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Laurel Ranch Subdivision Project
Initial Study/Addendum to the
Project Level EIR for Future Urban Area #2 Specific Plan
City of Antioch, Contra Costa County, California

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SECTION 1: INTRODUCTION

This Addendum, checklist, and attached supporting documents have been prepared to determine whether and to what extent the Final Environmental Impact Report (1996 Final EIR) for the East Lone Tree Specific Plan (officially known as the Future Urbanization Area #2 East Lone Tree Specific Plan Area Project-Level EIR) remains sufficient to address the potential impacts of the proposed Laurel Ranch Subdivision Project (proposed project), or whether additional documentation is required under the California Environmental Quality Act (CEQA) (Pub. Resources Code, Section 21000, et seq.). The 1996 Final EIR was certified in May 1996, based on the detailed development program identified in the Specific Plan. The City also updated its General Plan in November of 2003, providing additional policy direction for land use, housing, circulation and other long-range community planning issues.

1.1 - Initial Study/Environmental Checklist

Pursuant to Public Resources Code Section 21166, and CEQA Guidelines Sections 15162 and 15164, subd. (a), the attached initial study/checklist has been prepared to evaluate the proposed project. The attached initial study/checklist uses the standard environmental checklist categories provided in Appendix G of the CEQA Guidelines, but provides answer columns for evaluation consistent with the considerations listed under CEQA Guidelines Section 15162, subd. (a).

1.2 - Environmental Analysis and Conclusions

CEQA Guidelines Section 15164, subd. (a) provides that the lead agency or a responsible agency shall prepare an addendum to a previously certified EIR or Negative Declaration (ND) if some changes or additions are necessary but none of the conditions described in CEQA Guidelines Section 15162 calling for preparation of a subsequent EIR or ND have occurred (CEQA Guidelines, Section 15164, subd. (a)).

An addendum need not be circulated for public review but can be included in or attached to the Final EIR or ND (CEQA Guidelines Section 15164, subd. (c)). The decision-making body shall consider the addendum with the Final EIR prior to making a decision on the project (CEQA Guidelines Section 15164, subd. (d)). An agency must also include a brief explanation of the decision not to prepare a subsequent EIR or ND pursuant to Section 15162 (CEQA Guidelines Section 15164, subd. (e)).

Consequently, once an EIR or ND has been certified for a project, no subsequent EIR or ND is required under CEQA unless, based on substantial evidence:

1. Substantial changes are proposed in the project which will require major revisions of the previous EIR [or ND] . . . due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;[1]

[1] CEQA Guidelines Section 15382 defines "significant effect on the environment" as ". . . a substantial, or potentially substantial adverse change in any of the physical conditions within the area affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance . . ." (see also Public Resources Code, Section 21068).

2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR [or ND] . . . due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

3. New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the ND was adopted . . . shows any of the following:
   a) The project will have one or more significant effects not discussed in the previous EIR [or ND] or negative declaration;
   b) Significant effects previously examined will be substantially more severe than shown in the previous EIR [or ND];
   c) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
   d) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR [or ND] would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative (CEQA Guidelines, Section 15162, subd. (a); see also Pub. Resources Code, Section 21166).

This addendum, checklist, and attached documents constitute substantial evidence supporting the conclusion that preparation of a supplemental or subsequent EIR or ND is not required prior to approval of the proposed project by the City of Antioch, and provides the required documentation under CEQA.

1.2.1 - Findings

There are no substantial changes proposed by the Laurel Ranch Subdivision Project or in the circumstances in which the project will be undertaken that require major revisions of the 1996 Final EIR, or preparation of a new subsequent or supplemental EIR or ND, due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects. As illustrated herein, the project is consistent with the 1996 Final EIR, and would involve only minor changes.

1.2.2 - Conclusions

The impacts of the proposed project remain within the impacts previously analyzed in the EIR (CEQA Guidelines Section 15164).

The current proposed project does not require any major revisions to the 1996 Final EIR. Minor revisions to mitigation measures are proposed to address (1) changes to statutes and regulations that have occurred since adoption of the 1996 Final EIR; (2) acknowledge that certain mitigation measures have already been implemented; (3) to refine mitigation language to more accurately address site conditions or (4) to establish that certain mitigation measures from the 1996 Final EIR

do not apply to the proposed project. No new significant information or changes in circumstances surrounding the project have occurred since the certification of the EIR. Therefore, the previous CEQA analysis completed for the Laurel Ranch Project, as part of the Future Urbanization Area #2 East Lone Tree Specific Plan (FUA #2) in 1996, remains adequate. The applicable mitigation measures from the 1996 Final EIR will be imposed on the proposed project as described herein.

1.3 - Determination

CEQA allows the preparation of an addendum to a previously certified EIR if some changes or additions are made to the previous EIR and no conditions are present that would require the preparation of a subsequent EIR (PRC Section 21166, CEQA Guidelines Sections 15162, 15164). As explained throughout this Addendum and summarized below, no such conditions are present.

1.3.1 - Statement of Findings

1. Substantial changes are not proposed to the project that would require major revisions to the 1996 Final EIR, due to the involvement of new significant environmental effects or a substantial increase in the severity of a previously identified effect.

2. Substantial changes have not occurred with respect to the circumstances under which the project is undertaken requiring major revisions to the 1996 Final EIR, due to the involvement of new significant environmental effects or a substantial increase in the severity of a previously identified effect.

3. There is no new information of substantial importance which was not known and could not have been known at the time the 1996 Final EIR was certified showing any of the following:
   A. The project will have a new significant effect not previously discussed in the 1996 Final EIR.
   B. The project will not cause any significant effect examined in the 1996 Final EIR to be substantially more severe.
   C. The mitigation measures in the 1996 Final EIR and adopted in the CEQA Findings for the Project remain feasible but some have been modified to reflect the proposed project. All mitigation measures identified in this Addendum and required for the proposed project as identified in the 1996 Final EIR that are necessary to reduce the potentially significant impacts to a level of insignificance will be made a requirement of the project and are acceptable by the project proponent.

1.3.2 - Evidence Supporting Findings

As discussed in Section 2.3, Project Characteristics, the proposed project represents a net reduction in the development intensity that is allowed by the underlying Planned Development (PD) zoning for the site (209 units). The East Lone Tree Specific Plan included the following proposed designations for the Laurel Ranch site: RL—Low Density Residential at 2 to 4 units per acre and RH—Medium High Density Residential at 11 to 20 units per acre.

An updated Traffic Analysis was prepared as part of this Addendum to evaluate the changes in the traffic conditions in the vicinity of the project area since 1996. As explained in Section XVI

Transportation, the proposed project will not cause any new significant traffic impacts or increase the severity of the traffic impacts already evaluated in the 1996 Final EIR.

All potential impacts that were known or could have been known were adequately analyzed in the 1996 Final EIR (aesthetics, light, and glare; air quality; biological resources; cultural resources; geology and soils; greenhouse gases; hazards and hazardous materials; hydrology and water quality; land use; mineral resources; noise; population and housing; public services; recreation; transportation; and utility systems).

As summarized above and explained throughout this Addendum, this Addendum is appropriate for the proposed project since (1) substantial changes are not proposed in the project which will require major revisions to the 1996 Final EIR, (2) there are no substantial changes with respect to the circumstances under which the project is being undertaken that would require major revisions to the 1996 Final EIR, and (3) there is no new information which was not known or could not have been known at the time the 1996 Final EIR was certified.

1.4 - Mitigation Monitoring and Reporting Program

As required by Public Resources Code Section 21081.6, subd. (a)(1), a mitigation monitoring and reporting program (MMRP) has been prepared for the project in order to monitor the implementation of the mitigation measures that have been adopted for the project. Any long-term monitoring of mitigation measures imposed on the overall development will be implemented through the MMRP.

SECTION 2: PROJECT DESCRIPTION

2.1 - Location and Setting

2.1.1 - Location

The project site is located in the City of Antioch, Contra County, California (Exhibit 1). The project site is bounded by single-family residential uses (west), an Oakley Water District elevated tank site and open space (north), State Route 4 (SR-4) (east), and vacant land (south) (Exhibit 2). A future extension of Laurel Road would bisect the site. The project site is located on the Antioch, California 7.5-minute United States Geological Survey topographical quadrangle, Township 2 North, Range 2 East, Section 6 (Latitude 37° 58'48" North; Longitude 121° 44'24" West).

2.1.2 - Environmental Setting

The 54-acre project site contains undeveloped, rolling terrain. Elevations range from 98 feet above mean sea level near SR-4 to 235 feet above mean sea level in the northern portion of the site. Numerous unpaved roads cross the project site. Weedy vegetation is present throughout the site.

The project site is bisected by a man-made drainage ditch that flows from west to east. The ditch is vegetated with broad-leaved cattail (*Typha latifolia*) and conveys stormwater and nuisance runoff from the residential uses to the west. Approximately 1.43 acres of the ditch is classified as "Isolated/Non-Jurisdictional" wetlands.

Immediately north of the project site is an Oakley Water District elevated tank site. The tank site sits atop a knoll of approximately 177 feet above mean sea level and consists of two tanks, support buildings, and an access road. The tank site is enclosed with two sets of chain link fences, with mature trees planted on the sides of the knoll.

Exhibit 3 provides photographs of the project site.

2.1.3 - Land Use Designations

The City of Antioch General Plan designates the project site as "Residential/Open Space" within the "East Lone Tree Specific Plan Focus Area." The East Lone Tree Specific Plan zones the project site "Low Density Residential (RL) and Medium High Density Residential (RH)."

2.2 - Project Background

2.2.1 - Laurel Ranch Project

In 1988, the Antioch City Council adopted a General Plan Update that designated a 785-acre area-which included the project site-as "Future Urban Area 2." The General Plan Update envisioned various urban uses in this area including business park, office, and light industrial; however, it did not set forth any development targets.

In 1992, the Infrastructure Plan Environmental Impact Report (EIR) identified a range of development potential for "Future Urban Area 2" that consisted of 227 to 313 acres of commercial and employment land uses, and 1,300 to more than 2,600 dwelling units. Future Urban Area 2 was annexed into the City of Antioch in two phases, one in 1993, and one in 1995.

In 1996, the City of Antioch adopted the East Lone Tree Specific Plan and certified the associated Final EIR (officially known as "Future Urbanization Area 2 East Lone Tree Specific Plan Area Project-Level EIR"). The Specific Plan contemplated the development of 1,322 dwelling units, regional retail uses, a school, and parks.

In 2005, the Bixby Company, LLC received entitlements from the City of Antioch for the project site, including 86 single-family dwelling units, 131 detached courtyard homes, and 100,000 square feet of commercial uses. The City processed an Addendum to the 1996 Final EIR for this proposal pursuant to the California Environmental Quality Act (CEQA). Although the project was approved, a final map was never recorded and the Tentative Tract Map has since expired.

2.3 - Project Characteristics

2.3.1 - Project Summary

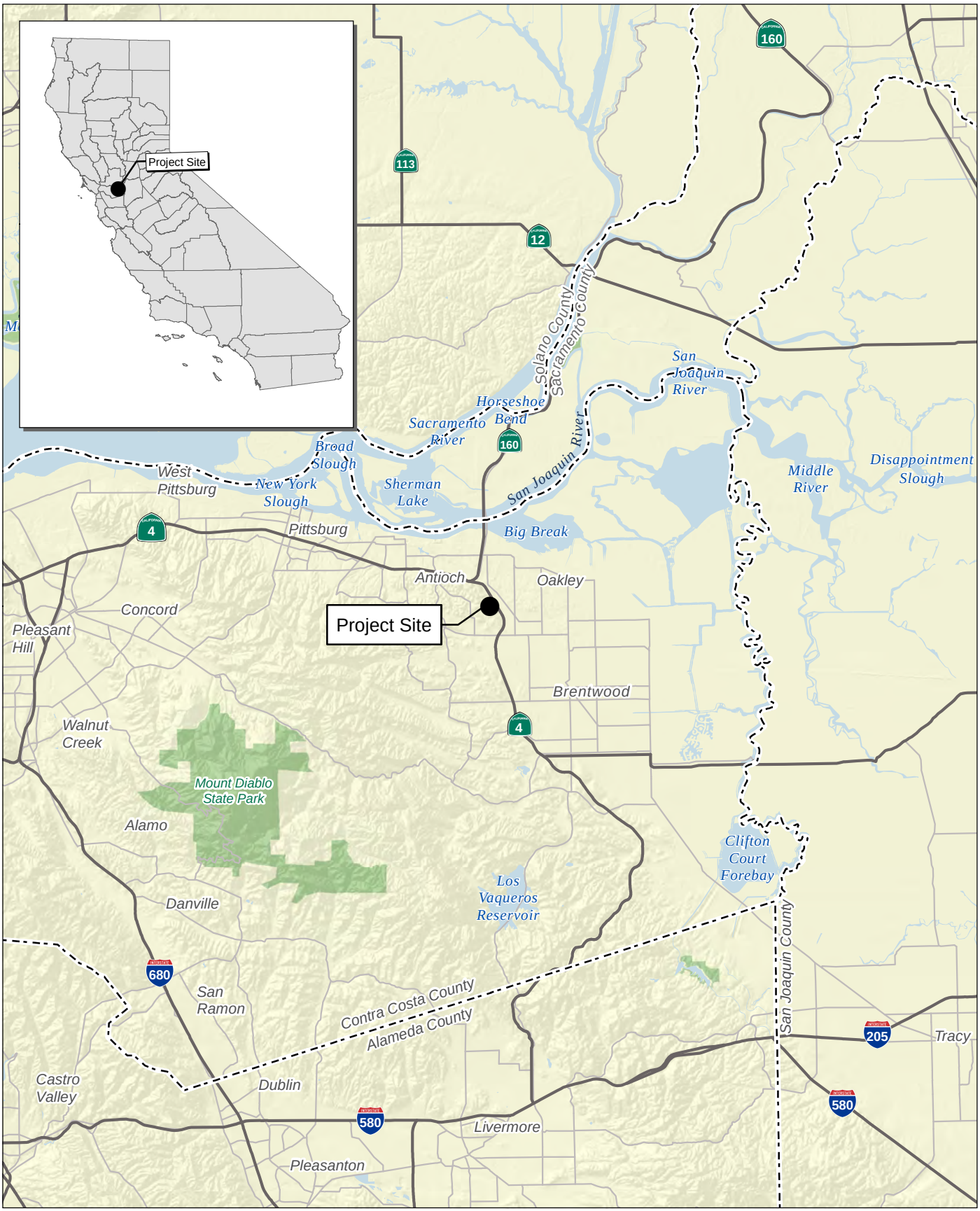
Strack Farms Land, LLC (Richland Communities) is now proposing to develop the project site for residential uses only, with a total of 180 dwelling units. The vesting tentative map is provided in Exhibit 4.

2.3.2 - Residential Uses

The applicant is proposing two distinct single-family detached residential neighborhoods: Conventional and Private Lane.

The Conventional neighborhood would consist of 88 dwelling units and is proposed to have a minimum lot size of 4,000 square feet, with minimum dimensions of 50 feet (width) and 80 feet (depth). There will be a mix of single and two-story homes that are expected to range from approximately 1,750 to 2,800 square feet. Density for this neighborhood is approximately 8.3 dwelling units/net developable acre.

The Private Lane neighborhood would consist of 92 dwelling units arranged in six-unit groupings. Each lot fronts onto a short private lane that takes access from the public streets. A minimum lot size of 2,580 square feet is proposed, providing each home with an individual driveway, and private side and rear yards for personal use. The two-story homes are expected to range in size from 1,800 to 2,100 square feet. Density for this neighborhood is approximately 12.3 dwelling units/net developable acre.



Source: Census 2000 Data, The CaSIL, FCS GIS 2013.

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5 2.5 0 5 Miles

Exhibit 1
Regional Location Map

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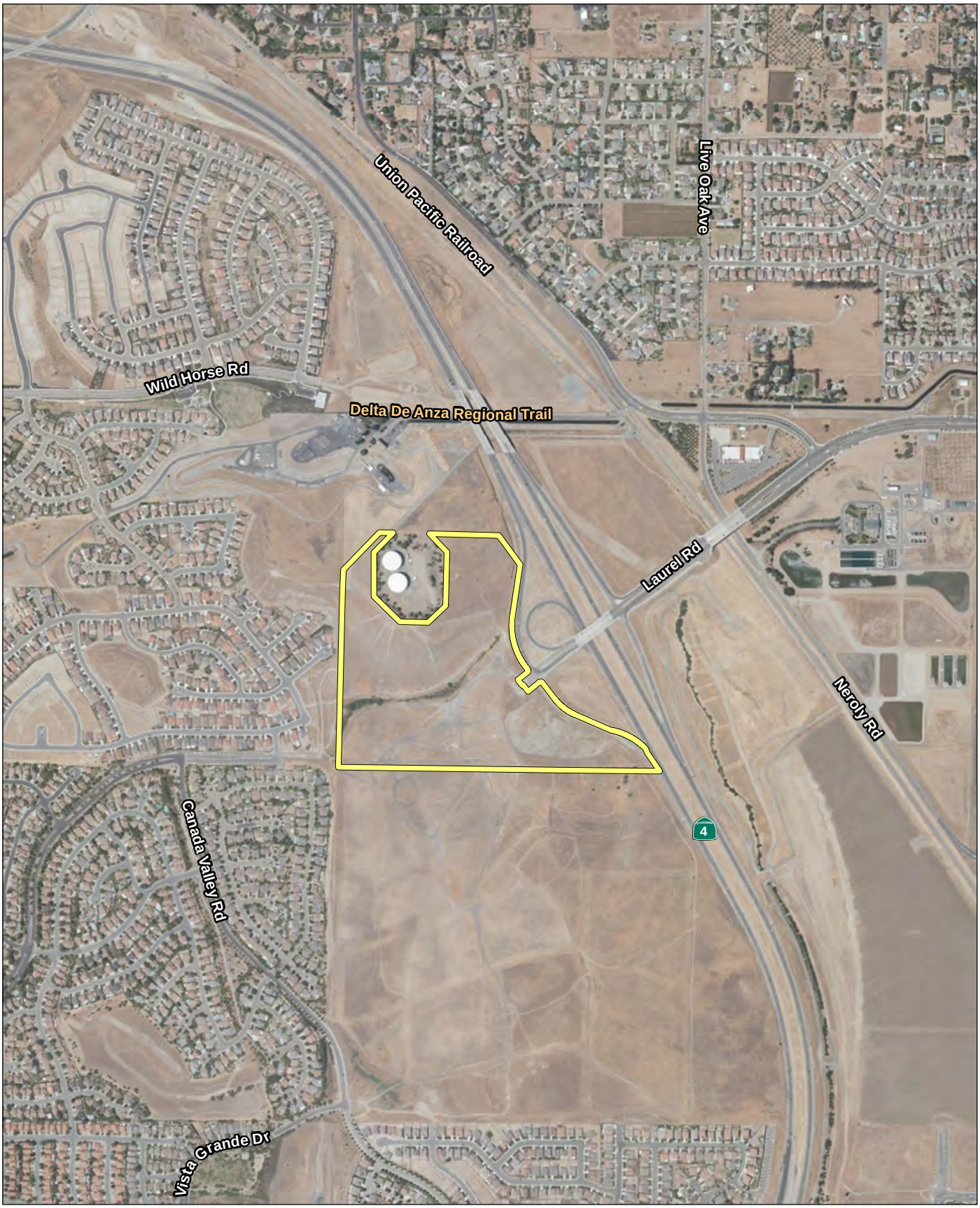

Source: ESRI Imagery, 2014

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1,000 500 0 1,000 Feet

Exhibit 2
Local Vicinity Map
Aerial Base

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View of project site from dead end of Laurel Road



View of project site Glasgow Court



View of the project site from knoll near State Route 4 / Laurel Road interchange



View of the drainage that crosses the project site

Source: FirstCarbon Solutions, 2015.

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Exhibit 3
Site Photographs

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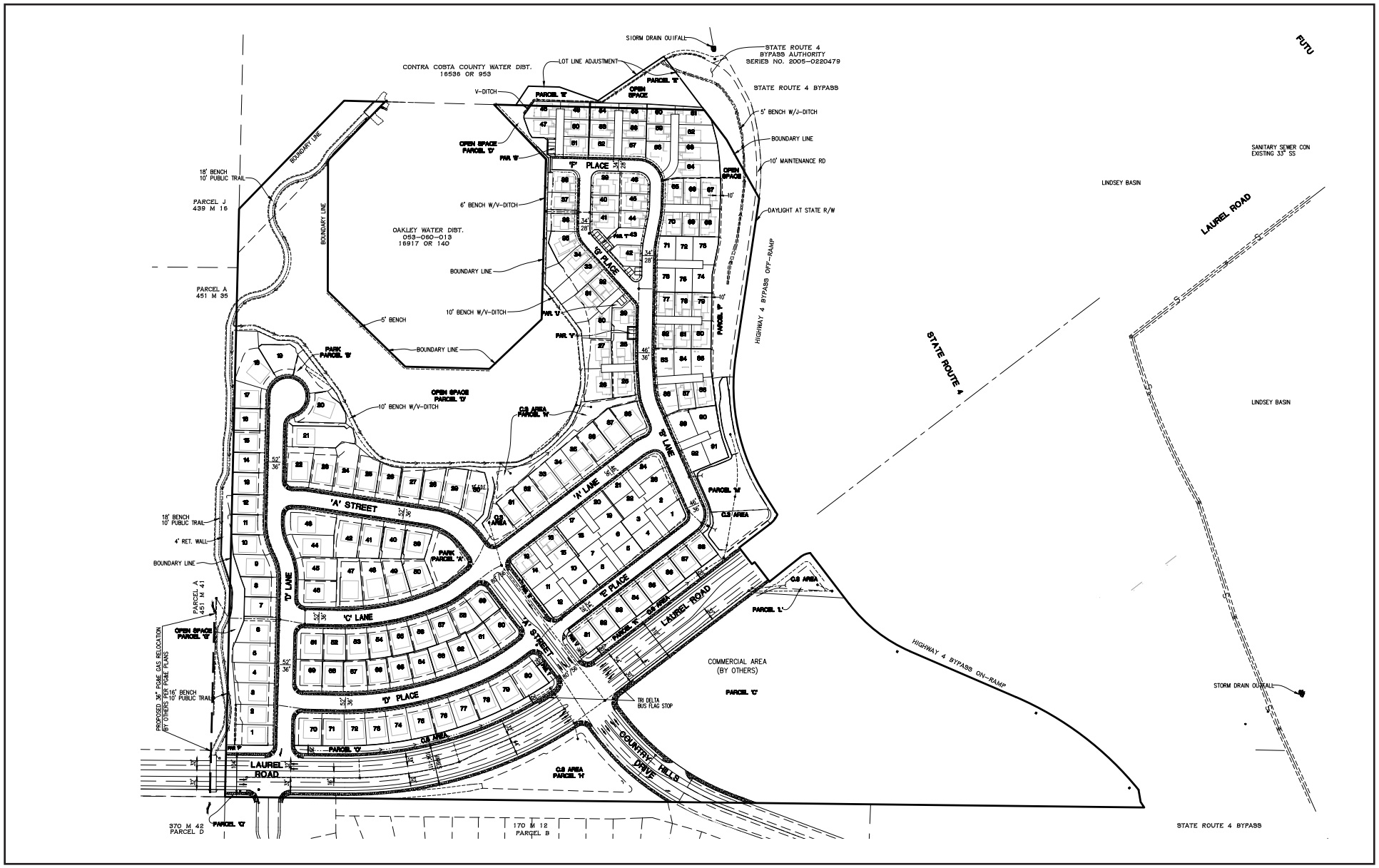

Source: DK Consulting, 2016

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Exhibit 4
Vesting Tentative Map

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Recreational Facilities

The community will provide residents one 10,000-square-foot park containing a play structure, a lawn area, and seating. Another 5,200-square-foot sitting park will provide residents with a small lawn area and park furniture for informal gatherings. From this small pocket park, there will be a trail connection to the future regional trail that will be constructed as part of the project, paralleling the project's western boundary. The regional trail is a component of the Specific Plan and it will provide a link between Laurel Road and the Delta De Anza Regional Trail,[2] which is a part of the East Bay Regional Park District trail system. The proposed parks and trail amenities will provide residents with recreation opportunities.

Additionally, the proposed project would preserve 10.1 acres of the project site as open space. The bulk of this acreage would be located around the base and immediately south of the water tank site, which are the portions of the project site that have the highest elevation.

2.3.3 - Access and Circulation

The proposed project would extend Laurel Road from the SR-4 interchange to its current terminus west of the project site. Laurel Road would consist of a 104-foot-wide to a 112-foot-wide section with a center median and two through lanes in each direction. Two new intersections would be included on this segment: a full access signalized intersection with Country Hills Drive, and a stop-controlled access at "D Lane" that would provide right-in right-out access to the site for westbound vehicles, due to the presence of a center median. The regional trail along the western boundary of the project will cross Laurel Road just west of this intersection in a designated pedestrian crossing. Exhibit 5 shows the proposed access at D Lane. The proposed stop-controlled intersection at D Lane differs from the four-way signalized intersection that was included as part of the approvals for the Park Ridge subdivision, located on the south side of Laurel Road. The transportation section of this Addendum includes an analysis of this alternate stop-controlled configuration to determine whether it would operate acceptably under future conditions.

A network of private streets and cul-de-sacs would provide internal circulation within the proposed project.

2.3.4 - Stormwater Control

The project includes six bio-retention basins that will capture sheet flow from rooftops and paved areas. The runoff will briefly flood the surface of the six treatment areas and then percolate through an active soil layer to drain rock below. Exhibit 6 shows the location of the six bio-retention areas.

2.3.5 - Construction

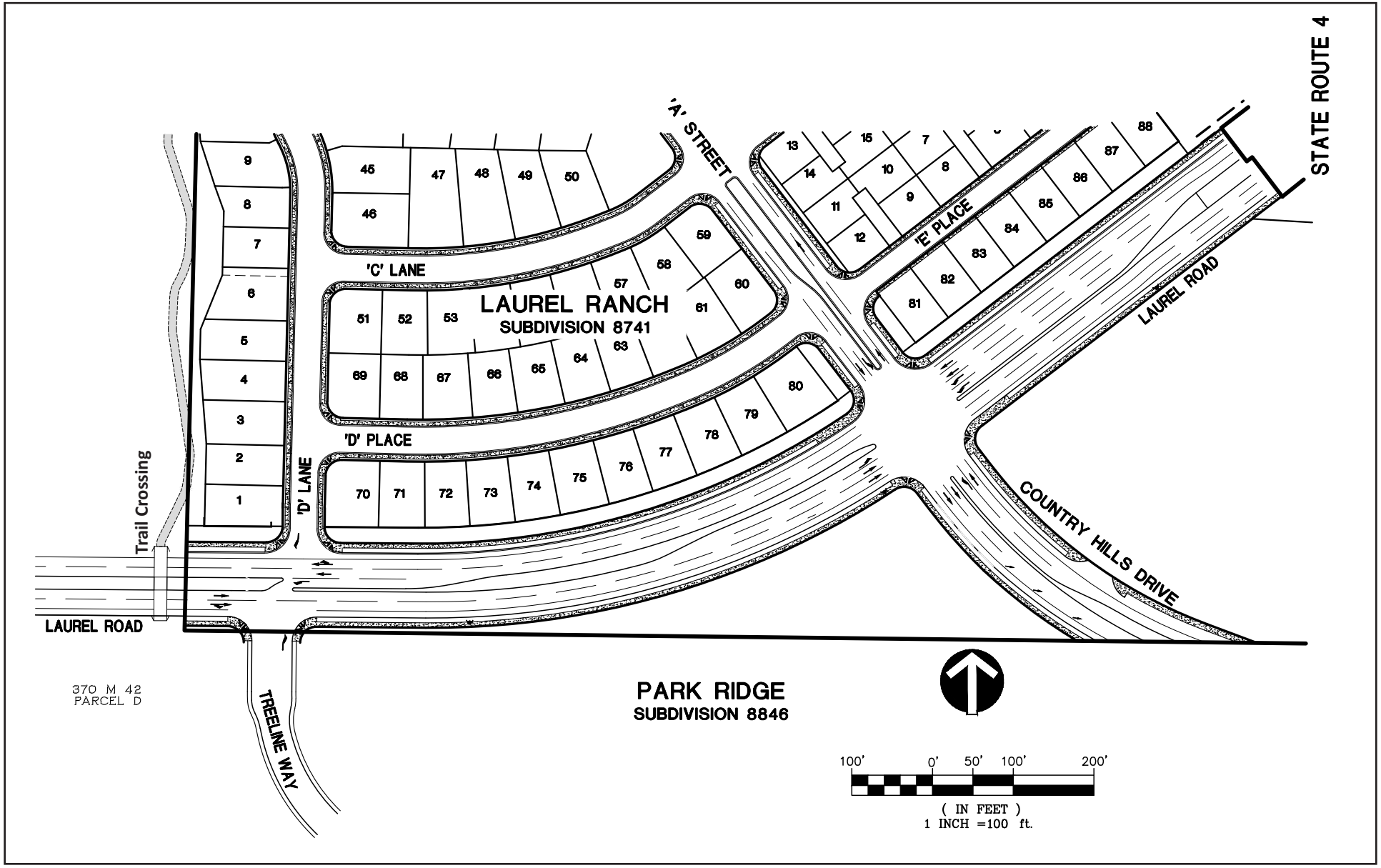
The project would be built over a period of 18 to 24 months, starting as early as 2017 and proceeding into 2018.

[2] The Delta de Anza Regional Trail is a 15-mile paved, Class I multi-use trail that extends from Bay Point to Oakley.

2.4 - Discretionary Approvals

The proposed project would require the following discretionary approvals:

- Planned Development rezone
- Vesting Tentative Subdivision Map
- Development Agreement



Source: DK Consulting, 2016

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Exhibit 5
Laurel Road Reconfiguration

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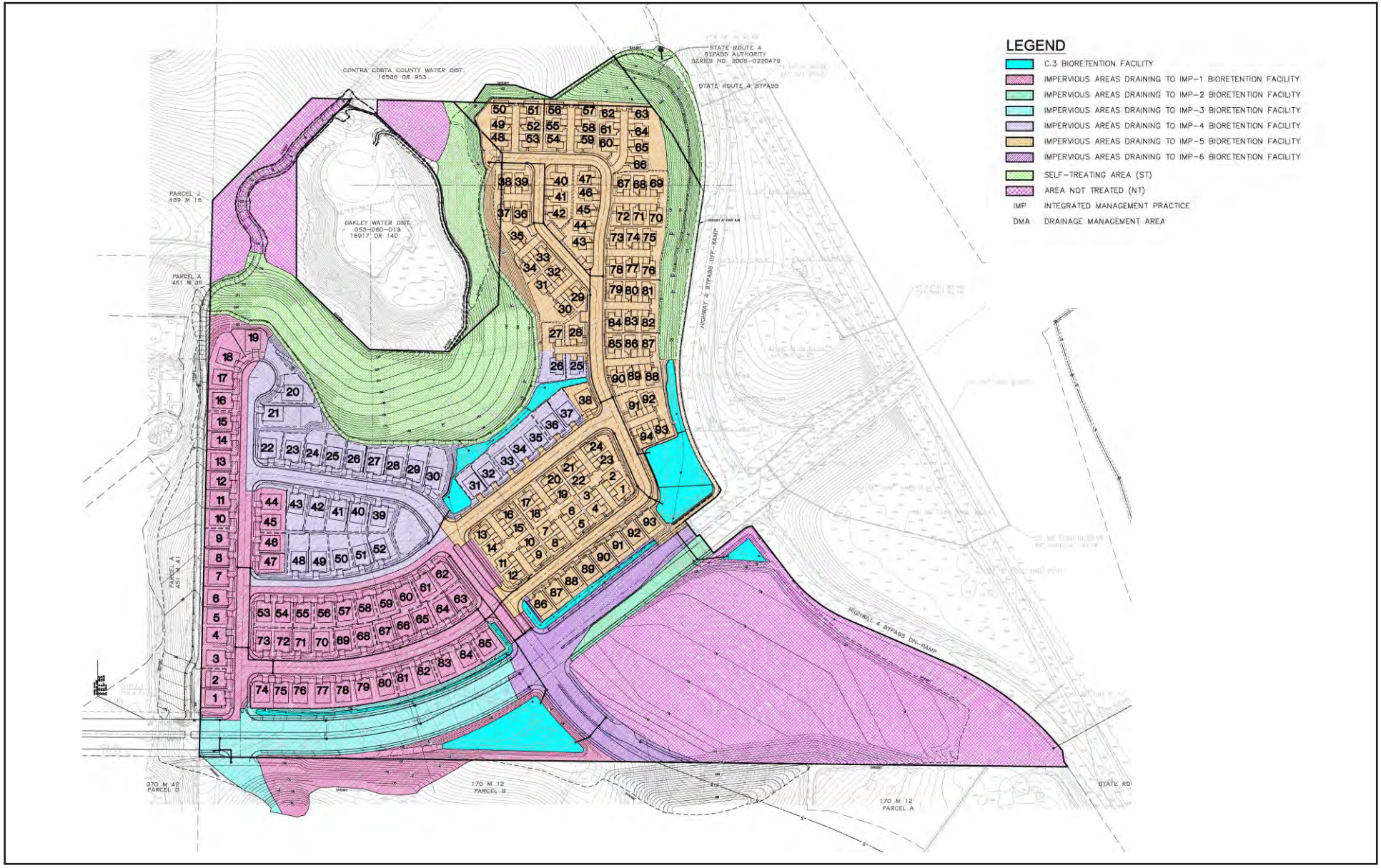

Source: DK Consulting, 2015

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Exhibit 6
Laurel Ranch Preliminary Storm Water Control Plan

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SECTION 3: CEQA CHECKLIST

The purpose of the checklist is to evaluate the categories in terms of any changed condition (e.g., changed circumstances, project changes, or new information of substantial importance) that may result in a changed environmental result (e.g., a new significant impact or substantial increase in the severity of a previously identified significant effect) (CEQA Guidelines Section 15162).

