only one wall of a living space.

W11a. Glass section assemblies in this group of units (group "A" along I-580, middle region, units facing the freeway), should provide a sound insulation equal to that required to meet an STC (Sound Transmission Class) rating as follows, applicable to windows having a direct or side orientation toward I-580: at the first floor: STC 32; at the second floor, STC 35; at the third floor, STC 39; at the fourth floor, STC 42. This is in conjunction with stucco exterior wall surface as shown on the plans for various locations.

The window rating is also, for the fourth floor, in conjunction with improvements to the roof/ceiling assembly as follows: for spaces directly adjacent to I-580, install a second (room side) 1/2" or 5/8" gypsum board layer, with spot adhesive attachment. The gypsum board should be held back 1/4" at the perimeter and at any required penetrations, and the clearance space sealed with resilient ("permanently non-hardening") caulking. (Alternatively, install the (single gypsum board) ceiling on resilient channels).

Where the exterior wall surface is wood siding, in the "A" group, the following sound rating applies for first floor windows facing I-580: STC 33.

Where the exterior wall surface is wood siding in the "A" group, the following sound rating applies for second floor, third floor and fourth floor windows, respectively, facing I-580: STC 35, STC 40, and STC 42. This is in conjunction with improvement of the exterior wall for living spaces on these floor levels and directly (or obliquely)

exposed to I-580. The wall improvement could consist of: installing a second layer of ½" or 5/8" gypsum board on the room side of the exterior wall along I-580, attached adhesively to the first layer in a spot arrangement. It is further recommended that the wall panels (room side panels) be held back ¼" at the perimeter and any required penetrations and the clearance space be sealed with resilient caulking. (Alternatively, a staggered stud exterior wall could be used, with R11 or somewhat thicker insulation).

The window sound ratings specified for the fourth floor are in conjunction with roof/ceiling improvement and with a parapet as described previously in this section.

W11b. Group "B." The following apply for windows with direct or side orientation toward MacArthur Street.

For living spaces in this group of units (group "B" along MacArthur Street, middle area), the following window ratings are recommended in conjunction with *stucco exterior walls*: STC 29 (except STC 31 at the fourth floor).

For glass section assemblies in this group of units (group "B" along MacArthur Street), the following window rating applies in conjunction with exterior siding finish material: STC 31 (except STC 33 at the fourth floor).

W11c. Group "C" - with corridors. For glass section assemblies in the group (group "C" along I-580), windows at the corridors (exterior side of the corridors) are recommended to provide a sound insulation rating as follows: STC 28.

W11d. Group "D." For glass section assemblies -window and sliding glass doors - in this stack (group "D" along I-580, near south end), the following window rating applies: STC 29. (The west building face is blank, with stucco exterior surface, and with no windows having a view of any part of I-580, as shown on the elevation drawing).

W11e. Group "E." For glass section assemblies in this stack (group "E" along I-580 and MacArthur Boulevard at the south end of the site), the following ratings apply for windows and sliding doors having a view of some part of I-580 or MacArthur Boulevard: first floor STC 32; second floor, STC 35; third floor, STC 39; fourth floor, STC 42. This is based on the use of stucco exterior wall finish throughout for this group as is understood from the drawings.

*W11f. Group "F." For glass section assemblies in this stack (group "F" along I-580 and High Street at the northwest corner of the site), the following ratings apply for windows having a view of some part of I-580 or of High Street: first floor, STC 35, second floor, STC 36; third floor, STC 40; fourth floor, STC 42. (Exterior wall*

material exposed to the roadways is stucco, as indicated by the drawings)

It is further recommended that the roof/ceiling assembly be improved acoustically as follows: for spaces directly adjacent to I-580 or High Street, install a second (room side) gypsum board layer, with spot adhesive attachment, or use resilient channels, as described more fully under group A .

W11g. Group "G." For glass section assemblies in this stack (group "G" along MacArthur Boulevard near High Street), the following window sound rating applies for the building faces exposed to MacArthur Street in conjunction with exterior siding finish: at the first, second and third floors, STC 31 ; at the fourth floor, STC 33.

For glass section assemblies in this group (stack "G", along MacArthur Street near High Street), the following window sound rating applies for the building faces exposed to MacArthur Boulevard in conjunction with stucco exterior wall finish: at the first, second and third floors, STC 29; at the fourth floor, STC 31 .

W11h. Group "H." For glass section assemblies in this stack (group "H" generally near MacArthur Boulevard on the northerly half of the site), the following window sound rating applies for the east, north and south (as applicable) building faces: STC 28.

W11i. Group "I." It is understood from the information provided that this stack is three stories high (first through third floor levels), and the exterior wall surface is stucco. For glass sections in this group (northeast corner of the site at the street corner), the following window sound ratings apply for the building faces having a direct or side exposure to High Street of MacArthur Boulevard: first floor: STC 39; second floor, STC 40; third floor, STC 40. —

W11j. For glass sections in this unit group (group "J," along High Street including middle part of the frontage), the following window sound ratings apply for the north building face: first floor: STC 35; second floor: STC 38, third floor, STC 40; fourth floor, STC 42; These values are based on stucco exterior wall For windows not directly along High Street, but with a view of some part of it, the ratings can be three points lower.

Where exterior siding is used at the third and fourth floor levels on building faces exposed to some part of High Street, it is recommended that a staggered stud exterior wall design be used at that location (single 2x6" plate with double row of staggered 2x4" wood studs, with 3-1/2", or somewhat thicker, glass fiber insulation in the stud cavities). Alternatively a second layer of ½" or 5/8" gypsum board can be installed at that location, with adhesive spot attachment, on the room side of the exterior wall.

WI1k. For glass sections in this unit group (group "K" near MacArthur Boulevard and High Street), the following window sound ratings apply: for east, north and any south building faces: STC 28.

WI1l. For glass section assemblies in this stack (group "L" along MacArthur near south end), the following window sound ratings apply for the east building face: first floor: STC 33; second floor: STC 35; third floor, STC 38; fourth floor: STC 41.

WI1m. For other glass sections at the development, the following window and sliding glass door sound rating applies: STC 29.

WI2. It is recommended that windows generally be operable but be kept closed by the residents in each unit as needed for sound control, with mechanical ventilation for the whole unit, acceptable to the Building Department, provided to assure habitability in accordance with the Uniform Building Code and Title 24.

WI3. It is assumed that carpeting, which affects interior sound absorption, is used in living spaces except for normally hard-floor spaces as kitchens and bathrooms. Also carpet is recommended (and planned) for use in the corridor along I-580.

WI4. The window rating applies to the complete operable (or fixed) assembly including frames and seals.

WI5. Ballard W. George, acoustical engineer, would be available to review submittals for windows.

Per the suggestion of Harris (1997), a check should be made to ensure that the acoustical test(s) were made in the last several years by an NVLAP-approved laboratory. If the unit (window) is intended to be operable, look for a statement that the unit was opened and closed at least five times prior to the acoustical test.

WI6. If laminated window glass is used, the acoustically preferred type is the ESCL, in view of its reported better resistance to degradation with colder weather. (And the laminated lite could advantageously be on the inside of a double pane assembly).

WI7. Exterior doors in general should be one and three-quarter inch thick solid core doors or acoustically equivalent metal doors with full perimeter seals and with no openings. Door frames should be true; doors and frames should be carefully matched. Door frames should be of substantial solid construction.

Doors to the corridor along I-580 should be 1-3/8" or thicker solid core wood doors 1-3/8" or thicker per California Title 24 noise insulation standards; these affect noise

from the corridor and in this case also noise from outside.

WI8. The building shell should be of airtight construction on the inside and outside except for required ventilation openings. All frames and junctions and any required penetrations of the building shell should be thoroughly caulked with resilient durable caulking and weather stripped to prevent air leaks. Window and exterior door frames should be thoroughly sealed against the building structure before trim is applied.

WI9. All roof/wall and floor/wall junctions should be thoroughly sealed and caulked. Caulking is to be a resilient, durable acoustical type appropriate to the application.

WI10. R30 insulation should be installed in the attic or roof/ceiling space. The roofing should incorporate solid sheathing. It is understood that there will not be open beam ceilings. It is assumed that attic access panels where applicable at relatively less sensitive locations. The panels should fit snugly. Recessed ceiling lights at the top level should be avoided or minimized.

WI11. Ceilings and wall skins on resilient channels, where applicable, should not be in rigid contact with any other part of the building structure. Thus, care should be taken to ensure that screws do not connect through from the ceilings or wall skins into the joists or studs. The gypsum board should be cut short about one-quarter inch at the perimeter of the ceiling or wall panel that is on resilient channels, also the channels held back one-half inch, and the clearance space around the gypsum board fully sealed with resilient caulking. The baseboard should be similarly held back and sealed with resilient caulking. Resilient channels should be installed in accordance with procedures of the supplier.

It is recommended that one or more "push" tests be performed, with some care, to check that the panels on resilient channels are in fact flexing (yielding), thus indicating no rigid attachments.

Heavy objects should not be supported by wall panels or ceilings on resilient channels.

Resilient channels should provide acoustical performance equivalent to that formerly provide by U.S. Gypsum; possible suppliers include Phillips and Cemel.

WI12. Kitchen and bathroom vents should be provided with exterior or interior dampers. Other required vents if any from occupied space to the exterior should be provided with appropriate dampers or sound traps. Ducting connecting occupied space directly or indirectly with the exterior should be fitted with interior acoustical

absorptive lining. Through the wall air-conditioning units are not to be used. Chimneys if used should be provided with effective steel dampers.

It is assumed that there are not vent openings between floor levels, and that there are not skylights at living units.

WI13. Vent openings at units along I-580 should be on the side away from the freeway, and at units along High Street should be on the side away from that street, or else incorporate appropriate sound traps in each case.

The following is recommended to minimize the effect of project mechanical equipment: any mechanical equipment on the roof should be shielded by a solid parapet.



## Appendix D

### Transportation





# Traffic Impact Study

## HIGH AND MACARTHUR MIXED USE HOUSING PROJECT CITY OF OAKLAND

**Prepared for:**

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Attn: Charity Wagner

**Prepared by:**

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**Abrams Associates**  
TRAFFIC ENGINEERING, INC.