The questions posed in the checklist come from Appendix G of the CEQA Guidelines. A "no" answer does not necessarily mean that there are no potential impacts relative to the environmental category, but that there is no change in the condition or status of the impact since it was analyzed and addressed with mitigation measures in the Final EIR prepared for the project. These environmental categories might be answered with a "no" in the checklist, since the proposed project does not introduce changes that would result in a modification to the conclusion of the certified EIR.

3.1 - Explanation of Checklist Evaluation Categories

(1) Conclusion in Prior EIR and Related Documents

This column summarizes the conclusion of the EIR relative to the environmental issue listed under each topic.

(2) Do the Proposed Changes Involve New Impacts?

Pursuant to CEQA Guidelines Section 15162, subd. (a)(1), this column indicates whether the changes represented by the revised Project will result in new significant environmental impacts not previously identified or mitigated by the EIR, or whether the changes will result in a substantial increase in the severity of a previously identified significant impact.

(3) New Circumstances Involving New Impacts?

Pursuant to CEQA Guidelines Section 15162, subd. (a)(2), this column indicates whether there have been substantial changes with respect to the circumstances under which the Project is undertaken that will require major revisions to the EIR, due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.

(4) New Information Requiring New Analysis or Verification?

Pursuant to CEQA Guidelines Section 15162, subd. (a)(3)(A-D), this column indicates whether new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the EIR was certified as complete, shows any of the following:

(A) The Project will have one or more significant effects not discussed in the previous EIR [or ND];

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR [or ND];

(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the Project, but the project proponents decline to adopt the mitigation measure or alternative; or

(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR [or ND] would substantially reduce one or more significant effect of the environment, but the project proponents decline to adopt the mitigation measure or alternative.

If the additional analysis completed as part of this environmental review were to find that the conclusions of the EIR remain the same and no new significant impacts are identified, or identified impacts are not found to be substantially more severe, or additional mitigation is not necessary, then the question would be answered "no" and no additional environmental document would be required.

(5) Mitigation Measures Implemented to Address Impacts

Pursuant to CEQA Guidelines Section 15162, subd. (a)(3), this column indicates whether the EIR provided mitigation measures to address effects in the related impact category. These mitigation measures will be implemented with the construction of the project, as applicable. If "NA" is indicated, both the 1996 Final EIR and this Initial Study/Addendum have concluded that the impact either would not occur with this project or would not be significant, and, therefore, no additional mitigation measures are needed.

3.2 - Discussion and Mitigation Sections

(1) Discussion

A discussion of the elements of the checklist is provided under each environmental category in order to clarify the answers. The discussion provides information about the particular environmental issue, how the project relates to the issue, and the status of any mitigation that may be required or that has already been implemented.

(2) Relevant Mitigation Measures

Applicable mitigation measures from the EIR that apply to the project are listed under each environmental category.

(3) Conclusions

A discussion of the conclusion relating to the analysis is contained in each section.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
I. Aesthetics					
Would the project:					
a) Have a substantial adverse effect on a scenic vista?	Less than significant impact with mitigation	**No.** The proposed project does not involve changes that would result in new impacts on a scenic vista.	**No.** There are no new circumstances that would result in new or more severe impacts on a scenic vista.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of scenic vistas.	L1, L2a, L3
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	No impact	**No.** The proposed project does not involve changes that would result in new impacts on State Scenic Highways.	**No.** There are no new circumstances that would result in new or more severe impacts on State Scenic Highways.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of State Scenic Highways.	
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	Less than significant impact with mitigation	**No.** The proposed project does not involve changes that would result in new impacts on visual character.	**No.** There are no new circumstances that would result in new or more severe impacts on visual character.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of visual character.	L1, L2a, L3
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	Less than significant impact with mitigation	**No.** The proposed project does not involve changes that would result in new impacts on light and glare.	**No.** There are no new circumstances that would result in new or more severe impacts on light and glare.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of light and glare.	

Discussion and Mitigation

Would the project:

a) Have a substantial adverse effect on a scenic vista?

Less than significant impact. Mt. Diablo is located southwest of the project site and is the most prominent topographical feature in the Antioch area. Views of Mt. Diablo from the existing residential uses located west of the project site would not be adversely affected by the proposed project by virtue of their location. Additionally, the water tank site and open space lands located north of the project site are located at a higher elevation, and, therefore, views of Mt. Diablo from these areas would not be affected. Finally, as will be discussed in b), no views of Mt. Diablo from SR-4 are available in the project vicinity because the roadway sits at lower elevation than land uses to the west and south. Impacts would remain less than significant with the implementation of Mitigation Measures L1, L2a, and L3 from the 1996 Final EIR:

MM L1 Site planning grading plans shall respect the integrity of the ridge that is an important visual resourced of the planning area.

MM L2a Utilize site plan review and design review to mitigate any adverse aesthetic impacts of the Specific Plan.

MM L2b The City of Antioch should take steps, as part of its participation in planning for the SR 4 Bypass, to assure that sound attenuation elements of the Bypass satisfy the city's design guidelines.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No impact. The segment of SR-4 near the project site is classified as an "Eligible" State Scenic Highway. Because of the site topography, views of the project site from SR-4 are limited to the eastern and southern slopes below the water tanks, which are at elevations of approximately 120 to 235 feet above mean sea level, while the roadway sits at an elevation of approximately 98 feet above mean sea level. The Laurel Road overcrossing and southbound off-ramp also obstructs views of the project site. Therefore, the development of the proposed project would not substantially damage scenic resources within view of a state scenic highway. No impact would occur.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

Less than significant impact. The project site contains weedy vegetation and unpaved roads; it does not support any remarkable visual features. The proposed project consists of the development of 180 dwelling units and the extension of Laurel Road. The project site has been contemplated to support urban development since the late 1980s; thus, it is considered committed to urban development. The proposed project's density and end uses are consistent with those set forth in the East Lone Tree Specific Plan. The 1996 Final EIR considered the visual effects of the construction of

sound walls as well as houses. Moreover, the types of dwelling units contemplated by the project are consistent with character of the existing single-family residential uses to the west. Finally, the proposed project would preserve 10.1 acres of the project site as open space. The bulk of this acreage would be located around the base and immediate south of the water tank site, which are the portions of the project site that have the highest elevation. Overall, the development of the proposed project would not substantially degrade the existing visual character of the project site and its surroundings with the implementation of Mitigation Measure L2a from the 1996 Final EIR. Impacts would remain less than significant.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less than significant impact. The proposed project would introduce new street lighting and residential lighting. Street light fixtures would employ full cutoff fixtures that intended to prevent lighting from spilling over onto adjoining properties. Residential lighting fixtures would consist of low intensity pedestrian-level and building mounted fixtures for safety and security purposes. No high intensity light fixtures are proposed such as stadium lighting, digital billboards, or similar items. Overall, lighting would similar in scale and intensity to other existing sources of lighting in the project vicinity. Impacts would be less than significant.

Mitigation Measures

Mitigation Measures L1, L2a, and L3 from the 1996 Final EIR still apply.

No new or refined mitigation measures are proposed.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
II. Agricultural Resources					
Would the project:					
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	NA	**No.** The proposed project does not involve changes that would result in new impacts on Important Farmland.	**No.** There are no new circumstances that would result in new or more severe impacts on Important Farmland.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of Important Farmland.	None
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	NA	**No.** The proposed project does not involve changes that would result in new impacts on agricultural zoning or Williamson Act contracts.	**No.** There are no new circumstances that would result in new or more severe impacts on agricultural zoning or Williamson Act contracts.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of agricultural zoning or Williamson Act contracts.	None
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	NA	**No.**	**No.**	**No.**	None

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
d) Result in the loss of forest land or conversion of forest land to non-forest use?	NA	**No.**	**No.**	**No.**	None
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	NA	**No.** The proposed project does not involve changes that would result in new impacts on surrounding agricultural uses.	**No.** There are no new circumstances that would result in new or more severe impacts on surrounding agricultural uses.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of surrounding agricultural uses.	None

Discussion and Mitigation

The 1996 Final EIR did not address impacts to agricultural land. The following discussion is provided to support the original EIR.

Would the project:

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No impact. The project site is mapped as "Other Land" with a small area mapped as "Grazing Land" by the Farmland Mapping and Monitoring Program. These mapping designations do not fall under the "Important Farmland" umbrella. This precludes the possibility of the proposed project converting Important Farmland to non-agricultural use. No impact would occur.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No impact. The East Lone Tree Specific Plan zones the project site "Residential High," "Residential Low," and "Open Space," all of which are non-agricultural zoning designations. Additionally, the project site does not support agricultural activities and, therefore, would not be eligible for a Williamson Act contract. This precludes the possibility of the proposed project conflicting with agricultural zoning or a Williamson Act contract. No impact would occur.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

No impact. The East Lone Tree Specific Plan zones the project site "Residential High," "Residential Low," and "Open Space," all of which are non-forest zoning designation. This precludes the possibility of the proposed project conflicting with forest zoning. No impact would occur.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No impact. The project site does not contain any stands of trees that would be considered forest lands. This precludes the possibility of the proposed project converting forest land to non-forest use. No impact would occur.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

No impact. The project site is surrounded by urban uses, infrastructure, and undeveloped land on four sides; no farmland exists in the project vicinity. This precludes the possibility of the proposed project creating pressures to convert surrounding farmland to non-agricultural use. No impact would occur.

Mitigation Measures

None.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
III. Air Quality					
Would the project:					
a) Conflict with or obstruct implementation of the applicable air quality plan?	N/A	**No.** The proposed project does not involve changes that would result in new impacts on an applicable air quality plan.	**No.** There are no new circumstances that would result in new or more severe impacts on an applicable air quality plan.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of an applicable air quality plan.	None
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	Less than significant with mitigation	**No.** The proposed project does not involve changes that would result in new impacts associated with violation of an air quality standard.	**No.** There are no new circumstances that would result in new or more severe impacts associated with violation of an air quality standard.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of violations of air quality standards.	C1a, C1b
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	N/A	**No.** The proposed project does not involve changes that would result in new impacts associated with any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.	**No.** There are no new circumstances that would result in new or more severe impacts associated with any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard.	C2

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
d) Expose sensitive receptors to substantial pollutant concentrations?	N/A	**No.** The proposed project does not involve changes that would result in new impacts on sensitive receptors.	**No.** There are no new circumstances that would result in new or more severe impacts on sensitive receptors.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of sensitive receptors.	None
e) Create objectionable odors affecting a substantial number of people?	N/A	**No.** The proposed project does not involve changes that would result in new impacts associated with objectionable odors.	**No.** There are no new circumstances that would result in new or more severe impacts associated with objectionable odors.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of objectionable odors.	None

Discussion and Mitigation

The 1996 EIR proposed the following mitigations; however, these have been superseded by subsequent City adoption of more rigorous air quality and Climate Action Plan policies:

MM C1a The proposed project shall comply with the air quality policies of the Antioch General Plan.

MM C1b Implement Antioch's Transportation Demand Management ordinance.

Would the project:

a) Conflict with or obstruct implementation of the applicable air quality plan?

Less than significant impact with mitigation incorporated. The 1996 EIR did not assess whether the project would conflict with or obstruct implementation of the applicable air quality plan. The currently proposed project is smaller in scale than what is allowed by the underlying zoning for the site (209 units). Furthermore, improvements in air quality emissions from vehicles have taken place with the passage of 20 years; therefore, impacts would be less than those of the original Specific Plan as analyzed in the 1996 EIR.

The San Francisco Bay Area Air Basin is currently in non-attainment for ozone (state and federal ambient standards) and particulate matter ($PM_{2.5}$ and PM_{10}) (state ambient standard). While an air quality plan exists for ozone, none currently exists for particulate matter. A project would be judged to conflict with or obstruct implementation of the regional air quality plan if it would result in substantial new regional emissions not foreseen in the air quality planning process. Regional emissions forecasts in the air quality plan are based on population, and employment forecasts are based on city and county general plans.

The BAAQMD's current Clean Air Plan is the 2010 Clean Air Plan (2010 CAP). The 2010 CAP accounts for projections of population growth provided by Association of Bay Area Governments and vehicle miles traveled provided by the Metropolitan Transportation Commission, and it identifies strategies to bring regional emissions into compliance with federal and state air quality standards. The BAAQMD's Guidance provides two criteria for determining if a plan-level project is consistent with the current Air Quality Plan (AQP) control measures. However, the BAAQMD does not provide a threshold of significance for project-level consistency analysis. Therefore, the following criteria will be used for determining a project's consistency with the AQP:

- Criterion 1: Does the project support the primary goals of the AQP?
- Criterion 2: Does the project include applicable control measures from the AQP?
- Criterion 3: Does the project disrupt or hinder implementation of any AQP control measures?

Criterion 1: Support Primary Goals of AQP

The primary goals of the 2010 CAP, the current AQP to date, are to:

- Attain air quality standards;
- Reduce population exposure to unhealthy air and protecting public health in the Bay Area; and
- Reduce greenhouse gas emissions and protect the climate.

Section 2.10, Land Use and Planning determined that the project would be consistent with land use designations and applicable goals and policies of the City of Antioch General Plan and site zoning. The City's General Plan designates the project site as "Residential/Open Space." The project site lies within the East Lone Tree Specific Plan Focus Area, which is divided into seven different land use designations. The maximum development intensity for areas shown as "Residential/Open Space" may contain up to 1,100 dwelling units and are subject to the provisions of the Low, Medium Low, and High Density Residential land use category described in Section 4.4.1.1 of the General Plan Land Use element. The "Low Density Residential" allows up to 4 dwelling units/acre; the "Medium Density Residential" designation allows up to 6 dwelling units/acre, and the High Density designation allows up to 20 dwelling units per acre.

As discussed in Section 2.3, impacts b) through e), the project would not create a localized violation of state or federal air quality standards, significantly contribute to cumulative nonattainment pollutant violations, expose sensitive receptors to substantial pollutant concentrations, or create objectionable odors affecting a substantial number of people after incorporation of Mitigation Measure (MM) AIR-1, which would require the current BAAQMD best management practices in

order to reduce the amount of fugitive dust generated by construction activities. Therefore, the project would not conflict with the 2010 Clean Air Plan and is consistent with Criterion 1.

Criterion 2: Applicable Control Measures of AQP

The 2010 CAP contains 55 control measures aimed at reducing air pollution in the Bay Area. Along with the traditional stationary, area, mobile source, and transportation control measures, the 2010 CAP contains a number of new control measures designed to protect the climate and promote mixed use, compact development to reduce vehicle emissions and exposure to pollutants from stationary and mobile sources (Bay Area Air Quality Management District 2010).

None of the 18 stationary source control measures are applicable to the project. In addition, none of the 10 mobile source measures or six land use and local impact measures applies to the project. Of the transportation control measures, TCM D (Support Focused Growth) measures D-1 through D-3 apply to the project. The project would provide access to pedestrians and bicyclists.

Relative to the Energy and Climate measures contained in the 2010 Plan, the project would be consistent with all applicable measures:

- **Energy Efficiency:** The project applicant would be required to conform to the energy efficiency requirements of the California Building Standards Code, also known as Title 24. Specifically, the project must implement the requirements of the most recent Building Energy Efficiency Standards, which is the current version of Title 24. The 2013 Building Efficiency Standards were adopted, in part, to meet an Executive order in the Green Building Initiative to improve the energy efficiency of buildings through aggressive standards.
- **Renewable Energy.** Pacific Gas and Electric Company (PG&E) provides electricity and natural gas service to the City. PG&E facilities include nuclear, natural gas, and hydroelectric facilities. PG&E's 2012 power mix consisted of nuclear generation (21.0 percent), large hydroelectric facilities (11.0 percent), and renewable resources (19.0 percent), such as wind, geothermal, biomass, and small hydro. The remaining portion came from natural gas (27.0 percent), and unspecified sources (21.0 percent).
- **Urban Heat Island Mitigation and Shade Tree Planting.** The project would implement landscaping including trees on-site.

In summary, the project would meet all of the applicable Land Use Measures and Energy and Climate Measures contained in the 2010 Clean Air Plan. The project would be consistent with Criterion 2.

Criterion 3: Hinder or Disrupt AQP Control Measures

The project will not preclude extension of a transit line or bike path, propose excessive parking beyond parking requirements, or otherwise create an impediment or disruption to implementation of any AQP control measures. As shown above, the project incorporates several AQP control measures as project design features. The project would be consistent with Criterion 3.

Conclusion

The proposed project would be consistent with all applicable provisions of the 2010 Clean Air Plan, and, therefore, impacts would be less than significant.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Less than significant impact with mitigation incorporated. The 1996 Final EIR found that the project would exceed regional air quality standards, resulting in a potentially significant impact. This impact relates to localized criteria pollutant impacts. Potential localized impacts would consist of exceedances of state or federal standards for $PM_{2.5}$, PM_{10}, or carbon monoxide (CO). Particulate matter emissions (both PM_{10} and $PM_{2.5}$) are of concern during project construction because of the potential to emit fugitive dust during earth-disturbing activities. CO emissions are of concern during project operation because operational CO hotspots are related to increases in on-road vehicle congestion.

Short-Term Construction Impacts

Construction Fugitive PM_{10} and $PM_{2.5}$

The BAAQMD recommends that fugitive PM_{10} and $PM_{2.5}$ from construction dust be evaluated separately from fugitive PM_{10} and $PM_{2.5}$ from equipment and vehicle exhaust. Thresholds and impact assessment for exhaust PM_{10} and $PM_{2.5}$ are provided in impact c). The BAAQMD's Air Quality Guidelines do not include a recommended threshold for construction-generated fugitive dust. For construction dust, the BAAQMD recommends incorporation of best management practices (BMPs) to reduce localized dust impacts to less than significant. Therefore, without application of BMPs, this impact is potentially significant. However, incorporation of MM AIR-1 reduces this impact to less than significant. This mitigation measure is more effective than Mitigation Measure C2 as proposed in the 1996 Final EIR, and replaces it.

MM AIR-1 The following Basic Construction Emission Control Measures shall be included in the project design and implemented during construction:

a. All active construction areas shall be watered at least two times per day.
b. All exposed non-paved surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and access roads) shall be watered at least three times per day and/or non-toxic soil stabilizers shall be applied to exposed nonpaved surfaces.
c. All haul trucks transporting soil, sand, or other loose material off-site shall be covered and/or shall maintain at least 2 feet of freeboard.
d. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
e. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour.
f. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

g. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of CCR).
   - Clear signage regarding idling restrictions shall be provided for construction workers at all access points.

h. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

i. The prime construction contractor shall post a publicly visible sign with the telephone number and person to contact regarding dust complaints. The construction contractor shall take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Long-Term Operational Impacts

Operational CO Hotspot

CO emissions from project-related traffic would be the greatest pollutant of concern at the local level, since congested intersections with a large volume of traffic have the greatest potential to cause high, localized concentrations of CO.

BAAQMD recommends a screening analysis to determine whether a project has the potential to contribute to a CO hotspot. The screening criteria identify when subsequent site-specific CO dispersion modeling is necessary.

BAAQMD considers a project's local CO emissions to be less than significant if the following screening criteria are met:

- The project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans; or
- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour; or
- The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

The project is within the jurisdiction of the Contra Costa Transportation Authority (CCTA). The CCTA was most concerned with projects that require a General Plan Amendment and/or small land use developments and all large developments having 500 vehicle trips in the peak hour; neither of these conditions would be created by the project.

The traffic analysis indicated that the anticipated vehicle volume at the highest volume intersection would be less than the BAAQMD's second and third screening criteria. Furthermore, the adjacent roadways are not located in an area where vertical and/or horizontal mixing, or the free movement of the air mass, is substantially limited by physical barriers such as bridge overpasses or urban or natural canyon walls. Therefore, the project would not result in any impact related to these criteria and would result in a less than significant impact for CO hotspot.

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)?

Less than significant impact with mitigation incorporated. The 1996 Final EIR did not directly assess the project's potential to 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. However, the FEIR noted a potentially significant impact from fugitive dust generated during the construction period.

The currently proposed project is smaller in scale than the project assessed in the 1996 Final EIR and, therefore, impacts would be less**.** Non-attainment pollutants of concern include ozone, PM_{10}, and $PM_{2.5}$. In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified thresholds of significance, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. The analysis considers construction and operation period impacts separately, as described below.

Construction Impacts

Emissions from construction-related activities are generally short-term in duration but may still cause adverse air quality impacts. The project would generate emissions from construction equipment exhaust, worker travel, and fugitive dust. These construction emissions include criteria air pollutants from the operation of heavy construction equipment.

A preliminary screening method is provided in the BAAQMD's 2011 Air Quality Guidelines for construction-related impacts associated with criteria air pollutants and precursors. The preliminary screening is used to indicate whether a project's construction-related regional air pollutants could potentially exceed the BAAQMD's thresholds of significance. If a project meets the applicable screening criteria, then it may be assumed that the project would result in a less than significant impact for regional construction emissions. If a project does not meet the applicable screening criteria, then additional analysis is required to demonstrate the project's potential significance. The construction of the proposed project would result in a less than significant impact to air quality if the following screening criteria are met:

1. The project is below the applicable screening level size.
2. All construction-period Standard Project Conditions would be included in the project design and implemented during construction.

3. Construction-related activities would not include any of the following:

    a) Demolition activities inconsistent with District Regulation 11, Rule 2: Asbestos Demolition, Renovation, and Manufacturing;
    b) Simultaneous occurrence of more than two construction phases;
    c) Simultaneous construction of more than one land use type (e.g., project would develop residential and commercial uses on the same site [not applicable to high-density infill development]);
    d) Extensive site preparation (i.e., greater than default assumptions used by the California Emissions Estimator Model (CalEEMod) for grading, cut/fill, or earth movement); or
    e) Extensive material transport (e.g., greater than 10,000 cy of soil import/export) requiring a considerable amount of haul truck activity.

As shown in Table 1, the project would exceed the screening size for construction-related criteria air pollutants and precursors. Therefore, the project would trigger the need for additional analysis to determine the project's potential significance and cannot be deemed less than significant using the screening method. Project construction emissions must be compared with the BAAQMD significance thresholds.

This analysis is based on a project size of 187 dwelling units. Although the applicant subsequently reduced the size of the project to 180 units, this analysis conservatively estimates potential impacts based on a larger project size.

Table 1: Construction Criteria Air Pollutants and Precursors Screening Level Sizes

Land Use Type	Construction-Related Screening Size	Project Size	Project Percent of Screening Size
Single-Family	114 du	187 du	164.04%

Note:
du = dwelling units
Source of BAAQMD's Screening Threshold: Bay Area Air Quality Management District 2011.

Table 2 summarizes the construction-generated emissions. Table 3 and Table 4 summarize the construction-generated emissions for years 2017 and 2018, respectively. As shown in Table 3 and Table 4, the BAAQMD's regional emission thresholds for construction exhaust would not be exceeded in any year. Therefore, the project would have a less than significant impact from project construction.

Table 2: Construction Regional Emissions (Annual Tons)

Construction Phase	Air Pollutant Emissions (Tons)			
	ROG	NO_x	PM_{10}[1]	$PM_{2.5}$[1]
2017 Activity				
Site Preparation	0.05	0.52	0.03	0.03
Grading	0.37	4.18	0.20	0.18
Building Construction	0.21	1.71	0.11	0.10
Subtotal 2017 Emissions	0.63	6.41	0.34	0.31
2018 Activity				
Building Construction	0.18	1.51	0.09	0.08
Paving	0.03	0.17	0.01	0.01
Architectural Coating	1.07	0.08	<0.01	<0.01
Subtotal 2018 Emissions	*1.28*	*1.76*	*<0.01*	*<0.01*
Total Construction Emissions	1.91	8.17	0.10	0.09

Notes:
[1] Exhaust only
ROG = reactive organic gases
NO_x = oxides of nitrogen
PM_{10} = particulate matter 10 microns in diameter
$PM_{2.5}$ = particulate matter 2.5 microns in diameter
Totals based on non-rounded emissions output.
Source: FirstCarbon Solutions 2016.

Table 3: Construction Regional Emissions Significance Analysis (2017)

Parameter	Air Pollutant Emissions (pounds)			
	ROG	NO_x	PM_{10}[1]	$PM_{2.5}$[1]
Total Tons Emissions	0.63	6.41	0.34	0.31
Total lbs Emissions	1,260	12,820	680	620
Average lbs per working day[2]	4.85	49.3	2.62	2.38
BAAQMD Average Daily Threshold	54	54	82	54
Significant?	No	No	No	No

Notes:
[1] Exhaust only
[2] Calculated by dividing the total lbs by the total 260 working days of construction in 2017.
ROG = reactive organic gases
NO_x = oxides of nitrogen
PM_{10} = particulate matter 10 microns in diameter
$PM_{2.5}$ = particulate matter 2.5 microns in diameter
Totals based on non-rounded emissions output.
Source: FirstCarbon Solutions 2016.

Table 4: Construction Regional Emissions Significance Analysis (2018)

Parameter	Air Pollutant Emissions (pounds)			
	ROG	NO_x	PM_{10}[1]	$PM_{2.5}$[1]
Total Tons Emissions	1.28	1.76	<0.01	<0.01
Total lbs Emissions	2,560	3,520	20	20
Average lbs per working day[2]	11.9	16.4	0.10	0.10
BAAQMD Average Daily Threshold	54	54	82	54
Significant?	No	No	No	No

Notes:
[1] Exhaust only
[2] Calculated by dividing the total lbs by the total 215 working days of construction in 2018.
ROG = reactive organic gases NO_x = oxides of nitrogen
PM_{10} = particulate matter 10 microns in diameter $PM_{2.5}$ = particulate matter 2.5 microns in diameter
Totals based on non-rounded emissions output
Source of thresholds: Bay Area Air Quality Management District 2011.
Source: FirstCarbon Solutions 2016.

Long-Term Operational Impacts

Long-term operational emissions would result primarily from project-related traffic. BAAQMD's 2010 Guidelines provide guidance and screening criteria for determining if a project could potentially result in significant air quality impacts. As shown in Table 5, the project is well below BAAQMD's screening threshold, indicating that ongoing project operations would not be considered to have the potential to generate a significant quantity of air pollutants. Therefore, long-term operation impacts associated with criteria pollutant emissions would be less than significant.

Table 5: Operational Criteria Air Pollutants and Precursors Screening Level Sizes

Land Use Type	Operational Criteria Pollutant Screening Size	Project Size	Project Percent of Screening Size
Single-Family	325 du	187 du	57.54%

Note:
du = dwelling units
Source of BAAQMD's Screening Threshold: Bay Area Air Quality Management District 2011.

d) Expose sensitive receptors to substantial pollutant concentrations?

Less than significant impact with mitigation incorporated. This impact addresses whether the project would expose sensitive receptors to asbestos, construction-generated fugitive dust (PM_{10} and $PM_{2.5}$), construction-generated diesel particulate matter (DPM), operational-related TACs, or operational CO hotspots.

A sensitive receptor is defined as the following (from BAAQMD 2010): "Facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples include schools, hospitals and residential areas."

Two scenarios have the potential for exposing sensitive receptors to toxic air contaminants. The first (identified as a Type A scenario) is when a project includes a new or modified source of toxic air contaminants and would be located near an existing or proposed sensitive receptor. The second (identified as a Type B scenario) involves a residential or other sensitive receptor development locating near an existing or planned source of toxic air contaminants. As single-family housing, the project itself is a sensitive receptor. Additional sensitive receptors near the project site include existing residences to the west and areas zoned for residential are located to the south of the project. This assessment evaluates the potential health risk impacts from both types of land use projects. This health risk assessment involves the following processes: estimate the TAC emissions of concern, estimate the dispersion of these emissions from the respective emission sources affecting nearby receptors, and estimate the resulting health risk impacts at these receptors.

The following analysis evaluates whether the project would result in construction or operation-period impacts to sensitive receptors.

Asbestos

The Department of Conservation, Division of Mines and Geology (DMG) published a guide for generally identifying areas that are likely to contain naturally occurring asbestos (NOA). The associated DMG map indicates that there are several locations within Contra Costa County that are likely to contain NOA; however these locations are not located in the project vicinity.

Carbon Monoxide Emission Impacts

As noted in the discussion of Impact 3b), the project is not expected to generate a CO hotspot. Therefore, the project would not expose receptors to substantial CO concentrations from operational activities.

Toxic Air Pollutants-On-site Workers

A variety of state and national programs protect workers from safety hazards, including high air pollutant concentrations (California OSHA and CDC 2012).

On-site workers are not required to be addressed through this health risk assessment process. A document published by the California Air Pollution Control Officers Association (CAPCOA 2009), Health Risk Assessments for Proposed Land Use Projects, indicates that on-site receptors are included in risk assessments if they are persons not employed by the project. Persons not employed by the project would not remain on-site for any significant period. Therefore, a health risk assessment for on-site workers is not required or recommended.

Toxic Air Pollutants–Construction

The following information is from the Health Risk Assessment conducted by FirstCarbon Solutions and is attached to Appendix A-1 and A-2 of this Initial Study/Addendum. The potential health impacts to sensitive/residential receptor locations surrounding the project from the construction of the project prior to the application of mitigation are shown in Table 6. As noted from Table 6, the construction of the project would exceed the BAAQMD's cancer risk significance threshold of 10 in one million. These maximum health impacts occur within the area zoned and developed as residential located along the western property line of the project (the area to the south is zoned for residential but is not yet developed). Therefore, without mitigation, the project would result in a significant health risk impact during construction.

Table 6: Maximum Project Impacts from Project Construction (Without Mitigation)

Health Impact	Risk (risk per million)	Significance Threshold (risk/million)	Exceeds Threshold?
Cancer Risk—Child	23.8	10	Yes
Cancer Risk—Adult	0.5	10	No
Health Impact	**Hazard Index**	**Significance Threshold**	**Exceeds Threshold?**
Chronic Non-cancer Hazard Index	0.03	1.0	No
Acute Non-cancer Hazard Index	0.05	1.0	No
Health Impact	**Annual Concentration ($\mu g/m^3$)**	**Significance Threshold ($\mu g/m^3$)**	**Exceeds Threshold?**
Annual $PM_{2.5}$	0.12	0.3	No
Source: See Appendix A.			

MM AIR-2 Off-road diesel-powered construction equipment greater than 50 horsepower shall meet United States Environmental Protection Agency Tier III off-road emissions standards.

Table 7 summarizes the maximum health impacts from project construction after implementing MM AIR-2, which requires that off-road diesel-powered construction equipment greater than 50 horsepower shall meet United States Environmental Protection Agency Tier III off-road emissions standards. This is new mitigation beyond Mitigation Measures C1a and C1b as proposed in the 1996 Final EIR. As noted, the maximum impacts with mitigation are less than the significant for cancer risk and annual $PM_{2.5}$ air concentrations.

Table 7: Maximum Project Impacts from the Project Construction (With Mitigation)

Health Impact	Risk (risk per million)	Significance Threshold (risk/million)	Exceeds Threshold?
Cancer Risk—Child	9.8	10	No
Source: see Appendix A.			

Toxic Air Pollutants-Operation

A Type B assessment examines the potential health impacts from nearby sources of TAC emissions on the project's residential land uses once the project commences operation. The BAAQMD recommends that the Type B assessment identify all sources of TAC emissions within a 1,000-foot zone of influence of an affected project. The BAAQMD has developed and published a series of internet-based assessment tools that can be used to identify such emission sources and quantify their respective health impacts. These tools include a highway screening tool, a roadway screening tool, and a stationary source screening tool.

Based on a review of the various BAAQMD internet-based assessment tools, there are two sources of TAC emissions that are within the 1,000-foot zone of influence of the project. These emission sources are shown in Table 8.

Table 8: Identification of TAC Emission Sources within 1,000 feet of the Project

Emission Source	Location
Verizon Wireless Generator Facility ID:18888	Adjacent to the Project at the northern boundary
SR-4	Adjacent to the Project along the eastern boundary
Source: BAAQMD Stationary Source Screening Analysis Tool and Google Earth.	

The BAAQMD internet-based stationary source assessment tool was used to estimate the health impacts from the Verizon Wireless facility. However, the BAAQMD highway screening tool does not include a health impact assessment for SR-4. Therefore, it was necessary to develop a health risk assessment for SR-4. This was accomplished by developing an hour-by-hour profile of vehicle traffic along SR-4 using traffic count information collected by the California Department of Transportation (CDOT) as part of its Performance Measurement System (PeMS). The PeMS system collects real-time traffic information from over 39,000 individual detectors. These sensors span the freeway system across all major metropolitan areas of the State of California. The collected data include traffic volumes, vehicle speeds, and truck percentages. The most recent full year of PeMS data is from 2014. Two PeMS monitoring detectors are located near the Laurel Road and SR-4 interchange. From this information, traffic profiles for each hour of the day were prepared for the southbound and northbound lanes of SR-4. The traffic profiles included, for each traffic direction and hour of the day,

vehicle volumes, average vehicle speed, vehicle mix (trucks vs. passenger vehicles), and emissions of DPM and total organic gases. The assessment process for SR-4 is presented in Appendix A.

Table 9 summarizes the estimated cumulative health impacts from both the stationary source (Verizon Wireless generator) and SR-4 on the residential locations within the project. As noted from Table 13, the cumulative health impacts from the two TAC emission sources do not exceed the BAAQMD cumulative health significance thresholds.

Table 9: Summary of Cumulative Health Impacts from TAC Emission Sources within 1,000 Feet of the Project

Health Impact	Risk (risk per million)	Cumulative Significance Threshold (risk/million)	Exceeds Threshold?
Cancer Risk Verizon Wireless SR-4 Total	 0.3 3.2 3.5	100	No
Health Impact	**Hazard Index**	**Cumulative Significance Threshold**	**Exceeds Threshold?**
Chronic Non-cancer Hazard Index Verizon Wireless SR-4 Total	 0.001 0.001 0.002	10	No
Acute Non-cancer Hazard Index Verizon Wireless SR-4 Total	 0.001 0.005 0.006	10	No
Health Impact	**Annual Concentration ($\mu g/m^3$)**	**Cumulative Significance Threshold ($\mu g/m^3$)**	**Exceeds Threshold?**
Annual $PM_{2.5}$ Verizon Wireless SR-4 Total	 0.0035 0.0032 0.0067	0.8	No
Source: Appendix A.			