**JUNE, 2012**

## Queues

Existing AM Volumes

## 1: High St &amp; MacArthur Blvd

3/10/2012

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBT                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Group Flow (vph)   | 167                                                                               | 353                                                                               | 461                                                                               | 684                                                                               | 781                                                                               | 600                                                                               |
| v/c Ratio               | 0.90                                                                              | 0.43                                                                              | 0.48                                                                              | 0.99                                                                              | 0.81                                                                              | 0.85                                                                              |
| Control Delay           | 109.1                                                                             | 31.1                                                                              | 3.9                                                                               | 82.6                                                                              | 57.5                                                                              | 66.9                                                                              |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Delay             | 109.1                                                                             | 31.1                                                                              | 3.9                                                                               | 82.6                                                                              | 57.5                                                                              | 66.9                                                                              |
| Queue Length 50th (ft)  | 164                                                                               | 236                                                                               | 0                                                                                 | 350                                                                               | 375                                                                               | 285                                                                               |
| Queue Length 95th (ft)  | #303                                                                              | 325                                                                               | 64                                                                                | #492                                                                              | 456                                                                               | #375                                                                              |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   | 490                                                                               | 360                                                                               | 365                                                                               |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)     | 189                                                                               | 821                                                                               | 956                                                                               | 691                                                                               | 968                                                                               | 704                                                                               |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Reduced v/c Ratio       | 0.88                                                                              | 0.43                                                                              | 0.48                                                                              | 0.99                                                                              | 0.81                                                                              | 0.85                                                                              |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis

## 1: High St & MacArthur Blvd

Existing AM Volumes

3/10/2012

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (vph)                      | 154                                                                               | 325                                                                               | 424                                                                               | 139                                                                               | 453                                                                               | 38                                                                                | 309                                                                                | 380                                                                                 | 29                                                                                  | 33                                                                                  | 364                                                                                 | 155                                                                                 |
| 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                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              |                                                                                   |                                                                                    | 0.95                                                                                |                                                                                     |                                                                                     | 0.95                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                    | 0.99                                                                                |                                                                                     |                                                                                     | 0.96                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                    | 0.98                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              |                                                                                   | 3469                                                                              |                                                                                   |                                                                                    | 3443                                                                                |                                                                                     |                                                                                     | 3380                                                                                |                                                                                     |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.64                                                                              |                                                                                   |                                                                                    | 0.98                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              |                                                                                   | 2242                                                                              |                                                                                   |                                                                                    | 3443                                                                                |                                                                                     |                                                                                     | 3380                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 167                                                                               | 353                                                                               | 461                                                                               | 151                                                                               | 492                                                                               | 41                                                                                | 336                                                                                | 413                                                                                 | 32                                                                                  | 36                                                                                  | 396                                                                                 | 168                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 259                                                                               | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                  | 2                                                                                   | 0                                                                                   | 0                                                                                   | 27                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 167                                                                               | 353                                                                               | 202                                                                               | 0                                                                                 | 681                                                                               | 0                                                                                 | 0                                                                                  | 779                                                                                 | 0                                                                                   | 0                                                                                   | 573                                                                                 | 0                                                                                   |
| Turn Type                         | Prot                                                                              |                                                                                   | Perm                                                                              | Perm                                                                              |                                                                                   |                                                                                   | Split                                                                              |                                                                                     |                                                                                     | Split                                                                               |                                                                                     |                                                                                     |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 15.7                                                                              | 65.7                                                                              | 65.7                                                                              |                                                                                   | 46.0                                                                              |                                                                                   |                                                                                    | 42.0                                                                                |                                                                                     |                                                                                     | 30.0                                                                                |                                                                                     |
| Effective Green, g (s)            | 15.7                                                                              | 65.7                                                                              | 65.7                                                                              |                                                                                   | 46.0                                                                              |                                                                                   |                                                                                    | 42.0                                                                                |                                                                                     |                                                                                     | 30.0                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.10                                                                              | 0.44                                                                              | 0.44                                                                              |                                                                                   | 0.31                                                                              |                                                                                   |                                                                                    | 0.28                                                                                |                                                                                     |                                                                                     | 0.20                                                                                |                                                                                     |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 186                                                                               | 818                                                                               | 695                                                                               |                                                                                   | 689                                                                               |                                                                                   |                                                                                    | 966                                                                                 |                                                                                     |                                                                                     | 677                                                                                 |                                                                                     |
| v/s Ratio Prot                    | c0.09                                                                             | 0.19                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | c0.23                                                                               |                                                                                     |                                                                                     | c0.17                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.13                                                                              |                                                                                   | c0.30                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/c Ratio                         | 0.90                                                                              | 0.43                                                                              | 0.29                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                    | 0.81                                                                                |                                                                                     |                                                                                     | 0.85                                                                                |                                                                                     |
| Uniform Delay, d1                 | 66.2                                                                              | 29.1                                                                              | 27.0                                                                              |                                                                                   | 51.6                                                                              |                                                                                   |                                                                                    | 50.1                                                                                |                                                                                     |                                                                                     | 57.6                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                    | 1.00                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 38.3                                                                              | 0.4                                                                               | 0.2                                                                               |                                                                                   | 31.1                                                                              |                                                                                   |                                                                                    | 7.2                                                                                 |                                                                                     |                                                                                     | 12.4                                                                                |                                                                                     |
| Delay (s)                         | 104.5                                                                             | 29.4                                                                              | 27.3                                                                              |                                                                                   | 82.7                                                                              |                                                                                   |                                                                                    | 57.2                                                                                |                                                                                     |                                                                                     | 70.0                                                                                |                                                                                     |
| Level of Service                  | F                                                                                 | C                                                                                 | C                                                                                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 41.2                                                                              |                                                                                   |                                                                                   | 82.7                                                                              |                                                                                   |                                                                                    | 57.2                                                                                |                                                                                     |                                                                                     | 70.0                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Average Control Delay         |                                                                                   |                                                                                   | 60.3                                                                              |                                                                                   | HCM Level of Service                                                              |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Volume to Capacity ratio      |                                                                                   |                                                                                   | 0.89                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 149.7                                                                             |                                                                                   | Sum of lost time (s)                                                              |                                                                                   |                                                                                    | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 84.6%                                                                             |                                                                                   | ICU Level of Service                                                              |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Queues

## Existing PM Volumes

## 1: High St &amp; MacArthur Blvd

3/10/2012

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBT                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Group Flow (vph)   | 234                                                                               | 336                                                                               | 437                                                                               | 465                                                                               | 734                                                                               | 693                                                                               |
| v/c Ratio               | 1.03                                                                              | 0.46                                                                              | 0.49                                                                              | 0.94                                                                              | 0.83                                                                              | 0.73                                                                              |
| Control Delay           | 129.3                                                                             | 35.8                                                                              | 4.5                                                                               | 83.0                                                                              | 61.4                                                                              | 51.7                                                                              |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Delay             | 129.3                                                                             | 35.8                                                                              | 4.5                                                                               | 83.0                                                                              | 61.4                                                                              | 51.7                                                                              |
| Queue Length 50th (ft)  | ~247                                                                              | 239                                                                               | 0                                                                                 | 231                                                                               | 359                                                                               | 310                                                                               |
| Queue Length 95th (ft)  | #424                                                                              | 332                                                                               | 68                                                                                | #337                                                                              | 440                                                                               | 385                                                                               |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   | 490                                                                               | 360                                                                               | 365                                                                               |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)     | 227                                                                               | 755                                                                               | 901                                                                               | 522                                                                               | 881                                                                               | 943                                                                               |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Reduced v/c Ratio       | 1.03                                                                              | 0.45                                                                              | 0.49                                                                              | 0.89                                                                              | 0.83                                                                              | 0.73                                                                              |

## Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis

## 1: High St & MacArthur Blvd

Existing PM Volumes

3/10/2012

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (vph)                      | 215                                                                               | 309                                                                               | 402                                                                               | 115                                                                               | 276                                                                               | 37                                                                                | 353                                                                                | 278                                                                                 | 44                                                                                  | 30                                                                                  | 417                                                                                 | 190                                                                                 |
| 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                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              |                                                                                   |                                                                                    | 0.95                                                                                |                                                                                     |                                                                                     | 0.95                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                    | 0.99                                                                                |                                                                                     |                                                                                     | 0.96                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                    | 0.97                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              |                                                                                   | 3447                                                                              |                                                                                   |                                                                                    | 3415                                                                                |                                                                                     |                                                                                     | 3373                                                                                |                                                                                     |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.59                                                                              |                                                                                   |                                                                                    | 0.97                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              |                                                                                   | 2068                                                                              |                                                                                   |                                                                                    | 3415                                                                                |                                                                                     |                                                                                     | 3373                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 234                                                                               | 336                                                                               | 437                                                                               | 125                                                                               | 300                                                                               | 40                                                                                | 384                                                                                | 302                                                                                 | 48                                                                                  | 33                                                                                  | 453                                                                                 | 207                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 266                                                                               | 0                                                                                 | 5                                                                                 | 0                                                                                 | 0                                                                                  | 4                                                                                   | 0                                                                                   | 0                                                                                   | 31                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 234                                                                               | 336                                                                               | 171                                                                               | 0                                                                                 | 460                                                                               | 0                                                                                 | 0                                                                                  | 730                                                                                 | 0                                                                                   | 0                                                                                   | 662                                                                                 | 0                                                                                   |
| Turn Type                         | Prot                                                                              |                                                                                   | Perm                                                                              | Perm                                                                              |                                                                                   |                                                                                   | Split                                                                              |                                                                                     |                                                                                     | Split                                                                               |                                                                                     |                                                                                     |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 19.0                                                                              | 58.0                                                                              | 58.0                                                                              |                                                                                   | 35.0                                                                              |                                                                                   |                                                                                    | 38.0                                                                                |                                                                                     |                                                                                     | 40.0                                                                                |                                                                                     |
| Effective Green, g (s)            | 19.0                                                                              | 58.0                                                                              | 58.0                                                                              |                                                                                   | 35.0                                                                              |                                                                                   |                                                                                    | 38.0                                                                                |                                                                                     |                                                                                     | 40.0                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.13                                                                              | 0.39                                                                              | 0.39                                                                              |                                                                                   | 0.24                                                                              |                                                                                   |                                                                                    | 0.26                                                                                |                                                                                     |                                                                                     | 0.27                                                                                |                                                                                     |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 227                                                                               | 730                                                                               | 620                                                                               |                                                                                   | 489                                                                               |                                                                                   |                                                                                    | 877                                                                                 |                                                                                     |                                                                                     | 912                                                                                 |                                                                                     |
| v/s Ratio Prot                    | c0.13                                                                             | 0.18                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | c0.21                                                                               |                                                                                     |                                                                                     | c0.20                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.11                                                                              |                                                                                   | c0.22                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/c Ratio                         | 1.03                                                                              | 0.46                                                                              | 0.28                                                                              |                                                                                   | 0.94                                                                              |                                                                                   |                                                                                    | 0.83                                                                                |                                                                                     |                                                                                     | 0.73                                                                                |                                                                                     |
| Uniform Delay, d1                 | 64.5                                                                              | 33.4                                                                              | 30.7                                                                              |                                                                                   | 55.5                                                                              |                                                                                   |                                                                                    | 52.0                                                                                |                                                                                     |                                                                                     | 49.0                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                    | 1.00                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 68.0                                                                              | 0.5                                                                               | 0.2                                                                               |                                                                                   | 26.6                                                                              |                                                                                   |                                                                                    | 9.1                                                                                 |                                                                                     |                                                                                     | 5.0                                                                                 |                                                                                     |
| Delay (s)                         | 132.5                                                                             | 33.8                                                                              | 30.9                                                                              |                                                                                   | 82.1                                                                              |                                                                                   |                                                                                    | 61.1                                                                                |                                                                                     |                                                                                     | 54.0                                                                                |                                                                                     |
| Level of Service                  | F                                                                                 | C                                                                                 | C                                                                                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 55.5                                                                              |                                                                                   |                                                                                   | 82.1                                                                              |                                                                                   |                                                                                    | 61.1                                                                                |                                                                                     |                                                                                     | 54.0                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Average Control Delay         |                                                                                   |                                                                                   | 60.8                                                                              |                                                                                   | HCM Level of Service                                                              |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Volume to Capacity ratio      |                                                                                   |                                                                                   | 0.86                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 148.0                                                                             |                                                                                   | Sum of lost time (s)                                                              |                                                                                   |                                                                                    | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 79.8%                                                                             |                                                                                   | ICU Level of Service                                                              |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Queues

## Existing +Project AM Volumes

## 1: High St &amp; MacArthur Blvd

3/10/2012

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBT                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Group Flow (vph)   | 167                                                                               | 353                                                                               | 466                                                                               | 685                                                                               | 793                                                                               | 602                                                                               |
| v/c Ratio               | 0.90                                                                              | 0.43                                                                              | 0.49                                                                              | 0.99                                                                              | 0.82                                                                              | 0.86                                                                              |
| Control Delay           | 109.1                                                                             | 31.1                                                                              | 3.9                                                                               | 83.0                                                                              | 58.3                                                                              | 67.2                                                                              |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Delay             | 109.1                                                                             | 31.1                                                                              | 3.9                                                                               | 83.0                                                                              | 58.3                                                                              | 67.2                                                                              |
| Queue Length 50th (ft)  | 164                                                                               | 236                                                                               | 0                                                                                 | 351                                                                               | 382                                                                               | 286                                                                               |
| Queue Length 95th (ft)  | #303                                                                              | 325                                                                               | 64                                                                                | #492                                                                              | 465                                                                               | #378                                                                              |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   | 490                                                                               | 360                                                                               | 365                                                                               |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)     | 189                                                                               | 821                                                                               | 958                                                                               | 691                                                                               | 968                                                                               | 704                                                                               |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Reduced v/c Ratio       | 0.88                                                                              | 0.43                                                                              | 0.49                                                                              | 0.99                                                                              | 0.82                                                                              | 0.86                                                                              |

## Intersection Summary

# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis

Existing +Project AM Volumes

1: High St & MacArthur Blvd

3/10/2012

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (vph)                      | 154                                                                               | 325                                                                               | 429                                                                               | 140                                                                               | 453                                                                               | 38                                                                                | 316                                                                                | 383                                                                                 | 31                                                                                  | 33                                                                                  | 366                                                                                 | 155                                                                                 |
| 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                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              |                                                                                   |                                                                                    | 0.95                                                                                |                                                                                     |                                                                                     | 0.95                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                    | 0.99                                                                                |                                                                                     |                                                                                     | 0.96                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                    | 0.98                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              |                                                                                   | 3469                                                                              |                                                                                   |                                                                                    | 3442                                                                                |                                                                                     |                                                                                     | 3381                                                                                |                                                                                     |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.64                                                                              |                                                                                   |                                                                                    | 0.98                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              |                                                                                   | 2241                                                                              |                                                                                   |                                                                                    | 3442                                                                                |                                                                                     |                                                                                     | 3381                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 167                                                                               | 353                                                                               | 466                                                                               | 152                                                                               | 492                                                                               | 41                                                                                | 343                                                                                | 416                                                                                 | 34                                                                                  | 36                                                                                  | 398                                                                                 | 168                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 261                                                                               | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                  | 2                                                                                   | 0                                                                                   | 0                                                                                   | 27                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 167                                                                               | 353                                                                               | 205                                                                               | 0                                                                                 | 682                                                                               | 0                                                                                 | 0                                                                                  | 791                                                                                 | 0                                                                                   | 0                                                                                   | 575                                                                                 | 0                                                                                   |
| Turn Type                         | Prot                                                                              |                                                                                   | Perm                                                                              | Perm                                                                              |                                                                                   |                                                                                   | Split                                                                              |                                                                                     |                                                                                     | Split                                                                               |                                                                                     |                                                                                     |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 15.7                                                                              | 65.7                                                                              | 65.7                                                                              |                                                                                   | 46.0                                                                              |                                                                                   |                                                                                    | 42.0                                                                                |                                                                                     |                                                                                     | 30.0                                                                                |                                                                                     |
| Effective Green, g (s)            | 15.7                                                                              | 65.7                                                                              | 65.7                                                                              |                                                                                   | 46.0                                                                              |                                                                                   |                                                                                    | 42.0                                                                                |                                                                                     |                                                                                     | 30.0                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.10                                                                              | 0.44                                                                              | 0.44                                                                              |                                                                                   | 0.31                                                                              |                                                                                   |                                                                                    | 0.28                                                                                |                                                                                     |                                                                                     | 0.20                                                                                |                                                                                     |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 186                                                                               | 818                                                                               | 695                                                                               |                                                                                   | 689                                                                               |                                                                                   |                                                                                    | 966                                                                                 |                                                                                     |                                                                                     | 678                                                                                 |                                                                                     |
| v/s Ratio Prot                    | c0.09                                                                             | 0.19                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | c0.23                                                                               |                                                                                     |                                                                                     | c0.17                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.13                                                                              |                                                                                   | c0.30                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/c Ratio                         | 0.90                                                                              | 0.43                                                                              | 0.29                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                    | 0.82                                                                                |                                                                                     |                                                                                     | 0.85                                                                                |                                                                                     |
| Uniform Delay, d1                 | 66.2                                                                              | 29.1                                                                              | 27.1                                                                              |                                                                                   | 51.6                                                                              |                                                                                   |                                                                                    | 50.3                                                                                |                                                                                     |                                                                                     | 57.7                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                    | 1.00                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 38.3                                                                              | 0.4                                                                               | 0.2                                                                               |                                                                                   | 31.7                                                                              |                                                                                   |                                                                                    | 7.7                                                                                 |                                                                                     |                                                                                     | 12.5                                                                                |                                                                                     |
| Delay (s)                         | 104.5                                                                             | 29.4                                                                              | 27.3                                                                              |                                                                                   | 83.3                                                                              |                                                                                   |                                                                                    | 58.0                                                                                |                                                                                     |                                                                                     | 70.2                                                                                |                                                                                     |
| Level of Service                  | F                                                                                 | C                                                                                 | C                                                                                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 41.1                                                                              |                                                                                   |                                                                                   | 83.3                                                                              |                                                                                   |                                                                                    | 58.0                                                                                |                                                                                     |                                                                                     | 70.2                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Average Control Delay         |                                                                                   |                                                                                   | 60.6                                                                              |                                                                                   | HCM Level of Service                                                              |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Volume to Capacity ratio      |                                                                                   |                                                                                   | 0.89                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 149.7                                                                             |                                                                                   | Sum of lost time (s)                                                              |                                                                                   |                                                                                    | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 85.0%                                                                             |                                                                                   | ICU Level of Service                                                              |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Queues

## Existing +Project PM Volumes

## 1: High St &amp; MacArthur Blvd

3/10/2012

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBT                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Group Flow (vph)   | 234                                                                               | 336                                                                               | 445                                                                               | 467                                                                               | 743                                                                               | 697                                                                               |
| v/c Ratio               | 1.03                                                                              | 0.46                                                                              | 0.50                                                                              | 0.94                                                                              | 0.85                                                                              | 0.74                                                                              |
| Control Delay           | 129.8                                                                             | 35.8                                                                              | 4.5                                                                               | 83.1                                                                              | 62.3                                                                              | 52.1                                                                              |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Delay             | 129.8                                                                             | 35.8                                                                              | 4.5                                                                               | 83.1                                                                              | 62.3                                                                              | 52.1                                                                              |
| Queue Length 50th (ft)  | ~247                                                                              | 239                                                                               | 0                                                                                 | 232                                                                               | 365                                                                               | 313                                                                               |
| Queue Length 95th (ft)  | #424                                                                              | 332                                                                               | 70                                                                                | #340                                                                              | 447                                                                               | 388                                                                               |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   | 490                                                                               | 360                                                                               | 365                                                                               |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)     | 227                                                                               | 754                                                                               | 906                                                                               | 521                                                                               | 879                                                                               | 941                                                                               |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Reduced v/c Ratio       | 1.03                                                                              | 0.45                                                                              | 0.49                                                                              | 0.90                                                                              | 0.85                                                                              | 0.74                                                                              |

## Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis

Existing +Project PM Volumes

1: High St & MacArthur Blvd

3/10/2012

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (vph)                      | 215                                                                               | 309                                                                               | 409                                                                               | 117                                                                               | 276                                                                               | 37                                                                                | 359                                                                                | 280                                                                                 | 45                                                                                  | 30                                                                                  | 420                                                                                 | 190                                                                                 |
| 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                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              |                                                                                   |                                                                                    | 0.95                                                                                |                                                                                     |                                                                                     | 0.95                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                    | 0.99                                                                                |                                                                                     |                                                                                     | 0.96                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                    | 0.97                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              |                                                                                   | 3447                                                                              |                                                                                   |                                                                                    | 3415                                                                                |                                                                                     |                                                                                     | 3374                                                                                |                                                                                     |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.59                                                                              |                                                                                   |                                                                                    | 0.97                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              |                                                                                   | 2069                                                                              |                                                                                   |                                                                                    | 3415                                                                                |                                                                                     |                                                                                     | 3374                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 234                                                                               | 336                                                                               | 445                                                                               | 127                                                                               | 300                                                                               | 40                                                                                | 390                                                                                | 304                                                                                 | 49                                                                                  | 33                                                                                  | 457                                                                                 | 207                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 270                                                                               | 0                                                                                 | 5                                                                                 | 0                                                                                 | 0                                                                                  | 4                                                                                   | 0                                                                                   | 0                                                                                   | 31                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 234                                                                               | 336                                                                               | 175                                                                               | 0                                                                                 | 462                                                                               | 0                                                                                 | 0                                                                                  | 739                                                                                 | 0                                                                                   | 0                                                                                   | 666                                                                                 | 0                                                                                   |
| Turn Type                         | Prot                                                                              |                                                                                   | Perm                                                                              | Perm                                                                              |                                                                                   |                                                                                   | Split                                                                              |                                                                                     |                                                                                     | Split                                                                               |                                                                                     |                                                                                     |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 19.0                                                                              | 58.2                                                                              | 58.2                                                                              |                                                                                   | 35.2                                                                              |                                                                                   |                                                                                    | 38.0                                                                                |                                                                                     |                                                                                     | 40.0                                                                                |                                                                                     |
| Effective Green, g (s)            | 19.0                                                                              | 58.2                                                                              | 58.2                                                                              |                                                                                   | 35.2                                                                              |                                                                                   |                                                                                    | 38.0                                                                                |                                                                                     |                                                                                     | 40.0                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.13                                                                              | 0.39                                                                              | 0.39                                                                              |                                                                                   | 0.24                                                                              |                                                                                   |                                                                                    | 0.26                                                                                |                                                                                     |                                                                                     | 0.27                                                                                |                                                                                     |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 227                                                                               | 732                                                                               | 622                                                                               |                                                                                   | 491                                                                               |                                                                                   |                                                                                    | 876                                                                                 |                                                                                     |                                                                                     | 911                                                                                 |                                                                                     |
| v/s Ratio Prot                    | c0.13                                                                             | 0.18                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | c0.22                                                                               |                                                                                     |                                                                                     | c0.20                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.11                                                                              |                                                                                   | c0.22                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/c Ratio                         | 1.03                                                                              | 0.46                                                                              | 0.28                                                                              |                                                                                   | 0.94                                                                              |                                                                                   |                                                                                    | 0.84                                                                                |                                                                                     |                                                                                     | 0.73                                                                                |                                                                                     |
| Uniform Delay, d1                 | 64.6                                                                              | 33.3                                                                              | 30.7                                                                              |                                                                                   | 55.5                                                                              |                                                                                   |                                                                                    | 52.3                                                                                |                                                                                     |                                                                                     | 49.2                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                    | 1.00                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 68.0                                                                              | 0.5                                                                               | 0.2                                                                               |                                                                                   | 26.6                                                                              |                                                                                   |                                                                                    | 9.8                                                                                 |                                                                                     |                                                                                     | 5.2                                                                                 |                                                                                     |
| Delay (s)                         | 132.6                                                                             | 33.8                                                                              | 31.0                                                                              |                                                                                   | 82.1                                                                              |                                                                                   |                                                                                    | 62.0                                                                                |                                                                                     |                                                                                     | 54.4                                                                                |                                                                                     |
| Level of Service                  | F                                                                                 | C                                                                                 | C                                                                                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 55.3                                                                              |                                                                                   |                                                                                   | 82.1                                                                              |                                                                                   |                                                                                    | 62.0                                                                                |                                                                                     |                                                                                     | 54.4                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Average Control Delay         |                                                                                   |                                                                                   | 61.1                                                                              |                                                                                   | HCM Level of Service                                                              |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Volume to Capacity ratio      |                                                                                   |                                                                                   | 0.86                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 148.2                                                                             |                                                                                   | Sum of lost time (s)                                                              |                                                                                   |                                                                                    | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 80.3%                                                                             |                                                                                   | ICU Level of Service                                                              |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Queues