Based on the result of the modeling summarized above, the project would not be exposed to substantial pollutant concentrations; therefore, long-term operation impacts associated with exposure of sensitive receptors to substantial pollutant concentrations would be less than significant.

e) Create objectionable odors affecting a substantial number of people?

No impact. The 1996 Final EIR did not analyze the potential for the project to create objectionable odors affecting a substation number of people. The proposed project consists of the development of 180 dwelling units and the extension of Laurel Road. Residential uses are not considered sources of objectionable odors by the BAAQMD. Additionally, the Laurel Road extension would be a transportation facility and also would not be a source of objectionable odors. These characteristics preclude the possibility of the proposed project creating objectionable odors that affect a substantial number of people. No additional impact would occur.

Mitigation Measures

Mitigation Measures C1a and C1b from the 1996 Final EIR no longer apply.

The following new mitigation measures are proposed as discussed in this section to fully address potential air quality impacts pursuant to current standards: Mitigation Measures AIR-1 and AIR 2.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
IV. Biological Resources					
Would the project:					
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	Less than significant after mitigation	**No.** The proposed project does not involve changes that would result in new impacts on special-status species.	**No.** There are no new circumstances that would result in new or more severe impacts on special-status species.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of special-status species.	J1
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 Wildlife or US Fish and Wildlife Service?	Less than significant after mitigation	**No.** The proposed project does not involve changes that would result in new impacts on riparian habitat.	**No.** There are no new circumstances that would result in new or more severe impacts on riparian habitat.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of riparian habitat.	J2
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	Less than significant after mitigation	**No.** The proposed project does not involve changes that would result in new impacts on Section 404 wetlands.	**No.** There are no new circumstances that would result in new or more severe impacts on Section 404 wetlands.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of Section 404 wetlands.	J1

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
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?	NA	**No.** The proposed project does not involve changes that would result in new impacts on fish or wildlife movement.	**No.** There are no new circumstances that would result in new or more severe impacts on fish or wildlife movement.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of fish or wildlife movement.	None.
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	NA	**No.** The proposed project does not involve changes that would result in new impacts on local biological policies or ordinances.	**No.** There are no new circumstances that would result in new or more severe impacts on fish or local biological policies or ordinances.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of local biological policies or ordinances.	None.
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	NA	**No.** The proposed project does not involve changes that would result in new impacts on an adopted Habitat Conservation Plan or Natural Community Conservation Plan.	**No.** There are no new circumstances that would result in new or more severe impacts on an adopted Habitat Conservation Plan or Natural Community Conservation Plan.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of an adopted Habitat Conservation Plan or Natural Community Conservation Plan.	None.

Discussion and Mitigation

This section evaluates potential effects on biological resources that may result from project implementation. Descriptions and analysis in this section are based on a reconnaissance-level

biological survey performed by Monk & Associates (M & A) on November 18, 2013 and July 30, 2015, and subsequent plant surveys on April 7 and May 18, 2016 (Appendix B). These additional surveys were conducted as required by mitigation included in the 1996 Final EIR and to re-confirm potential resources on the site in accordance with current regulations and guidelines. This addendum includes an expanded discussion of biological resources to summarize the findings of M & A surveys. No new impacts were determined as a result of the biological survey and analysis beyond what was evaluated in the 1996 EIR and what is required by uniformly applied policies and standards.

Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Plants

Less than significant impact with mitigation incorporated.

Owing to many years of excessive levels of disturbance that continue today, it is unlikely that federally or state listed plants, or other plants with special-status designations would occur on the project site. Regardless, formal surveys must be conducted at appropriate times of the year when regionally known special-status plants are identifiable to a species level. Late-season focused surveys were performed August 29, 2013 and July 31, 2015; no special-status plant species were observed during this time, dismissing the presence of several late-season blooming species with a potential to occur within the project. Additional surveys were conducted in April and May 2016 by M & A, dismissing the presence of several early-season blooming species with a potential to occur with the project.

The following mitigation from the 1996 Final EIR addresses the potential for habitat modification, and still applies:

MM J1 Development allowed by the proposed plan would affect a seasonal wetland of approximately 1.7 acres, the exact boundaries of which are uncertain due to the existence of off-site drainage facilities of an interim nature. The developer of any subsequent project(s) shall be required to have a formal wetland delineation undertaken and verified by the Army Corps of Engineers. Base on the delineation, the developer may be required to have wetland replacement plan prepared and shall commit to its implementation in a manner, and on a schedule, acceptable to the Corps and to the City of Antioch.

Wildlife

Less than significant impact with mitigation incorporated. The following mitigation measure was proposed in the 1996 Final EIR to address impacts to nesting raptors, and still applies:

MM J3 Construction activities during the nesting season (February through July) could disturb nesting raptors and should be preceded by surveys conducted by a qualified

ornithologist. If nesting raptors are located in proposed construction areas such that nesting success will be doubtful, then construction should be postponed until the nesting season is over.

Swainson's hawk

The Swainson's hawk (*Buteo swainsoni*) is a state-listed threatened species. While the Swainson's hawk has no special federal status it is protected from direct take under the Federal Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711). Swainson's hawks, their nests, eggs, and young are also protected under California Fish and Game Code (Section 3503, Section 3503.5, Section 3513, and Section 3800).

No Swainson's hawk nests were discovered on or near the project site during M&A's project site surveys. The project site, which is surrounded by development and the Highway 4 Bypass, is likely too small to provide adequate foraging habitat necessary to support a nesting pair of Swainson's hawks. However, this species is mobile and can nest in different locations from year to year. In addition, the nesting population appears to be increasing throughout its nesting range in northern California (G. Monk, general observations), and, thus, Swainson's hawks could conceivably nest on or adjacent to the project site in the future.

If Swainson's hawks are found to be nesting on or adjacent to the project site within 1,000 feet of the project site, implementation of the proposed project could be viewed by CDFW as a project that could impact nesting Swainson's hawks. Loss or alteration of foraging habitat or nest site disturbance which results in (1) nest abandonment; (2) loss of young; (3) reduced health and vigor of eggs and/or nestlings (resulting in reduced survival rates), may ultimately result in the take (killing) of nestling or fledgling Swainson's hawks incidental to otherwise lawful activities. The taking of Swainson's hawks in this manner can be viewed by CDFW as a violation of the Section 2080 of the Fish and Game Code.

Typically, CDFW requires that any impact to a Swainson's hawk nest be permitted through a Fish and Game Section 2081 management authorization. If an active nest is found on or adjacent to the project site or within the area of influence of the project site (which is generally considered to be within 1,000 feet of the project site) "to avoid potential violation of Fish and Game Code 2080 (i.e., killing of listed species), project-related disturbance at active Swainson's hawk nesting sites should be reduced or eliminated during critical phases of the nesting cycle (March 1–September 15 annually)" (CDFG 1994). If disturbance would occur, a Fish and Game Section 2081 management authorization may be required. As such, in the absence of survey results the year the project site is developed, it must be concluded that impacts to Swainson's hawk from the proposed project would be potentially significant pursuant to CEQA.

This impact could be mitigated to a level considered less than significant pursuant to CEQA with implementation of the mitigation measure that follows below.

MM BIO-1 Mitigation for potential impacts to Swainson's Hawk

a. To ensure that there are no impacts to nesting Swainson's hawks, preconstruction surveys should be conducted for 0.5 mile radius around all project related activities and should be completed for at least the two survey periods prior to construction. The first survey should be conducted in April and the second survey in June (CDFG 2000).
b. If no nesting Swainson's hawks are identified during the April surveys (first survey), project construction can commence. If during the second survey (June), Swainson's hawks are found nesting in the project vicinity and project construction commenced in April/May, it should be assumed that the Swainson's hawks commenced nesting while the project site was under construction and thus, that the hawks are habituated to the ambient level of noise and disturbance emanating from the project site.
c. If Swainson's hawks nest on or within the area of influence of the project site (which is generally considered to be within 1,000 feet of the project site), impacts to nesting Swainson's hawks would be regarded as significant pursuant to CEQA, and implementation of avoidance measures below would be necessary to ensure the project does not impact the nesting Swainson's hawks.
d. If Swainson's hawks are found to be nesting on or within 1,000 feet of the project site, a non-disturbance buffer shall be established that keeps all project activities a minimum of 1,000 feet from the nest site. If the 1,000-foot buffer only partially intersects the project site, that intersecting area shall be demarked in orange construction fencing and will ensure that noise/disturbance related impacts emanating from the project site remains at least 1,000 feet from the nest site. No project activities would be allowed in the orange construction fenced off area constituting the buffer.
e. If a qualified raptor biologist makes a determination that the nesting Swainson's hawks are shielded from disturbance by geographic barriers or are well acclimated to higher levels of disturbance (for example if the nesting attempt commenced after the project was under construction, or the nest site is adjacent to preexisting high levels of disturbance), the biologist may justify a recommendation for a smaller buffer. CDFW shall be consulted regarding the qualified raptor biologists' recommendations for an appropriate non-disturbance buffer. At that time the necessity of acquiring a Fish and Game Section 2081 management authorization would also be determined.
f. Under all circumstances the nesting buffer must ensure that all project related disturbance remains far enough away from the Swainson's hawk nest site to ensure that the level of construction related disturbance does not result in deleterious effects on the nesting hawks, their eggs, or nestlings. If the nesting buffer is reduced to less than 1,000 feet, a qualified raptor biologist shall monitor the nesting hawks initially for a period long enough to understand the nesting hawks response to disturbance, and thereafter on a routine basis (at least 3 times

a week, or as required by the CDFW) until the nestlings successfully fledge and become independent of the nesting tree. Any buffer that is smaller than 1,000 feet may have to be increased in size again if the nesting hawks respond poorly to a reduced buffer.

g. No project-related disturbance shall be allowed in the nesting buffer until the young fledge the nest or the nesting attempt is otherwise complete for the year. The buffer should remain in place until the Swainson's hawk young fledge the nest and become independent of the nesting tree. The young can be considered successfully fledged when the hawks no longer return to the nesting tree for several consecutive nights.

Implementation of this mitigation measure would reduce potential impacts to Swainson's hawk to a level considered less than significant pursuant to CEQA.

White-tailed kite

The white-tailed kite (*Elanus leucurus*) is a CDFW fully protected species. Fully protected species are protected under California Fish and Game Code Section 3511, and cannot be taken or possessed at any time. The CDFW cannot issue permits or licenses that authorize the take of any fully protected species, except under certain circumstances (such as scientific research).

White tailed-kites are falcon-shaped birds of prey with long pointed wings and a long white tail. White-tailed kites are found in a variety of habitats, including open groves, marshes, grasslands, and river valleys. Habitat requirements are trees for perching and nesting, and open ground with high rodent and small mammal populations.

No white-tailed kites were observed during project field surveys, but there is a recorded occurrence of white-tailed kite immediately south of the project site, and marginal nesting habitat occurs within the project site.

MM BIO-2 Mitigation for potential impacts to white-tailed kite

To ensure there are no impacts to white-tailed kite, a preconstruction survey is necessary.

a. If construction is proposed during the nesting season for golden eagle and white-tailed kite (typically March 1 to August 31), a focused survey for active nests of white-tailed kite and migratory birds within and in the vicinity of (no less than 500 feet outside project boundaries, where possible) the project site shall be conducted by a qualified biologist no sooner than 10 days prior to construction activities commencing. If no active nests are found, construction activities may proceed without further mitigation.
b. If an active nest is located during pre-construction or focused surveys, CDFW shall be notified and consulted regarding the status of the nest. Furthermore, construction activities shall be restricted as necessary to avoid disturbance of the

nest. Restrictions may include establishment of exclusion zones (no ingress of personnel or equipment at a minimum radius of 500 feet around an active white-tailed kite nest) or alteration of the construction schedule.

Burrowing owl

The western burrowing owl (*Athene cunicularia*) is a California "species of special concern." Its nest, eggs, and young are also protected under California Fish and Game Code (Section 3503, Section 3503.5, and Section 3800). The burrowing owl is also protected from direct take under the Migratory Bird Treaty Act. Finally, based upon this species' rarity status, any unmitigated impacts to rare species would be considered a "significant effect on the environment" pursuant to Section 21068 of CEQA and Section 15382 of the CEQA Guidelines. Thus, this owl species must be considered in any project that will, or is currently, undergoing CEQA review, and/or that must obtain an environmental permit(s) from a public agency. When these owls occur on project sites, mitigation requirements are typically mandated in the conditions of project approval from the CEQA lead agency.

Burrowing owl habitat is usually found in annual and perennial grasslands, characterized by low-growing vegetation. Often, the burrowing owl utilizes rodent burrows, typically California ground squirrel (*Spermophilus beecheyi*) burrows, for nesting and cover. They may also on occasion dig their own burrows, or use man-made objects such as concrete culverts or rip-rap piles for cover. They exhibit high site fidelity, reusing burrows year after year. Occupancy of suitable burrowing owl habitat can be verified at a site by observation of these owls during the spring and summer months or, alternatively, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement (white wash) at or near a burrow. Burrowing owls typically are not observed in grasslands with tall vegetation or wooded areas because the vegetation obscures their ability to detect avian and terrestrial predators. Since burrowing owls spend the majority of their time sitting at the entrances of their burrows, grazed grasslands seem to be their preferred habitat because it allows them to view the world at 360 degrees without obstructions.

The closest CNDDB records for western burrowing owls is located immediately south of the project site (CNDDB Occurrence No. 981). Two pairs of owls were observed at this location in 2007, and one pair of owls was observed in 2008. There are 19 additional records for this species within two miles of the project site (see Figure 5). There are California ground squirrel burrows scattered throughout the site providing suitable burrows for this species. M&A observed western burrowing owl on the project site in November of 2013, but none have been observed on-site during more recent surveys. Regardless, western burrowing owl is a highly mobile species and could move onto the project site. Accordingly, impacts to western burrowing owl are regarded as potentially significant pursuant to CEQA. The following mitigation measure would reduce impacts to less than significant.

MM BIO-3 Mitigation for potential impact to western burrowing owl

a. Based on the recorded presence for this species in the project vicinity and the potential habitat found on the project site, a preconstruction survey for burrowing owls should be conducted 14 days or less prior to initiating ground

disturbance. As burrowing owls may recolonize a site after only a few days, time lapses between project activities trigger subsequent avoidance surveys, including but not limited to, a final survey conducted within 24 hours prior to ground disturbance to ensure absence. If no owls are found during these surveys, no further regard for the burrowing owl would be necessary.

b. Burrowing owl surveys should be conducted by walking the entire project site. Systematic survey transects should be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines should be seven meters to 20 meters and should be reduced to account for differences in terrain, vegetation density, and ground surface visibility. Poor weather may affect the surveyor's ability to detect burrowing owls thus, avoid conducting surveys when wind speed is greater than 20 kilometers per hour and there is precipitation or dense fog. To avoid impacts to owls from surveyors, owls and/or occupied burrows should be avoided by a minimum of 50 meters (approximately 160 ft.) wherever practical to avoid flushing occupied burrows. Disturbance to occupied burrows shall be avoided during all seasons.
c. If burrowing owls are detected on the site, the following restricted activity dates and setback distances are recommended to ensure that there will be no take of western burrowing owls or impacts to their nest.
   - From April 1 through October 1, low disturbance and medium disturbance activities shall have a 200 meter buffer while high disturbance activities shall have a 500 meter buffer from occupied nests. The size of the buffer may be reduced if a qualified burrowing owl biologist determines that smaller buffers would adequately protect the nesting burrowing owls.
   - No earth-moving activities or other disturbance shall occur within the afore-mentioned buffer zones of occupied burrows. These buffer zones shall be fenced or otherwise marked to ensure that they are not impacted by the project.
   - From October 1 through February 1 western burrowing owls may be passively evicted from the project site by a qualified biologist in order to ensure that an owl is not harmed by the project.

Implementation of these mitigation measures would reduce potential impacts to burrowing owls to a level considered less than significant pursuant to CEQA.

Nesting Birds

The trees found on and in proximity to the project site provide suitable nesting habitat for many passerine birds (such as jays, juncos, and towhees) and for urban nesting raptors such as the red-tailed hawk (*Buteo jamaicensis*) and red shouldered hawk (*Buteo lineatus*). All of these birds are protected under the Migratory Bird Treaty Act (50 CFR 10.13) and their eggs and young are also protected under California Fish and Game Code Sections 3503, 3503.5. Additionally, fully protected bird species, such as the white-tailed kite and golden eagle (*Aquila chrysaetos*) are protected under California Fish and Game Code Section 3511. Fully protected species cannot be taken or possessed at any time. The CDFW cannot issue permits or licenses that authorize the take of any fully

protected species, except under certain circumstances (such as scientific research). Any project-related impacts to nesting birds would be considered a significant adverse impact. Potential impacts to these species from the proposed project include disturbance to nesting birds, and possibly death of adults and/or young. Impacts to nesting birds from the proposed project would be potentially significant pursuant to CEQA.

This impact would be mitigated to a level considered less than significant with the following new mitigation measure, MM BIO-4, and Mitigation Measure J3.

MM BIO-4 Mitigation for potential impacts to Nesting Birds

a. In order to avoid impacts to nesting birds, a nesting survey shall be conducted 15 days prior to commencing with construction work or tree removal if this work would commence between February 1 and August 31. The nesting survey shall include examination of all trees within 300 feet of the entire project site (i.e., within a zone of influence of nesting birds), not just trees slated for removal. The zone of influence includes those areas off the project site where birds could be disturbed by earth- moving vibrations and/or other construction-related noise.
b. If birds are identified nesting on or within the zone of influence of the construction project, a qualified biologist shall establish a temporary protective nest buffer around the nest(s). The nest buffer shall be staked with orange construction fencing or orange lath staking. The buffer must be of sufficient size to protect the nesting site from construction related disturbance and shall be established by a qualified ornithologist or biologist with extensive experience working with nesting birds near and on construction sites. Typically, adequate nesting buffers are 75 feet from the nest site or nest tree dripline for small birds and up to 200 feet for sensitive nesting birds, including several raptor species known in the region of the project site. Upon completion of nesting surveys, if nesting birds are identified on or within a zone of influence of the project site, a qualified ornithologist/biologist that frequently works with nesting birds shall prescribe adequate nesting buffers to protect the nesting birds from harm.
c. No construction or earth-moving activity shall occur within any established nest protection buffer prior to September 1 unless it is determined by a qualified ornithologist/biologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid project construction zones, or that the nesting cycle is otherwise completed. In the region of the project site, most species complete nesting by mid-July. This date can be significantly earlier or later, and shall to be determined by the qualified biologist. At the end of the nesting cycle, and abandonment of the nest by its occupants, as determined by a qualified biologist, temporary nest buffers may be removed and construction may commence in established nesting buffers without further regard for the nest site.

Implementation of this mitigation measure would reduce impacts to nesting birds to a level considered less than significant pursuant to CEQA.

Western red bat

The western red bat (*Lasiurus blossevillii*) is a California "species of special concern." The "species of special concern" status designation does not provide any special legally mandated protection for this bat species. However, this status designation likely meets the definition of "rare" pursuant to CEQA. As such, potential impacts to this bat species should be considered during any CEQA review.

The riparian trees on the project site are small and only provide marginal roosting habitat for the western red bat. Regardless, preconstruction surveys will be conducted prior to any tree removal to ensure that there are no impacts to this special-status bat species. Accordingly, impacts to western red bat are regarded as potentially significant pursuant to CEQA.

These impacts would be mitigated to levels considered less than significant pursuant to CEQA with implementation of the following mitigation measure.

MM BIO-5 Mitigation for potential impacts to western red bat.

a. In order to avoid impacts to roosting special-status bats, a tree survey shall be conducted 15 days prior to commencement of project activities that include grading or tree removal. Tree cavities and exfoliated bark that could provide roosting or maternity habitat shall be examined for evidence of use by bats. All bat surveys shall be conducted by a biologist with known experience surveying for bats. If roosts are found, a determination should be made whether there are young. If a maternity site is found, impacts to that tree shall be avoided until the young have reached independence. If adults are found roosting but no maternity sites are found, then the adult bats can be flushed prior to the time the tree in question would be removed or disturbed.

Implementation of this mitigation measure would reduce impacts to western red bat to a level considered less than significant pursuant to CEQA.

American badger

The American badger (*Taxidea taxus*) is a California Species of Special Concern. The species of special concern status designation does not provide any special legally mandated protection for this species. However, this status designation likely meets the definition of "rare" pursuant to CEQA.

Although no evidence of badgers was observed during the site surveys, there is a recorded occurrence of American badger 2.1 miles south of the project site, and marginal suitable habitat exists within the project site. American badger is found in drier open stages of shrub, forest, and herbaceous habitats with friable soils. This species preys on burrowing rodents, and digs extensive burrows as shelter.

MM BIO-6 Mitigation for potential impacts to American badger:

a. In order to avoid impacts to American badger, a qualified biologist shall conduct a pre-construction field survey to determine if active badger dens are present on or within 200 feet of the project site. The survey shall be conducted no earlier than 14 days prior to any grading activity. If active badger dens are found within the area of disturbance, the biologist shall coordinate with CDFW to develop avoidance or exclusion measures. If active badger dens are found within 200 feet of the project site, the applicant shall work with the biologist to establish an exclusion buffer 150 feet around the den to avoid disturbance.

Implementation of this mitigation measure would reduce impacts to American badger to a level considered less than significant pursuant to CEQA.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Less than significant impact with mitigation incorporated.

The 1996 Final EIR found the water quality in East Antioch Creek would be degraded. Subsequently, CDFW has determined that the on-site ditch includes a bed and bank that supports wildlife and plant communities. Therefore, the CDFW has determined it will regulate impacts to this feature pursuant to Section 1602 of the Fish and Game Code,[3] which requires approval of a streambed alteration agreement (SBAA). The applicant is required to connect the stormwater pipe from the development to the west of the project site to the stormwater system that will be constructed within the project site. This will dewater the drainage. Furthermore, the drainage will be filled to bring the project site grades level with the housing development immediately west of the project site. Accordingly, impacts to this man-made drainage feature are regarded as potentially significant pursuant to CEQA.

With the addition of MM BIO-7, this impact would be mitigated to levels considered less than significant pursuant to CEQA.

MM BIO-7 Mitigation for impacts to Section 1602 jurisdictional areas.

a. Because avoidance is not possible, the applicant has submitted a Streambed Alteration Agreement application to the California Department of Fish and Wildlife (CDFW). CDFW is requiring mitigation to remove this drainage from the site. The applicant shall purchase 1.35 acres of mitigation credits from the Cosumnes River Preserve or other CDFW approved conservation bank to mitigate for project-related impacts to Section 1602 jurisdictional areas on the project site.

[3] California Fish and Game Code, Chapter 6. Fish and Wildlife Protection and Conservation, Section 1602.

Implementation of this mitigation measure would reduce significant impacts to Section 1602 jurisdictional areas to a level considered less-than-significant pursuant to CEQA.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No impact. The 1996 Final EIR found that wetland habitats within the planning area would be lost or periodically modified by development envisioned by the proposed plan. In accordance with MM J1, above, from the 1996 Final EIR, a wetland delineation was conducted in February 2014 by Olberding Environmental, Inc. The United States Army Corps of Engineers (USACE) conducted a site verification visit on May 5, 2015. USACE determined there exists on-site 1.33 acres of isolated non-jurisdictional wetlands and 0.05 acre of isolated non-jurisdictional other waters. These wetlands and waters were determined to be isolated by USACE, and are not subject to USACE jurisdiction pursuant to Section 404 of the Clean Water Act. No mitigation is required.

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 wildlife nursery sites?

Less than significant impact. The proposed project will not interfere significantly with the movement of native wildlife, on a regional or a local level. The project site is surrounded by single-family residential uses (west), a water tank site (north), SR-4 (east), and undeveloped land (south), precluding the movement of wildlife through this area from distant locations. The presence of the Highway 4 Bypass, a very heavily traveled four- to six-lane road to the east of the project site creates a significant wildlife movement barrier. The undeveloped land to the south of the project site is approved for the development of 525 homes, and further to the south of this area is another housing development. No streams or rivers exist on-site that could act as a migratory corridor for any native or migratory fish. The highly disturbed nature of the project site existing conditions makes it an unlikely wildlife nursery site. As a result, the project will not interfere with the movement or native wildlife, nor impede the use of wildlife nursery sites, and impacts will be considered less than significant pursuant to CEQA.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less than significant impact with mitigation incorporated.

Protected Trees

The proposed project will remove 14 trees, all of which are all native species. There are nine arroyo willows (*Salix lasiolepis*) and five red willows (*Salix laevigata*) slated for removal which, though native species, are not defined by the City as "indigenous." Eight of these willows are considered established. All willows are of recent origin, and have germinated and grown in the on-site ditch over the last 5 to 6 years. None have large stature. In total, 14 indigenous trees are currently

identified for removal. Accordingly, impacts to indigenous, protected trees are regarded as significant pursuant to CEQA.

This impact can be mitigated to levels considered less than significant pursuant to CEQA with implementation of the following mitigation measure.

MM BIO-8 Mitigation for impacts to Protected Trees

Mitigation for the impacts to the 14 indigenous trees shall be addressed in the future landscape plan design review application, which shall be submitted by the applicant for review and approval by the Planning Commission prior to any tree removal. The landscape plan is required to show the existing topography with the location of all established trees, clearly labeling those trees and providing a detailed description of all trees on the project site (such as diameter, estimated height, species, and relative condition).

The tree removal landscape plan compensates for all impacts to established trees, in accordance with the City of Antioch tree ordinance:

- Each established tree shall be replaced with two 24-inch box trees.
- Legally removed indigenous trees and landmark trees shall be replaced by box specimens at a rate and size to be established by the decision-making body at the time of regular development application approvals.

Implementation of the landscaping plan would reduce impacts to protected/indigenous trees to a level considered less than significant pursuant to CEQA because it would ensure that every tree removed is not only replaced, but an additional tree is planted.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No impact. The City of Antioch is not within the boundaries of the East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP). Therefore, the proposed project is not subject the provisions of the HCP/NCCP, which precludes the possibility of conflicts. No impact would occur.

Mitigation Measures

Mitigation Measures JI and J2 from the 1996 Final EIR still apply.

The following new or refined mitigation measures are proposed as discussed in this section: Mitigation Measures BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, and BIO-8.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
V. Cultural Resources					
Would the project:					
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	Less than significant after mitigation	**No.** The proposed project does not involve changes that would result in new impacts on historic resources.	**No.** There are no new circumstances that would result in new or more severe impacts on historic resources.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of historic resources.	K1
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	Less than significant after mitigation	**No.** The proposed project does not involve changes that would result in new impacts on archaeological resources.	**No.** There are no new circumstances that would result in new or more severe impacts on archaeological resources.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of archaeological resources.	K1
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	NA	**No.** The proposed project does not involve changes that would result in new impacts on paleontological resources.	**No.** There are no new circumstances that would result in new or more severe impacts on paleontological resources.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of paleontological resources.	None.
d) Disturb any human remains, including those interred outside of formal cemeteries?	Less than significant after mitigation	**No.** The proposed project does not involve changes that would result in new impacts on burial sites.	**No.** There are no new circumstances that would result in new or more severe impacts on burial sites.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of burial sites.	K2

Discussion and Mitigation

Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

No impact. The East Lone Tree Specific Plan area was surveyed for cultural resources as part of the East Lone Tree Specific Plan EIR. The surveys determined that there are no historic resources listed on a federal, state, or local historic register within Future Urban Area 2. Additionally, there are no structures on the project site that could potentially be eligible for a historic register by virtue of their age (i.e., more than 50 years old). This condition precludes the possibility of adverse impacts on a historic resource. No impact would occur.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

No impact. Future Urban Area 2 was surveyed for cultural resources as part of the previous rounds of environmental review. The surveys determined that there was one documented archaeological resource site within Future Urban Area 2 (CA-CCo-532H); however, it is adjacent to Lone Tree Way and not within the project site boundaries. In the unlikely event that archaeological resources are encountered, standard inadvertent discovery measures would be implemented in accordance with the Public Resource Code. Impacts would be less than significant.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

No impact. Future Urban Area 2 was surveyed for cultural resources as part of the previously rounds of environmental review. The surveys found no evidence of paleontological resources or unique geologic features within the project site. In the unlikely event that paleontological resources are encountered, standard inadvertent discovery measures would be implemented in accordance with industry practice. Impacts would be less than significant.

d) Disturb any human remains, including those interred outside of formal cemeteries?

Less than significant impact. Future Urban Area 2 was surveyed for cultural resources as part of the previous rounds of environmental review. The surveys found no evidence of burial sites within the project site. In the unlikely event that human remains are encountered, standard inadvertent discovery measures would be implemented in accordance with the Public Resource Code. Impacts would be less than significant.

Mitigation Measures

The following mitigation measure was proposed in the 1996 Final EIR to address the potential for subsurface archaeological resources, and still applies:

MM K1b Section 7050.5(b) of the California Health and Safety Code should be implemented in the event that human remains or possible human remains are located.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
VI. Geology and Soils					
Would the project:					
a) Expose people or structures to potential substantial adverse effects, including 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?	NA	**No.** The proposed project does not involve changes that would result in new impacts on an earthquake fault.	**No.** There are no new circumstances that would result in new or more severe impacts on an earthquake fault.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of an earthquake fault.	None.
ii) Strong seismic ground shaking?	Less than significant after mitigation	**No.** The proposed project does not involve changes that would result in new impacts on strong seismic ground shaking.	**No.** There are no new circumstances that would result in new or more severe impacts on strong seismic ground shaking.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of strong seismic ground shaking.	E3a, E3b
iii) Seismic-related ground failure, including liquefaction?	Less than significant after mitigation	**No.** The proposed project does not involve changes that would result in new impacts on seismic-related ground failure, including liquefaction.	**No.** There are no new circumstances that would result in new or more severe impacts on seismic-related ground failure, including liquefaction.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of seismic-related ground failure, including liquefaction.	E3a, E3b

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
iv) Landslides?	NA	**No.** The proposed project does not involve changes that would result in new impacts on landslides.	**No.** There are no new circumstances that would result in new or more severe impacts on landslides.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of landslides.	None.
b) Result in substantial soil erosion or the loss of topsoil?	NA	**No.** The proposed project does not involve changes that would result in new impacts on soil erosion.	**No.** There are no new circumstances that would result in new or more severe impacts on soil erosion.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of soil erosion.	None.
c) Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	Less than significant after mitigation	**No.** The proposed project does not involve changes that would result in new impacts on unstable geologic units or soils.	**No.** There are no new circumstances that would result in new or more severe impacts on unstable geologic units or soils.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of unstable geologic units or soils.	E3
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	Less than significant after mitigation	**No.** The proposed project does not involve changes that would result in new impacts on expansive soils.	**No.** There are no new circumstances that would result in new or more severe impacts on expansive soils.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of expansive soils.	E2
e) Have soils incapable of adequately supporting the use of	NA	**No.** The proposed project does	**No.** There are no new circumstances	**No.** No new information has been disclosed	None

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.		not involve changes that would result in new impacts on septic systems.	that would result in new or more severe impacts on septic systems.	pertaining to the proposed project that would require additional analysis of septic systems.	

Discussion and Mitigation

Would the project:

a) Expose people or structures to potential substantial adverse effects, including the 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.

No impact. There are no active earthquake faults or Alquist-Priolo Earthquake Fault Zones located within the project site boundaries. This condition precludes the possibility of impact of fault rupture occurring within the project site. No impacts would occur.

ii) Strong seismic ground shaking?

Less than significant impact after mitigation. The project site is located within a seismically active region of California and, thus, may be susceptible to strong ground shaking during an earthquake. The proposed project would be subject to the latest adopted edition of the California Building Standards Code, which includes structural design requirements intended to mitigate the effects of strong ground shaking. Impacts would be less than significant after implementation of mitigation measures MM E3a and MM E3b from the 1996 Final EIR.

MM E3a Site planning building design shall incorporate provisions to reduce risk to life and property from seismic activity.

MM E3b All buildings, underground utilities, and other improvements shall be designed and constructed in accordance with seismic design criteria presented in the Uniform Building Code.

iii) Seismic-related ground failure, including liquefaction?

Less than significant impact. The project site is located within a seismically active region of California and, thus, may be susceptible to seismic related ground failure during an earthquake. The proposed project would be subject to the latest adopted edition of the California Building Standards Code, which includes structural design requirements intended to mitigate the effects of seismic related ground failure. Impacts would be less than significant.

iv) Landslides?

Less than significant impact. The northern portion of the project site includes slopes associated with a knoll that supports a tank site. The sides of the knoll are vegetated with plants and mature trees, and would be protected as open space by the proposed project. As such, the likelihood of landsliding occurring is very low. Impacts would be less than significant.

b) Result in substantial soil erosion or the loss of topsoil?

Less than significant impact. The proposed project would involve ground disturbing activities that have the potential to cause erosion. Accordingly, the proposed project would be required to prepare and implement a Storm Water Pollution Prevention Plan during construction. The Storm Water Pollution Prevention Plan would identify structural and non-structural management practices intended to prevent erosion. Impacts would be less than significant.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Less than significant impact after mitigation. The proposed project would include grading and soil engineering activities to ensure that the underlying soils and geologic units are suitable to support the proposed project. These grading and soil engineering activities would be conducted in accordance with the applicable provisions of the California Building Standards Code which includes structural design requirements intended to mitigate the effects of unstable geologic units or soils. Impacts would be less than significant. The 1996 Final EIR proposed Mitigation Measure E1 to ensure geotechnical engineer recommendations are incorporated into building design and grading plans. Mitigation Measure E1 still applies.