## 1: High St &amp; MacArthur Blvd

## Near-Term AM Volumes

6/28/2012

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBT                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Group Flow (vph)   | 167                                                                               | 354                                                                               | 463                                                                               | 885                                                                               | 896                                                                               | 481                                                                               |
| v/c Ratio               | 0.90                                                                              | 0.43                                                                              | 0.48                                                                              | 1.28                                                                              | 0.93                                                                              | 0.68                                                                              |
| Control Delay           | 109.1                                                                             | 31.2                                                                              | 3.9                                                                               | 178.8                                                                             | 67.9                                                                              | 57.1                                                                              |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Delay             | 109.1                                                                             | 31.2                                                                              | 3.9                                                                               | 178.8                                                                             | 67.9                                                                              | 57.1                                                                              |
| Queue Length 50th (ft)  | 164                                                                               | 237                                                                               | 0                                                                                 | ~577                                                                              | 450                                                                               | 216                                                                               |
| Queue Length 95th (ft)  | #303                                                                              | 326                                                                               | 63                                                                                | #716                                                                              | #575                                                                              | 281                                                                               |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   | 490                                                                               | 360                                                                               | 365                                                                               |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)     | 189                                                                               | 821                                                                               | 957                                                                               | 691                                                                               | 968                                                                               | 704                                                                               |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Reduced v/c Ratio       | 0.88                                                                              | 0.43                                                                              | 0.48                                                                              | 1.28                                                                              | 0.93                                                                              | 0.68                                                                              |

## Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis

Near-Term AM Volumes

## 1: High St & MacArthur Blvd

6/28/2012

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (vph)                      | 154                                                                               | 326                                                                               | 426                                                                               | 179                                                                               | 586                                                                               | 49                                                                                | 354                                                                                | 437                                                                                 | 33                                                                                  | 27                                                                                  | 292                                                                                 | 124                                                                                 |
| 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                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              |                                                                                   |                                                                                    | 0.95                                                                                |                                                                                     |                                                                                     | 0.95                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                    | 0.99                                                                                |                                                                                     |                                                                                     | 0.96                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                    | 0.98                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              |                                                                                   | 3469                                                                              |                                                                                   |                                                                                    | 3444                                                                                |                                                                                     |                                                                                     | 3380                                                                                |                                                                                     |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.64                                                                              |                                                                                   |                                                                                    | 0.98                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              |                                                                                   | 2240                                                                              |                                                                                   |                                                                                    | 3444                                                                                |                                                                                     |                                                                                     | 3380                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 167                                                                               | 354                                                                               | 463                                                                               | 195                                                                               | 637                                                                               | 53                                                                                | 385                                                                                | 475                                                                                 | 36                                                                                  | 29                                                                                  | 317                                                                                 | 135                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 260                                                                               | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                  | 2                                                                                   | 0                                                                                   | 0                                                                                   | 27                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 167                                                                               | 354                                                                               | 203                                                                               | 0                                                                                 | 882                                                                               | 0                                                                                 | 0                                                                                  | 894                                                                                 | 0                                                                                   | 0                                                                                   | 454                                                                                 | 0                                                                                   |
| Turn Type                         | Prot                                                                              |                                                                                   | Perm                                                                              | Perm                                                                              |                                                                                   |                                                                                   | Split                                                                              |                                                                                     |                                                                                     | Split                                                                               |                                                                                     |                                                                                     |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 15.7                                                                              | 65.7                                                                              | 65.7                                                                              |                                                                                   | 46.0                                                                              |                                                                                   |                                                                                    | 42.0                                                                                |                                                                                     |                                                                                     | 30.0                                                                                |                                                                                     |
| Effective Green, g (s)            | 15.7                                                                              | 65.7                                                                              | 65.7                                                                              |                                                                                   | 46.0                                                                              |                                                                                   |                                                                                    | 42.0                                                                                |                                                                                     |                                                                                     | 30.0                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.10                                                                              | 0.44                                                                              | 0.44                                                                              |                                                                                   | 0.31                                                                              |                                                                                   |                                                                                    | 0.28                                                                                |                                                                                     |                                                                                     | 0.20                                                                                |                                                                                     |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 186                                                                               | 818                                                                               | 695                                                                               |                                                                                   | 688                                                                               |                                                                                   |                                                                                    | 966                                                                                 |                                                                                     |                                                                                     | 677                                                                                 |                                                                                     |
| v/s Ratio Prot                    | c0.09                                                                             | 0.19                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | c0.26                                                                               |                                                                                     |                                                                                     | c0.13                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.13                                                                              |                                                                                   | c0.39                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/c Ratio                         | 0.90                                                                              | 0.43                                                                              | 0.29                                                                              |                                                                                   | 1.28                                                                              |                                                                                   |                                                                                    | 0.93                                                                                |                                                                                     |                                                                                     | 0.67                                                                                |                                                                                     |
| Uniform Delay, d1                 | 66.2                                                                              | 29.1                                                                              | 27.0                                                                              |                                                                                   | 51.8                                                                              |                                                                                   |                                                                                    | 52.3                                                                                |                                                                                     |                                                                                     | 55.3                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                    | 1.00                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 38.3                                                                              | 0.4                                                                               | 0.2                                                                               |                                                                                   | 138.0                                                                             |                                                                                   |                                                                                    | 15.7                                                                                |                                                                                     |                                                                                     | 5.2                                                                                 |                                                                                     |
| Delay (s)                         | 104.5                                                                             | 29.5                                                                              | 27.3                                                                              |                                                                                   | 189.8                                                                             |                                                                                   |                                                                                    | 68.1                                                                                |                                                                                     |                                                                                     | 60.5                                                                                |                                                                                     |
| Level of Service                  | F                                                                                 | C                                                                                 | C                                                                                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 41.2                                                                              |                                                                                   |                                                                                   | 189.8                                                                             |                                                                                   |                                                                                    | 68.1                                                                                |                                                                                     |                                                                                     | 60.5                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Average Control Delay         |                                                                                   |                                                                                   | 92.0                                                                              |                                                                                   | HCM Level of Service                                                              |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Volume to Capacity ratio      |                                                                                   |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 149.7                                                                             |                                                                                   | Sum of lost time (s)                                                              |                                                                                   |                                                                                    | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 89.7%                                                                             |                                                                                   | ICU Level of Service                                                              |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Queues

## Near-Term PM Volumes

## 1: High St &amp; MacArthur Blvd

6/28/2012

|                         |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBT                                                                               | SBT                                                                                |
| Lane Group Flow (vph)   | 296                                                                               | 426                                                                               | 553                                                                               | 215                                                                               | 582                                                                               | 858                                                                               | 797                                                                                |
| v/c Ratio               | 1.19                                                                              | 0.46                                                                              | 0.52                                                                              | 1.14                                                                              | 0.97                                                                              | 1.04                                                                              | 1.21                                                                               |
| Control Delay           | 172.7                                                                             | 27.1                                                                              | 3.5                                                                               | 154.4                                                                             | 78.7                                                                              | 96.6                                                                              | 154.3                                                                              |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                |
| Total Delay             | 172.7                                                                             | 27.1                                                                              | 3.5                                                                               | 154.4                                                                             | 78.7                                                                              | 96.6                                                                              | 154.3                                                                              |
| Queue Length 50th (ft)  | ~349                                                                              | 268                                                                               | 0                                                                                 | ~245                                                                              | 558                                                                               | ~474                                                                              | ~482                                                                               |
| Queue Length 95th (ft)  | #544                                                                              | 363                                                                               | 61                                                                                | #418                                                                              | #806                                                                              | #612                                                                              | #618                                                                               |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   |                                                                                   | 490                                                                               | 360                                                                               | 365                                                                                |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Base Capacity (vph)     | 248                                                                               | 919                                                                               | 1061                                                                              | 188                                                                               | 601                                                                               | 824                                                                               | 661                                                                                |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Reduced v/c Ratio       | 1.19                                                                              | 0.46                                                                              | 0.52                                                                              | 1.14                                                                              | 0.97                                                                              | 1.04                                                                              | 1.21                                                                               |

## Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis

Near-Term PM Volumes

1: High St & MacArthur Blvd

6/28/2012

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |  |
| Volume (vph)                      | 272                                                                               | 392                                                                               | 509                                                                               | 198                                                                               | 471                                                                               | 64                                                                                | 410                                                                                | 324                                                                                 | 55                                                                                  | 37                                                                                  | 477                                                                                 | 220                                                                                 |
| 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                                                                               | 4.0                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                    | 0.95                                                                                |                                                                                     |                                                                                     | 0.95                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 0.98                                                                              |                                                                                   |                                                                                    | 0.99                                                                                |                                                                                     |                                                                                     | 0.96                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              |                                                                                   |                                                                                    | 0.97                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              | 1770                                                                              | 1829                                                                              |                                                                                   |                                                                                    | 3413                                                                                |                                                                                     |                                                                                     | 3372                                                                                |                                                                                     |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.31                                                                              | 1.00                                                                              |                                                                                   |                                                                                    | 0.97                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              | 575                                                                               | 1829                                                                              |                                                                                   |                                                                                    | 3413                                                                                |                                                                                     |                                                                                     | 3372                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 296                                                                               | 426                                                                               | 553                                                                               | 215                                                                               | 512                                                                               | 70                                                                                | 446                                                                                | 352                                                                                 | 60                                                                                  | 40                                                                                  | 518                                                                                 | 239                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 280                                                                               | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                  | 4                                                                                   | 0                                                                                   | 0                                                                                   | 32                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 296                                                                               | 426                                                                               | 273                                                                               | 215                                                                               | 579                                                                               | 0                                                                                 | 0                                                                                  | 854                                                                                 | 0                                                                                   | 0                                                                                   | 765                                                                                 | 0                                                                                   |
| Turn Type                         | Prot                                                                              |                                                                                   | Perm                                                                              | Perm                                                                              |                                                                                   |                                                                                   | Split                                                                              |                                                                                     |                                                                                     | Split                                                                               |                                                                                     |                                                                                     |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 21.0                                                                              | 74.0                                                                              | 74.0                                                                              | 49.0                                                                              | 49.0                                                                              |                                                                                   |                                                                                    | 36.0                                                                                |                                                                                     |                                                                                     | 28.0                                                                                |                                                                                     |
| Effective Green, g (s)            | 21.0                                                                              | 74.0                                                                              | 74.0                                                                              | 49.0                                                                              | 49.0                                                                              |                                                                                   |                                                                                    | 36.0                                                                                |                                                                                     |                                                                                     | 28.0                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.14                                                                              | 0.49                                                                              | 0.49                                                                              | 0.33                                                                              | 0.33                                                                              |                                                                                   |                                                                                    | 0.24                                                                                |                                                                                     |                                                                                     | 0.19                                                                                |                                                                                     |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 248                                                                               | 919                                                                               | 781                                                                               | 188                                                                               | 597                                                                               |                                                                                   |                                                                                    | 819                                                                                 |                                                                                     |                                                                                     | 629                                                                                 |                                                                                     |
| v/s Ratio Prot                    | c0.17                                                                             | 0.23                                                                              |                                                                                   |                                                                                   | 0.32                                                                              |                                                                                   |                                                                                    | c0.25                                                                               |                                                                                     |                                                                                     | c0.23                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.17                                                                              | c0.37                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/c Ratio                         | 1.19                                                                              | 0.46                                                                              | 0.35                                                                              | 1.14                                                                              | 0.97                                                                              |                                                                                   |                                                                                    | 1.04                                                                                |                                                                                     |                                                                                     | 1.22                                                                                |                                                                                     |
| Uniform Delay, d1                 | 64.5                                                                              | 25.0                                                                              | 23.3                                                                              | 50.5                                                                              | 49.8                                                                              |                                                                                   |                                                                                    | 57.0                                                                                |                                                                                     |                                                                                     | 61.0                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                    | 1.00                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 119.7                                                                             | 0.4                                                                               | 0.3                                                                               | 109.6                                                                             | 28.8                                                                              |                                                                                   |                                                                                    | 43.2                                                                                |                                                                                     |                                                                                     | 111.5                                                                               |                                                                                     |
| Delay (s)                         | 184.2                                                                             | 25.3                                                                              | 23.5                                                                              | 160.1                                                                             | 78.6                                                                              |                                                                                   |                                                                                    | 100.2                                                                               |                                                                                     |                                                                                     | 172.5                                                                               |                                                                                     |
| Level of Service                  | F                                                                                 | C                                                                                 | C                                                                                 | F                                                                                 | E                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 61.4                                                                              |                                                                                   |                                                                                   | 100.6                                                                             |                                                                                   |                                                                                    | 100.2                                                                               |                                                                                     |                                                                                     | 172.5                                                                               |                                                                                     |
| Approach LOS                      |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Average Control Delay         |                                                                                   |                                                                                   | 102.5                                                                             |                                                                                   |                                                                                   | HCM Level of Service                                                              |                                                                                    |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |                                                                                     |
| HCM Volume to Capacity ratio      |                                                                                   |                                                                                   | 1.14                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 150.0                                                                             |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                    |                                                                                     | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 101.1%                                                                            |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                    |                                                                                     | G                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Queues

## Near-Term +Project AM Volumes

## 1: High St &amp; MacArthur Blvd

6/28/2012

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBT                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Group Flow (vph)   | 167                                                                               | 354                                                                               | 468                                                                               | 886                                                                               | 908                                                                               | 484                                                                               |
| v/c Ratio               | 0.90                                                                              | 0.43                                                                              | 0.49                                                                              | 1.28                                                                              | 0.94                                                                              | 0.69                                                                              |
| Control Delay           | 109.1                                                                             | 31.2                                                                              | 3.9                                                                               | 180.0                                                                             | 69.7                                                                              | 57.3                                                                              |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Delay             | 109.1                                                                             | 31.2                                                                              | 3.9                                                                               | 180.0                                                                             | 69.7                                                                              | 57.3                                                                              |
| Queue Length 50th (ft)  | 164                                                                               | 237                                                                               | 0                                                                                 | ~579                                                                              | 458                                                                               | 217                                                                               |
| Queue Length 95th (ft)  | #303                                                                              | 326                                                                               | 64                                                                                | #716                                                                              | #590                                                                              | 282                                                                               |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   | 490                                                                               | 360                                                                               | 365                                                                               |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)     | 189                                                                               | 821                                                                               | 960                                                                               | 690                                                                               | 968                                                                               | 704                                                                               |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Reduced v/c Ratio       | 0.88                                                                              | 0.43                                                                              | 0.49                                                                              | 1.28                                                                              | 0.94                                                                              | 0.69                                                                              |

## Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis

Near-Term +Project AM Volumes

## 1: High St & MacArthur Blvd

6/28/2012

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (vph)                      | 154                                                                               | 326                                                                               | 431                                                                               | 180                                                                               | 586                                                                               | 49                                                                                | 361                                                                               | 440                                                                                 | 35                                                                                  | 27                                                                                  | 294                                                                                 | 124                                                                                 |
| 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                                                                               |                                                                                   |                                                                                   | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              |                                                                                   |                                                                                   | 0.95                                                                                |                                                                                     |                                                                                     | 0.95                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                   | 0.99                                                                                |                                                                                     |                                                                                     | 0.96                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                   | 0.98                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              |                                                                                   | 3469                                                                              |                                                                                   |                                                                                   | 3443                                                                                |                                                                                     |                                                                                     | 3381                                                                                |                                                                                     |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.64                                                                              |                                                                                   |                                                                                   | 0.98                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              |                                                                                   | 2239                                                                              |                                                                                   |                                                                                   | 3443                                                                                |                                                                                     |                                                                                     | 3381                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 167                                                                               | 354                                                                               | 468                                                                               | 196                                                                               | 637                                                                               | 53                                                                                | 392                                                                               | 478                                                                                 | 38                                                                                  | 29                                                                                  | 320                                                                                 | 135                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 263                                                                               | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                 | 2                                                                                   | 0                                                                                   | 0                                                                                   | 27                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 167                                                                               | 354                                                                               | 205                                                                               | 0                                                                                 | 883                                                                               | 0                                                                                 | 0                                                                                 | 906                                                                                 | 0                                                                                   | 0                                                                                   | 457                                                                                 | 0                                                                                   |
| Turn Type                         | Prot                                                                              |                                                                                   | Perm                                                                              | Perm                                                                              |                                                                                   |                                                                                   | Split                                                                             |                                                                                     |                                                                                     | Split                                                                               |                                                                                     |                                                                                     |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 15.7                                                                              | 65.7                                                                              | 65.7                                                                              |                                                                                   | 46.0                                                                              |                                                                                   |                                                                                   | 42.0                                                                                |                                                                                     |                                                                                     | 30.0                                                                                |                                                                                     |
| Effective Green, g (s)            | 15.7                                                                              | 65.7                                                                              | 65.7                                                                              |                                                                                   | 46.0                                                                              |                                                                                   |                                                                                   | 42.0                                                                                |                                                                                     |                                                                                     | 30.0                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.10                                                                              | 0.44                                                                              | 0.44                                                                              |                                                                                   | 0.31                                                                              |                                                                                   |                                                                                   | 0.28                                                                                |                                                                                     |                                                                                     | 0.20                                                                                |                                                                                     |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                   | 3.0                                                                                 |                                                                                     |                                                                                     | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 186                                                                               | 818                                                                               | 695                                                                               |                                                                                   | 688                                                                               |                                                                                   |                                                                                   | 966                                                                                 |                                                                                     |                                                                                     | 678                                                                                 |                                                                                     |
| v/s Ratio Prot                    | c0.09                                                                             | 0.19                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | c0.26                                                                               |                                                                                     |                                                                                     | c0.14                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.13                                                                              |                                                                                   | c0.39                                                                             |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/c Ratio                         | 0.90                                                                              | 0.43                                                                              | 0.30                                                                              |                                                                                   | 1.28                                                                              |                                                                                   |                                                                                   | 0.94                                                                                |                                                                                     |                                                                                     | 0.67                                                                                |                                                                                     |
| Uniform Delay, d1                 | 66.2                                                                              | 29.1                                                                              | 27.1                                                                              |                                                                                   | 51.8                                                                              |                                                                                   |                                                                                   | 52.6                                                                                |                                                                                     |                                                                                     | 55.3                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 38.3                                                                              | 0.4                                                                               | 0.2                                                                               |                                                                                   | 138.6                                                                             |                                                                                   |                                                                                   | 17.3                                                                                |                                                                                     |                                                                                     | 5.3                                                                                 |                                                                                     |
| Delay (s)                         | 104.5                                                                             | 29.5                                                                              | 27.3                                                                              |                                                                                   | 190.4                                                                             |                                                                                   |                                                                                   | 69.9                                                                                |                                                                                     |                                                                                     | 60.6                                                                                |                                                                                     |
| Level of Service                  | F                                                                                 | C                                                                                 | C                                                                                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | E                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 41.1                                                                              |                                                                                   |                                                                                   | 190.4                                                                             |                                                                                   |                                                                                   | 69.9                                                                                |                                                                                     |                                                                                     | 60.6                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | E                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Average Control Delay         |                                                                                   |                                                                                   | 92.5                                                                              |                                                                                   | HCM Level of Service                                                              |                                                                                   |                                                                                   | F                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Volume to Capacity ratio      |                                                                                   |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 149.7                                                                             |                                                                                   | Sum of lost time (s)                                                              |                                                                                   |                                                                                   | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 90.1%                                                                             |                                                                                   | ICU Level of Service                                                              |                                                                                   |                                                                                   | E                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Queues

## Near-Term +Project PM Volumes

## 1: High St &amp; MacArthur Blvd

6/28/2012

|                         |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBT                                                                               | SBT                                                                                |
| Lane Group Flow (vph)   | 296                                                                               | 426                                                                               | 561                                                                               | 217                                                                               | 582                                                                               | 867                                                                               | 801                                                                                |
| v/c Ratio               | 1.19                                                                              | 0.46                                                                              | 0.53                                                                              | 1.15                                                                              | 0.97                                                                              | 1.05                                                                              | 1.21                                                                               |
| Control Delay           | 172.7                                                                             | 27.1                                                                              | 3.5                                                                               | 157.8                                                                             | 78.7                                                                              | 99.9                                                                              | 156.6                                                                              |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                |
| Total Delay             | 172.7                                                                             | 27.1                                                                              | 3.5                                                                               | 157.8                                                                             | 78.7                                                                              | 99.9                                                                              | 156.6                                                                              |
| Queue Length 50th (ft)  | ~349                                                                              | 268                                                                               | 0                                                                                 | ~249                                                                              | 558                                                                               | ~484                                                                              | ~486                                                                               |
| Queue Length 95th (ft)  | #544                                                                              | 363                                                                               | 61                                                                                | #422                                                                              | #806                                                                              | #622                                                                              | #622                                                                               |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   |                                                                                   | 490                                                                               | 360                                                                               | 365                                                                                |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Base Capacity (vph)     | 248                                                                               | 919                                                                               | 1065                                                                              | 188                                                                               | 601                                                                               | 823                                                                               | 661                                                                                |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Reduced v/c Ratio       | 1.19                                                                              | 0.46                                                                              | 0.53                                                                              | 1.15                                                                              | 0.97                                                                              | 1.05                                                                              | 1.21                                                                               |

## Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis

Near-Term +Project PM Volumes

1: High St & MacArthur Blvd

6/28/2012

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |  |
| Volume (vph)                      | 272                                                                               | 392                                                                               | 516                                                                               | 200                                                                               | 471                                                                               | 64                                                                                | 416                                                                                | 326                                                                                 | 56                                                                                  | 37                                                                                  | 480                                                                                 | 220                                                                                 |
| 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                                                                               | 4.0                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                    | 0.95                                                                                |                                                                                     |                                                                                     | 0.95                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 0.98                                                                              |                                                                                   |                                                                                    | 0.99                                                                                |                                                                                     |                                                                                     | 0.96                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              |                                                                                   |                                                                                    | 0.97                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              | 1770                                                                              | 1829                                                                              |                                                                                   |                                                                                    | 3413                                                                                |                                                                                     |                                                                                     | 3372                                                                                |                                                                                     |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.31                                                                              | 1.00                                                                              |                                                                                   |                                                                                    | 0.97                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              | 575                                                                               | 1829                                                                              |                                                                                   |                                                                                    | 3413                                                                                |                                                                                     |                                                                                     | 3372                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 296                                                                               | 426                                                                               | 561                                                                               | 217                                                                               | 512                                                                               | 70                                                                                | 452                                                                                | 354                                                                                 | 61                                                                                  | 40                                                                                  | 522                                                                                 | 239                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 284                                                                               | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                  | 4                                                                                   | 0                                                                                   | 0                                                                                   | 32                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 296                                                                               | 426                                                                               | 277                                                                               | 217                                                                               | 579                                                                               | 0                                                                                 | 0                                                                                  | 863                                                                                 | 0                                                                                   | 0                                                                                   | 769                                                                                 | 0                                                                                   |
| Turn Type                         | Prot                                                                              |                                                                                   | Perm                                                                              | Perm                                                                              |                                                                                   |                                                                                   | Split                                                                              |                                                                                     |                                                                                     | Split                                                                               |                                                                                     |                                                                                     |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 21.0                                                                              | 74.0                                                                              | 74.0                                                                              | 49.0                                                                              | 49.0                                                                              |                                                                                   |                                                                                    | 36.0                                                                                |                                                                                     |                                                                                     | 28.0                                                                                |                                                                                     |
| Effective Green, g (s)            | 21.0                                                                              | 74.0                                                                              | 74.0                                                                              | 49.0                                                                              | 49.0                                                                              |                                                                                   |                                                                                    | 36.0                                                                                |                                                                                     |                                                                                     | 28.0                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.14                                                                              | 0.49                                                                              | 0.49                                                                              | 0.33                                                                              | 0.33                                                                              |                                                                                   |                                                                                    | 0.24                                                                                |                                                                                     |                                                                                     | 0.19                                                                                |                                                                                     |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 248                                                                               | 919                                                                               | 781                                                                               | 188                                                                               | 597                                                                               |                                                                                   |                                                                                    | 819                                                                                 |                                                                                     |                                                                                     | 629                                                                                 |                                                                                     |
| v/s Ratio Prot                    | c0.17                                                                             | 0.23                                                                              |                                                                                   |                                                                                   | 0.32                                                                              |                                                                                   |                                                                                    | c0.25                                                                               |                                                                                     |                                                                                     | c0.23                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.17                                                                              | c0.38                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/c Ratio                         | 1.19                                                                              | 0.46                                                                              | 0.35                                                                              | 1.15                                                                              | 0.97                                                                              |                                                                                   |                                                                                    | 1.05                                                                                |                                                                                     |                                                                                     | 1.22                                                                                |                                                                                     |
| Uniform Delay, d1                 | 64.5                                                                              | 25.0                                                                              | 23.3                                                                              | 50.5                                                                              | 49.8                                                                              |                                                                                   |                                                                                    | 57.0                                                                                |                                                                                     |                                                                                     | 61.0                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                    | 1.00                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 119.7                                                                             | 0.4                                                                               | 0.3                                                                               | 113.3                                                                             | 28.8                                                                              |                                                                                   |                                                                                    | 46.6                                                                                |                                                                                     |                                                                                     | 114.2                                                                               |                                                                                     |
| Delay (s)                         | 184.2                                                                             | 25.3                                                                              | 23.6                                                                              | 163.8                                                                             | 78.6                                                                              |                                                                                   |                                                                                    | 103.6                                                                               |                                                                                     |                                                                                     | 175.2                                                                               |                                                                                     |
| Level of Service                  | F                                                                                 | C                                                                                 | C                                                                                 | F                                                                                 | E                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 61.2                                                                              |                                                                                   |                                                                                   | 101.7                                                                             |                                                                                   |                                                                                    | 103.6                                                                               |                                                                                     |                                                                                     | 175.2                                                                               |                                                                                     |
| Approach LOS                      |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Average Control Delay         |                                                                                   |                                                                                   | 104.0                                                                             |                                                                                   |                                                                                   | HCM Level of Service                                                              |                                                                                    |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |                                                                                     |
| HCM Volume to Capacity ratio      |                                                                                   |                                                                                   | 1.15                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 150.0                                                                             |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                    |                                                                                     | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 101.5%                                                                            |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                    |                                                                                     | G                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Queues

## Cumulative AM Volumes

## 1: High St &amp; MacArthur Blvd

3/10/2012

|                         |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBT                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Group Flow (vph)   | 208                                                                               | 439                                                                               | 572                                                                               | 921                                                                               | 1288                                                                              | 992                                                                               |
| v/c Ratio               | 1.10                                                                              | 0.54                                                                              | 0.56                                                                              | 1.48                                                                              | 1.33                                                                              | 1.41                                                                              |
| Control Delay           | 154.3                                                                             | 33.8                                                                              | 4.2                                                                               | 261.6                                                                             | 198.6                                                                             | 234.4                                                                             |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Delay             | 154.3                                                                             | 33.8                                                                              | 4.2                                                                               | 261.6                                                                             | 198.6                                                                             | 234.4                                                                             |
| Queue Length 50th (ft)  | ~230                                                                              | 311                                                                               | 0                                                                                 | ~653                                                                              | ~862                                                                              | ~673                                                                              |
| Queue Length 95th (ft)  | #401                                                                              | 420                                                                               | 70                                                                                | #792                                                                              | #1004                                                                             | #812                                                                              |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   | 490                                                                               | 360                                                                               | 365                                                                               |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)     | 189                                                                               | 820                                                                               | 1017                                                                              | 622                                                                               | 966                                                                               | 703                                                                               |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Reduced v/c Ratio       | 1.10                                                                              | 0.54                                                                              | 0.56                                                                              | 1.48                                                                              | 1.33                                                                              | 1.41                                                                              |

## Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis

## 1: High St & MacArthur Blvd

# Cumulative AM Volumes

3/10/2012

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (vph)                      | 191                                                                               | 404                                                                               | 526                                                                               | 187                                                                               | 610                                                                               | 51                                                                                | 510                                                                                | 628                                                                                 | 47                                                                                  | 55                                                                                  | 602                                                                                 | 256                                                                                 |
| 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                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              |                                                                                   |                                                                                    | 0.95                                                                                |                                                                                     |                                                                                     | 0.95                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                    | 0.99                                                                                |                                                                                     |                                                                                     | 0.96                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                    | 0.98                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              |                                                                                   | 3469                                                                              |                                                                                   |                                                                                    | 3444                                                                                |                                                                                     |                                                                                     | 3380                                                                                |                                                                                     |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.58                                                                              |                                                                                   |                                                                                    | 0.98                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              |                                                                                   | 2021                                                                              |                                                                                   |                                                                                    | 3444                                                                                |                                                                                     |                                                                                     | 3380                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 208                                                                               | 439                                                                               | 572                                                                               | 203                                                                               | 663                                                                               | 55                                                                                | 554                                                                                | 683                                                                                 | 51                                                                                  | 60                                                                                  | 654                                                                                 | 278                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 320                                                                               | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                  | 2                                                                                   | 0                                                                                   | 0                                                                                   | 27                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 208                                                                               | 439                                                                               | 252                                                                               | 0                                                                                 | 918                                                                               | 0                                                                                 | 0                                                                                  | 1286                                                                                | 0                                                                                   | 0                                                                                   | 965                                                                                 | 0                                                                                   |
| Turn Type                         | Prot                                                                              |                                                                                   | Perm                                                                              | Perm                                                                              |                                                                                   |                                                                                   | Split                                                                              |                                                                                     |                                                                                     | Split                                                                               |                                                                                     |                                                                                     |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 16.0                                                                              | 66.0                                                                              | 66.0                                                                              |                                                                                   | 46.0                                                                              |                                                                                   |                                                                                    | 42.0                                                                                |                                                                                     |                                                                                     | 30.0                                                                                |                                                                                     |
| Effective Green, g (s)            | 16.0                                                                              | 66.0                                                                              | 66.0                                                                              |                                                                                   | 46.0                                                                              |                                                                                   |                                                                                    | 42.0                                                                                |                                                                                     |                                                                                     | 30.0                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.11                                                                              | 0.44                                                                              | 0.44                                                                              |                                                                                   | 0.31                                                                              |                                                                                   |                                                                                    | 0.28                                                                                |                                                                                     |                                                                                     | 0.20                                                                                |                                                                                     |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 189                                                                               | 820                                                                               | 697                                                                               |                                                                                   | 620                                                                               |                                                                                   |                                                                                    | 964                                                                                 |                                                                                     |                                                                                     | 676                                                                                 |                                                                                     |
| v/s Ratio Prot                    | c0.12                                                                             | 0.24                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | c0.37                                                                               |                                                                                     |                                                                                     | c0.29                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.16                                                                              |                                                                                   | c0.45                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/c Ratio                         | 1.10                                                                              | 0.54                                                                              | 0.36                                                                              |                                                                                   | 1.48                                                                              |                                                                                   |                                                                                    | 1.33                                                                                |                                                                                     |                                                                                     | 1.43                                                                                |                                                                                     |
| Uniform Delay, d1                 | 67.0                                                                              | 30.8                                                                              | 28.0                                                                              |                                                                                   | 52.0                                                                              |                                                                                   |                                                                                    | 54.0                                                                                |                                                                                     |                                                                                     | 60.0                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                    | 1.00                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 94.9                                                                              | 0.7                                                                               | 0.3                                                                               |                                                                                   | 225.1                                                                             |                                                                                   |                                                                                    | 157.4                                                                               |                                                                                     |                                                                                     | 200.8                                                                               |                                                                                     |
| Delay (s)                         | 161.9                                                                             | 31.4                                                                              | 28.3                                                                              |                                                                                   | 277.1                                                                             |                                                                                   |                                                                                    | 211.4                                                                               |                                                                                     |                                                                                     | 260.8                                                                               |                                                                                     |
| Level of Service                  | F                                                                                 | C                                                                                 | C                                                                                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 52.2                                                                              |                                                                                   |                                                                                   | 277.1                                                                             |                                                                                   |                                                                                    | 211.4                                                                               |                                                                                     |                                                                                     | 260.8                                                                               |                                                                                     |
| Approach LOS                      |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Average Control Delay         |                                                                                   |                                                                                   | 192.2                                                                             |                                                                                   |                                                                                   | HCM Level of Service                                                              |                                                                                    |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |                                                                                     |
| HCM Volume to Capacity ratio      |                                                                                   |                                                                                   | 1.38                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 150.0                                                                             |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                    |                                                                                     | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 118.6%                                                                            |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                    |                                                                                     | H                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Queues