MM E1 A grading plan shall be prepared by the site developer for final design review of the project. Pursuant to Uniform Building Code Requirements, the grading plan shall be prepared by a licensed civil engineer and include soils engineering and engineering geology reports. The grading plan shall accurately show all cut and fill areas and provide calculated earthwork volumes. The grading plan shall also address erosion control and describe drainage facilities. The soil engineering and engineering geology reports required for the grading plan shall specifically address the slope stability of any proposed cut slopes and potentially unstable areas, including north-northeastern slopes, and their suitability for any proposed building, roadway, or

other infrastructure development. Their recommendation shall be included in the grading and building plans prepared for the project. All grading activities shall be continuously inspected by the project geotechnical engineer in order to endure that recommendation are incorporated during field activities.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Less than significant impact. The proposed project would include grading and soil engineering activities to ensure that the soils are suitable to support the proposed project. These grading and soil engineering activities would be conducted in accordance with the applicable provisions of the California Building Standards Code which includes structural design requirements intended to mitigate the effects of expansive soils. The 1996 Final EIR also included Mitigation Measure E2, which still applies. Together these measures would ensure that impacts remain less than significant.

MM E2 The soils engineering and engineering geology reports shall identify areas where weak and expansive soil would likely affect proposed development and provide design specifications for minimizing the potential for damage due to weak and expansive soils. A series of measures to be considered in the design of structures is presented on p. 104.

e) 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?

No impact. The proposed project would be served with sanitary sewer service provided by Delta Diablo Sanitation District. No septic or alternative wastewater disposal systems would be employed. No impacts would occur.

Mitigation Measures

Mitigation Measures E1, E2, E3a, and E3b from the 1996 Final EIR still apply.

No new or refined mitigation measures are proposed.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
VII. Greenhouse Gas Emissions					
Would the project:					
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	NA	**No.** The proposed project does not involve changes that would result in new impacts on greenhouse gas emissions.	**No.** There are no new circumstances that would result in new or more severe impacts on greenhouse gas emissions.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of greenhouse gas emissions.	None.
b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	NA	**No.** The proposed project does not involve changes that would result in new impacts on conflicts with a plan, policy, or regulation for reducing greenhouse gas emissions.	**No.** There are no new circumstances that would result in new or more severe impacts on conflicts with a plan, policy, or regulation for reducing greenhouse gas emissions.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of conflicts with a plan, policy, or regulation for reducing greenhouse gas emissions.	None.

Discussion and Mitigation

Greenhouse gas emissions were not analyzed under CEQA in 1996 when the Specific Plan EIR was written. The following discussion is provided to clarify that there would be less than significant impact due to the project as analyzed using current standards.

Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less than significant impact. This analysis is restricted to greenhouse gases identified by Assembly Bill (AB) 32, which include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The project would generate a variety of greenhouse

gases during construction and operation, including several defined by AB 32 such as carbon dioxide, methane, and nitrous oxide.

BAAQMD currently provides multiple recommended thresholds for project-level greenhouse gas generation from operation of a project and for plan-level analysis of project operations. BAAQMD does not presently provide a construction-related greenhouse gas generation threshold, but recommends that construction-generated greenhouse gases be quantified and disclosed. BAAQMD also recommends that lead agencies make a determination of the level of significance of construction-generated greenhouse gas emissions in relation to meeting AB 32 greenhouse gas reduction goals. The lead agency is also encouraged to incorporate best management practices (BMPs) to reduce GHG emissions during project construction, as feasible and applicable.

Construction

The project would emit greenhouse gas emissions during construction from the off-road equipment, worker vehicles, and any hauling that may occur. As stated previously, the BAAQMD does not have a greenhouse gas threshold for construction emissions. Emissions would occur prior to the year 2020, which is the year by which the State of California is required to reduce its emissions to 1990 levels. Therefore, construction emissions would be less than significant. Greenhouse gas emissions from project construction equipment and worker vehicles are shown in Table 10. The emissions are from all phases of construction.

Table 10: Construction Greenhouse Gas Emissions

2016 Construction Year	$MTCO_2e$
Site Preparation	77
Grading	317
Building Construction (2016)	305
Building Construction (2017)	1,114
Paving	88
Architectural Coating	9
Total	1,910
Source: FirstCarbon Solutions and CalEEMod.	

Operation

The BAAQMD's 2010 Air Quality Guidelines provide screening criteria developed for greenhouse gases emissions assessment. As shown in Table 11, the project's proposed land use is more than the BAAQMD's applicable screening size for operational greenhouse gas emissions. Therefore, the greenhouse gas emissions for the project were estimated. (Emissions were estimated for 187 units, larger than the 180 units currently proposed. Therefore, this analysis is more conservative.)

Table 11: Operational Greenhouse Gas Screening

Land Use Type	Operational Greenhouse Gas Screening Size	Project Size	Project Percent of Screening Size
Single-Family	56 du	187 du	333.93%

Note:
du = dwelling units
Source of BAAQMD's Screening Threshold: Bay Area Air Quality Management District 2011.

The BAAQMD provides multiple threshold options for project-level greenhouse gas impact analysis. A significant impact would occur if the project would exceed all of the significance thresholds. Accordingly, the impact would be less than significant if the project were below any of the thresholds. The BAAQMD's 2010 thresholds for operational greenhouse gas emissions are:

- Compliance with Qualified GHG Reduction Strategy, or
- 1,100 MTCO2e annually, or
- 4.6 MTCO2e/Service Population/Year

The operational emissions are shown in Table 12. As shown, the project's annual emissions are estimated to be 2,305 $MTCO_2e$, more than the BAAQMD's threshold of 1,100 $MTCO_2e$. However, the project has a greenhouse gas efficiency of 4.3 $MTCO_2e$/Service Population/Year, which is less than the 4.6 $MTCO_2e$/Service Population/Year established by the BAAQMD. (This threshold number reflects both employee and resident population numbers.) Therefore, impacts associated with operational greenhouse gas emissions are less than significant.

Table 12: Greenhouse Gas Operational Emissions

Source	Annual Emissions ($MTCO_2e$)
Area Sources	37
Energy	653
Mobile	1,505
Waste	77
Water	33
Total Emissions	**2,305**
Service Population[1]	**535**
Significance Threshold	**4.6 $MTCO_2e$**
Project's Greenhouse Gas Efficiency	**4.3 $MTCO_2e$**
Does project exceed threshold?	**No**

Notes:
$MTCO_2e$ = metric tons of carbon dioxide equivalent
[1] Service population from CalEEMod population estimate for development.
Source of Threshold: Bay Area Air Quality Management District 2011.
Source: FirstCarbon Solutions and CalEEMod 2013.2.2.

b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

Less than significant impact. The City of Antioch adopted a Community Climate Action Plan (CCAP) on May 24, 2011. However, the CCAP did not include project-level emission thresholds or criteria for determining significance for GHG emissions. In addition, the City of Antioch has not completed a GHG inventory, benchmarking, or an adopted project-level goal-setting process required to take advantage of the streamlining provisions contained in the CEQA Guidelines amendments adopted for SB 97. Therefore, AB 32's Scoping Plan is used to determine significance.

The California State Legislature adopted AB 32 in 2006. AB 32 focuses on reducing greenhouse gases (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) to 1990 levels by the year 2020. Pursuant to the requirements in AB 32, the ARB adopted the Climate Change Scoping Plan (Scoping Plan) in 2008, which outlines actions recommended to obtain that goal.

BAAQMD's recommended significance thresholds are based on Executive Order S-3-05 reductions goals. Therefore, project emission less than BAAQMD's significance thresholds demonstrates consistency with Executive Order S-3-05 goals and, by extension, the ARB's Scoping Plan to achieve AB 32 reduction goals. Both construction and operational emissions are below the greenhouse gas thresholds recommended by BAAQMD, as demonstrated in question 7a) above. Therefore, it can be concluded that the project is in compliance with the applicable AB 32 Scoping Plan.

The Scoping Plan contains a variety of strategies to reduce the State's emissions. As shown in Table 13, the strategies are not applicable to the project. Most of the measures target the transportation and electricity sectors. Therefore, the project is consistent with the applicable strategies and would not conflict with the recommendations of AB 32 in achieving a statewide reduction in greenhouse emissions. The impact is less than significant.

Table 13: Inapplicable Scoping Plan Reduction Measures

Scoping Plan Reduction Measure	Reason Why Not Applicable
1. California Cap-and-Trade Program Linked to Western Climate Initiative. Implement a broad-based California Cap-and-Trade program to provide a firm limit on emissions. Link the California cap-and-trade program with other Western Climate Initiative Partner programs to create a regional market system to achieve greater environmental and economic benefits for California. Ensure California's program meets all applicable AB 32 requirements for market-based mechanisms.	When this cap-and-trade system begins, products or services (such as electricity) would be covered and the cost of the cap-and-trade system would be transferred to the consumers.

Table 13 (cont.): Inapplicable Scoping Plan Reduction Measures

Scoping Plan Reduction Measure	Reason Why Not Applicable
2. California Light-Duty Vehicle Greenhouse Gas Standards. Implement adopted standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and vehicle technology programs with long-term climate change goals.	This is a statewide measure that cannot be implemented by a project applicant or lead agency. When this measure is initiated, the standards would be applicable to the light-duty vehicles that would access the project site.
3. Energy Efficiency. Maximize energy efficiency building and appliance standards; pursue additional efficiency including new technologies, policy, and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California.	This is a measure for the state to increase its energy efficiency standards. However, the project would increase its energy efficiency through existing regulation.
4. Renewable Portfolio Standard. Achieve 33 percent renewable energy mix statewide. Renewable energy sources include (but are not limited to) wind, solar, geothermal, small hydroelectric, biomass, anaerobic digestion, and landfill gas.	The Pacific Gas and Electric Company, which would provide power to the project, is in the process of increasing the percent of renewable energy in its portfolio. It is required to increase this percentage by the year 2020 pursuant to various regulations.
5. Low Carbon Fuel Standard. Develop and adopt the Low Carbon Fuel Standard.	This is a statewide measure that cannot be implemented by a project applicant or lead agency. When this measure is initiated, the standard would be applicable to the fuel used by vehicles that would access the project site.
6. Regional Transportation-Related Greenhouse Gas Targets. Develop regional greenhouse gas emissions reduction targets for passenger vehicles. This measure refers to SB 375.	The project is not related to developing greenhouse gas emission reduction targets.
7. Vehicle Efficiency Measures. Implement light-duty vehicle efficiency measures.	When this measure is initiated, the standards would be applicable to the light-duty vehicles that would access the project site.
8. Goods Movement. Implement adopted regulations for the use of shore power for ships at berth. Improve efficiency in goods movement activities.	The project does not propose any changes to maritime, rail, or intermodal facilities or forms of transportation.
9. Million Solar Roofs Program. Install 3,000 MW of solar-electric capacity under California's existing solar programs.	This measure is to increase solar throughout California, which is being done by various electricity providers and existing solar programs.
10. Medium/Heavy-Duty Vehicles. Adopt medium and heavy-duty vehicle efficiency measures.	This is a statewide measure that cannot be implemented by a project applicant or lead agency. When this measure is initiated, the standards would be applicable to the vehicles that access the project site.
11. Industrial Emissions. Require assessment of large industrial sources to determine whether individual sources within a facility can cost-effectively reduce greenhouse gas emissions	The project is not an industrial land use.

Table 13 (cont.): Inapplicable Scoping Plan Reduction Measures

Scoping Plan Reduction Measure	Reason Why Not Applicable
and provide other pollution reduction co-benefits. Reduce greenhouse gas emissions from fugitive emissions from oil and gas extraction and gas transmission. Adopt and implement regulations to control fugitive methane emissions and reduce flaring at refineries.	
12. High Speed Rail. Support implementation of a high-speed rail system.	This is a statewide measure that cannot be implemented by a project applicant or lead agency.
13. Green Building Strategy. Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	The state is to increase the use of green building practices. The project develop buildings that would utilize green building practices as to save energy, water, or generation of wastewater.
14. High Global Warming Potential Gases. Adopt measures to reduce high global warming potential gases.	When this measure is initiated, it would be applicable to the high global warming potential gases that would be used by the project (such as in air conditioning and refrigerators).
15. Recycling and Waste. Reduce methane emissions at landfills. Increase waste diversion, composting, and commercial recycling. Move toward zero-waste.	The project would not contain a landfill. The State is to help increase waste diversion. The project would reduce waste with implementation of mitigation.
16. Sustainable Forests. Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation.	The project site is in an urban setting therefore, this measure is not applicable.
17. Water. Continue efficiency programs and use cleaner energy sources to move and treat water.	This is a measure for state and local agencies.
18. Agriculture. In the near-term, encourage investment in manure digesters and at the five-year Scoping Plan update determine if the program should be made mandatory by 2020.	No grazing, feedlot, or other agricultural activities that generate manure occur on-site or are proposed to be implemented by the project.
Source of ARB Scoping Plan Reduction Measure: California Air Resources Board 2008. Source of Project Consistency or Applicability: FirstCarbon Solutions.	

Mitigation Measures

None.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
VIII. Hazards and Hazardous Materials					
Would the project:					
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	Less than significant after mitigation.	**No.** The proposed development does not add any impacts from hazardous materials.	**No.** There are no new circumstances that would result in new or more severe impacts related to hazardous materials.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of hazardous materials.	G3
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?	Less than significant after mitigation.	**No**. The proposed development does not add any impacts from hazardous materials.	**No.** There are no new circumstances that would result in new or more severe impacts related to reasonably foreseeable upset and accident conditions.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of reasonably foreseeable upset and accident conditions.	G1, G2
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	NA	**No**. The proposed development does not add any impacts from hazardous materials.	**No.** There are no new circumstances that would result in new or more severe impacts related to hazardous or acutely hazardous materials, substances, or waste.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of hazardous or acutely hazardous materials, substances, or waste.	None.
d) Be located on a site which is included on a list of hazardous	NA	**No.** The proposed development	**No.** There are no new circumstances	**No.** No new information has been disclosed	None.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
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?		does not add any impacts from hazardous materials.	that would result in new or more severe impacts related to hazardous materials sites compiled pursuant to Government Code Section 65962.5.	pertaining to the proposed project that would require additional analysis of hazardous materials sites compiled pursuant to Government Code Section 65962.5.	
e) Be located within two miles of a public airport or private use airport and result in a safety hazard for people residing or working in the project area?	NA	**No.** The proposed development does not add any impacts from hazardous materials.	**No.** There are no new circumstances that would result in new or more severe impacts on airports.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of airports.	None.
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	NA	**No.** The proposed project would not result in the disclosure of new information that would require additional analysis of private airstrips.	**No.** There are no new circumstances that would result in new or more severe impacts on private airstrips.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of private airstrips.	None.
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	NA	**No.** The proposed project would not impair or interfere with emergency evacuation or response.	**No.** There are no new circumstances that would result in new or more severe impacts on emergency evacuation or response.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of emergency evacuation or response.	None.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
h) Be located in an area designated as having a high, extreme, or severe fire hazard, or otherwise expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	NA	**No.** The proposed project would not result in new exposure of people or structures to wildland fires.	**No.** There are no new circumstances that would result in new or more severe impacts related to wildland fires.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of wildland fires.	None.

Discussion and Mitigation

Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less than significant after mitigation. The proposed project would develop 180 dwelling units on the project site. These uses would not involve the routine transport, use, or disposal of hazardous materials, which precludes the possibility of creating a significant hazard to the public or the environment. The 1996 Final EIR stated that the development of the project would result in an increase in the use, storage and disposal of hazardous materials. With the implementation of Mitigation Measure G3, this was determined to be less than significant.

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?

Less than significant after mitigation. The proposed project would develop 180 dwelling units on the project site. These uses would not involve the use of hazardous materials, which precludes the possibility of creating a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions. Because of the presence of fuel pipelines in the area, the 1996 EIR that construction workers and the public may be exposed to potentially hazardous materials during project development. Mitigation Measure G1 has been implemented and the risk is mitigated to less than significant. The 1996 Final EIR posited that impacts could occur from exposure to electromagnetic fields, PCBs, and effects associated with overhead electrical lines. These impacts

were determined to be less than significant with the implementation of Mitigation Measure G2 and G3, which still apply.

MM G2 Because the potential health effects of EMG exposure have not been confirmed by scientific studies, information on the health issues of EMF exposure and the exposure profiles form overhead transmission lines shall be provided by the developer to individuals who may reside near transmission lines with annual updates summarizing the results of the most recent studies pertaining to EMF exposure.

Prior to development plan submittals, all existing transformers shall be checked for the presence of PCBs by PG&E. If PCBs are present, PG&E shall remove and replace the equipment with non-PCB-containing equipment. If any leaks or spills are discovered during this activity during a preliminary site assessment, an investigation shall be conducted by a qualified environmental consultant to assess impacts from the release and propose remedial actions. Any remediation of PCBs shall be completed prior to development of the parcel in question.

All metal structures or objects located adjacent to transmission line easement shall be properly grounded to prevent electrical shocks from person or animals in contact with those objects.

MM G3 Existing federal, state and local hazardous materials laws and regulations, and household hazardous waste programs would mitigate potential hazards associated with hazardous materials management.

Reduction of hazardous materials use by small businesses and households can be encouraged through education.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No impact. The proposed project would develop 180 dwelling units on the project site. These uses would not involve the use of hazardous materials. Moreover, the nearest school, Carmen Dragon Elementary, is located more than 0.75 mile from the project site. These conditions preclude the possibility of exposing schools located within 0.25 mile of the site to hazardous materials. No impact would occur.

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?

No impact. The State Water Resources Control Board GeoTracker database indicates that the project site is not on any hazardous materials site list compiled pursuant to Government Code Section 65962.5. Moreover, the project site is undeveloped and has not supported any previous urban uses,

making it unlikely that there is any residual contamination from past land use activities. No impact would occur.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

No impact. The nearest airport to the project site is Byron Municipal Airport, located 10.5 miles to the southeast. This distance precludes the possibility of the proposed project exposing persons residing or working in the project vicinity to aviation safety hazards. No impact would occur.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

No impact. There are no private airstrips in the project vicinity. This condition precludes the possibility of the proposed project exposing persons residing or working in the project vicinity to aviation safety hazards. No impact would occur.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less than significant impact. The proposed project includes the extension of Laurel Road, from the SR-4 interchange to its current terminus west of the project site that would close a gap in the regional roadway network. This would serve to improve emergency response and evacuation in the project vicinity. Additionally, all internal roadways would comply with the latest adopted edition of California Fire Code. Therefore, the proposed project would not interfere with emergency response or emergency evacuation. Impacts would be less than significant.

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

No impact. The project site is surrounded by urban development, infrastructure, and undeveloped land on four sides. No areas susceptible to wildland fires exist in the project vicinity. This condition precludes the possibility of the proposed project being exposed to wildland fire hazards. No impact would occur.

Mitigation Measures

MM G1 This mitigation has already been implemented.

Mitigation Measures G2 and G3 from the 1996 Final EIR still apply.

No new or refined mitigation measures are proposed.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
IX. Hydrology and Water Quality					
Would the project:					
a) Violate any water quality standards or waste discharge requirements?	Less than significant after mitigation.	**No.** The proposed project would not result in the disclosure of new information that would require additional analysis of water quality standards or waste discharge requirements.	**No.** There are no new circumstances that would result in new or more severe impacts on water quality standards or waste discharge requirements.	**No.** No new information has been disclosed pertaining to the proposed project that would additional analysis of water quality standards or waste discharge requirements.	F1
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)?	NA	**No.** The proposed project would not result in the disclosure of new information that would require additional analysis of groundwater.	**No.** There are no new circumstances that would result in new or more severe impacts on groundwater.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of groundwater.	None.
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	Less than significant after mitigation.	**No.** The proposed project would not result in new impacts involving erosion or siltation.	**No.** There are no new circumstances that would result in new or more severe impacts on erosion.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of erosion.	F1

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	Less than significant after mitigation.	**No.** The proposed project would not result in new impacts resulting in flooding.	**No.** There are no new circumstances that would result in new or more severe impacts on flooding.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of flooding.	F2
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	Less than significant after mitigation.	**No.** The proposed project would not result in new runoff.	**No.** There are no new circumstances that would result in new or more severe impacts on runoff.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of runoff.	F3
f) Otherwise substantially degrade water quality	NA	**No.** The proposed project would not degrade water quality.	**No.** There are no new circumstances that would result in new or more severe impacts on water quality.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of water quality.	None.
g) 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?		**No.** The proposed project would not result in the disclosure of new information that would require additional analysis of 100-year flood hazard areas.	**No.** There are no new circumstances that would result in new or more severe impacts on 100-year flood hazard areas.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of 100-year flood hazard areas.	

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
h) Place within a 100-year flood hazard structures which would impede or redirect flood flows?	NA	**No.** The proposed project would not result in the disclosure of new information that would require additional analysis of 100-year flood hazard areas.	**No.** There are no new circumstances that would result in new or more severe impacts on 100-year flood hazard areas.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of 100-year flood hazard areas.	None.
i) Expose people or structures to significant risk or loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	NA	**No.** The proposed project does not involve changes that would result in new impacts on dam or levee failure.	**No.** There are no new circumstances that would result in new or more severe impacts on dam or levee failure.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of dam or levee failure inundation zone.	None.
j) Inundation of by seiche, tsunami, or mudflow?	NA	**No.** The proposed project does not involve changes that would result in new impacts on seiches, tsunamis, or mudflows.	**No.** There are no new circumstances that would result in new or more severe impacts on seiches, tsunamis, or mudflows.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of seiches, tsunamis, or mudflows.	None.

Discussion and Mitigation

Would the project:

a) Violate any water quality standards or waste discharge requirements?

Less than significant impact after mitigation. The proposed project would be required to prepare and implement a Stormwater Pollution Prevention Plan during construction. The proposed project

would also be required to design and install an on-site storm drainage system in accordance with City standards that detains and treats runoff over the life of the project. Collectively, these features would ensure that the proposed project would not violate any water quality standards. Impacts would be less than significant after implementation of Mitigation Measure F1.

MM F1 A SWPP should be prepared that, when properly implemented, would reduce or eliminate impacts to surface water quality from all phases of the project. Required elements of the SWPPP are listed on p. 112 of Chapter III [of the 1996 Final EIR.]

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?

No impact. The proposed project would be served with potable water provided by the City of Antioch. No groundwater wells would be drilled on-site to serve the project. Additionally, the project site does not serve as a groundwater recharge facility. Thus, the proposed project would not have the potential to deplete groundwater supplies or interfere substantially with groundwater recharge. No impact would occur.

c) Substantially alter the existing drainage pattern of area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

Less than significant impact after mitigation. The proposed project would involve ground disturbing activities that have the potential to cause erosion. Accordingly, the proposed project would be required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) during construction. The Stormwater Pollution Prevention Plan would identify structural and non-structural management practices intended to prevent erosion. Impacts would be less than significant with the implementation of Mitigation Measure F1.

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Less than significant impact after mitigation. The proposed project would install an on-site stormwater collection system consisting of catch basins, inlets, underground piping, and stormwater basins. The system would be designed to detain runoff during a stormwater event and regulate the discharge of runoff into the municipal storm drainage system at a rate less than the pre-development condition of the site. This would ensure that runoff leaving the project site would not inundate downstream drainage facilities in a manner that results in flooding. Impacts would be less than significant with the implementation of Mitigation Measure F3.

MM F3 A tentative map for each phase of development of the project would be submitted to the City of Antioch Department of community Development (ADCD), Building

Division for review. Grading and drainage plans would be reviewed for compliance with City requirements by the ADCD, Engineering Division. Any undersized components in the downstream storm drain system would be identified at that time and new design required prior to plan approval.

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Less than significant impact. The proposed project would install an on-site stormwater collection system consisting of catch basins, inlets, underground piping, and stormwater basins. The system would be designed to detain runoff during a stormwater event and regulate the discharge of runoff into the municipal storm drainage system at a rate less than the pre-development condition of the site. This would ensure that runoff leaving the project site would not inundate downstream drainage facilities in a manner that results in flooding. Thus, no new or expanded storm drainage facilities would be required to serve the proposed project. Impacts would be less than significant.

f) Otherwise substantially degrade water quality?

No impact. The project does not possess any attributes that have the potential to otherwise degrade water quality (e.g., underground storage tanks). No impact would occur.

g) 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?

No impact. The elevation of the project site ranges from 98 feet to 235 feet above mean sea level. The project site is at a higher elevation than most of the surrounding land uses and is not within a 100-year flood hazard area. No impact would occur.

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

No impact. The elevation of the project site ranges from 98 feet to 235 feet above mean sea level. The project site is at a higher elevation than most of the surrounding land uses and is not within a 100-year flood hazard area. No impact would occur.

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

No impact. The elevation of the project site ranges from 98 feet to 235 feet above mean sea level. The project site is at a higher elevation than most of the surrounding land uses and is not protected by any levees. Additionally, the project site is not within the dam failure inundation zone of Contra Loma Dam or the Los Vaqueros Reservoir Dam. This condition precludes the possibility of the project being exposed to flooding as a result of levee or dam failure. No impact would occur.

j) Inundation by seiche, tsunami, or mudflow?

No impact. There are no inland bodies of water near the project site, a condition that precludes the possibility of inundation by seiche. The project site is more than 30 miles from the Pacific Ocean, a condition that precludes the possibility of inundation by tsunami. Finally, the sides of the knoll on which the water tanks sit atop are planted with mature trees and vegetation, which makes the likelihood of a mudflow very low. No impact would occur.

Mitigation Measures

Mitigation Measures FI and F2 from the 1996 Final EIR still apply.

No new or refined mitigation measures are proposed.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
X. Land Use					
Would the project:					
a) Physically divide an established community?	N/A	**No.** The proposed project does not involve changes that would result in new impacts on division of an established community.	**No.** There are no new circumstances that would result in new or more severe impacts on division of an established community.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of division of an established community.	None
b) Conflict with any 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?	N/A	**No.** The proposed project does not involve changes that would result in new impacts on conflicts with any applicable land use plan, policy, or regulation.	**No.** There are no new circumstances that would result in new or more severe impacts on conflicts with any applicable land use plan, policy, or regulation.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of conflicts with any applicable land use plan, policy, or regulation.	None
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	N/A	**No.** The proposed project does not involve changes that would result in new impacts on habitat conservation plans or natural community conservation plans.	**No.** There are no new circumstances that would result in new or more severe impacts on habitat conservation plans or natural community conservation plans.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of habitat conservation plans or natural community conservation plans.	None

Discussion and Mitigation

Would the project:

a) Physically divide an established community?

The 1996 Final EIR did not directly assess the project's potentially to physically divide an established community. However, the 1996 Final EIR found that the primarily residential subdivisions located to the west and north of the planning area would blend with the proposed uses of FUA #2, and that existing open space reserves situated along the western edge of the planning would tie in with open space planned for FUA #2. Ultimately, the 1996 Final EIR found that the 1996 project would not result in any significant land use impacts.

The proposed 54-acre project site is undeveloped and does not contain any dwelling units. The surrounding area includes residential development to the north and west. The future Park Ridge subdivision will result in additional residential development to the south. SR-4 separates the project site from residential development located to the east. Therefore, development of the proposed project would continue the development of planned residential uses, and would not divide an established community. Moreover, the proposed project would extend Laurel Road from the SR-4 interchange to its current terminus west of the project site and close a gap in the regional roadway network. This would serve to better link established communities. There would be no impact that would physically divide an established community.

b) Conflict with any 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?

The 1996 Final EIR did not directly assess the project's potential to conflict with any applicable land use plan, policy, or regulation. However, the 1996 Final EIR noted that the planned FUA #2 uses would be complementary with the Brentwood General Plan.

The City of Antioch General Plan designates the proposed project site as "Residential/Open Space," which allows 4 to 6 dwelling units per gross developable acre; the currently proposed project would develop 180 dwelling units on 18.1 net acres (10.33 units per net developable acre).

The East Lone Tree Specific Plan designation for the project site is "Low Density Residential (RL) and Medium High Density Residential (RH)." The project applicant is seeking approval of a Planned Development to guide the development proposed project as required by the East Lone Tree Specific Plan and, thus, is consistent with the requirements of the planning process. Moreover, the 180 dwelling units are within the 1,322 dwelling-unit cap established by the Specific Plan. Conflicts with any applicable land use plan, policy, or regulation would be less than significant.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

The 1996 project did not assess potential conflicts with applicable habitat conservation plans (HCPs) or natural community conservation plans (NCCPs). The City of Antioch is not within the boundaries of the East Contra Costa County HCP/NCCP. Therefore, the proposed project is not subject the provisions of the HCP/NCCP, which precludes the possibility of conflicts. No impact would occur.

Mitigation Measures

None.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
XI. Mineral Resources					
Would the project:					
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	NA	**No.** The proposed project does not involve changes that would result in new impacts on loss of known mineral resources of statewide importance.	**No.** There are no new circumstances that would result in new or more severe impacts on loss of known mineral resources of statewide importance.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of known mineral resources of statewide importance.	None.
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?	NA	**No.** The proposed project does not involve changes that would result in new impacts on loss of known mineral resources of local importance.	**No.** There are no new circumstances that would result in new or more severe impacts on loss of known mineral resources of local importance.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of known mineral resources of local importance.	None.

Discussion and Mitigation

Mineral resources were not addressed in the 1996 Final EIR. The following discussion provides additional analysis of this topic.

Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

No impact. Neither the City of Antioch General Plan nor the East Lone Tree Specific Plan identifies the project site as a source of a known mineral of value. Therefore, the development of the proposed project would not result in the loss of availability of a known mineral resource of regional or statewide importance. No impact would occur.

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?

No impact. Neither the City of Antioch General Plan nor the East Lone Tree Specific Plan identifies the project site as a mineral resource recovery site. This condition precludes the possibility of related impacts. No impact would occur.

Mitigation Measures

None.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
XII. Noise					
Would the project:					
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	Less than significant after mitigation.	**No.** The proposed project does not involve changes that would result in new impacts associated with noise levels in excess of standards established by applicable local, regional, or national regulations.	**No.** There are no new circumstances that would result in new or more severe impacts associated with noise levels in excess of standards established by applicable local, regional, or national regulations.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of noise levels in excess of standards established by applicable local, regional, or national regulations.	D1a, D1b, D1c
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	NA	**No.** The proposed project does not involve changes that would result in new impacts associated with groundborne vibration.	**No.** There are no new circumstances that would result in new or more severe impacts associated with groundborne vibration.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of groundborne vibration.	None.
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	NA	**No.** The proposed project does not involve changes that would result in new impacts on associated with a substantial permanent increase in ambient noise levels.	**No.** There are no new circumstances that would result in new or more severe impacts associated with a substantial permanent increase in ambient noise levels.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of a substantial permanent increase in ambient noise levels.	None.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	Less than significant after mitigation.	**No.** The proposed project does not involve changes that would result in new impacts associated with a substantial temporary increase in ambient noise levels.	**No.** There are no new circumstances that would result in new or more severe impacts associated with a substantial temporary increase in ambient noise levels.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of a substantial temporary increase in ambient noise levels.	D2a, D2b
e) For a project located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	NA	**No.** The proposed project does not involve changes that would result in new impacts associated with aviation noise.	**No.** There are no new circumstances that would result in new or more severe impacts associated with aviation noise.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of aviation noise.	None.
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	NA	**No.** The proposed project does not involve changes that would result in new impacts associated with aviation noise.	**No.** There are no new circumstances that would result in new or more severe impacts associated with aviation noise.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of aviation noise.	None.

Discussion and Mitigation

Would the project result in:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Less than significant impact with mitigation incorporated. Noise levels in the project area would be influenced by construction activities and from the ongoing operation of the project.

Short-Term Construction Impacts

Two types of short-term noise impacts could occur during the construction of the proposed project. First, construction crew commutes and the transport of construction equipment and materials to the project site would incrementally increase noise levels on access roads leading to the project site. Although there would be a relatively high single event noise exposure potential causing intermittent noise nuisance, the effect on longer term (hourly or daily) ambient noise levels would be small. Therefore, short-term construction-related impacts associated with worker commute and equipment transport to the project site would be less than significant.

The second type of short-term noise impact is related to noise generated during construction on the project site. Construction is completed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the site and, therefore, the noise levels surrounding the site as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction related noise ranges to be categorized by work phase. Table 14 lists typical construction equipment noise levels, based on a distance of 50 feet between the equipment and a noise receptor. Typical operating cycles for the heaviest types of construction equipment may involve 1 or 2 minutes of full-power operation followed by 3 or 4 minutes at lower power settings. Impact equipment such as pile drivers is not expected to be used during construction of this project.

Table 14: Typical Construction Equipment Maximum Noise Levels, L_{max}

Type of Equipment	Impact Device?[4] (Yes/No)	Specification Maximum Sound Levels for Analysis (dBA at 50 feet)
Pumps	No	77
Backhoe	No	80
Front-End Loaders	No	80
Portable Generators	No	82
Dump Truck	No	84
Tractors	No	84

[4] Impact devices are pieces of construction equipment that create high levels of noise and vibration such as jackhammers and pile drivers.

Table 14 (cont.): Typical Construction Equipment Maximum Noise Levels, L_{max}

Type of Equipment	Impact Device?[5] (Yes/No)	Specification Maximum Sound Levels for Analysis (dBA at 50 feet)
Concrete Mixer Truck	No	85
Cranes	No	85
Dozers	No	85
Excavators	No	85
Graders	No	85
Jackhammers	Yes	85
Paver	No	85
Rollers	No	85
Scrapers	No	85
Vibratory Pile Driver	No	95
Source: FHWA 2006.		

The site preparation of the project is expected to require the use of rubber tired dozers, tractors, front-end loaders, and backhoes. The grading and utilities phase is expected to require the use of excavators, graders, rubber tired dozers, scrapers, tractors, front-end loaders, and backhoes. The building construction phase is expected to require the use of cranes, forklifts, portable generators, tractors, front-end loaders, backhoes, and welder torches. The paving phase of construction is expected to require the use of pavers, rollers, concrete mixer trucks, and dump trucks.

The Federal Highway Administration's (FHWA) Roadway Construction Noise Model was used to calculate construction noise levels at nearby sensitive receptors surrounding the project site during each phase of construction. The modeled receptor locations represent the closest residential units to the west and southwest of the project site. The modeled receptor locations are shown in Exhibit 8. The modeled construction phases included the site preparation and grading phase, the building construction phase, and the paving of the internal roadways phase. Construction equipment assumptions are based on the default construction equipment list from the air quality impact analysis for this project. A worst-case scenario was modeled assuming each piece of modeled equipment would operate simultaneously at the nearest reasonable locations to each modeled receptor. Overall, average daily project construction noise levels would be much lower than in this worst-case scenario, because all equipment would not always operate simultaneously and noise levels would also be lower as the equipment operates toward the center of the project site further from off-site receptors. A summary of the modeling results is shown in Table 15.

[5] Impact devices are pieces of construction equipment that create high levels of noise and vibration such as jackhammers and pile drivers.

Table 15: Construction Noise Model Results Summary (dBA)

Receptor Location	Site Preparation Phase		Grading & Utilities Phase		Building Construction Phase		Paving Phase	
	L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}
R-1: Residence to west of the project on Aberdeen Court	70.2	69.2	72.3	70.2	67.8	68.4	62.0	62.5
R-2: Residence to west of the project on Glasgow Court	76.9	76.1	78.6	77.1	73.4	74.4	66.3	67.0
R-3: Residence to west of the project on Braemar Street	63.7	62.6	65.9	63.6	61.6	62.0	56.2	56.7
R-4: Residence to southwest of the project on Palomino Way	70.1	69.2	72.0	70.2	61.6	62.0	65.1	66.0

Note:
L_{max} is the loudest value of any single piece of equipment as measured at the modeled receptor location.
Source: FirstCarbon Solutions, 2015.

The City of Antioch's General Plan Noise Element and the Municipal Code both outline the City's standards for noise producing construction activities. The General Plan limits noise-producing construction related activities to between the hours of 7:00 a.m. and 7:00 p.m. Monday through Saturday, with no construction allowed on Sundays and public holidays. The Antioch Municipal Code limits noise-producing construction activity to weekdays between the hours of 8:00 a.m. and 5:00 p.m. when work is within 300 feet of occupied dwellings, and to weekends between the hours of 9:00 a.m. and 5:00 p.m. irrespective of the distance from occupied dwellings. For the purpose of this analysis, the most conservative combination of these standards has been applied as follows.

The permissible hours of noise producing construction activities should be limited on Monday through Friday to between the hours of 8:00 a.m. and 5:00 p.m. when work is within 300 feet of occupied dwellings, and to between the hours of 7:00 a.m. and 7:00 p.m. when work occurs greater than 300 feet from occupied dwellings. Such activities should be limited on Saturdays to between the hours of 9:00 a.m. and 5:00 p.m., with no construction allowed on Sundays and public holidays.

In addition, the City requires that proposed development adjacent to occupied noise sensitive land uses must implement a construction-related noise mitigation plan. This plan would depict the location of construction equipment storage and maintenance areas, and document methods to be employed to minimize noise impacts on adjacent noise sensitive land uses.

The receptor that would experience the greatest impacts from construction noise is the receptor R-2, located on Glasgow Court. Because of the existing terrain, the western portion of the project site is lower in elevation than existing residential land uses to the west. Therefore, the use of temporary noise attenuation fences along the project's western property line would not result in a significant noise reduction because it would not block the line of sight to the nearest receptors. However, by locating minimum 8-foot-high temporary noise attenuation fences a maximum of 10-

feet from the eastern property line of the residences indicated by receptor locations R-1 and R-2 would reduce the highest construction noise levels by an additional 5 dBA as measured within the rear yards of these land uses.

Therefore, restricting the permissible hours of construction activities as well as implementing the best management noise reduction techniques and practices outlined in Mitigation Measure NOI-1 would ensure that potential short-term construction noise impacts on sensitive receptors in the project vicinity would be reduced to less than significant. This mitigation measure provides more detail that the original mitigation proposed in the 1996 Final EIR but achieves an equivalent or greater reduction in construction noise, and thus would supersede MMs D1a-D1c.

MM NOI-1 The following noise attenuation measures shall be implemented during construction:

- The construction contractor shall limit all noise producing construction related activities, including haul truck deliveries or warming up and idling of heavy construction equipment, to the hours of 8:00 a.m. and 5:00 p.m. Monday through Friday when work is within 300 feet of occupied dwellings, and to between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday when work occurs greater than 300 feet from occupied dwellings. Such activities should be limited to the hours of 9:00 a.m. and 5:00 p.m. on Saturdays. No construction shall be allowed on Sundays and public holidays.
- The construction contractor shall use temporary noise attenuation fences at least 8-feet in height to protect sensitive receptors west of the project site. These fences should be located a maximum of 10-feet from the eastern property line of the residences indicated by receptor locations R-1 and R-2.
- The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.
- The construction contractor shall locate equipment staging in areas that will create the greatest distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction and placed so that emitted noise is directed away from adjacent residences.
- The construction contractor shall ensure all construction equipment utilize noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.
- The construction contractor shall ensure that unnecessary idling of internal combustion engines (i.e., idling in excess of 5 minutes) is prohibited.
- The construction contractor shall utilize “quiet” models of air compressors and other stationary noise sources where technology exists.

Long-Term Operational Impacts

Mobile-Source Noise Impacts

Implementation of the project would result in a significant impact if it would expose the project to ambient noise levels in excess of the City’s exterior noise standard of 60 dBA CNEL as measured in the back yard of single family residential land uses.

The existing ambient noise environment was documented through the short-term ambient noise measurement effort. Noise measurement locations are shown in Exhibit 7. Measured average ambient noise levels at the project site ranged from 45.4 dBA to 59.6 dBA L_{eq}, with maximum levels of approximately 56 dBA to 69 dBA L_{max}. There are no major noise sources in the project vicinity that would substantially affect the nighttime noise levels above those measured during the daytime peak noise hours. Therefore, the existing noise levels would not exceed the City's standard of 60 dBA CNEL as measured in the back yards of proposed residential units. Consequently, existing noise levels on the project site would result in a less than significant impact on the proposed land use development.

The projected future traffic noise levels adjacent to the project site were also analyzed to determine compliance with the City's noise and land use compatibility standards. Noise from vehicular traffic was modeled using the FHWA Traffic Noise Prediction Model (FHWA-RD-77-108). Site-specific information is entered, such as roadway traffic volumes, roadway active width, source-to-receiver distances, travel speed, noise source and receiver heights, and the percentages of automobiles, medium trucks, and heavy trucks that constitute traffic throughout the day, among other variables. A summary of the traffic noise modeling results are shown in Table 16.

Table 16: Traffic Noise Level Results

Roadway Segment	CNEL (dBA) 50 feet from Centerline of Outermost Lane					
	Existing No Project	Existing + Nearby Project + Project	Increase over Existing No Project (dBA)	Cumulative No Project	Cumulative + Project	Increase over Cumulative No Project (dBA)
Laurel Road–Hillcrest Avenue to Canada Valley Road	60.6	64.6	4.0	68.2	68.3	0.1
Laurel Road–Canada Valley Road to State Route 4[a]	ND	67.0	ND[1]	69.7	69.8	0.1
Laurel Road–State Route 4 to Neroly Road	69.3	71.0	1.7	70.9	71.0	0.1
Hillcrest Avenue–North of Laurel Valley Road	66.5	66.2	-0.3	71.0	70.8	-0.2
Hillcrest Avenue–South of Laurel Valley Road	65.3	65.1	-0.2	69.9	69.9	0.0
State Route 4–North of Laurel Road	82.6	83.1	0.5	83.3	83.3	0.0
State Route 4–South of Laurel Road	82.1	82.4	0.3	82.1	82.2	0.1

Note:
[a] This segment of Laurel Road currently does not exist; thus, noise levels cannot be calculated.
Source: FCS, May 2016.

The traffic noise model results show that projected traffic noise levels along Laurel Road adjacent to the project site would range up to 67.0 dBA CNEL as measured at 50 feet from the centerline of the nearest travel lane under existing plus nearby projects plus project conditions.



Source: ESRI Imagery, 2014

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1,000 500 0 1,000 Feet

Exhibit 7
Noise Monitoring Locations

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Traffic noise levels are projected to range up to approximately 69.8 dBA CNEL with implementation of the proposed project under cumulative plus project conditions. At the nearest property line of the proposed residential land uses, these traffic noise levels would attenuate to 65.9 dBA and 68.7 dBA under existing plus project and cumulative plus project conditions, respectively. These noise levels would exceed the City's exterior noise level standards of 60 dBA CNEL as measured within rear yards of single-family residential land uses. With the implementation of a minimum 8-foot-high soundwall (or soundwall/berm combination) along the property lines of all proposed residential lots adjoining Laurel Road, these traffic noise levels would be reduced to below the General Plan residential standard of 60 dBA CNEL, as measured within the rear yards of the single-family residential land uses.

Similarly, projected traffic noise levels along SR-4 would exceed the City's exterior noise level standard of 60 dBA CNEL as measured within rear yards of the nearest proposed residential land uses. Projected traffic noise levels under cumulative plus project conditions would range up to approximately 71 dBA CNEL at the nearest project property line to SR-4. However, with implementation of a minimum 10-foot-high soundwall (or soundwall/berm combination) along the property lines of all proposed residential lots adjoining SR-4 and SR-4 southbound off-ramp, these traffic noise levels would be reduced to below 60 dBA CNEL as measured within the rear yards of the single-family residential land uses.

Therefore, implementation of the Mitigation Measure NOI-2 requiring the construction of soundwalls would reduce potential impacts on the proposed sensitive land uses from traffic noise sources to a less than significant level. MM NO1-2 supersedes Mitigation Measure D2a.

Mitigation Measure D2b provides additional mitigation to bring the indoor CNEL level to 45 dBA.

MM D2b All single-and multi-family housing located within the 60 dBA CNEL contour shall be designed such that the indoor CNEL level shall not exceed 45 dBA. The designs for the housing shall be reviewed by a qualified acoustical engineer and the necessary noise control treatments incorporated into the design. All such units shall be provided with forced air ventilations systems so that windows may be kept closed at the discretion of the occupants for noise control. Additional noise control treatments could include sound-rated windows and doors. A report shall be prepared following the requirements of Title 24, part 2 of the California Administrative Code for all multi-family housing within the 60 CNEL contour distances. A similar report shall be provided for single-family housing to the City of Antioch.

MM NOI-2 The project shall include implementation of a minimum 8-foot-high soundwall (or soundwall/berm combination) along the property lines of all proposed residential lots adjoining Laurel Road. The project shall also include implementation of a minimum 10-foot-high soundwall (or soundwall/berm combination) along the eastern property lines of all proposed residential lots fronting the SR-4 Bypass, and then stepping down to meet the 8-foot-high soundwall for the lots adjoining Laurel Road.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Less than significant impact. Groundborne vibrations consist of rapidly fluctuating motions within the ground that have an average motion of zero. Vibrating objects in contact with the ground radiate vibration waves through various soil and rock strata to the foundations of nearby buildings.

In extreme cases, excessive groundborne vibration has the potential to cause structural damage to buildings. Common sources of groundborne vibration include construction activities such as blasting, pile driving, and operating heavy earthmoving equipment. Construction vibration impacts on building structures are generally assessed in terms of peak particle velocity (PPV). For purposes of this analysis, project related impacts are expressed in terms of PPV. Typical vibration source levels from construction equipment range from 0.001 to 0.210 PPV at a distance of 25 feet.

Of the variety of equipment used during construction, the vibratory rollers that are anticipated to be used in the site preparation phase of construction would produce the greatest groundborne vibration levels. Impact equipment such as pile drivers is not expected to be used during construction of this project. Large vibratory rollers produce groundborne vibration levels ranging up to 0.210 inches per second (in/sec) peak particle velocity (PPV) at 25 feet from the operating equipment.

The nearest off-site receptor to the proposed construction areas where heavy construction equipment would operate is residential land use west of the project on Glasgow Court. This receptor, shown as R-2 in Exhibit 8, is located approximately 85 feet from the nearest construction footprint where heavy construction equipment would potentially operate.

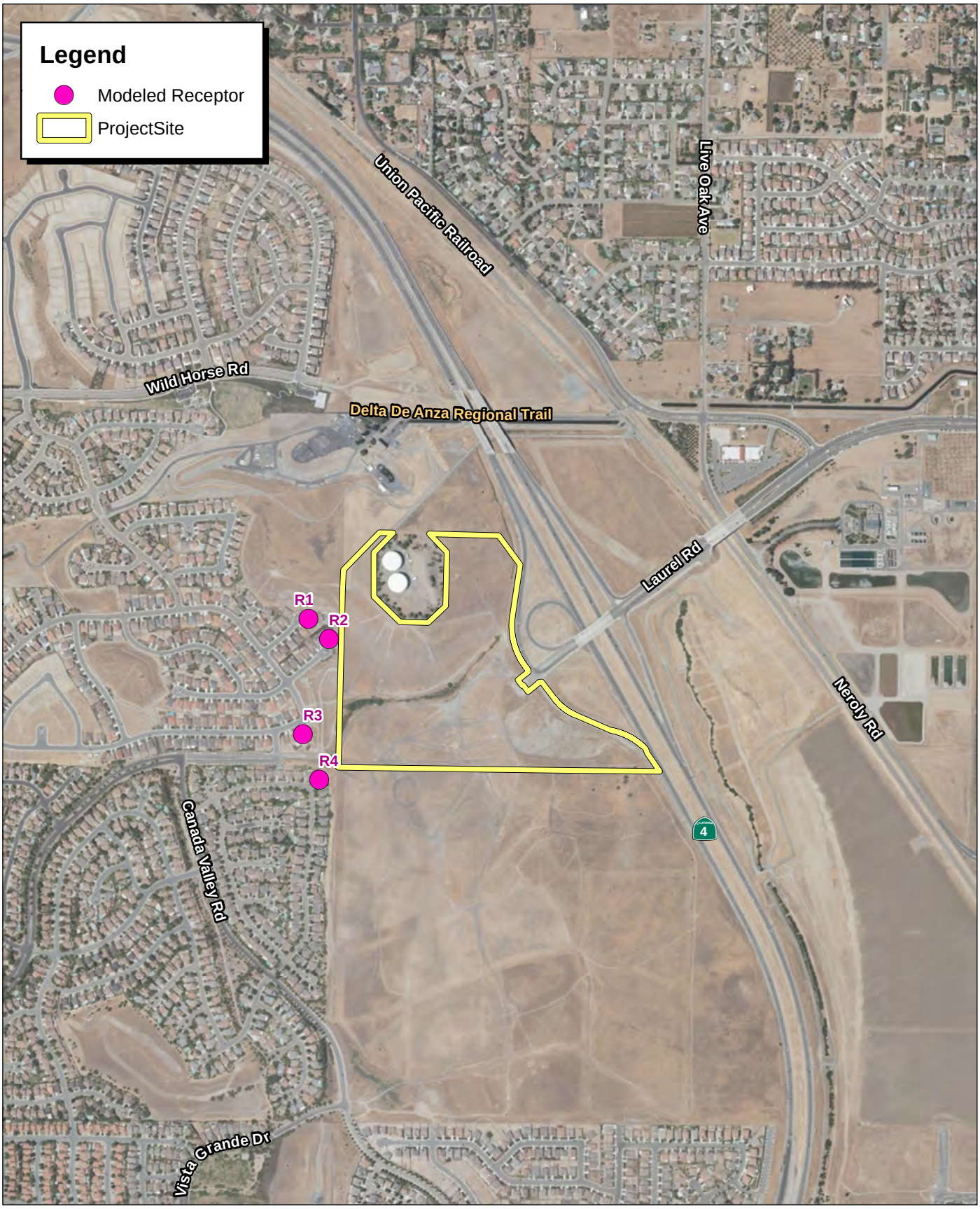
At this distance, groundborne vibration levels could range up to 0.033 PPV from operation of a large vibratory roller. This is below the industry standard vibration damage criteria of 0.2 PPV for residential non-engineered timber framed structures. Therefore, construction-related groundborne vibration impacts would be considered less than significant.

Upon completion of construction, the project would not include any permanent sources of groundborne vibrations. As such, implementation of the proposed project would not expose persons within the project vicinity to excessive groundborne vibration levels. Therefore, project-related groundborne vibration impacts would be considered less than significant.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Less than significant impact. According to the significance criteria of the City of Antioch, a significant impact would occur if the project would result in an audible (3.0 dBA) increase in noise in areas where General Plan noise objectives are already exceeded.

Primary new permanent noise sources associated with implementation of the project would be project related traffic and new stationary noise sources such as new mechanical ventilation systems.



Source: ESRI Imagery, 2014

FirstCarbon SOLUTIONS

1,000 500 0 1,000 Feet

Exhibit 8
Modeled Receptor Locations

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As discussed previously, implementation of the proposed project would generate slight increases in traffic noise levels along modeled roadway segments in the project vicinity compared with conditions existing without the project. The greatest increase would occur along the segment of Laurel Road from Hillcrest Avenue to Canada Valley Road. Under the existing plus nearby project plus project conditions, this roadway segment would experience an increase of up to 4 dBA compared with conditions existing without the project. However, existing traffic noise levels along this roadway are below the City's exterior noise level standard of 60 dBA CNEL for receiving single-family residential land uses. This is due to distance attenuation and noise reduction resulting from the existing soundwalls along residential property lines. No other modeled roadway segment would experience increases of 3 dBA or greater with implementation of the project.

Therefore, existing sensitive receptors in the project vicinity would not experience a substantial increase in traffic noise levels with implementation of the proposed project. Therefore, project-related traffic noise level increases would be considered less-than-significant, and impacts would remain the same or less than those identified in the 1996 Final EIR.

Noise levels from project-related stationary noise sources such as operation of new mechanical ventilation equipment could range up to 51 dBA L_{max} as measured at the nearest off-site sensitive receptor. These noise levels are below the City's exterior noise level standard of 60 dBA CNEL for receiving single-family residential land uses. These noise levels are below the measured maximum recorded ambient noise level at this location, ST-1, of 56.5 dBA L_{max}. Therefore, noise levels from new stationary noise sources would not result in a substantial permanent increase in ambient noise levels in the project vicinity compared with conditions existing without the project. Therefore, implementation of the project would result in a less than significant permanent increase in noise levels existing without the project, and impacts would remain the same or less than those identified in the 1996 Final EIR.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Less than significant impact with mitigation incorporated. Project-related construction activities could result in high intermittent noise levels at the closest noise sensitive land uses surrounding the project site. The modeled construction noise levels for each phase of construction are shown in Table 15. These noise levels would result in increases in daytime ambient noise levels above those existing without the project. However, restricting the permissible hours of construction activities, and by implementing the best management noise reduction techniques and practices outlined in Mitigation Measure NOI-1, would ensure that potential short-term construction noise impacts on sensitive receptors in the project vicinity would be reduced to less than significant, and impacts would remain the same or less than those identified in the 1996 Final EIR.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No impact. The nearest airport to the project site is Byron Municipal Airport, located 10.5 miles to the southeast. This distance precludes the possibility of the proposed project exposing persons residing or working in the project vicinity to excessive aviation noise. No impact would occur.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

No impact. There are no private airstrips in the project vicinity. This condition precludes the possibility of the proposed project exposing persons residing or working in the project vicinity to excessive aviation noise. No impact would occur.

Mitigation Measures

Mitigation Measures D2b from the 1996 Final EIR still applies.

The following new or refined mitigation measures are proposed as discussed in this section: Mitigation Measures NOI-1 and NOI-2.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
XIII. Population and Housing					
Would the project:					
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	NA	**No.** The proposed project does not involve changes that would result in new impacts associated with growth inducement.	**No.** There are no new circumstances that would result in new or more severe impacts associated with growth inducement.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of growth inducement.	None.
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?		**No.** The proposed project does not involve changes that would result in new impacts associated with displacement of housing.	**No.** There are no new circumstances that would result in new or more severe impacts associated with displacement of housing.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of displacement of housing.	
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?		**No.** The proposed project does not involve changes that would result in new impacts associated with displacement of persons.	**No.** There are no new circumstances that would result in new or more severe impacts associated with displacement of persons.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of displacement of persons.	

Discussion and Mitigation

The 1996 Final did not address the topic of Population and Housing. The following discussion provides analysis of the current proposal.

Would the project:

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Less than significant impact. The proposed project would develop 180 dwelling units. Using the City of Antioch's 2015 average household size estimate of 3.25 persons, the proposed project would add 585 persons to the City's population. This figure would represent less than 1 percent of the City's 2015 population estimate of 108,298. Moreover, the project site is within the Antioch city limits and has been contemplated to support urban development since the 1980s; therefore, the addition of the proposed project's residents to the City's population would represent planned growth, not growth inducement. Impacts would be less than significant.

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

No impact. There are no dwelling units on the project site. This condition precludes the possibility of displacement of housing. No impact would occur.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No impact. There are no dwelling units on the project site. This condition precludes the possibility of displacement of persons. No impact would occur.

Mitigation Measures

None.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
XIV. Public Services					
Would the project :					
a) Fire protection?	Less than significant after mitigation.	**No.** The proposed project does not involve changes that would result in new impacts on fire protection.	**No.** There are no new circumstances that would result in new or more severe impacts on fire protection.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of fire protection.	H1
b) Police protection?	NA	**No.** The proposed project does not involve changes that would result in new impacts on police protection.	**No.** There are no new circumstances that would result in new or more severe impacts on police protection.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of police protection.	None
c) Schools?	Less than significant after mitigation.	**No.** The proposed project does not involve changes that would result in new impacts on schools.	**No.** There are no new circumstances that would result in new or more severe impacts on schools.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of schools.	H3a, H3b, H3c and H3d
d) Parks?	NA	**No.** The proposed project does not involve changes that would result in new impacts on parks.	**No.** There are no new circumstances that would result in new or more severe impacts on parks.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of parks.	None.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
e) Other public facilities?	NA	**No.** The proposed project does not involve changes that would result in new impacts on other public facilities.	**No.** There are no new circumstances that would result in new or more severe impacts on other public facilities.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of other public facilities, and impacts would remain the same or less than those identified in the 1996 Final EIR.	None.

Discussion and Mitigation

Would the project 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 public services:

a) Fire protection?

Less than significant impact. The Contra Costa County Fire Protection District provides fire protection to the City of Antioch. Fire Station No. 88 is located 1.1 miles from the project site at 4288 Folsom Drive, Antioch. Using an average travel speed of 25 miles per hour, it would take a fire engine 2 minutes, 40 seconds to reach the project site. This would be within acceptable response times and, thus, no require new or expanded fire protection facilities. Moreover, the extension of Laurel Drive would be expected to improve emergency responses times by closing a gap in the regional roadway network. Impacts would be less than significant with implementation of MM H1, and impacts would remain the same or less than those identified in the 1996 Final EIR.

MM H1 Projects within the Specific Plan area shall pay CCCFD fees applicable at the time development proceeds. Incorporate CCCFD planning input into project design and approval to ensure that adequate provisions are made for access, water supply, and compliance with Fire Code requirements. Coordinate the timing of development in the Specific Plan area with CCCFD construction and staffing of the new station, in order to prevent excessive response times and the depletion of resources that serve existing development.

b) Police protection?

Less than significant impact. The 1996 EIR did not address police protection**.** The Antioch Police Department provides police protection to the City of Antioch. The proposed project is located adjacent to an established residential area that is routinely patrolled by police. Standard 3.5.3.1 in the Antioch General Plan requires the staffing ratio for the Antioch PD to be 1.20 to 1.50 officers per 1,000 residents. However, the current Antioch PD staffing ratio is approximately 1.0, which is unacceptable. Although the staffing for the Antioch PD is unacceptable, staffing is not identified as a physical environmental impact. The need to build additional law enforcement facilities, which could cause further environmental impacts is considered a physical environmental impact. The Antioch PD has a state-of-the-art, 67,000-square-foot police facility, located at 300 "L" Street, near the Marina. The police facility features an indoor firing range, weight training and exercise room, spacious locker rooms and a computer aided dispatch system. A new law enforcement facility is not needed to serve the needs of the proposed project's residents. Impacts would be less than significant.

c) Schools?

Less than significant impact after mitigation. The Antioch Unified School District provides K-12 education to the City of Antioch. Using a standard student generation rate of 0.5 student/dwelling unit, the proposed project would be expected to add 94 students to the School District. The proposed project would provide the school district with development fees in accordance with the latest adopted fee schedule at the time building permits are sought. Government Code Section 65995 prohibits a local agency from either denying approval of a land use project because of inadequate school facilities or imposing school impact mitigation measures other than designated fees. Therefore, payment of development fees to the School District as required by Mitigation Measure H3b would address the proposed project's impacts on schools and ensure that impacts are less than significant. Impacts would remain the same or less than those identified in the 1996 Final EIR.

MM H3a Accommodate increased enrollment by a variety of strategies, including provision of portable facilities, year-round education, double sessions and construction of new facilities.

MM H3b Require portions of FUA #2 that are within the AUSD to join the current Mello-Roos district or provide an alternate funding mechanism for construction of school facilities.

d) Parks?

Less than significant impact. The proposed project would include two parks: a 10,000-square-foot park containing a play structure, a lawn area, seating, and a 5,200-square-foot sitting park. The development of these park facilities is within the scope of the project and is evaluated in this Initial Study/Addendum. Impacts would be less than significant.

e) Other public facilities?

No impact. The proposed project does not involve the construction of new or expansion of existing other public facilities (libraries, community facilities, etc.). No impact would occur.

Mitigation Measures

Mitigation Measures H1, H3a, and H3b from the 1996 Final EIR still apply.

No new or refined mitigation measures are proposed.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
XV. Recreation					
Would the project:					
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	NA	**No.** The proposed project does not involve changes that would result in new impacts on deterioration of existing park lands.	**No.** There are no new circumstances that would result in new or more severe impacts on deterioration of existing park lands.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of deterioration of existing park lands.	None.
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	NA	**No.** The proposed project does not involve changes that would result in new impacts on new or expanded park facilities.	**No.** There are no new circumstances that would result in new or more severe impacts on new or expanded park facilities.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of new or expanded park facilities.	None.

Discussion and Mitigation

The 1996 Final EIR did not address potential impacts to Recreation. The following discussion provides additional analysis but does not change the conclusions of the 1996 Final EIR.

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Less than significant impact. The proposed project would include two parks: a 10,000-square-foot park containing a play structure, a lawn area, seating, and a 5,200-square-foot sitting park. Additionally, the project includes a trail connection to the Delta de Anza Regional Trail, providing residents with easy access to additional recreational opportunities. The development of residential uses on this site was envisioned in the buildout of the General Plan and was analyzed as part of the General Plan EIR. Accordingly, the project would not result in an adverse increase in the use of

existing recreational facilities such that their use would be substantially deteriorated. Impacts would be less than significant.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

Less than significant impact. The proposed project would include two parks: a 10,000-square-foot park containing a play structure, a lawn area, and seating, and a 5,200-square-foot sitting park. Additionally, the project includes a trail connection to the Delta de Anza Regional Trail. The development of these recreational facilities is within the scope of the project and is evaluated in this Initial Study/Addendum. Impacts would be less than significant.

Mitigation Measures

None.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
XVI. Transportation					
Would the project:					
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	Less than significant after mitigation.	**No.** The proposed project does not involve changes that would result in new impacts on measures of effectiveness of transportation.	**No.** There are no new circumstances that would result in new or more severe impacts on measures of effectiveness of transportation.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of measures of effectiveness of transportation.	B1a–B1c, B2a–B2c, B3, B4a–B4e, B5a–B5f, B6a–B6f, B7a–B7e, B8a–B8e, B9a–B9o, and B10
b) Conflict with an applicable congestion management program, including but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for the designated roads or highways?	Less than significant after mitigation.	**No.** The proposed project does not involve changes that would result in new impacts on congestion management program roadways.	**No.** There are no new circumstances that would result in new or more severe impacts on congestion management program roadways.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of congestion management program roadways.	B1a–B1c, B2a–B2c, B3, B4a–B4e, B5a–B5f, B6a–B6f, B7a–B7e, B8a–B8e, B9a–B9o, and B10
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety	N/A	**No.** The proposed project does not involve changes that would result in new impacts on air	**No.** There are no new circumstances that would result in new or more severe impacts on air	**No.** No new information has been disclosed pertaining to the proposed project that would require	None.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
risks?		traffic patterns.	traffic patterns.	additional analysis of air traffic patterns.	
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	N/A	**No.** The proposed project does not involve changes that would result in new impacts on hazards due to a design feature.	**No.** There are no new circumstances that would result in new or more severe impacts on hazards due to a design feature.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of hazards due to a design feature.	None
e) Result in inadequate emergency access?	Less than significant after mitigation.	**No.** The proposed project does not involve changes that would result in new impacts on emergency access.	**No.** There are no new circumstances that would result in new or more severe impacts on emergency access.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of emergency access.	B16
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.	Less than significant after mitigation.	**No.** The proposed project does not involve changes that would result in new impacts on public transit, bicycle, or pedestrian facilities.	**No.** There are no new circumstances that would result in new or more severe impacts on public transit, bicycle, or pedestrian facilities.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of public transit, bicycle, or pedestrian facilities.	B13, B14, and B19

Discussion and Mitigation

Evaluation of the potential impacts of the currently proposed project is based on the Traffic Impact Analysis for Laurel Ranch, prepared by W-Trans, a traffic engineering and transportation planning consultant. The Traffic Impact Analysis is attached in Appendix C.

Would the project:

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Less than significant impact after mitigation. The 1996 Final EIR did not specifically assess the potential for the project to conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system. The 1996 Final EIR provided an evaluation of off-site impacts on traffic operation and capacity at different horizon years and a review of on-site circulation issues, which include internal access and circulation, traffic operations and capacity, roadway standards, pedestrian and bicycle circulation, emergency vehicle access and service deliveries, parking, construction impacts and transit. Future traffic operating conditions on study roadways and intersections were evaluated by comparing existing level of service (LOS) results with future LOS results. Aspects of the proposed project concerning access, internal circulation, sight distance, emergency vehicle access, parking, intersection and roadway standards, pedestrian and bicycle circulation and impacts due to construction were evaluated on the basis of commonly accepted traffic engineering standards. Trip generation of the project was calculated using the trip generation equations embedded in the East County Model. The model estimates the amount of different types of travel expected to come from different land uses on a daily basis.

The 1996 Final EIR found that the addition of project traffic would worsen deficient conditions at certain intersections, that the project would deteriorate LOS to unacceptable in certain locations, the new intersection of Sunset Drive Wild/Horse Drive would operate at unacceptable conditions with project traffic, and the project would require a number of intersections to warrant signals. The 1996 Final EIR included several mitigation measures to reduce impacts to a less than significant level (Mitigation Measures B1a–B1c, B2a–B2c, B3, B4a–B4e, B5a–B5f, B6a–B6f, B7a–B7e, B8a–B8e, B9a–B9o, and B10.)

The currently proposed project is smaller in scale than the 1996 project, and, therefore, traffic impacts will be less. The currently proposed project would develop 180 single-family dwelling units on the project site, which is significantly less development than was planned and assessed for this site in the 1996 Final EIR. Table 17 summarizes the trip generation associated with the project. As shown in the table, the proposed project would generate 1,780 daily trips, 140 AM peak-hour trips, and 187 PM peak-hour trips. (Note: the traffic analysis was conducted using an earlier figure of 187 units so presents a more conservative analysis.)

Table 17: Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Proposed											
Single Family Detached Housing	187 du	9.52	1,780	0.75	140	35	105	1.00	187	118	69
Note: du = dwelling unit											

Intersection Operations

Intersection operations were evaluated based on the significance threshold established by the jurisdiction in which they are located or the agency that maintains them. The study area is located in the City of Antioch in Contra Costa County. The East County Regional Transportation Planning Committee, under the Contra Cost Transportation Planning Authority and in conjunction with local agencies, developed the Draft East County Action Plan for Routes of Regional Significance, which establishes objectives for arterial routes. Local agencies, such as the City of Antioch, have adopted the plan and resulting objectives.

In the study area, if one or more legs of the study intersection are ramps for SR-4, the intersection is maintained by Caltrans; otherwise, the intersection falls under the jurisdiction of the City of Antioch. For the intersection of Lone Tree Way/Empire Avenue, the jurisdiction is both the City of Antioch and the City of Brentwood. The Caltrans recommended target LOS is the transition from LOS C to D. The cities of Antioch and Brentwood have the recommended objective target of LOS D.

W-Trans evaluated the proposed project's impacts on intersection operations. Table 18 summarizes Existing (without project) Conditions and Existing Plus Project intersection operations. Note that the Existing Plus Project scenario accounts for the planned extension of Laurel Road from the SR-4 interchange to its current terminus west of the project site, while the Existing Conditions scenario does not. As shown in the table, all intersections would operate at acceptable LOS. Therefore, impacts would be less than significant, and would remain the same or less than those identified in the 1996 Final EIR.

Table 18: Existing and Existing Plus Project Intersection Operations

Study Intersection *Approach*	Existing Conditions				Existing plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. SR-4 WB Ramps/Hillcrest Ave	7.7	A	8.0	B	7.7	A	8.0	B
2. SR-4 EB Ramps/Hillcrest Ave	26.5	C	25.5	C	26.6	C	25.5	C
3. Hillcrest Rd/Laurel Rd	10.4	B	8.5	A	13.7	B	12.9	A

Table 18 (cont.): Existing and Existing Plus Project Intersection Operations

Study Intersection *Approach*	Existing Conditions				Existing plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
4. Laurel Rd/Canada Valley Rd	—	—	—	—	9.1	A	8.0	A
5. SR-4 EB Ramps/Laurel Rd	1.4	A	1.0	A	7.8	A	14.4	B
6. SR-4 WB Ramps/Laurel Rd	9.5	A	15.4	B	21.0	C	30.9	C
7. SR-4 EB Ramps/Lone Tree Way	14.7	B	16.3	B	14.7	B	16.3	B
8. SR-4 WB Ramps/Lone Tree Way	8.2	A	10.8	B	8.3	A	10.9	B
9. Lone Tree Way/Empire Ave	15.2	B	18.8	B	15.3	B	18.9	B
10. Laurel Rd/Country Hills Dr	—	—	—	—	4.5	A	4.7	A

Notes:
Delay is measured in average seconds per vehicle
LOS = Level of Service

Table 19 summarizes Existing Plus Park Ridge Phase 1 (without project) Conditions (where "Park Ridge Phase 1" refers to the completed Phase 1, of seven phases of the Park Ridge Project) and Existing Plus Nearby Project Plus Project intersection operations. Note that the Existing Plus Nearby Project Plus Project scenario accounts for the planned extension of Laurel Road from the SR-4 interchange to its current terminus west of the project site, as both D Lane and Country Hills Drive—the two access roads into the Laurel Ranch project site—are located along this extension. The Existing Plus Nearby Project scenario would not require this segment of road to be built because access to Phase 1 of the Park Ridge Project is primarily located from Canada Valley Road. Phase 7, the last phase of the Park Ridge project, would primarily be accessed through the Laurel Road extension. As shown in the table, all intersections would operate at acceptable LOS. Therefore, impacts would be less than significant, and would remain the same or less than those identified in the 1996 Final EIR.

Table 19: Existing Plus Park Ridge Phase 1 and Existing Plus Park Ridge Phase 1 Plus Project Intersection Operations

Study Intersection *Approach*	Existing Plus Nearby Project Conditions				Existing Plus Nearby Project Plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. SR-4 WB Ramps/Hillcrest Ave	7.7	A	8.0	B	7.7	A	8.0	B
2. SR-4 EB Ramps/Hillcrest Ave	26.6	C	25.5	C	26.6	C	25.9	C
3. Hillcrest Rd/Laurel Rd	10.4	B	8.5	A	13.8	B	12.9	A

Table 19 (cont.): Existing Plus Nearby Project and Existing Plus Nearby Project Plus Project Intersection Operations

Study Intersection *Approach*	Existing Plus Nearby Project Conditions				Existing Plus Nearby Project Plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
4. Laurel Rd/Canada Valley Rd	—	—	—	—	9.6	A	9.0	A
5. SR-4 EB Ramps/Laurel Rd	1.4	A	1.0	A	8.0	A	15.3	B
6. SR-4 WB Ramps/Laurel Rd	9.5	A	15.4	B	22.3	A	32.7	C
7. SR-4 EB Ramps/Lone Tree Way	15.1	B	22.6	B	14.7	B	16.3	B
8. SR-4 WB Ramps/Lone Tree Way	8.3	A	11.1	B	8.3	A	10.9	B
9. Lone Tree Way/Empire Ave	16.0	B	19.6	B	15.7	B	19.0	B
10. Laurel Rd/Country Hills Dr	—	—	—	—	4.5	A	4.7	A

Notes:
Delay is measured in average seconds per vehicle
LOS = Level of Service

Table 20 summarizes Cumulative (without project) Conditions and Cumulative Plus Project intersection operations. The Cumulative Conditions represent the projected traffic conditions in the year 2040. This includes the completion of all seven phases of the Park Ridge project as well as the completion of any proposed roadway infrastructure improvements in the study area. Note that both scenarios account for the planned extension of Laurel Road from the SR-4 interchange to its current terminus west of the project site. While the intersections of SR-4 Eastbound Ramps/Hillcrest Avenue and SR-4 Eastbound Ramps/Lone Tree Way would still operate below the desired Caltrans threshold, the intersections would continue to operate acceptably, based on the East County Action Plan. Therefore, impacts would be less than significant, and would remain the same or less than those identified in the 1996 Final EIR.

Table 20: Cumulative and Cumulative Plus Project Intersection Operation

Study Intersection *Approach*	Cumulative Conditions				Cumulative plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. SR-4 WB Ramps/Hillcrest Ave	—	—	—	—	—	—	—	—
2. SR-4 EB Ramps/Hillcrest Ave	13.9	B	**51.0**	**D**	13.9	B	**51.0**	**D**
3. Hillcrest Rd/Laurel Rd	**68.8**	**E**	**107.3**	**F**	**71.6**	**E**	**108.9**	**F**
4. Laurel Rd/Canada Valley Rd	19.6	B	43.7	D	19.9	B	45.4	D

Table 20 (cont.): Cumulative and Cumulative Plus Project Intersection Operation

Study Intersection *Approach*	Cumulative Conditions				Cumulative plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
5. SR-4 EB Ramps/Laurel Rd	17.4	B	25.4	C	18.8	B	30.3	C
6. SR-4 WB Ramps/Laurel Rd	15.8	B	21.4	C	17.3	B	23.0	C
7. SR-4 EB Ramps/Lone Tree Way	30.2	C	**49.7**	**D**	30.3	C	**49.7**	**D**
8. SR-4 WB Ramps/Lone Tree Way	13.4	B	21.2	C	13.4	B	21.3	C
9. Lone Tree Way/Empire Ave	18.6	B	27.4	C	18.6	B	27.5	C
10. Laurel Rd/Country Hills Dr	20.3	C	13.9	B	37.6	D	23.2	C
11. Laurel Rd/Slatten Ranch Rd	30.6	C	**55.9**	**E**	30.9	C	**57.0**	**E**

Notes:
Delay is measured in average seconds per vehicle
LOS = Level of Service; **Bold** text = deficient operation

Queuing

Queuing analysis was performed for the project driveways in order to determine adequacy of turning pocket lengths in reference to projected queue lengths. Analysis for the project driveways were performed under the Cumulative and Cumulative plus project scenarios. As noted in the site plan, there are two project driveways, one is the study signalized intersection of Country Hills Drive/Laurel Road and the second is Laurel Road/D Lane, a side street stop-controlled intersection with only right-in and right-out access, due to the median on Laurel Road.

Under the Cumulative Scenarios, the projected 95th percentile queues in left-turn pockets at the study intersection and the queue at the unsignalized intersection of Laurel Road/D Lane were determined using the SIMTRAFFIC application of Synchro, and averaging the projected 95th percentile queue for each of five runs. The 95th percentile queue represents the peak of the peak, or queues that only have a 5 percent chance of being exceeded. The estimated available storage lengths for the intersections are all approximations based on the site plan for the project. Summarized in Table 11 of the Traffic Impact Analysis (Appendix C) are the predicted queue lengths for approaches to intersections where queues are expected to exceed the existing available storage capacity. The results of the 95th percentile queuing analysis indicate that the estimated available storage lengths, as proposed, would be adequate to accommodate future volumes in addition to proposed Laurel Ranch and Park Ridge project traffic volumes. Impacts would be less than significant.

Alternative Access 2

As part of the Davidon Homes (Park Ridge Subdivision) Addendum to the Project Level EIR, the intersection of D Lane-Treeline Way/Laurel Road had no turning movement restrictions and was analyzed with stop-controlled side streets. Based on the significance criterion for unsignalized

intersections, it did not meet this signal warrant and as such would not result in a significant impact. It was determined that if the intersection were to be signalized, it would operate at an acceptable LOS.

An alternative access was analyzed in which the Laurel Road median would be designed to allow westbound left turns into the Park Ridge project directly to the south of D Lane. The queuing analysis, shown in Table 21 for the proposed left-turn pocket indicated that there would be sufficient length to accommodate the projected queues from the Park Ridge Project.

Table 21: Queuing Summary

Intersection *Approach*	Estimated Available Storage	95th Percent Queues			
		AM Peak Hour		PM Peak Hour	
		C	C+P	C	C+P
Laurel Rd/D Lane					
WB Left-Turn	200*	36	52	75	68

Notes:
95th Percent Queue based on the calculated potential from five averaged SIMTRAFFIC runs
* = Estimates of storage length based on potential space according to site plan, measured in feet
C = Cumulative Conditions; C+P = Future plus Project Conditions

According to the queuing calculations, there would be adequate space in the proposed Laurel Road median to incorporate a left-turn pocket at the intersection of Laurel Road and D Lane (Treeline Way). (While the median can accommodate a storage length of approximately 200 feet, the queuing calculations indicate that the storage length could be shorter, if desired). Impacts would be less than significant from queuing at either the study intersections or the alternative design of the intersection of Laurel Road and D Lane (Treeline Way), and impacts would remain the same or less than those identified in the 1996 Final EIR.

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Less than significant impact after mitigation. As noted previously, the 1996 Final EIR included several transportation-related mitigation measures to reduce impacts to a less than significant level (Mitigation Measures B1a–B1c, B2a–B2c, B3, B4a–B4e, B5a–B5f, B6a–B6f, B7a–B7e, B8a–B8e, B9a–B9o, and B10.)

The currently proposed project is smaller in scale than the project assessed in the 1996 Final EIR, and, therefore, impacts will be lessened. According to the East County Action Plan, one of the Multimodal Transportation Service Objectives is delay index for all freeway segments in East County. However, following the CCTA Final Technical Procedures (2013), the threshold for analysis of freeway Multimodal Transportation Service Objectives would not be satisfied. As stated, "when the proposed project adds more than 50 net new peak-hour vehicle trips to a freeway ramp, then the impact of the project on freeway Multimodal Transportation Service Objectives should be

evaluated." Therefore, because the proposed project would not add more than 50 net new peak-hour trips to any one of the ten freeway ramps from the five study intersections under the Cumulative scenario, the freeway Multimodal Transportation Service Objectives were not required to be analyzed and impacts would be consider *de minimis*. Impacts would be less than significant, and would remain the same or less than those identified in the 1996 Final EIR.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No impact. The 1996 Final EIR did not assess impacts resulting in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

The nearest airport to the project site is Byron Municipal Airport, located 10.5 miles to the southeast. This distance precludes the possibility of the proposed project changing air traffic patterns at Byron Municipal Airport. No impact would occur.

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less than significant impact. The 1996 Final EIR did not specifically assess whether the project would substantially increase hazards due to a design feature or incompatible uses**.** The currently proposed project is much smaller than the 1996 project, and, therefore, impacts will be less. The project includes the extension of Laurel Road from the SR-4 interchange to its current terminus west of the project site. The Laurel Road extension would provide a roadway section ranging from 104 to 112 feet in width with a center median and two through lanes in each direction. Left-turn lanes would be provided at the two new intersections on this segment to separate left turning movements from through movements. In addition, the two new intersections would consolidate and align the residential access points at these locations, thereby avoiding creating potentially unsafe configurations involving offset or closely spaced access points into each residential development. As such, the proposed project would not increase roadway safety hazards associated with design features or incompatible uses. Impacts would be less than significant.

e) Result in inadequate emergency access?

Less than significant impact. The 1996 Final EIR identified that site planning for the Specific Plan area needs to provide for emergency vehicle access and service delivery facilities. Specific project layout and circulation planning had not yet reached a stage at which compliance with City of Antioch public works and fire standards could be verified. The EIR noted that unless adequately addressed in subsequent plans, this would be a significant impact.

The currently proposed project includes the extension of Laurel Road from the SR-4 interchange to its current terminus west of the project site that would close a gap in the regional roadway network. This would serve to improve emergency access in the project vicinity. Additionally, all internal roadways would comply with the latest adopted edition of California Fire Code. Therefore, the

proposed project would provide adequate emergency access. Impacts would be less than significant.

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

Less than significant impact after mitigation. For the 1996 Final EIR, pedestrian or bicycle paths had not yet been specified for the project, but incorporation of the Mitigation B13 and B14 has resulted in adequate bike and pedestrian connections.

Tri-Delta Transit Route 380 currently stops on Laurel Road west of the project site. The extension of Laurel Road to SR-4 would be expected to result in the introduction of bus service on this segment of the road in the future. Additionally sidewalks would be installed along Laurel Road and along the internal streets. Finally, a trail connection between the project and the Delta de Anza Regional Trail would be provided. In summary, the proposed project would be accessible to public transit, bicycles, and pedestrians. Impacts would be less than significant.

Mitigation Measures

Mitigation Measures B1a–B1c, B2a–B2c, B3, B4a–B4e, B5a–B5f, B6a–B6f, B7a–B7e, B8a–B8e, B9a–B9o, and B10 from the 1996 Final EIR still apply.

No new or refined mitigation measures are proposed.

Mitigation Measures B1a–B1c The following intersection improvements would be needed to mitigate deficient conditions to an acceptable level:

- B1a—Lone Tree Way/James Donlon Blvd.
  - Add 2nd eastbound right-tum lane or channelized “free-right” and 2nd northbound left-tum lane.
- B1b—Lone Tree Way/Fairview Ave.
  - Will operate at acceptable conditions with planned year 2010 widenings.
- B1c—Lone Tree Way/Dallas Ranch Rd.
  - Add exclusive eastbound right-tum lane.

Mitigation Measures B2a–B2c The following intersection improvements would be needed to mitigate deficient conditions to an acceptable level:

- B2a—SR4 eastbound ramps/Lone Tree Way
  - Add 2nd eastbound right-turn lane or channelized “free-right.”
- B2b—Sunset Drive/Laurel Rd.
  - Add 2nd southbound left-turn lane.
- B2c—Deer Valley Rd./Lone Tree Way
  - Add exclusive eastbound right-tum lane.

Mitigation Measure B3 This intersection will operate-at acceptable conditions with planned 2010 widenings.

- Sunset Drive/Wild Horse Drive

Mitigation Measures B4a–B4e Signalize intersections:

- Deer Valley Rd./Balfour Rd.
- Sand Creek Rd./Lone Tree Way
- Fairview Ave./Sand Creek Rd.
- O'Hara Ave./Lone Tree Way
- Empire Ave./Lone Tree Way

Mitigation Measures B5a–B5f Signalize intersections:

- Sunset Drive/Lone Tree Way
- Empire Ave./Laurel Rd.
- Canada Valley Rd./Lone Tree Way
- Sunset Dr./Laurel Rd.
- Sunset Dr./Wild Horse Drive
- Lone Tree Way/Regional Commercial
- Use Driveway

Mitigation Measures B6a–B6f The following intersection improvements would mitigate deficient conditions to an acceptable level:

- B6a SR 4 westbound ramps/Lone Tree Way
  - Add 2nd northbound left-turn lane
- B6b SR 4 westbound ramps/Hillcrest Ave.
  - Add 2nd northbound left-turn lane
- B6c SR 4 eastbound ramps/Hillcrest Ave.
  - Channelized "Free-Right" and exclusive northbound right-turn lane
- B6d Lone Tree Way/James Donlon Blvd.
  - Add exclusive eastbound right-turn lane and 2nd northbound left-turn lane
- B6e Dallas Ranch Road/Lone Tree Way
  - Add exclusive eastbound right-turn lane and 2nd northbound left-turn lane
- B6f Hillcrest Ave./Lone Tree Way
  - Add exclusive southbound and westbound right-turn lanes

Mitigation Measures B7a–B7e The following intersection improvements would be needed to mitigate deficient conditions to an acceptable level:

- B7a Deer Valley Rd./New Sand Creek Rd
  - Add exclusive southbound right-turn lane and 2nd eastbound left-turn lane
- B7b Deer Valley Rd./Lone Tree Way
  - Add exclusive eastbound and northbound right-turn lanes
- B7c Dallas Ranch Rd./New Sand Creek Rd.
  - Add 2nd southbound left-turn lane
- B7d Hillcrest Ave./Laurel Ave
  - Add exclusive eastbound right turn lane
- B7e Dallas Ranch Rd./Lone Tree Way
  - See Mitigation Measure B6

Mitigation Measures B8a–B8e Signalize intersections

- Lone Tree Way/Sand Creek Rd.
- Empire Ave./Laurel Rd.
- O'Hara Ave./Lone Tree Way
- Sunset Drive/Laurel Rd.
- Dallas Ranch Rd./Lone Tree Way

Mitigation Measures B9a-B9o Signalize intersections

- Deer Valley Rd./New Rd.
- Sunset Drive/Lone Tree Way
- Canada Valley Rd./Lone Tree Way
- Dallas Ranch Rd./New Sand Creek Rd.
- Hillcrest Ave./New Sand Creek Rd.
- New Sand Creek Rd./Kaiser Driveway
- New Sand Creek Rd./Zone 451 Residential Access
- New Sand Creek Rd./South Dallas Ranch Rd.
- New Sand Creek Rd./Zone 453 Residential Access
- Dallas Ranch Rd./Zone 434 Residential Access
- Deer Valley Rd./Kaiser Access
- Deer Valley Rd./Zones 434/455 Residential Access
- Hillcrest Ave./Zones 21:59/460 Residential Access
- Lone Tree Way/Regional Commercial Driveway
- Lone Tree Way/Regional Commercial Driveway

MM B10 Address in subsequent plans. (Access to on-site commercial and employment areas has not yet been developed.)

MM B11, B12, B13	Intersections, roadways, sidewalks and bike lanes will be designed in subsequent plans to meet City standards.
MM B14	Address in subsequent plans. (Provision for bicycle parking, showers in employment centers and other facilities to encourage bicycle use, and bicycle connections to adjacent development are not yet specified for the project.)
MM B15, B16, B17	Address in subsequent plans. (School pedestrian access, emergency vehicle access and parking are not yet specified for the project.)
MM B18	Develop a detailed construction traffic plan.
MM B19	There are two factors that will improve the transit accessibility of the project: (1) The project should be designed to allow for ready access to arterial and collector streets by pedestrians. This means that cul-de-sacs that back onto arterial and collector streets should have a pedestrian/bicycle link between the cul-de-sac and the main road. (2) Bus turnouts and passenger shelters should be provided on major Streets to accommodate future transit service. Transit routes will need to be addressed in subsequent plans.
MM B20	Implement incentives for employment bearing land uses to help assure that employment in FUA #2 will be established in the same general time frame as housing.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
XVII. Utilities and Service Systems					
Would the project:					
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	NA	**No.** The proposed project does not involve changes that would result in new impacts on wastewater treatment requirements.	**No.** There are no new circumstances that would result in new or more severe impacts on wastewater treatment requirements.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of wastewater treatment requirements.	None.
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	NA	**No.** The proposed project does not involve changes that would result in new impacts associated with new water or wastewater treatment facilities.	**No.** There are no new circumstances that would result in new or more severe impacts associated with new water or wastewater treatment facilities.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of new water or wastewater treatment facilities.	None.
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	NA	**No.** The proposed project does not involve changes that would result in new impacts on stormwater drainage facilities.	**No.** There are no new circumstances that would result in new or more severe impacts on stormwater drainage facilities.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of stormwater drainage facilities.	None.
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded	NA	**No.** The proposed project does not involve changes that would result in new impacts on	**No.** There are no new circumstances that would result in new or more severe impacts on	**No.** No new information has been disclosed pertaining to the proposed project that would require	None.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
entitlements needed?		water supply.	water supply.	additional analysis of water supply.	
e) Result in inadequate wastewater treatment capacity to serve the project's projected demand in addition to the provider's existing commitments?	NA	**No.** The proposed project does not involve changes that would result in new impacts on wastewater treatment capacity.	**No.** There are no new circumstances that would result in new or more severe impacts on wastewater treatment capacity.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of wastewater treatment capacity.	None.
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	NA	**No.** The proposed project does not involve changes that would result in new impacts on landfill capacity.	**No.** There are no new circumstances that would result in new or more severe impacts on landfill capacity.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of landfill capacity.	None.
g) Comply with federal, state, and local statutes and regulations related to solid waste?	NA	**No.** The proposed project does not involve changes that would result in new impacts on statutes and regulations related to solid waste.	**No.** There are no new circumstances that would result in new or more severe impacts on statutes and regulations related to solid waste.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of statutes and regulations related to solid waste.	None.

Discussion and Mitigation

The 1996 Final EIR did not evaluate the provision of utilities and service systems using the current Environmental Checklist. The following discussion is provided to expand upon those topics but does

not change the 1996 Final EIR's conclusion that there would be no significant impact to utilities and service systems after mitigation.

Would the project:

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Less than significant impact. Delta Diablo Sanitation District provides wastewater treatment to the City of Antioch, City of Pittsburg, and the unincorporated community of Bay Point. The Delta Diablo wastewater treatment plant has a treatment capacity of 16.5 million gallons per day and is in compliance with all applicable water quality permits. The proposed project would demand 108,225 gallons of potable water per day, with indoor water use representing an estimated 40 percent of this figure (45,000 gallons). If it were assumed that all 45,000 gallons represented the amount of effluent generated by the proposed project, it would represent less than 1 percent of the treatment capacity at the plant. Impacts would be less than significant.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No impact. The proposed project would be served with potable water provided by the City of Antioch and wastewater treatment provided by Delta Diablo Sanitation District. Both agencies have sufficient treatment capacity to serve the proposed project and, therefore, new or expanded facilities are not required. No impact would occur.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less than significant impact. The proposed project would install an on-site stormwater collection system consisting of catch basins, inlets, underground piping, and stormwater basins. The system would be designed to detain runoff during a stormwater event and regulate the discharge of runoff into the municipal storm drainage system at a rate less than the pre-development condition of the site. This would ensure that runoff leaving the project site would not inundate downstream drainage facilities. Thus, no new or expanded storm drainage facilities would be required to serve the proposed project. Impacts would be less than significant.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Less than significant impact. The City of Antioch provides potable water service to businesses and residents in the city limits. The City's 2010 Urban Water Management Plan projected that the City's water supplies would total 31,062 acre-feet in 2015. Using the Urban Water Management Plan per capita water use rate of 185 gallons per day, the proposed project's 585 residents would demand 108,225 gallons per day or 127 acre-feet annually. This latter figure represents less than 1 percent of the City's 2015 water supply total. Impacts would be less than significant.

e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Less than significant impact. The Delta Diablo wastewater treatment plant has a treatment capacity of 16.5 million gallons per day and is in compliance with all applicable water quality permits. The proposed project would demand 108,225 gallons of potable water per day, with indoor water use representing an estimated 40 percent of this figure (45,000 gallons). If it were assumed that all 45,000 gallons of indoor use represented the amount of effluent generated by the proposed project, it would represent less than 1 percent of the treatment capacity at the plant. Impacts would be less than significant.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Less than significant impact. Solid waste from Antioch is disposed of at various landfills in the region including Altamont Sanitary Landfill, Vasco Road Landfill, and Keller Canyon Landfill. Collectively, these facilities have more than 117 million cubic yards of remaining capacity. Using a waste generation rate of 2.55 cubic yards/dwelling unit/year, the proposed project would generate 405 cubic yards of solid waste annually. This would represent less than 0.01 percent of the remaining capacity at the three landfills. Impacts would be less than significant.

g) Comply with federal, state, and local statutes and regulations related to solid waste?

Less than significant impact. The proposed project's residential uses would be served with curbside solid waste, green waste, and recycling services provided by Republic Services. As such, the proposed project would comply with state objectives concerning waste diversion. Impacts would be less than significant.

Mitigation Measures

None.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
XVIII. Mandatory Findings of Significance					
Would the project:					
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?		**No.** The proposed project does not involve changes that would result in new impacts associated with degrading the quality of the environment, substantially reducing the habitat of a fish or wildlife species, causing a fish or wildlife population to drop below self-sustaining levels, threatening to eliminate a plant or animal community, reducing the number or restrict the range of a rare or endangered plant or animal, or eliminating important examples of the major periods of California history or prehistory.	**No.** There are no new circumstances that would result in new or more severe impacts associated degrading the quality of the environment, substantially reducing the habitat of a fish or wildlife species, causing a fish or wildlife population to drop below self-sustaining levels, threatening to eliminate a plant or animal community, reducing the number or restrict the range of a rare or endangered plant or animal, or eliminating important examples of the major periods of California history or prehistory.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of degrading the quality of the environment, substantially reducing the habitat of a fish or wildlife species, causing a fish or wildlife population to drop below self-sustaining levels, threatening to eliminate a plant or animal community, reducing the number or restrict the range of a rare or endangered plant or animal, or eliminating important examples of the major periods of California history or prehistory.	
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively		**No.** The proposed project does not involve changes that would result in	**No.** There are no new circumstances that would result in new or more severe	**No.** No new information has been disclosed pertaining to the proposed project that	

Environmental Issue Area	Conclusion in 1996 EIR	Do the Proposed Changes Involve New Impacts?	New Circumstances Involving New Impacts?	New Information Requiring New Analysis or Verification?	1996 EIR Mitigation Measures
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.)		new impacts associated with cumulatively considerable impacts.	impacts associated with cumulatively considerable impacts	would require additional analysis of cumulatively considerable impacts	
c) Does the project have environmental effects which will cause substantial adverse effects on human beings?		**No.** The proposed project does not involve changes that would result in new impacts associated with environmental effects that will cause substantial adverse effects on human beings.	**No.** There are no new circumstances that would result in new or more severe impacts associated with environmental effects that will cause substantial adverse effects on human beings.	**No.** No new information has been disclosed pertaining to the proposed project that would require additional analysis of environmental effects that will cause substantial adverse effects on human beings.	

Discussion and Mitigation

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?

Less than significant impact with mitigation. The proposed project may result in several impacts associated with biological resources and cultural resources that would be significant if left unmitigated. Mitigation Measures BIO-1 through BIO-8 plus Mitigation Measures J1, J2, and K1b above would fully mitigate all potential impacts to levels of less than significant. With the implementation of these mitigation measures, the proposed project would have less than significant impacts.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

Less than significant impact. All cumulative impacts related to air quality, noise, and traffic are either less than significant after mitigation or less than significant and do not require mitigation. Given the size of the project and its impacts and mitigation measures, the incremental effects of this project are not considerable relative to the effects of past, current, and probably future projects. As discussed previously, the project does not have a significant cumulative traffic impact. Therefore, the proposed project would not result in cumulatively considerable impacts on these areas. Impacts would be less than significant.

c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?

Less than significant impact. All impacts identified in this Initial Study/Addendum are either less than significant after mitigation, or less than significant and do not require mitigation. Therefore, the proposed project would not result in environmental effects that cause substantial adverse effects on human beings either directly or indirectly. Impacts would be less than significant.

Mitigation Measures

None.

Conclusion

The conclusions from the 1996 Final EIR remain unchanged when considering the development of the proposed project.

SECTION 4: REFERENCES

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SECTION 5: LIST OF PREPARERS

5.1 - Lead Consultant

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Project Director ..... Mary Bean
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5.2 - Technical Subconsultant

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Appendix A:
Air Quality Analysis Data

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A.1 - CalEEMod Output

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Laurel Ranch Construction Run

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	5.40	Acre	5.40	0.00	0
Other Non-Asphalt Surfaces	10.10	Acre	10.10	0.00	0
City Park	0.35	Acre	0.35	0.00	0
Single Family Housing	187.00	Dwelling Unit	38.15	336,600.00	535

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	2			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - based on PD

Construction Phase - Per client, construction would begin April 2018 and would be operational approximately February 2018

Off-road Equipment - Updated construction equipment amount based off updated phasing

Construction Off-road Equipment Mitigation - Application of BAAQMD Table 8-1 Construction Mitigation measures
Use of Tier IV equipment for equipment >50hp

Architectural Coating - VOC content limit of 50 g/l

Table Name	Column Name	Default Value	New Value

tblArchitecturalCoating	EF_Residential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	50.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	14.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	24.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	1,110.00	240.00
tblConstructionPhase	NumDays	110.00	120.00
tblConstructionPhase	NumDays	75.00	20.00
tblConstructionPhase	NumDays	40.00	20.00

tblGrading	AcresOfGrading	262.50	275.00
tblLandUse	LandUseSquareFeet	235,224.00	0.00
tblLandUse	LandUseSquareFeet	439,956.00	0.00
tblLandUse	LandUseSquareFeet	15,246.00	0.00
tblLandUse	LotAcreage	60.71	38.15
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	14.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	14.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblProjectCharacteristics	OperationalYear	2014	2017

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.8507	8.3599	5.7854	7.5700e-003	0.8563	0.4752	1.3315	0.3970	0.4415	0.8385	0.0000	695.1035	695.1035	0.1854	0.0000	698.9960
2017	2.1723	12.3048	8.9954	0.0136	0.0783	0.8158	0.8941	0.0211	0.7651	0.7861	0.0000	1,205.6168	1,205.6168	0.2819	0.0000	1,211.5359
2018	0.3410	0.0248	0.0290	5.0000e-005	1.4200e-003	1.8200e-003	3.2400e-003	3.8000e-004	1.8200e-003	2.1900e-003	0.0000	4.2517	4.2517	3.5000e-004	0.0000	4.2591
Total	**3.3640**	**20.6894**	**14.8097**	**0.0212**	**0.9360**	**1.2928**	**2.2288**	**0.4184**	**1.2083**	**1.6268**	**0.0000**	**1,904.9720**	**1,904.9720**	**0.4676**	**0.0000**	**1,914.7910**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.1632	0.6246	4.5620	7.5700e-003	0.4034	0.0277	0.4312	0.1835	0.0277	0.2112	0.0000	695.1027	695.1027	0.1854	0.0000	698.9953
2017	1.1088	1.4991	8.9481	0.0136	0.0783	0.0734	0.1517	0.0211	0.0732	0.0943	0.0000	1,205.6154	1,205.6154	0.2819	0.0000	1,211.5346
2018	0.3378	2.2400e-003	0.0287	5.0000e-005	1.4200e-003	6.0000e-005	1.4800e-003	3.8000e-004	6.0000e-005	4.4000e-004	0.0000	4.2517	4.2517	3.5000e-004	0.0000	4.2591
Total	**1.6098**	**2.1259**	**13.5388**	**0.0212**	**0.4832**	**0.1012**	**0.5844**	**0.2050**	**0.1009**	**0.3059**	**0.0000**	**1,904.9699**	**1,904.9699**	**0.4676**	**0.0000**	**1,914.7889**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**52.15**	**89.72**	**8.58**	**0.00**	**48.38**	**92.17**	**73.78**	**51.02**	**91.65**	**81.20**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/8/2016	5/5/2016	5	20	
2	Grading	Grading	5/6/2016	10/20/2016	5	120	

3	Building Construction	Building Construction	10/21/2016	9/21/2017	5	240	
4	Paving	Paving	9/22/2017	10/19/2017	5	20	
5	Architectural Coating	Architectural Coating	10/20/2017	2/1/2018	5	75	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 275

Acres of Paving: 0

Residential Indoor: 681,615; Residential Outdoor: 227,205; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	6	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	8	8.00	97	0.37
Grading	Excavators	2	7.00	162	0.38
Grading	Graders	1	7.00	174	0.41
Grading	Rubber Tired Dozers	1	7.00	255	0.40
Grading	Scrapers	2	7.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	5	6.00	226	0.29
Building Construction	Forklifts	14	8.00	89	0.20
Building Construction	Generator Sets	5	7.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	14	7.00	97	0.37
Building Construction	Welders	5	7.00	46	0.45
Paving	Pavers	8	8.00	125	0.42
Paving	Paving Equipment	8	8.00	130	0.36
Paving	Rollers	8	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	14	35.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	43	67.00	20.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	24	60.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	13.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3613	0.0000	0.3613	0.1986	0.0000	0.1986	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1015	1.0927	0.8221	7.8000e-004		0.0588	0.0588		0.0541	0.0541	0.0000	73.7542	73.7542	0.0223	0.0000	74.2214
Total	**0.1015**	**1.0927**	**0.8221**	**7.8000e-004**	**0.3613**	**0.0588**	**0.4201**	**0.1986**	**0.0541**	**0.2527**	**0.0000**	**73.7542**	**73.7542**	**0.0223**	**0.0000**	**74.2214**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3200e-003	1.9400e-003	0.0189	4.0000e-005	3.1900e-003	3.0000e-005	3.2100e-003	8.5000e-004	2.0000e-005	8.7000e-004	0.0000	2.8777	2.8777	1.6000e-004	0.0000	2.8811
Total	**1.3200e-003**	**1.9400e-003**	**0.0189**	**4.0000e-005**	**3.1900e-003**	**3.0000e-005**	**3.2100e-003**	**8.5000e-004**	**2.0000e-005**	**8.7000e-004**	**0.0000**	**2.8777**	**2.8777**	**1.6000e-004**	**0.0000**	**2.8811**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1626	0.0000	0.1626	0.0894	0.0000	0.0894	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.5100e-003	0.0412	0.4248	7.8000e-004		1.2700e-003	1.2700e-003		1.2700e-003	1.2700e-003	0.0000	73.7541	73.7541	0.0223	0.0000	74.2213
Total	**9.5100e-003**	**0.0412**	**0.4248**	**7.8000e-004**	**0.1626**	**1.2700e-003**	**0.1639**	**0.0894**	**1.2700e-003**	**0.0907**	**0.0000**	**73.7541**	**73.7541**	**0.0223**	**0.0000**	**74.2213**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3200e-003	1.9400e-003	0.0189	4.0000e-005	3.1900e-003	3.0000e-005	3.2100e-003	8.5000e-004	2.0000e-005	8.7000e-004	0.0000	2.8777	2.8777	1.6000e-004	0.0000	2.8811
Total	**1.3200e-003**	**1.9400e-003**	**0.0189**	**4.0000e-005**	**3.1900e-003**	**3.0000e-005**	**3.2100e-003**	**8.5000e-004**	**2.0000e-005**	**8.7000e-004**	**0.0000**	**2.8777**	**2.8777**	**1.6000e-004**	**0.0000**	**2.8811**

3.3 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4620	0.0000	0.4620	0.1895	0.0000	0.1895	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3402	3.9277	2.5797	3.2400e-003		0.1882	0.1882		0.1731	0.1731	0.0000	305.5276	305.5276	0.0922	0.0000	307.4629
Total	**0.3402**	**3.9277**	**2.5797**	**3.2400e-003**	**0.4620**	**0.1882**	**0.6502**	**0.1895**	**0.1731**	**0.3627**	**0.0000**	**305.5276**	**305.5276**	**0.0922**	**0.0000**	**307.4629**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.5200e-003	6.6400e-003	0.0649	1.3000e-004	0.0109	9.0000e-005	0.0110	2.9100e-003	8.0000e-005	2.9900e-003	0.0000	9.8665	9.8665	5.5000e-004	0.0000	9.8780
Total	**4.5200e-003**	**6.6400e-003**	**0.0649**	**1.3000e-004**	**0.0109**	**9.0000e-005**	**0.0110**	**2.9100e-003**	**8.0000e-005**	**2.9900e-003**	**0.0000**	**9.8665**	**9.8665**	**5.5000e-004**	**0.0000**	**9.8780**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2079	0.0000	0.2079	0.0853	0.0000	0.0853	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0397	0.1721	1.8259	3.2400e-003		5.2900e-003	5.2900e-003		5.2900e-003	5.2900e-003	0.0000	305.5272	305.5272	0.0922	0.0000	307.4625
Total	**0.0397**	**0.1721**	**1.8259**	**3.2400e-003**	**0.2079**	**5.2900e-003**	**0.2132**	**0.0853**	**5.2900e-003**	**0.0906**	**0.0000**	**305.5272**	**305.5272**	**0.0922**	**0.0000**	**307.4625**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.5200e-003	6.6400e-003	0.0649	1.3000e-004	0.0109	9.0000e-005	0.0110	2.9100e-003	8.0000e-005	2.9900e-003	0.0000	9.8665	9.8665	5.5000e-004	0.0000	9.8780
Total	**4.5200e-003**	**6.6400e-003**	**0.0649**	**1.3000e-004**	**0.0109**	**9.0000e-005**	**0.0110**	**2.9100e-003**	**8.0000e-005**	**2.9900e-003**	**0.0000**	**9.8665**	**9.8665**	**5.5000e-004**	**0.0000**	**9.8780**

3.4 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3903	3.2704	2.1340	3.0800e-003		0.2273	0.2273		0.2134	0.2134	0.0000	278.0387	278.0387	0.0694	0.0000	279.4957
Total	**0.3903**	**3.2704**	**2.1340**	**3.0800e-003**		**0.2273**	**0.2273**		**0.2134**	**0.2134**	**0.0000**	**278.0387**	**278.0387**	**0.0694**	**0.0000**	**279.4957**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.3900e-003	0.0511	0.0734	1.2000e-004	3.2900e-003	7.5000e-004	4.0400e-003	9.4000e-004	6.9000e-004	1.6300e-003	0.0000	10.9915	10.9915	9.0000e-005	0.0000	10.9933
Worker	6.4400e-003	9.4600e-003	0.0924	1.8000e-004	0.0156	1.3000e-004	0.0157	4.1400e-003	1.2000e-004	4.2500e-003	0.0000	14.0474	14.0474	7.8000e-004	0.0000	14.0638
Total	**0.0128**	**0.0605**	**0.1658**	**3.0000e-004**	**0.0189**	**8.8000e-004**	**0.0197**	**5.0800e-003**	**8.1000e-004**	**5.8800e-003**	**0.0000**	**25.0389**	**25.0389**	**8.7000e-004**	**0.0000**	**25.0571**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0953	0.3421	2.0617	3.0800e-003		0.0202	0.0202		0.0202	0.0202	0.0000	278.0383	278.0383	0.0694	0.0000	279.4953
Total	**0.0953**	**0.3421**	**2.0617**	**3.0800e-003**		**0.0202**	**0.0202**		**0.0202**	**0.0202**	**0.0000**	**278.0383**	**278.0383**	**0.0694**	**0.0000**	**279.4953**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.3900e-003	0.0511	0.0734	1.2000e-004	3.2900e-003	7.5000e-004	4.0400e-003	9.4000e-004	6.9000e-004	1.6300e-003	0.0000	10.9915	10.9915	9.0000e-005	0.0000	10.9933
Worker	6.4400e-003	9.4600e-003	0.0924	1.8000e-004	0.0156	1.3000e-004	0.0157	4.1400e-003	1.2000e-004	4.2500e-003	0.0000	14.0474	14.0474	7.8000e-004	0.0000	14.0638
Total	**0.0128**	**0.0605**	**0.1658**	**3.0000e-004**	**0.0189**	**8.8000e-004**	**0.0197**	**5.0800e-003**	**8.1000e-004**	**5.8800e-003**	**0.0000**	**25.0389**	**25.0389**	**8.7000e-004**	**0.0000**	**25.0571**

3.4 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.3182	11.2315	7.7514	0.0114		0.7629	0.7629		0.7160	0.7160	0.0000	1,018.8412	1,018.8412	0.2525	0.0000	1,024.1434
Total	**1.3182**	**11.2315**	**7.7514**	**0.0114**		**0.7629**	**0.7629**		**0.7160**	**0.7160**	**0.0000**	**1,018.8412**	**1,018.8412**	**0.2525**	**0.0000**	**1,024.1434**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0220	0.1697	0.2588	4.5000e-004	0.0122	2.4200e-003	0.0146	3.4900e-003	2.2200e-003	5.7100e-003	0.0000	40.0524	40.0524	3.1000e-004	0.0000	40.0589
Worker	0.0211	0.0314	0.3038	6.8000e-004	0.0577	4.5000e-004	0.0581	0.0153	4.1000e-004	0.0157	0.0000	50.0720	50.0720	2.6300e-003	0.0000	50.1273
Total	**0.0430**	**0.2011**	**0.5626**	**1.1300e-003**	**0.0698**	**2.8700e-003**	**0.0727**	**0.0188**	**2.6300e-003**	**0.0215**	**0.0000**	**90.1244**	**90.1244**	**2.9400e-003**	**0.0000**	**90.1862**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3278	1.2425	7.6170	0.0114		0.0689	0.0689		0.0689	0.0689	0.0000	1,018.8400	1,018.8400	0.2525	0.0000	1,024.1422
Total	**0.3278**	**1.2425**	**7.6170**	**0.0114**		**0.0689**	**0.0689**		**0.0689**	**0.0689**	**0.0000**	**1,018.8400**	**1,018.8400**	**0.2525**	**0.0000**	**1,024.1422**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0220	0.1697	0.2588	4.5000e-004	0.0122	2.4200e-003	0.0146	3.4900e-003	2.2200e-003	5.7100e-003	0.0000	40.0524	40.0524	3.1000e-004	0.0000	40.0589
Worker	0.0211	0.0314	0.3038	6.8000e-004	0.0577	4.5000e-004	0.0581	0.0153	4.1000e-004	0.0157	0.0000	50.0720	50.0720	2.6300e-003	0.0000	50.1273
Total	**0.0430**	**0.2011**	**0.5626**	**1.1300e-003**	**0.0698**	**2.8700e-003**	**0.0727**	**0.0188**	**2.6300e-003**	**0.0215**	**0.0000**	**90.1244**	**90.1244**	**2.9400e-003**	**0.0000**	**90.1862**

3.5 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0763	0.8119	0.5891	8.9000e-004		0.0455	0.0455		0.0419	0.0419	0.0000	82.7737	82.7737	0.0254	0.0000	83.3063
Paving	7.0700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0834**	**0.8119**	**0.5891**	**8.9000e-004**		**0.0455**	**0.0455**		**0.0419**	**0.0419**	**0.0000**	**82.7737**	**82.7737**	**0.0254**	**0.0000**	**83.3063**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-003	2.9700e-003	0.0288	6.0000e-005	5.4600e-003	4.0000e-005	5.5100e-003	1.4500e-003	4.0000e-005	1.4900e-003	0.0000	4.7450	4.7450	2.5000e-004	0.0000	4.7503
Total	**2.0000e-003**	**2.9700e-003**	**0.0288**	**6.0000e-005**	**5.4600e-003**	**4.0000e-005**	**5.5100e-003**	**1.4500e-003**	**4.0000e-005**	**1.4900e-003**	**0.0000**	**4.7450**	**4.7450**	**2.5000e-004**	**0.0000**	**4.7503**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0110	0.0476	0.6771	8.9000e-004		1.4600e-003	1.4600e-003		1.4600e-003	1.4600e-003	0.0000	82.7736	82.7736	0.0254	0.0000	83.3062
Paving	7.0700e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Total	**0.0181**	**0.0476**	**0.6771**	**8.9000e-004**		**1.4600e-003**	**1.4600e-003**		**1.4600e-003**	**1.4600e-003**	**0.0000**	**82.7736**	**82.7736**	**0.0254**	**0.0000**	**83.3062**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-003	2.9700e-003	0.0288	6.0000e-005	5.4600e-003	4.0000e-005	5.5100e-003	1.4500e-003	4.0000e-005	1.4900e-003	0.0000	4.7450	4.7450	2.5000e-004	0.0000	4.7503
Total	**2.0000e-003**	**2.9700e-003**	**0.0288**	**6.0000e-005**	**5.4600e-003**	**4.0000e-005**	**5.5100e-003**	**1.4500e-003**	**4.0000e-005**	**1.4900e-003**	**0.0000**	**4.7450**	**4.7450**	**2.5000e-004**	**0.0000**	**4.7503**

3.6 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7161					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.4700e-003	0.0557	0.0476	8.0000e-005		4.4200e-003	4.4200e-003		4.4200e-003	4.4200e-003	0.0000	6.5108	6.5108	6.9000e-004	0.0000	6.5252
Total	**0.7246**	**0.0557**	**0.0476**	**8.0000e-005**		**4.4200e-003**	**4.4200e-003**		**4.4200e-003**	**4.4200e-003**	**0.0000**	**6.5108**	**6.5108**	**6.9000e-004**	**0.0000**	**6.5252**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-003	1.6400e-003	0.0159	4.0000e-005	3.0200e-003	2.0000e-005	3.0400e-003	8.0000e-004	2.0000e-005	8.2000e-004	0.0000	2.6216	2.6216	1.4000e-004	0.0000	2.6245
Total	**1.1000e-003**	**1.6400e-003**	**0.0159**	**4.0000e-005**	**3.0200e-003**	**2.0000e-005**	**3.0400e-003**	**8.0000e-004**	**2.0000e-005**	**8.2000e-004**	**0.0000**	**2.6216**	**2.6216**	**1.4000e-004**	**0.0000**	**2.6245**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.7161					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.6000e-004	3.2800e-003	0.0467	8.0000e-005		1.0000e-004	1.0000e-004		1.0000e-004	1.0000e-004	0.0000	6.5108	6.5108	6.9000e-004	0.0000	6.5252
Total	**0.7169**	**3.2800e-003**	**0.0467**	**8.0000e-005**		**1.0000e-004**	**1.0000e-004**		**1.0000e-004**	**1.0000e-004**	**0.0000**	**6.5108**	**6.5108**	**6.9000e-004**	**0.0000**	**6.5252**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-003	1.6400e-003	0.0159	4.0000e-005	3.0200e-003	2.0000e-005	3.0400e-003	8.0000e-004	2.0000e-005	8.2000e-004	0.0000	2.6216	2.6216	1.4000e-004	0.0000	2.6245
Total	**1.1000e-003**	**1.6400e-003**	**0.0159**	**4.0000e-005**	**3.0200e-003**	**2.0000e-005**	**3.0400e-003**	**8.0000e-004**	**2.0000e-005**	**8.2000e-004**	**0.0000**	**2.6216**	**2.6216**	**1.4000e-004**	**0.0000**	**2.6245**

3.6 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Archit. Coating	0.3370					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.5800e-003	0.0241	0.0223	4.0000e-005		1.8100e-003	1.8100e-003		1.8100e-003	1.8100e-003	0.0000	3.0639	3.0639	2.9000e-004	0.0000	3.0700
Total	**0.3406**	**0.0241**	**0.0223**	**4.0000e-005**		**1.8100e-003**	**1.8100e-003**		**1.8100e-003**	**1.8100e-003**	**0.0000**	**3.0639**	**3.0639**	**2.9000e-004**	**0.0000**	**3.0700**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6000e-004	7.0000e-004	6.6900e-003	2.0000e-005	1.4200e-003	1.0000e-005	1.4300e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1878	1.1878	6.0000e-005	0.0000	1.1890
Total	**4.6000e-004**	**7.0000e-004**	**6.6900e-003**	**2.0000e-005**	**1.4200e-003**	**1.0000e-005**	**1.4300e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.1878**	**1.1878**	**6.0000e-005**	**0.0000**	**1.1890**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3370					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6000e-004	1.5500e-003	0.0220	4.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	3.0639	3.0639	2.9000e-004	0.0000	3.0700
Total	**0.3374**	**1.5500e-003**	**0.0220**	**4.0000e-005**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**3.0639**	**3.0639**	**2.9000e-004**	**0.0000**	**3.0700**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6000e-004	7.0000e-004	6.6900e-003	2.0000e-005	1.4200e-003	1.0000e-005	1.4300e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1878	1.1878	6.0000e-005	0.0000	1.1890
Total	**4.6000e-004**	**7.0000e-004**	**6.6900e-003**	**2.0000e-005**	**1.4200e-003**	**1.0000e-005**	**1.4300e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.1878**	**1.1878**	**6.0000e-005**	**0.0000**	**1.1890**

Laurel Ranch Construction Run

Contra Costa County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	5.40	Acre	5.40	0.00	0
Other Non-Asphalt Surfaces	10.10	Acre	10.10	0.00	0
City Park	0.35	Acre	0.35	0.00	0
Single Family Housing	187.00	Dwelling Unit	38.15	336,600.00	535

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	2			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - based on PD

Construction Phase - Per client, construction would begin April 2018 and would be operational approximately February 2018

Off-road Equipment - Updated construction equipment amount based off updated phasing

Construction Off-road Equipment Mitigation - Application of BAAQMD Table 8-1 Construction Mitigation measures
Use of Tier IV equipment for equipment >50hp

Architectural Coating - VOC content limit of 50 g/l

Table Name	Column Name	Default Value	New Value

tblArchitecturalCoating	EF_Residential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	50.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	14.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	24.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	1,110.00	240.00
tblConstructionPhase	NumDays	110.00	120.00
tblConstructionPhase	NumDays	75.00	20.00
tblConstructionPhase	NumDays	40.00	20.00

tblGrading	AcresOfGrading	262.50	275.00
tblLandUse	LandUseSquareFeet	235,224.00	0.00
tblLandUse	LandUseSquareFeet	439,956.00	0.00
tblLandUse	LandUseSquareFeet	15,246.00	0.00
tblLandUse	LotAcreage	60.71	38.15
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	14.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	14.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblProjectCharacteristics	OperationalYear	2014	2017

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Year	lb/day										lb/day					
2016	15.8088	130.5186	89.8819	0.1332	36.4626	8.9463	42.3425	19.9489	8.3988	25.3585	0.0000	13,157.0592	13,157.0592	3.0366	0.0000	13,220.8280
2017	28.4630	120.8864	87.6640	0.1332	0.7645	8.1034	8.8679	0.2054	7.6049	7.8104	0.0000	12,989.3747	12,989.3747	2.9795	0.0000	13,051.9433
2018	28.4244	2.0575	2.4713	4.5000e-003	0.1226	0.1514	0.2740	0.0325	0.1514	0.1839	0.0000	400.3106	400.3106	0.0322	0.0000	400.9874
Total	**72.6962**	**253.4625**	**180.0172**	**0.2709**	**37.3497**	**17.2011**	**51.4844**	**20.1869**	**16.1551**	**33.3527**	**0.0000**	**26,546.7445**	**26,546.7445**	**6.0483**	**0.0000**	**26,673.7586**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	4.2401	15.6856	87.0488	0.1332	16.5897	0.8260	16.7192	9.0252	0.8232	9.1544	0.0000	13,157.0592	13,157.0592	3.0366	0.0000	13,220.8280
2017	28.1604	15.1826	86.2420	0.1332	0.7645	0.7595	1.5240	0.2054	0.7571	0.9625	0.0000	12,989.3747	12,989.3747	2.9795	0.0000	13,051.9433
2018	28.1555	0.1805	2.4495	4.5000e-003	0.1226	4.8500e-003	0.1274	0.0325	4.7800e-003	0.0373	0.0000	400.3106	400.3106	0.0322	0.0000	400.9874
Total	**60.5560**	**31.0487**	**175.7402**	**0.2709**	**17.4768**	**1.5903**	**18.3706**	**9.2631**	**1.5850**	**10.1542**	**0.0000**	**26,546.7445**	**26,546.7445**	**6.0483**	**0.0000**	**26,673.7586**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**16.70**	**87.75**	**2.38**	**0.00**	**53.21**	**90.75**	**64.32**	**54.11**	**90.19**	**69.56**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/8/2016	5/5/2016	5	20	
2	Grading	Grading	5/6/2016	10/20/2016	5	120	
3	Building Construction	Building Construction	10/21/2016	9/21/2017	5	240	

4	Paving	Paving	9/22/2017	10/19/2017	5	20	
5	Architectural Coating	Architectural Coating	10/20/2017	2/1/2018	5	75	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 275

Acres of Paving: 0

Residential Indoor: 681,615; Residential Outdoor: 227,205; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	6	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	8	8.00	97	0.37
Grading	Excavators	2	7.00	162	0.38
Grading	Graders	1	7.00	174	0.41
Grading	Rubber Tired Dozers	1	7.00	255	0.40
Grading	Scrapers	2	7.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	5	6.00	226	0.29
Building Construction	Forklifts	14	8.00	89	0.20
Building Construction	Generator Sets	5	7.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	14	7.00	97	0.37
Building Construction	Welders	5	7.00	46	0.45
Paving	Pavers	8	8.00	125	0.42
Paving	Paving Equipment	8	8.00	130	0.36
Paving	Rollers	8	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class

Site Preparation	14	35.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	43	67.00	20.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	24	60.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	13.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					36.1325	0.0000	36.1325	19.8614	0.0000	19.8614			0.0000			0.0000
Off-Road	10.1541	109.2646	82.2105	0.0782		5.8774	5.8774		5.4072	5.4072		8,130.0105	8,130.0105	2.4523		8,181.5088
Total	**10.1541**	**109.2646**	**82.2105**	**0.0782**	**36.1325**	**5.8774**	**42.0099**	**19.8614**	**5.4072**	**25.2685**		**8,130.0105**	**8,130.0105**	**2.4523**		**8,181.5088**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Worker	0.1457	0.1728	2.0707	4.1200e-003	0.3301	2.6000e-003	0.3327	0.0875	2.3800e-003	0.0899		345.4866	345.4866	0.0176		345.8556
Total	**0.1457**	**0.1728**	**2.0707**	**4.1200e-003**	**0.3301**	**2.6000e-003**	**0.3327**	**0.0875**	**2.3800e-003**	**0.0899**		**345.4866**	**345.4866**	**0.0176**		**345.8556**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					16.2596	0.0000	16.2596	8.9376	0.0000	8.9376			0.0000			0.0000
Off-Road	0.9515	4.1230	42.4830	0.0782		0.1269	0.1269		0.1269	0.1269	0.0000	8,130.0105	8,130.0105	2.4523		8,181.5088
Total	**0.9515**	**4.1230**	**42.4830**	**0.0782**	**16.2596**	**0.1269**	**16.3865**	**8.9376**	**0.1269**	**9.0645**	**0.0000**	**8,130.0105**	**8,130.0105**	**2.4523**		**8,181.5088**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1457	0.1728	2.0707	4.1200e-003	0.3301	2.6000e-003	0.3327	0.0875	2.3800e-003	0.0899		345.4866	345.4866	0.0176		345.8556
Total	**0.1457**	**0.1728**	**2.0707**	**4.1200e-003**	**0.3301**	**2.6000e-003**	**0.3327**	**0.0875**	**2.3800e-003**	**0.0899**		**345.4866**	**345.4866**	**0.0176**		**345.8556**

3.3 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					7.6996	0.0000	7.6996	3.1589	0.0000	3.1589			0.0000			0.0000
Off-Road	5.6695	65.4620	42.9952	0.0540		3.1362	3.1362		2.8853	2.8853		5,613.1081	5,613.1081	1.6931		5,648.6635
Total	**5.6695**	**65.4620**	**42.9952**	**0.0540**	**7.6996**	**3.1362**	**10.8359**	**3.1589**	**2.8853**	**6.0442**		**5,613.1081**	**5,613.1081**	**1.6931**		**5,648.6635**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0833	0.0987	1.1832	2.3500e-003	0.1886	1.4800e-003	0.1901	0.0500	1.3600e-003	0.0514		197.4209	197.4209	0.0100		197.6318
Total	**0.0833**	**0.0987**	**1.1832**	**2.3500e-003**	**0.1886**	**1.4800e-003**	**0.1901**	**0.0500**	**1.3600e-003**	**0.0514**		**197.4209**	**197.4209**	**0.0100**		**197.6318**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.4648	0.0000	3.4648	1.4215	0.0000	1.4215			0.0000			0.0000
Off-Road	0.6619	2.8681	30.4314	0.0540		0.0883	0.0883		0.0883	0.0883	0.0000	5,613.1081	5,613.1081	1.6931		5,648.6635
Total	**0.6619**	**2.8681**	**30.4314**	**0.0540**	**3.4648**	**0.0883**	**3.5531**	**1.4215**	**0.0883**	**1.5097**	**0.0000**	**5,613.1081**	**5,613.1081**	**1.6931**		**5,648.6635**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0833	0.0987	1.1832	2.3500e-003	0.1886	1.4800e-003	0.1901	0.0500	1.3600e-003	0.0514		197.4209	197.4209	0.0100		197.6318
Total	**0.0833**	**0.0987**	**1.1832**	**2.3500e-003**	**0.1886**	**1.4800e-003**	**0.1901**	**0.0500**	**1.3600e-003**	**0.0514**		**197.4209**	**197.4209**	**0.0100**		**197.6318**

3.4 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Off-Road	15.3053	128.2500	83.6856	0.1206		8.9119	8.9119		8.3672	8.3672		12,019.0255	12,019.0255	2.9992		12,082.0088
Total	**15.3053**	**128.2500**	**83.6856**	**0.1206**		**8.9119**	**8.9119**		**8.3672**	**8.3672**		**12,019.0255**	**12,019.0255**	**2.9992**		**12,082.0088**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2246	1.9379	2.2325	4.7500e-003	0.1327	0.0294	0.1621	0.0378	0.0271	0.0649		476.6736	476.6736	3.7600e-003		476.7527
Worker	0.2789	0.3307	3.9638	7.8800e-003	0.6318	4.9700e-003	0.6368	0.1676	4.5600e-003	0.1721		661.3600	661.3600	0.0336		662.0665
Total	**0.5035**	**2.2687**	**6.1963**	**0.0126**	**0.7645**	**0.0344**	**0.7989**	**0.2054**	**0.0316**	**0.2370**		**1,138.0337**	**1,138.0337**	**0.0374**		**1,138.8191**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	3.7366	13.4169	80.8525	0.1206		0.7916	0.7916		0.7916	0.7916	0.0000	12,019.0255	12,019.0255	2.9992		12,082.0088
Total	**3.7366**	**13.4169**	**80.8525**	**0.1206**		**0.7916**	**0.7916**		**0.7916**	**0.7916**	**0.0000**	**12,019.0255**	**12,019.0255**	**2.9992**		**12,082.0088**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2246	1.9379	2.2325	4.7500e-003	0.1327	0.0294	0.1621	0.0378	0.0271	0.0649		476.6736	476.6736	3.7600e-003		476.7527
Worker	0.2789	0.3307	3.9638	7.8800e-003	0.6318	4.9700e-003	0.6368	0.1676	4.5600e-003	0.1721		661.3600	661.3600	0.0336		662.0665
Total	**0.5035**	**2.2687**	**6.1963**	**0.0126**	**0.7645**	**0.0344**	**0.7989**	**0.2054**	**0.0316**	**0.2370**		**1,138.0337**	**1,138.0337**	**0.0374**		**1,138.8191**

3.4 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	13.9493	118.8523	82.0254	0.1206		8.0731	8.0731		7.5771	7.5771		11,884.4461	11,884.4461	2.9452		11,946.2947
Total	**13.9493**	**118.8523**	**82.0254**	**0.1206**		**8.0731**	**8.0731**		**7.5771**	**7.5771**		**11,884.4461**	**11,884.4461**	**2.9452**		**11,946.2947**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2086	1.7381	2.1012	4.7500e-003	0.1327	0.0255	0.1582	0.0379	0.0234	0.0613		468.7131	468.7131	3.5700e-003		468.7881
Worker	0.2483	0.2960	3.5374	7.8800e-003	0.6318	4.7400e-003	0.6366	0.1676	4.3600e-003	0.1719		636.2155	636.2155	0.0307		636.8605
Total	**0.4569**	**2.0341**	**5.6386**	**0.0126**	**0.7645**	**0.0302**	**0.7947**	**0.2054**	**0.0278**	**0.2332**		**1,104.9286**	**1,104.9286**	**0.0343**		**1,105.6486**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4683	13.1486	80.6033	0.1206		0.7293	0.7293		0.7293	0.7293	0.0000	11,884.4461	11,884.4461	2.9452		11,946.2947
Total	**3.4683**	**13.1486**	**80.6033**	**0.1206**		**0.7293**	**0.7293**		**0.7293**	**0.7293**	**0.0000**	**11,884.4461**	**11,884.4461**	**2.9452**		**11,946.2947**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2086	1.7381	2.1012	4.7500e-003	0.1327	0.0255	0.1582	0.0379	0.0234	0.0613		468.7131	468.7131	3.5700e-003		468.7881
Worker	0.2483	0.2960	3.5374	7.8800e-003	0.6318	4.7400e-003	0.6366	0.1676	4.3600e-003	0.1719		636.2155	636.2155	0.0307		636.8605
Total	**0.4569**	**2.0341**	**5.6386**	**0.0126**	**0.7645**	**0.0302**	**0.7947**	**0.2054**	**0.0278**	**0.2332**		**1,104.9286**	**1,104.9286**	**0.0343**		**1,105.6486**

3.5 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	7.6295	81.1856	58.9081	0.0892		4.5536	4.5536		4.1893	4.1893		9,124.2352	9,124.2352	2.7957		9,182.9438
Paving	0.7074					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**8.3369**	**81.1856**	**58.9081**	**0.0892**		**4.5536**	**4.5536**		**4.1893**	**4.1893**		**9,124.2352**	**9,124.2352**	**2.7957**		**9,182.9438**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2224	0.2651	3.1678	7.0600e-003	0.5658	4.2400e-003	0.5701	0.1501	3.9100e-003	0.1540		569.7452	569.7452	0.0275		570.3228
Total	**0.2224**	**0.2651**	**3.1678**	**7.0600e-003**	**0.5658**	**4.2400e-003**	**0.5701**	**0.1501**	**3.9100e-003**	**0.1540**		**569.7452**	**569.7452**	**0.0275**		**570.3228**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0980	4.7580	67.7105	0.0892		0.1464	0.1464		0.1464	0.1464	0.0000	9,124.2352	9,124.2352	2.7957		9,182.9438
Paving	0.7074					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.8054**	**4.7580**	**67.7105**	**0.0892**		**0.1464**	**0.1464**		**0.1464**	**0.1464**	**0.0000**	**9,124.2352**	**9,124.2352**	**2.7957**		**9,182.9438**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2224	0.2651	3.1678	7.0600e-003	0.5658	4.2400e-003	0.5701	0.1501	3.9100e-003	0.1540		569.7452	569.7452	0.0275		570.3228
Total	**0.2224**	**0.2651**	**3.1678**	**7.0600e-003**	**0.5658**	**4.2400e-003**	**0.5701**	**0.1501**	**3.9100e-003**	**0.1540**		**569.7452**	**569.7452**	**0.0275**		**570.3228**

3.6 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.0825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733		281.4481	281.4481	0.0297		282.0721
Total	**28.4149**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**		**281.4481**	**281.4481**	**0.0297**		**282.0721**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0482	0.0574	0.6864	1.5300e-003	0.1226	9.2000e-004	0.1235	0.0325	8.5000e-004	0.0334		123.4448	123.4448	5.9600e-003		123.5699

Total	**0.0482**	**0.0574**	**0.6864**	**1.5300e-003**	**0.1226**	**9.2000e-004**	**0.1235**	**0.0325**	**8.5000e-004**	**0.0334**		**123.4448**	**123.4448**	**5.9600e-003**		**123.5699**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.0825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0297		282.0721
Total	**28.1123**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0297**		**282.0721**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0482	0.0574	0.6864	1.5300e-003	0.1226	9.2000e-004	0.1235	0.0325	8.5000e-004	0.0334		123.4448	123.4448	5.9600e-003		123.5699
Total	**0.0482**	**0.0574**	**0.6864**	**1.5300e-003**	**0.1226**	**9.2000e-004**	**0.1235**	**0.0325**	**8.5000e-004**	**0.0334**		**123.4448**	**123.4448**	**5.9600e-003**		**123.5699**

3.6 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.0825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506		281.4485	281.4485	0.0267		282.0102
Total	**28.3812**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**		**281.4485**	**281.4485**	**0.0267**		**282.0102**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0433	0.0518	0.6171	1.5300e-003	0.1226	8.9000e-004	0.1235	0.0325	8.2000e-004	0.0333		118.8621	118.8621	5.4800e-003		118.9772
Total	**0.0433**	**0.0518**	**0.6171**	**1.5300e-003**	**0.1226**	**8.9000e-004**	**0.1235**	**0.0325**	**8.2000e-004**	**0.0333**		**118.8621**	**118.8621**	**5.4800e-003**		**118.9772**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.0825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4485	281.4485	0.0267		282.0102
Total	**28.1123**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4485**	**281.4485**	**0.0267**		**282.0102**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0433	0.0518	0.6171	1.5300e-003	0.1226	8.9000e-004	0.1235	0.0325	8.2000e-004	0.0333		118.8621	118.8621	5.4800e-003		118.9772
Total	**0.0433**	**0.0518**	**0.6171**	**1.5300e-003**	**0.1226**	**8.9000e-004**	**0.1235**	**0.0325**	**8.2000e-004**	**0.0333**		**118.8621**	**118.8621**	**5.4800e-003**		**118.9772**

Laurel Ranch Construction Run

Contra Costa County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	5.40	Acre	5.40	0.00	0
Other Non-Asphalt Surfaces	10.10	Acre	10.10	0.00	0
City Park	0.35	Acre	0.35	0.00	0
Single Family Housing	187.00	Dwelling Unit	38.15	336,600.00	535

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	2			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - based on PD

Construction Phase - Per client, construction would begin April 2018 and would be operational approximately February 2018

Off-road Equipment - Updated construction equipment amount based off updated phasing

Construction Off-road Equipment Mitigation - Application of BAAQMD Table 8-1 Construction Mitigation measures
Use of Tier IV equipment for equipment >50hp

Architectural Coating - VOC content limit of 50 g/l

Table Name	Column Name	Default Value	New Value

tblArchitecturalCoating	EF_Residential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	50.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	14.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	24.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	1,110.00	240.00
tblConstructionPhase	NumDays	110.00	120.00
tblConstructionPhase	NumDays	75.00	20.00
tblConstructionPhase	NumDays	40.00	20.00

tblGrading	AcresOfGrading	262.50	275.00
tblLandUse	LandUseSquareFeet	235,224.00	0.00
tblLandUse	LandUseSquareFeet	439,956.00	0.00
tblLandUse	LandUseSquareFeet	15,246.00	0.00
tblLandUse	LotAcreage	60.71	38.15
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	14.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	14.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblProjectCharacteristics	OperationalYear	2014	2017

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Year	lb/day										lb/day					
2016	15.8590	130.6877	91.0390	0.1325	36.4626	8.9466	42.3425	19.9489	8.3991	25.3585	0.0000	13,091.8664	13,091.8664	3.0367	0.0000	13,155.6372
2017	28.4609	121.0373	88.7840	0.1324	0.7645	8.1036	8.8681	0.2054	7.6052	7.8106	0.0000	12,926.4815	12,926.4815	2.9796	0.0000	12,989.0520
2018	28.4221	2.0697	2.4318	4.3600e-003	0.1226	0.1514	0.2740	0.0325	0.1514	0.1839	0.0000	389.2215	389.2215	0.0322	0.0000	389.8982
Total	**72.7420**	**253.7946**	**182.2548**	**0.2693**	**37.3497**	**17.2017**	**51.4847**	**20.1869**	**16.1557**	**33.3529**	**0.0000**	**26,407.5694**	**26,407.5694**	**6.0485**	**0.0000**	**26,534.5874**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	4.2903	15.8546	88.2059	0.1325	16.5897	0.8263	16.7192	9.0252	0.8235	9.1544	0.0000	13,091.8664	13,091.8664	3.0367	0.0000	13,155.6372
2017	28.1583	15.3336	87.3619	0.1324	0.7645	0.7598	1.5243	0.2054	0.7573	0.9627	0.0000	12,926.4815	12,926.4815	2.9796	0.0000	12,989.0520
2018	28.1532	0.1927	2.4100	4.3600e-003	0.1226	4.8500e-003	0.1274	0.0325	4.7800e-003	0.0373	0.0000	389.2215	389.2215	0.0322	0.0000	389.8982
Total	**60.6017**	**31.3809**	**177.9778**	**0.2693**	**17.4768**	**1.5909**	**18.3709**	**9.2631**	**1.5856**	**10.1544**	**0.0000**	**26,407.5693**	**26,407.5693**	**6.0485**	**0.0000**	**26,534.5874**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**16.69**	**87.64**	**2.35**	**0.00**	**53.21**	**90.75**	**64.32**	**54.11**	**90.19**	**69.55**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/8/2016	5/5/2016	5	20	
2	Grading	Grading	5/6/2016	10/20/2016	5	120	
3	Building Construction	Building Construction	10/21/2016	9/21/2017	5	240	

4	Paving	Paving	9/22/2017	10/19/2017	5	20	
5	Architectural Coating	Architectural Coating	10/20/2017	2/1/2018	5	75	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 275

Acres of Paving: 0

Residential Indoor: 681,615; Residential Outdoor: 227,205; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	6	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	8	8.00	97	0.37
Grading	Excavators	2	7.00	162	0.38
Grading	Graders	1	7.00	174	0.41
Grading	Rubber Tired Dozers	1	7.00	255	0.40
Grading	Scrapers	2	7.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	5	6.00	226	0.29
Building Construction	Forklifts	14	8.00	89	0.20
Building Construction	Generator Sets	5	7.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	14	7.00	97	0.37
Building Construction	Welders	5	7.00	46	0.45
Paving	Pavers	8	8.00	125	0.42
Paving	Paving Equipment	8	8.00	130	0.36
Paving	Rollers	8	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class

Site Preparation	14	35.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	43	67.00	20.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	24	60.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	13.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					36.1325	0.0000	36.1325	19.8614	0.0000	19.8614			0.0000			0.0000
Off-Road	10.1541	109.2646	82.2105	0.0782		5.8774	5.8774		5.4072	5.4072		8,130.0105	8,130.0105	2.4523		8,181.5088
Total	**10.1541**	**109.2646**	**82.2105**	**0.0782**	**36.1325**	**5.8774**	**42.0099**	**19.8614**	**5.4072**	**25.2685**		**8,130.0105**	**8,130.0105**	**2.4523**		**8,181.5088**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Worker	0.1409	0.2133	1.9752	3.7300e-003	0.3301	2.6000e-003	0.3327	0.0875	2.3800e-003	0.0899		313.3413	313.3413	0.0176		313.7104
Total	**0.1409**	**0.2133**	**1.9752**	**3.7300e-003**	**0.3301**	**2.6000e-003**	**0.3327**	**0.0875**	**2.3800e-003**	**0.0899**		**313.3413**	**313.3413**	**0.0176**		**313.7104**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					16.2596	0.0000	16.2596	8.9376	0.0000	8.9376			0.0000			0.0000
Off-Road	0.9515	4.1230	42.4830	0.0782		0.1269	0.1269		0.1269	0.1269	0.0000	8,130.0105	8,130.0105	2.4523		8,181.5088
Total	**0.9515**	**4.1230**	**42.4830**	**0.0782**	**16.2596**	**0.1269**	**16.3865**	**8.9376**	**0.1269**	**9.0645**	**0.0000**	**8,130.0105**	**8,130.0105**	**2.4523**		**8,181.5088**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1409	0.2133	1.9752	3.7300e-003	0.3301	2.6000e-003	0.3327	0.0875	2.3800e-003	0.0899		313.3413	313.3413	0.0176		313.7104
Total	**0.1409**	**0.2133**	**1.9752**	**3.7300e-003**	**0.3301**	**2.6000e-003**	**0.3327**	**0.0875**	**2.3800e-003**	**0.0899**		**313.3413**	**313.3413**	**0.0176**		**313.7104**

3.3 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					7.6996	0.0000	7.6996	3.1589	0.0000	3.1589			0.0000			0.0000
Off-Road	5.6695	65.4620	42.9952	0.0540		3.1362	3.1362		2.8853	2.8853		5,613.1081	5,613.1081	1.6931		5,648.6635
Total	**5.6695**	**65.4620**	**42.9952**	**0.0540**	**7.6996**	**3.1362**	**10.8359**	**3.1589**	**2.8853**	**6.0442**		**5,613.1081**	**5,613.1081**	**1.6931**		**5,648.6635**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0805	0.1219	1.1287	2.1300e-003	0.1886	1.4800e-003	0.1901	0.0500	1.3600e-003	0.0514		179.0522	179.0522	0.0100		179.2631
Total	**0.0805**	**0.1219**	**1.1287**	**2.1300e-003**	**0.1886**	**1.4800e-003**	**0.1901**	**0.0500**	**1.3600e-003**	**0.0514**		**179.0522**	**179.0522**	**0.0100**		**179.2631**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.4648	0.0000	3.4648	1.4215	0.0000	1.4215			0.0000			0.0000
Off-Road	0.6619	2.8681	30.4314	0.0540		0.0883	0.0883		0.0883	0.0883	0.0000	5,613.1081	5,613.1081	1.6931		5,648.6635
Total	**0.6619**	**2.8681**	**30.4314**	**0.0540**	**3.4648**	**0.0883**	**3.5531**	**1.4215**	**0.0883**	**1.5097**	**0.0000**	**5,613.1081**	**5,613.1081**	**1.6931**		**5,648.6635**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0805	0.1219	1.1287	2.1300e-003	0.1886	1.4800e-003	0.1901	0.0500	1.3600e-003	0.0514		179.0522	179.0522	0.0100		179.2631
Total	**0.0805**	**0.1219**	**1.1287**	**2.1300e-003**	**0.1886**	**1.4800e-003**	**0.1901**	**0.0500**	**1.3600e-003**	**0.0514**		**179.0522**	**179.0522**	**0.0100**		**179.2631**

3.4 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	15.3053	128.2500	83.6856	0.1206		8.9119	8.9119		8.3672	8.3672		12,019.0255	12,019.0255	2.9992		12,082.0088
Total	**15.3053**	**128.2500**	**83.6856**	**0.1206**		**8.9119**	**8.9119**		**8.3672**	**8.3672**		**12,019.0255**	**12,019.0255**	**2.9992**		**12,082.0088**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2841	2.0294	3.5722	4.7400e-003	0.1327	0.0298	0.1624	0.0378	0.0274	0.0652		473.0161	473.0161	3.8600e-003		473.0971
Worker	0.2696	0.4084	3.7812	7.1500e-003	0.6318	4.9700e-003	0.6368	0.1676	4.5600e-003	0.1721		599.8248	599.8248	0.0336		600.5313
Total	**0.5537**	**2.4377**	**7.3534**	**0.0119**	**0.7645**	**0.0347**	**0.7992**	**0.2054**	**0.0319**	**0.2373**		**1,072.8409**	**1,072.8409**	**0.0375**		**1,073.6284**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.7366	13.4169	80.8525	0.1206		0.7916	0.7916		0.7916	0.7916	0.0000	12,019.0255	12,019.0255	2.9992		12,082.0088
Total	**3.7366**	**13.4169**	**80.8525**	**0.1206**		**0.7916**	**0.7916**		**0.7916**	**0.7916**	**0.0000**	**12,019.0255**	**12,019.0255**	**2.9992**		**12,082.0088**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2841	2.0294	3.5722	4.7400e-003	0.1327	0.0298	0.1624	0.0378	0.0274	0.0652		473.0161	473.0161	3.8600e-003		473.0971
Worker	0.2696	0.4084	3.7812	7.1500e-003	0.6318	4.9700e-003	0.6368	0.1676	4.5600e-003	0.1721		599.8248	599.8248	0.0336		600.5313
Total	**0.5537**	**2.4377**	**7.3534**	**0.0119**	**0.7645**	**0.0347**	**0.7992**	**0.2054**	**0.0319**	**0.2373**		**1,072.8409**	**1,072.8409**	**0.0375**		**1,073.6284**

3.4 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	13.9493	118.8523	82.0254	0.1206		8.0731	8.0731		7.5771	7.5771		11,884.4461	11,884.4461	2.9452		11,946.2947
Total	**13.9493**	**118.8523**	**82.0254**	**0.1206**		**8.0731**	**8.0731**		**7.5771**	**7.5771**		**11,884.4461**	**11,884.4461**	**2.9452**		**11,946.2947**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2626	1.8195	3.4166	4.7300e-003	0.1327	0.0258	0.1584	0.0379	0.0237	0.0615		465.1058	465.1058	3.6600e-003		465.1828
Worker	0.2374	0.3655	3.3420	7.1400e-003	0.6318	4.7400e-003	0.6366	0.1676	4.3600e-003	0.1719		576.9296	576.9296	0.0307		577.5746
Total	**0.5000**	**2.1850**	**6.7586**	**0.0119**	**0.7645**	**0.0305**	**0.7950**	**0.2054**	**0.0280**	**0.2335**		**1,042.0354**	**1,042.0354**	**0.0344**		**1,042.7573**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.4683	13.1486	80.6033	0.1206		0.7293	0.7293		0.7293	0.7293	0.0000	11,884.4461	11,884.4461	2.9452		11,946.2947
Total	**3.4683**	**13.1486**	**80.6033**	**0.1206**		**0.7293**	**0.7293**		**0.7293**	**0.7293**	**0.0000**	**11,884.4461**	**11,884.4461**	**2.9452**		**11,946.2947**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2626	1.8195	3.4166	4.7300e-003	0.1327	0.0258	0.1584	0.0379	0.0237	0.0615		465.1058	465.1058	3.6600e-003		465.1828
Worker	0.2374	0.3655	3.3420	7.1400e-003	0.6318	4.7400e-003	0.6366	0.1676	4.3600e-003	0.1719		576.9296	576.9296	0.0307		577.5746
Total	**0.5000**	**2.1850**	**6.7586**	**0.0119**	**0.7645**	**0.0305**	**0.7950**	**0.2054**	**0.0280**	**0.2335**		**1,042.0354**	**1,042.0354**	**0.0344**		**1,042.7573**

3.5 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	7.6295	81.1856	58.9081	0.0892		4.5536	4.5536		4.1893	4.1893		9,124.2352	9,124.2352	2.7957		9,182.9438
Paving	0.7074					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**8.3369**	**81.1856**	**58.9081**	**0.0892**		**4.5536**	**4.5536**		**4.1893**	**4.1893**		**9,124.2352**	**9,124.2352**	**2.7957**		**9,182.9438**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2126	0.3274	2.9928	6.3900e-003	0.5658	4.2400e-003	0.5701	0.1501	3.9100e-003	0.1540		516.6533	516.6533	0.0275		517.2309
Total	**0.2126**	**0.3274**	**2.9928**	**6.3900e-003**	**0.5658**	**4.2400e-003**	**0.5701**	**0.1501**	**3.9100e-003**	**0.1540**		**516.6533**	**516.6533**	**0.0275**		**517.2309**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0980	4.7580	67.7105	0.0892		0.1464	0.1464		0.1464	0.1464	0.0000	9,124.2352	9,124.2352	2.7957		9,182.9438
Paving	0.7074					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.8054**	**4.7580**	**67.7105**	**0.0892**		**0.1464**	**0.1464**		**0.1464**	**0.1464**	**0.0000**	**9,124.2352**	**9,124.2352**	**2.7957**		**9,182.9438**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2126	0.3274	2.9928	6.3900e-003	0.5658	4.2400e-003	0.5701	0.1501	3.9100e-003	0.1540		516.6533	516.6533	0.0275		517.2309
Total	**0.2126**	**0.3274**	**2.9928**	**6.3900e-003**	**0.5658**	**4.2400e-003**	**0.5701**	**0.1501**	**3.9100e-003**	**0.1540**		**516.6533**	**516.6533**	**0.0275**		**517.2309**

3.6 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.0825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733		281.4481	281.4481	0.0297		282.0721
Total	**28.4149**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**		**281.4481**	**281.4481**	**0.0297**		**282.0721**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Worker	0.0461	0.0709	0.6484	1.3900e-003	0.1226	9.2000e-004	0.1235	0.0325	8.5000e-004	0.0334		111.9416	111.9416	5.9600e-003		112.0667
Total	**0.0461**	**0.0709**	**0.6484**	**1.3900e-003**	**0.1226**	**9.2000e-004**	**0.1235**	**0.0325**	**8.5000e-004**	**0.0334**		**111.9416**	**111.9416**	**5.9600e-003**		**112.0667**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.0825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0297		282.0721
Total	**28.1123**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0297**		**282.0721**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0461	0.0709	0.6484	1.3900e-003	0.1226	9.2000e-004	0.1235	0.0325	8.5000e-004	0.0334		111.9416	111.9416	5.9600e-003		112.0667
Total	**0.0461**	**0.0709**	**0.6484**	**1.3900e-003**	**0.1226**	**9.2000e-004**	**0.1235**	**0.0325**	**8.5000e-004**	**0.0334**		**111.9416**	**111.9416**	**5.9600e-003**		**112.0667**

3.6 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Archit. Coating	28.0825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506		281.4485	281.4485	0.0267		282.0102
Total	**28.3812**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**		**281.4485**	**281.4485**	**0.0267**		**282.0102**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0409	0.0639	0.5776	1.3800e-003	0.1226	8.9000e-004	0.1235	0.0325	8.2000e-004	0.0333		107.7729	107.7729	5.4800e-003		107.8880
Total	**0.0409**	**0.0639**	**0.5776**	**1.3800e-003**	**0.1226**	**8.9000e-004**	**0.1235**	**0.0325**	**8.2000e-004**	**0.0333**		**107.7729**	**107.7729**	**5.4800e-003**		**107.8880**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.0825					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4485	281.4485	0.0267		282.0102
Total	**28.1123**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4485**	**281.4485**	**0.0267**		**282.0102**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0409	0.0639	0.5776	1.3800e-003	0.1226	8.9000e-004	0.1235	0.0325	8.2000e-004	0.0333		107.7729	107.7729	5.4800e-003		107.8880
Total	**0.0409**	**0.0639**	**0.5776**	**1.3800e-003**	**0.1226**	**8.9000e-004**	**0.1235**	**0.0325**	**8.2000e-004**	**0.0333**		**107.7729**	**107.7729**	**5.4800e-003**		**107.8880**

Laurel Ranch Operational Run

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	5.40	Acre	5.40	0.00	0
Other Non-Asphalt Surfaces	10.10	Acre	10.10	0.00	0
City Park	0.35	Acre	0.35	0.00	0
Single Family Housing	187.00	Dwelling Unit	38.15	336,600.00	535

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	2			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - based on PD

Architectural Coating - VOC content limit of 50 g/l

Vehicle Trips - Trip rates from traffic analysis

Mobile Land Use Mitigation - Existing project site conditions

Energy Mitigation - Exceed Title 24 by 25% for new residential development

Water Mitigation - Apply water conservation strategy

Waste Mitigation - Insitute a recycling goal of 25%

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Residential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	50.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	14.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	24.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	1,110.00	240.00
tblConstructionPhase	NumDays	110.00	120.00
tblConstructionPhase	NumDays	75.00	20.00

tblConstructionPhase	NumDays	40.00	20.00
tblGrading	AcresOfGrading	262.50	275.00
tblLandUse	LandUseSquareFeet	235,224.00	0.00
tblLandUse	LandUseSquareFeet	439,956.00	0.00
tblLandUse	LandUseSquareFeet	15,246.00	0.00
tblLandUse	LotAcreage	60.71	38.15
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	14.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	14.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	10.08	9.91
tblVehicleTrips	SU_TR	8.77	8.62
tblVehicleTrips	WD_TR	9.57	9.52
tblWaterMitigation	PercentReductionInFlowBathroomFaucet	32	20
tblWaterMitigation	PercentReductionInFlowKitchenFaucet	18	20

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.6945	0.0370	3.0917	1.8500e-003		0.2537	0.2537		0.2537	0.2537	25.8576	9.5181	35.3757	0.0579	1.3700e-003	37.0154
Energy	0.0324	0.2770	0.1179	1.7700e-003		0.0224	0.0224		0.0224	0.0224	0.0000	725.4360	725.4360	0.0244	9.6700e-003	728.9461
Mobile	1.0481	2.2337	10.5313	0.0208	1.4682	0.0272	1.4954	0.3932	0.0250	0.4182	0.0000	1,597.8153	1,597.8153	0.0694	0.0000	1,599.2735
Waste						0.0000	0.0000		0.0000	0.0000	45.6182	0.0000	45.6182	2.6960	0.0000	102.2332
Water						0.0000	0.0000		0.0000	0.0000	3.8654	27.4242	31.2896	0.3983	9.6300e-003	42.6384
Total	**3.7750**	**2.5478**	**13.7408**	**0.0244**	**1.4682**	**0.3033**	**1.7715**	**0.3932**	**0.3011**	**0.6943**	**75.3411**	**2,360.1935**	**2,435.5347**	**3.2460**	**0.0207**	**2,510.1066**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	2.6945	0.0370	3.0917	1.8500e-003		0.2537	0.2537		0.2537	0.2537	25.8576	9.5181	35.3757	0.0579	1.3700e-003	37.0154
Energy	0.0258	0.2206	0.0939	1.4100e-003		0.0178	0.0178		0.0178	0.0178	0.0000	650.1055	650.1055	0.0227	8.3800e-003	653.1794
Mobile	1.0308	2.1237	10.1205	0.0196	1.3793	0.0257	1.4049	0.3694	0.0236	0.3930	0.0000	1,504.5555	1,504.5555	0.0658	0.0000	1,505.9372
Waste						0.0000	0.0000		0.0000	0.0000	34.2136	0.0000	34.2136	2.0220	0.0000	76.6749
Water						0.0000	0.0000		0.0000	0.0000	3.0923	20.6579	23.7502	0.3185	7.6900e-003	32.8243

Total	**3.7511**	**2.3812**	**13.3061**	**0.0229**	**1.3793**	**0.2972**	**1.6764**	**0.3694**	**0.2951**	**0.6645**	**63.1635**	**2,184.8370**	**2,248.0005**	**2.4869**	**0.0174**	**2,305.6311**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.63**	**6.54**	**3.16**	**6.42**	**6.06**	**2.00**	**5.36**	**6.06**	**1.97**	**4.29**	**16.16**	**7.43**	**7.70**	**23.38**	**15.63**	**8.15**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.0308	2.1237	10.1205	0.0196	1.3793	0.0257	1.4049	0.3694	0.0236	0.3930	0.0000	1,504.5555	1,504.5555	0.0658	0.0000	1,505.9372
Unmitigated	1.0481	2.2337	10.5313	0.0208	1.4682	0.0272	1.4954	0.3932	0.0250	0.4182	0.0000	1,597.8153	1,597.8153	0.0694	0.0000	1,599.2735

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.56	0.56	0.56	1,188	1,116
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	1,780.24	1,853.17	1611.94	3,943,733	3,704,753
Total	1,780.80	1,853.73	1,612.50	3,944,921	3,705,869

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by

City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Single Family Housing	12.40	4.30	5.40	26.10	29.10	44.80	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.527495	0.065038	0.176571	0.145330	0.036305	0.004850	0.009787	0.021393	0.001225	0.001483	0.006378	0.002095	0.002051

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	394.6695	394.6695	0.0179	3.6900e-003	396.1889
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	404.5924	404.5924	0.0183	3.7900e-003	406.1500
NaturalGas Mitigated	0.0258	0.2206	0.0939	1.4100e-003		0.0178	0.0178		0.0178	0.0178	0.0000	255.4360	255.4360	4.9000e-003	4.6800e-003	256.9905
NaturalGas Unmitigated	0.0324	0.2770	0.1179	1.7700e-003		0.0224	0.0224		0.0224	0.0224	0.0000	320.8436	320.8436	6.1500e-003	5.8800e-003	322.7962

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	6.01238e+006	0.0324	0.2770	0.1179	1.7700e-003		0.0224	0.0224		0.0224	0.0224	0.0000	320.8436	320.8436	6.1500e-003	5.8800e-003	322.7962
Total		**0.0324**	**0.2770**	**0.1179**	**1.7700e-003**		**0.0224**	**0.0224**		**0.0224**	**0.0224**	**0.0000**	**320.8436**	**320.8436**	**6.1500e-003**	**5.8800e-003**	**322.7962**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.78669e+006	0.0258	0.2206	0.0939	1.4100e-003		0.0178	0.0178		0.0178	0.0178	0.0000	255.4360	255.4360	4.9000e-003	4.6800e-003	256.9905
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0258**	**0.2206**	**0.0939**	**1.4100e-003**		**0.0178**	**0.0178**		**0.0178**	**0.0178**	**0.0000**	**255.4360**	**255.4360**	**4.9000e-003**	**4.6800e-003**	**256.9905**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000

Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.39078e+006	404.5924	0.0183	3.7900e-003	406.1500
Total		**404.5924**	**0.0183**	**3.7900e-003**	**406.1500**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	1.35667e+006	394.6695	0.0179	3.6900e-003	396.1889
Total		**394.6695**	**0.0179**	**3.6900e-003**	**396.1889**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.6945	0.0370	3.0917	1.8500e-003		0.2537	0.2537		0.2537	0.2537	25.8576	9.5181	35.3757	0.0579	1.3700e-003	37.0154
Unmitigated	2.6945	0.0370	3.0917	1.8500e-003		0.2537	0.2537		0.2537	0.2537	25.8576	9.5181	35.3757	0.0579	1.3700e-003	37.0154

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2370					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3146					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.0992	0.0207	1.6891	1.7700e-003		0.2461	0.2461		0.2461	0.2461	25.8576	7.2497	33.1073	0.0556	1.3700e-003	34.6992
Landscaping	0.0437	0.0164	1.4026	7.0000e-005		7.6200e-003	7.6200e-003		7.6200e-003	7.6200e-003	0.0000	2.2684	2.2684	2.2800e-003	0.0000	2.3162
Total	**2.6945**	**0.0370**	**3.0917**	**1.8400e-003**		**0.2537**	**0.2537**		**0.2537**	**0.2537**	**25.8576**	**9.5181**	**35.3757**	**0.0579**	**1.3700e-003**	**37.0154**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2370					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.3146					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.0992	0.0207	1.6891	1.7700e-003		0.2461	0.2461		0.2461	0.2461	25.8576	7.2497	33.1073	0.0556	1.3700e-003	34.6992
Landscaping	0.0437	0.0164	1.4026	7.0000e-005		7.6200e-003	7.6200e-003		7.6200e-003	7.6200e-003	0.0000	2.2684	2.2684	2.2800e-003	0.0000	2.3162
Total	**2.6945**	**0.0370**	**3.0917**	**1.8400e-003**		**0.2537**	**0.2537**		**0.2537**	**0.2537**	**25.8576**	**9.5181**	**35.3757**	**0.0579**	**1.3700e-003**	**37.0154**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	23.7502	0.3185	7.6900e-003	32.8243
Unmitigated	31.2896	0.3983	9.6300e-003	42.6384

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.417018	0.4246	2.0000e-005	0.0000	0.4262
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	12.1838 / 7.68109	30.8650	0.3982	9.6300e-003	42.2121
Total		**31.2896**	**0.3983**	**9.6300e-003**	**42.6384**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.333615	0.3397	2.0000e-005	0.0000	0.3410

Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	9.74704 / 6.14487	23.4105	0.3185	7.6900e-003	32.4833
Total		**23.7502**	**0.3186**	**7.6900e-003**	**32.8243**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	34.2136	2.0220	0.0000	76.6749
Unmitigated	45.6182	2.6960	0.0000	102.2332

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.03	6.0900e-003	3.6000e-004	0.0000	0.0137
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	224.7	45.6121	2.6956	0.0000	102.2196

Total		**45.6182**	**2.6960**	**0.0000**	**102.2332**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.0225	4.5700e-003	2.7000e-004	0.0000	0.0102
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	168.525	34.2091	2.0217	0.0000	76.6647
Total		**34.2136**	**2.0220**	**0.0000**	**76.6749**

Laurel Ranch Operational Run

Contra Costa County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	5.40	Acre	5.40	0.00	0
Other Non-Asphalt Surfaces	10.10	Acre	10.10	0.00	0
City Park	0.35	Acre	0.35	0.00	0
Single Family Housing	187.00	Dwelling Unit	38.15	336,600.00	535

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	2			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - based on PD

Mobile Land Use Mitigation - Existing project site conditions

Energy Mitigation - Exceed Title 24 by 25% for new residential development

Water Mitigation - Apply water conservation strategy

Waste Mitigation - Insitute a recycling goal of 25%

Table Name	Column Name	Default Value	New Value

tblArchitecturalCoating	EF_Residential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	50.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	14.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	24.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	1,110.00	240.00
tblConstructionPhase	NumDays	110.00	120.00
tblConstructionPhase	NumDays	75.00	20.00
tblConstructionPhase	NumDays	40.00	20.00

tblGrading	AcresOfGrading	262.50	275.00
tblLandUse	LandUseSquareFeet	235,224.00	0.00
tblLandUse	LandUseSquareFeet	439,956.00	0.00
tblLandUse	LandUseSquareFeet	15,246.00	0.00
tblLandUse	LotAcreage	60.71	38.15
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	14.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	14.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	10.08	9.91
tblVehicleTrips	SU_TR	8.77	8.62
tblVehicleTrips	WD_TR	9.57	9.52
tblWaterMitigation	PercentReductionInFlowBathroomFaucet	32	20
tblWaterMitigation	PercentReductionInFlowKitchenFaucet	18	20

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	344.0410	4.6069	421.3047	0.1359		56.9006	56.9006		56.8989	56.8989	5,900.5316	2,568.7828	8,469.3144	4.7378	0.4792	8,717.3727
Energy	0.1776	1.5180	0.6460	9.6900e-003		0.1227	0.1227		0.1227	0.1227		1,937.9149	1,937.9149	0.0371	0.0355	1,949.7087
Mobile	6.4312	12.0695	59.7543	0.1287	8.7608	0.1564	8.9172	2.3396	0.1439	2.4835		10,866.0938	10,866.0938	0.4416		10,875.3666
Total	**350.6499**	**18.1944**	**481.7050**	**0.2743**	**8.7608**	**57.1798**	**65.9406**	**2.3396**	**57.1656**	**59.5052**	**5,900.5316**	**15,372.7914**	**21,273.3231**	**5.2165**	**0.5148**	**21,542.4481**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	344.0410	4.6069	421.3047	0.1359		56.9006	56.9006		56.8989	56.8989	5,900.5316	2,568.7828	8,469.3144	4.7378	0.4792	8,717.3727
Energy	0.1414	1.2086	0.5143	7.7100e-003		0.0977	0.0977		0.0977	0.0977		1,542.8490	1,542.8490	0.0296	0.0283	1,552.2385
Mobile	6.3280	11.4758	57.0390	0.1212	8.2299	0.1478	8.3778	2.1979	0.1360	2.3339		10,230.5943	10,230.5943	0.4184		10,239.3798
Total	**350.5105**	**17.2912**	**478.8581**	**0.2648**	**8.2299**	**57.1462**	**65.3761**	**2.1979**	**57.1326**	**59.3305**	**5,900.5316**	**14,342.2260**	**20,242.7577**	**5.1857**	**0.5075**	**20,508.9910**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.04**	**4.96**	**0.59**	**3.47**	**6.06**	**0.06**	**0.86**	**6.06**	**0.06**	**0.29**	**0.00**	**6.70**	**4.84**	**0.59**	**1.41**	**4.80**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.3280	11.4758	57.0390	0.1212	8.2299	0.1478	8.3778	2.1979	0.1360	2.3339		10,230.5943	10,230.5943	0.4184		10,239.3798
Unmitigated	6.4312	12.0695	59.7543	0.1287	8.7608	0.1564	8.9172	2.3396	0.1439	2.4835		10,866.0938	10,866.0938	0.4416		10,875.3666

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.56	0.56	0.56	1,188	1,116
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	1,780.24	1,853.17	1611.94	3,943,733	3,704,753
Total	1,780.80	1,853.73	1,612.50	3,944,921	3,705,869

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Single Family Housing	12.40	4.30	5.40	26.10	29.10	44.80	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.527495	0.065038	0.176571	0.145330	0.036305	0.004850	0.009787	0.021393	0.001225	0.001483	0.006378	0.002095	0.002051

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1414	1.2086	0.5143	7.7100e-003		0.0977	0.0977		0.0977	0.0977		1,542.8490	1,542.8490	0.0296	0.0283	1,552.2385
NaturalGas Unmitigated	0.1776	1.5180	0.6460	9.6900e-003		0.1227	0.1227		0.1227	0.1227		1,937.9149	1,937.9149	0.0371	0.0355	1,949.7087

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	16472.3	0.1776	1.5180	0.6460	9.6900e-003		0.1227	0.1227		0.1227	0.1227		1,937.9149	1,937.9149	0.0371	0.0355	1,949.7087
Total		**0.1776**	**1.5180**	**0.6460**	**9.6900e-003**		**0.1227**	**0.1227**		**0.1227**	**0.1227**		**1,937.9149**	**1,937.9149**	**0.0371**	**0.0355**	**1,949.7087**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	13.1142	0.1414	1.2086	0.5143	7.7100e-003		0.0977	0.0977		0.0977	0.0977		1,542.8490	1,542.8490	0.0296	0.0283	1,552.2385
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.1414**	**1.2086**	**0.5143**	**7.7100e-003**		**0.0977**	**0.0977**		**0.0977**	**0.0977**		**1,542.8490**	**1,542.8490**	**0.0296**	**0.0283**	**1,552.2385**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	344.0410	4.6069	421.3047	0.1359		56.9006	56.9006		56.8989	56.8989	5,900.5316	2,568.7828	8,469.3144	4.7378	0.4792	8,717.3727
Unmitigated	344.0410	4.6069	421.3047	0.1359		56.9006	56.9006		56.8989	56.8989	5,900.5316	2,568.7828	8,469.3144	4.7378	0.4792	8,717.3727

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.2983					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	7.2032					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Hearth	335.0541	4.4252	405.7199	0.1351		56.8160	56.8160		56.8143	56.8143	5,900.5316	2,541.0000	8,441.5316	4.7099	0.4792	8,689.0042
Landscaping	0.4854	0.1817	15.5848	8.1000e-004		0.0846	0.0846		0.0846	0.0846		27.7828	27.7828	0.0279		28.3685
Total	**344.0410**	**4.6069**	**421.3047**	**0.1359**		**56.9006**	**56.9006**		**56.8989**	**56.8989**	**5,900.5316**	**2,568.7828**	**8,469.3144**	**4.7378**	**0.4792**	**8,717.3727**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.2983					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	7.2032					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	335.0541	4.4252	405.7199	0.1351		56.8160	56.8160		56.8143	56.8143	5,900.5316	2,541.0000	8,441.5316	4.7099	0.4792	8,689.0042
Landscaping	0.4854	0.1817	15.5848	8.1000e-004		0.0846	0.0846		0.0846	0.0846		27.7828	27.7828	0.0279		28.3685
Total	**344.0410**	**4.6069**	**421.3047**	**0.1359**		**56.9006**	**56.9006**		**56.8989**	**56.8989**	**5,900.5316**	**2,568.7828**	**8,469.3144**	**4.7378**	**0.4792**	**8,717.3727**

Laurel Ranch Operational Run

Contra Costa County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	5.40	Acre	5.40	0.00	0
Other Non-Asphalt Surfaces	10.10	Acre	10.10	0.00	0
City Park	0.35	Acre	0.35	0.00	0
Single Family Housing	187.00	Dwelling Unit	38.15	336,600.00	535

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	2			**Operational Year**	2017
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - based on PD

Architectural Coating - VOC content limit of 50 g/l

Vehicle Trips - Trip rates from traffic analysis

Mobile Land Use Mitigation - Existing project site conditions

Energy Mitigation - Exceed Title 24 by 25% for new residential development

Water Mitigation - Apply water conservation strategy

Waste Mitigation - Insitute a recycling goal of 25%

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Residential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	100.00	50.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	14.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	24.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	1,110.00	240.00
tblConstructionPhase	NumDays	110.00	120.00
tblConstructionPhase	NumDays	75.00	20.00

tblConstructionPhase	NumDays	40.00	20.00
tblGrading	AcresOfGrading	262.50	275.00
tblLandUse	LandUseSquareFeet	235,224.00	0.00
tblLandUse	LandUseSquareFeet	439,956.00	0.00
tblLandUse	LandUseSquareFeet	15,246.00	0.00
tblLandUse	LotAcreage	60.71	38.15
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	14.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	6.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	14.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	8.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	5.00
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	10.08	9.91
tblVehicleTrips	SU_TR	8.77	8.62
tblVehicleTrips	WD_TR	9.57	9.52
tblWaterMitigation	PercentReductionInFlowBathroomFaucet	32	20
tblWaterMitigation	PercentReductionInFlowKitchenFaucet	18	20

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	344.0410	4.6069	421.3047	0.1359		56.9006	56.9006		56.8989	56.8989	5,900.5316	2,568.7828	8,469.3144	4.7378	0.4792	8,717.3727
Energy	0.1776	1.5180	0.6460	9.6900e-003		0.1227	0.1227		0.1227	0.1227		1,937.9149	1,937.9149	0.0371	0.0355	1,949.7087
Mobile	6.4821	13.5008	67.0491	0.1190	8.7608	0.1572	8.9180	2.3396	0.1446	2.4843		10,061.2982	10,061.2982	0.4419		10,070.5783
Total	**350.7008**	**19.6257**	**488.9998**	**0.2646**	**8.7608**	**57.1806**	**65.9414**	**2.3396**	**57.1663**	**59.5059**	**5,900.5316**	**14,567.9958**	**20,468.5275**	**5.2168**	**0.5148**	**20,737.6597**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	344.0410	4.6069	421.3047	0.1359		56.9006	56.9006		56.8989	56.8989	5,900.5316	2,568.7828	8,469.3144	4.7378	0.4792	8,717.3727
Energy	0.1414	1.2086	0.5143	7.7100e-003		0.0977	0.0977		0.0977	0.0977		1,542.8490	1,542.8490	0.0296	0.0283	1,552.2385
Mobile	6.3809	12.8344	64.6569	0.1121	8.2299	0.1486	8.3785	2.1979	0.1367	2.3346		9,473.8783	9,473.8783	0.4187		9,482.6711
Total	**350.5634**	**18.6499**	**486.4759**	**0.2557**	**8.2299**	**57.1470**	**65.3769**	**2.1979**	**57.1334**	**59.3312**	**5,900.5316**	**13,585.5101**	**19,486.0417**	**5.1861**	**0.5075**	**19,752.2823**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.04**	**4.97**	**0.52**	**3.36**	**6.06**	**0.06**	**0.86**	**6.06**	**0.06**	**0.29**	**0.00**	**6.74**	**4.80**	**0.59**	**1.41**	**4.75**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Destination Accessibility

Increase Transit Accessibility

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.3809	12.8344	64.6569	0.1121	8.2299	0.1486	8.3785	2.1979	0.1367	2.3346		9,473.8783	9,473.8783	0.4187		9,482.6711
Unmitigated	6.4821	13.5008	67.0491	0.1190	8.7608	0.1572	8.9180	2.3396	0.1446	2.4843		10,061.2982	10,061.2982	0.4419		10,070.5783

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.56	0.56	0.56	1,188	1,116
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	1,780.24	1,853.17	1611.94	3,943,733	3,704,753
Total	1,780.80	1,853.73	1,612.50	3,944,921	3,705,869

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	9.50	7.30	7.30	33.00	48.00	19.00	66	28	6
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Single Family Housing	12.40	4.30	5.40	26.10	29.10	44.80	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.527495	0.065038	0.176571	0.145330	0.036305	0.004850	0.009787	0.021393	0.001225	0.001483	0.006378	0.002095	0.002051

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.1414	1.2086	0.5143	7.7100e-003		0.0977	0.0977		0.0977	0.0977		1,542.8490	1,542.8490	0.0296	0.0283	1,