## 1: High St &amp; MacArthur Blvd

## Cumulative PM Volumes

6/28/2012

|                         |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBT                                                                               | SBT                                                                                 |
| Lane Group Flow (vph)   | 304                                                                               | 440                                                                               | 568                                                                               | 217                                                                               | 587                                                                               | 1452                                                                              | 1677                                                                                |
| v/c Ratio               | 1.43                                                                              | 0.55                                                                              | 0.58                                                                              | 1.89                                                                              | 1.14                                                                              | 1.76                                                                              | 1.89                                                                                |
| Control Delay           | 264.8                                                                             | 35.6                                                                              | 5.7                                                                               | 460.2                                                                             | 130.8                                                                             | 380.9                                                                             | 435.9                                                                               |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |
| Total Delay             | 264.8                                                                             | 35.6                                                                              | 5.7                                                                               | 460.2                                                                             | 130.8                                                                             | 380.9                                                                             | 435.9                                                                               |
| Queue Length 50th (ft)  | ~401                                                                              | 320                                                                               | 20                                                                                | ~324                                                                              | ~666                                                                              | ~1117                                                                             | ~1311                                                                               |
| Queue Length 95th (ft)  | #598                                                                              | 431                                                                               | 110                                                                               | #496                                                                              | #906                                                                              | #1259                                                                             | #1451                                                                               |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   |                                                                                   | 490                                                                               | 360                                                                               | 365                                                                                 |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |
| Base Capacity (vph)     | 212                                                                               | 795                                                                               | 980                                                                               | 115                                                                               | 516                                                                               | 824                                                                               | 886                                                                                 |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   |
| Reduced v/c Ratio       | 1.43                                                                              | 0.55                                                                              | 0.58                                                                              | 1.89                                                                              | 1.14                                                                              | 1.76                                                                              | 1.89                                                                                |

## Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis

Cumulative PM Volumes

1: High St & MacArthur Blvd

6/28/2012

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |  |
| Volume (vph)                      | 280                                                                               | 405                                                                               | 523                                                                               | 200                                                                               | 475                                                                               | 65                                                                                | 696                                                                                | 549                                                                                 | 90                                                                                  | 75                                                                                  | 1006                                                                                | 462                                                                                 |
| 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                                                                               | 4.0                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                    | 0.95                                                                                |                                                                                     |                                                                                     | 0.95                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 0.98                                                                              |                                                                                   |                                                                                    | 0.99                                                                                |                                                                                     |                                                                                     | 0.96                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              |                                                                                   |                                                                                    | 0.97                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              | 1770                                                                              | 1829                                                                              |                                                                                   |                                                                                    | 3414                                                                                |                                                                                     |                                                                                     | 3372                                                                                |                                                                                     |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.22                                                                              | 1.00                                                                              |                                                                                   |                                                                                    | 0.97                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              | 409                                                                               | 1829                                                                              |                                                                                   |                                                                                    | 3414                                                                                |                                                                                     |                                                                                     | 3372                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 304                                                                               | 440                                                                               | 568                                                                               | 217                                                                               | 516                                                                               | 71                                                                                | 757                                                                                | 597                                                                                 | 98                                                                                  | 82                                                                                  | 1093                                                                                | 502                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 305                                                                               | 0                                                                                 | 4                                                                                 | 0                                                                                 | 0                                                                                  | 4                                                                                   | 0                                                                                   | 0                                                                                   | 31                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 304                                                                               | 440                                                                               | 263                                                                               | 217                                                                               | 583                                                                               | 0                                                                                 | 0                                                                                  | 1448                                                                                | 0                                                                                   | 0                                                                                   | 1646                                                                                | 0                                                                                   |
| Turn Type                         | Prot                                                                              |                                                                                   | Perm                                                                              | Perm                                                                              |                                                                                   |                                                                                   | Split                                                                              |                                                                                     |                                                                                     | Split                                                                               |                                                                                     |                                                                                     |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 18.0                                                                              | 64.0                                                                              | 64.0                                                                              | 42.0                                                                              | 42.0                                                                              |                                                                                   |                                                                                    | 36.0                                                                                |                                                                                     |                                                                                     | 38.0                                                                                |                                                                                     |
| Effective Green, g (s)            | 18.0                                                                              | 64.0                                                                              | 64.0                                                                              | 42.0                                                                              | 42.0                                                                              |                                                                                   |                                                                                    | 36.0                                                                                |                                                                                     |                                                                                     | 38.0                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.12                                                                              | 0.43                                                                              | 0.43                                                                              | 0.28                                                                              | 0.28                                                                              |                                                                                   |                                                                                    | 0.24                                                                                |                                                                                     |                                                                                     | 0.25                                                                                |                                                                                     |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 212                                                                               | 795                                                                               | 675                                                                               | 115                                                                               | 512                                                                               |                                                                                   |                                                                                    | 819                                                                                 |                                                                                     |                                                                                     | 854                                                                                 |                                                                                     |
| v/s Ratio Prot                    | c0.17                                                                             | 0.24                                                                              |                                                                                   |                                                                                   | 0.32                                                                              |                                                                                   |                                                                                    | c0.42                                                                               |                                                                                     |                                                                                     | c0.49                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.17                                                                              | c0.53                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/c Ratio                         | 1.43                                                                              | 0.55                                                                              | 0.39                                                                              | 1.89                                                                              | 1.14                                                                              |                                                                                   |                                                                                    | 1.77                                                                                |                                                                                     |                                                                                     | 1.93                                                                                |                                                                                     |
| Uniform Delay, d1                 | 66.0                                                                              | 32.3                                                                              | 29.6                                                                              | 54.0                                                                              | 54.0                                                                              |                                                                                   |                                                                                    | 57.0                                                                                |                                                                                     |                                                                                     | 56.0                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                    | 1.00                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 220.2                                                                             | 0.8                                                                               | 0.4                                                                               | 430.0                                                                             | 84.2                                                                              |                                                                                   |                                                                                    | 350.7                                                                               |                                                                                     |                                                                                     | 421.5                                                                               |                                                                                     |
| Delay (s)                         | 286.2                                                                             | 33.1                                                                              | 29.9                                                                              | 484.0                                                                             | 138.2                                                                             |                                                                                   |                                                                                    | 407.7                                                                               |                                                                                     |                                                                                     | 477.5                                                                               |                                                                                     |
| Level of Service                  | F                                                                                 | C                                                                                 | C                                                                                 | F                                                                                 | F                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 90.4                                                                              |                                                                                   |                                                                                   | 231.5                                                                             |                                                                                   |                                                                                    | 407.7                                                                               |                                                                                     |                                                                                     | 477.5                                                                               |                                                                                     |
| Approach LOS                      |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Average Control Delay         |                                                                                   |                                                                                   | 323.6                                                                             |                                                                                   |                                                                                   | HCM Level of Service                                                              |                                                                                    |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |                                                                                     |
| HCM Volume to Capacity ratio      |                                                                                   |                                                                                   | 1.81                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 150.0                                                                             |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                    |                                                                                     | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 141.1%                                                                            |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                    |                                                                                     | H                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Queues

## Cumulative +Project AM Volumes

## 1: High St &amp; MacArthur Blvd

3/10/2012

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|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBT                                                                               | NBT                                                                               | SBT                                                                               |
| Lane Group Flow (vph)   | 208                                                                               | 439                                                                               | 577                                                                               | 922                                                                               | 1301                                                                              | 995                                                                               |
| v/c Ratio               | 1.10                                                                              | 0.54                                                                              | 0.57                                                                              | 1.48                                                                              | 1.35                                                                              | 1.42                                                                              |
| Control Delay           | 154.3                                                                             | 33.8                                                                              | 4.3                                                                               | 262.3                                                                             | 204.1                                                                             | 236.2                                                                             |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |
| Total Delay             | 154.3                                                                             | 33.8                                                                              | 4.3                                                                               | 262.3                                                                             | 204.1                                                                             | 236.2                                                                             |
| Queue Length 50th (ft)  | ~230                                                                              | 311                                                                               | 0                                                                                 | ~654                                                                              | ~876                                                                              | ~676                                                                              |
| Queue Length 95th (ft)  | #401                                                                              | 420                                                                               | 70                                                                                | #793                                                                              | #1019                                                                             | #815                                                                              |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   | 490                                                                               | 360                                                                               | 365                                                                               |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Base Capacity (vph)     | 189                                                                               | 820                                                                               | 1020                                                                              | 622                                                                               | 966                                                                               | 703                                                                               |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |
| Reduced v/c Ratio       | 1.10                                                                              | 0.54                                                                              | 0.57                                                                              | 1.48                                                                              | 1.35                                                                              | 1.42                                                                              |

## Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis

Cumulative +Project AM Volumes

1: High St & MacArthur Blvd

3/10/2012

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Volume (vph)                      | 191                                                                               | 404                                                                               | 531                                                                               | 188                                                                               | 610                                                                               | 51                                                                                | 517                                                                                | 631                                                                                 | 49                                                                                  | 55                                                                                  | 604                                                                                 | 256                                                                                 |
| 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                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              |                                                                                   |                                                                                    | 0.95                                                                                |                                                                                     |                                                                                     | 0.95                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                    | 0.99                                                                                |                                                                                     |                                                                                     | 0.96                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              |                                                                                   |                                                                                    | 0.98                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              |                                                                                   | 3469                                                                              |                                                                                   |                                                                                    | 3443                                                                                |                                                                                     |                                                                                     | 3381                                                                                |                                                                                     |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.58                                                                              |                                                                                   |                                                                                    | 0.98                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              |                                                                                   | 2020                                                                              |                                                                                   |                                                                                    | 3443                                                                                |                                                                                     |                                                                                     | 3381                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 208                                                                               | 439                                                                               | 577                                                                               | 204                                                                               | 663                                                                               | 55                                                                                | 562                                                                                | 686                                                                                 | 53                                                                                  | 60                                                                                  | 657                                                                                 | 278                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 323                                                                               | 0                                                                                 | 3                                                                                 | 0                                                                                 | 0                                                                                  | 2                                                                                   | 0                                                                                   | 0                                                                                   | 27                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 208                                                                               | 439                                                                               | 254                                                                               | 0                                                                                 | 919                                                                               | 0                                                                                 | 0                                                                                  | 1299                                                                                | 0                                                                                   | 0                                                                                   | 968                                                                                 | 0                                                                                   |
| Turn Type                         | Prot                                                                              |                                                                                   | Perm                                                                              | Perm                                                                              |                                                                                   |                                                                                   | Split                                                                              |                                                                                     |                                                                                     | Split                                                                               |                                                                                     |                                                                                     |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 2                                                                                  | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 16.0                                                                              | 66.0                                                                              | 66.0                                                                              |                                                                                   | 46.0                                                                              |                                                                                   |                                                                                    | 42.0                                                                                |                                                                                     |                                                                                     | 30.0                                                                                |                                                                                     |
| Effective Green, g (s)            | 16.0                                                                              | 66.0                                                                              | 66.0                                                                              |                                                                                   | 46.0                                                                              |                                                                                   |                                                                                    | 42.0                                                                                |                                                                                     |                                                                                     | 30.0                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.11                                                                              | 0.44                                                                              | 0.44                                                                              |                                                                                   | 0.31                                                                              |                                                                                   |                                                                                    | 0.28                                                                                |                                                                                     |                                                                                     | 0.20                                                                                |                                                                                     |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   | 4.0                                                                               |                                                                                   |                                                                                    | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                    | 3.0                                                                                 |                                                                                     |                                                                                     | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 189                                                                               | 820                                                                               | 697                                                                               |                                                                                   | 619                                                                               |                                                                                   |                                                                                    | 964                                                                                 |                                                                                     |                                                                                     | 676                                                                                 |                                                                                     |
| v/s Ratio Prot                    | c0.12                                                                             | 0.24                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | c0.38                                                                               |                                                                                     |                                                                                     | c0.29                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.16                                                                              |                                                                                   | c0.45                                                                             |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/c Ratio                         | 1.10                                                                              | 0.54                                                                              | 0.36                                                                              |                                                                                   | 1.49                                                                              |                                                                                   |                                                                                    | 1.35                                                                                |                                                                                     |                                                                                     | 1.43                                                                                |                                                                                     |
| Uniform Delay, d1                 | 67.0                                                                              | 30.8                                                                              | 28.0                                                                              |                                                                                   | 52.0                                                                              |                                                                                   |                                                                                    | 54.0                                                                                |                                                                                     |                                                                                     | 60.0                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                   |                                                                                    | 1.00                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 94.9                                                                              | 0.7                                                                               | 0.3                                                                               |                                                                                   | 226.8                                                                             |                                                                                   |                                                                                    | 163.2                                                                               |                                                                                     |                                                                                     | 202.7                                                                               |                                                                                     |
| Delay (s)                         | 161.9                                                                             | 31.4                                                                              | 28.3                                                                              |                                                                                   | 278.8                                                                             |                                                                                   |                                                                                    | 217.2                                                                               |                                                                                     |                                                                                     | 262.7                                                                               |                                                                                     |
| Level of Service                  | F                                                                                 | C                                                                                 | C                                                                                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 52.2                                                                              |                                                                                   |                                                                                   | 278.8                                                                             |                                                                                   |                                                                                    | 217.2                                                                               |                                                                                     |                                                                                     | 262.7                                                                               |                                                                                     |
| Approach LOS                      |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Average Control Delay         |                                                                                   |                                                                                   | 194.7                                                                             |                                                                                   |                                                                                   | HCM Level of Service                                                              |                                                                                    |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |                                                                                     |
| HCM Volume to Capacity ratio      |                                                                                   |                                                                                   | 1.38                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 150.0                                                                             |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                    |                                                                                     | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 119.1%                                                                            |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                    |                                                                                     | H                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

## Queues

## Cumulative +Project PM Volumes

## 1: High St &amp; MacArthur Blvd

6/28/2012

|                         |  |  |  |  |  |  |  |
|-------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Lane Group              | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBT                                                                               | SBT                                                                                |
| Lane Group Flow (vph)   | 304                                                                               | 440                                                                               | 576                                                                               | 220                                                                               | 587                                                                               | 1461                                                                              | 1681                                                                               |
| v/c Ratio               | 1.43                                                                              | 0.55                                                                              | 0.59                                                                              | 1.91                                                                              | 1.14                                                                              | 1.77                                                                              | 1.90                                                                               |
| Control Delay           | 264.8                                                                             | 35.6                                                                              | 6.0                                                                               | 471.1                                                                             | 130.8                                                                             | 385.6                                                                             | 437.8                                                                              |
| Queue Delay             | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                |
| Total Delay             | 264.8                                                                             | 35.6                                                                              | 6.0                                                                               | 471.1                                                                             | 130.8                                                                             | 385.6                                                                             | 437.8                                                                              |
| Queue Length 50th (ft)  | ~401                                                                              | 320                                                                               | 25                                                                                | ~330                                                                              | ~666                                                                              | ~1127                                                                             | ~1316                                                                              |
| Queue Length 95th (ft)  | #598                                                                              | 431                                                                               | 119                                                                               | #504                                                                              | #906                                                                              | #1268                                                                             | #1455                                                                              |
| Internal Link Dist (ft) |                                                                                   | 505                                                                               |                                                                                   |                                                                                   | 490                                                                               | 360                                                                               | 365                                                                                |
| Turn Bay Length (ft)    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |
| Base Capacity (vph)     | 212                                                                               | 795                                                                               | 980                                                                               | 115                                                                               | 516                                                                               | 824                                                                               | 886                                                                                |
| Starvation Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Spillback Cap Reductn   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Storage Cap Reductn     | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |
| Reduced v/c Ratio       | 1.43                                                                              | 0.55                                                                              | 0.59                                                                              | 1.91                                                                              | 1.14                                                                              | 1.77                                                                              | 1.90                                                                               |

## Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.  
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis

Cumulative +Project PM Volumes

1: High St & MacArthur Blvd

6/28/2012

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                               | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |                                                                                   |                                                                                   |  |                                                                                     |                                                                                     |  |  |
| Volume (vph)                      | 280                                                                               | 405                                                                               | 530                                                                               | 202                                                                               | 475                                                                               | 65                                                                                | 702                                                                               | 551                                                                                 | 91                                                                                  | 75                                                                                  | 1009                                                                                | 462                                                                                 |
| 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                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 0.95                                                                                |                                                                                     |                                                                                     | 0.95                                                                                |                                                                                     |
| Flt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 0.98                                                                              |                                                                                   |                                                                                   | 0.99                                                                                |                                                                                     |                                                                                     | 0.96                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 0.97                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              | 1770                                                                              | 1829                                                                              |                                                                                   |                                                                                   | 3414                                                                                |                                                                                     |                                                                                     | 3372                                                                                |                                                                                     |
| Flt Permitted                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.22                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 0.97                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1770                                                                              | 1863                                                                              | 1583                                                                              | 409                                                                               | 1829                                                                              |                                                                                   |                                                                                   | 3414                                                                                |                                                                                     |                                                                                     | 3372                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Adj. Flow (vph)                   | 304                                                                               | 440                                                                               | 576                                                                               | 220                                                                               | 516                                                                               | 71                                                                                | 763                                                                               | 599                                                                                 | 99                                                                                  | 82                                                                                  | 1097                                                                                | 502                                                                                 |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 305                                                                               | 0                                                                                 | 4                                                                                 | 0                                                                                 | 0                                                                                 | 4                                                                                   | 0                                                                                   | 0                                                                                   | 31                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 304                                                                               | 440                                                                               | 271                                                                               | 220                                                                               | 583                                                                               | 0                                                                                 | 0                                                                                 | 1457                                                                                | 0                                                                                   | 0                                                                                   | 1650                                                                                | 0                                                                                   |
| Turn Type                         | Prot                                                                              |                                                                                   | Perm                                                                              | Perm                                                                              |                                                                                   |                                                                                   | Split                                                                             |                                                                                     |                                                                                     | Split                                                                               |                                                                                     |                                                                                     |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                   |                                                                                     | 6                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  |                                                                                   |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 18.0                                                                              | 64.0                                                                              | 64.0                                                                              | 42.0                                                                              | 42.0                                                                              |                                                                                   |                                                                                   | 36.0                                                                                |                                                                                     |                                                                                     | 38.0                                                                                |                                                                                     |
| Effective Green, g (s)            | 18.0                                                                              | 64.0                                                                              | 64.0                                                                              | 42.0                                                                              | 42.0                                                                              |                                                                                   |                                                                                   | 36.0                                                                                |                                                                                     |                                                                                     | 38.0                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.12                                                                              | 0.43                                                                              | 0.43                                                                              | 0.28                                                                              | 0.28                                                                              |                                                                                   |                                                                                   | 0.24                                                                                |                                                                                     |                                                                                     | 0.25                                                                                |                                                                                     |
| Clearance Time (s)                | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               | 4.0                                                                               |                                                                                   |                                                                                   | 4.0                                                                                 |                                                                                     |                                                                                     | 4.0                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               |                                                                                   |                                                                                   | 3.0                                                                                 |                                                                                     |                                                                                     | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 212                                                                               | 795                                                                               | 675                                                                               | 115                                                                               | 512                                                                               |                                                                                   |                                                                                   | 819                                                                                 |                                                                                     |                                                                                     | 854                                                                                 |                                                                                     |
| v/s Ratio Prot                    | c0.17                                                                             | 0.24                                                                              |                                                                                   |                                                                                   | 0.32                                                                              |                                                                                   |                                                                                   | c0.43                                                                               |                                                                                     |                                                                                     | c0.49                                                                               |                                                                                     |
| v/s Ratio Perm                    |                                                                                   |                                                                                   | 0.17                                                                              | c0.54                                                                             |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| v/c Ratio                         | 1.43                                                                              | 0.55                                                                              | 0.40                                                                              | 1.91                                                                              | 1.14                                                                              |                                                                                   |                                                                                   | 1.78                                                                                |                                                                                     |                                                                                     | 1.93                                                                                |                                                                                     |
| Uniform Delay, d1                 | 66.0                                                                              | 32.3                                                                              | 29.7                                                                              | 54.0                                                                              | 54.0                                                                              |                                                                                   |                                                                                   | 57.0                                                                                |                                                                                     |                                                                                     | 56.0                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                                |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 220.2                                                                             | 0.8                                                                               | 0.4                                                                               | 441.4                                                                             | 84.2                                                                              |                                                                                   |                                                                                   | 355.6                                                                               |                                                                                     |                                                                                     | 423.6                                                                               |                                                                                     |
| Delay (s)                         | 286.2                                                                             | 33.1                                                                              | 30.1                                                                              | 495.4                                                                             | 138.2                                                                             |                                                                                   |                                                                                   | 412.6                                                                               |                                                                                     |                                                                                     | 479.6                                                                               |                                                                                     |
| Level of Service                  | F                                                                                 | C                                                                                 | C                                                                                 | F                                                                                 | F                                                                                 |                                                                                   |                                                                                   | F                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 90.1                                                                              |                                                                                   |                                                                                   | 235.6                                                                             |                                                                                   |                                                                                   | 412.6                                                                               |                                                                                     |                                                                                     | 479.6                                                                               |                                                                                     |
| Approach LOS                      |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | F                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM Average Control Delay         |                                                                                   |                                                                                   | 326.1                                                                             |                                                                                   |                                                                                   | HCM Level of Service                                                              |                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |                                                                                     |
| HCM Volume to Capacity ratio      |                                                                                   |                                                                                   | 1.82                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 150.0                                                                             |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                   |                                                                                     | 16.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 141.5%                                                                            |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                   |                                                                                     | H                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |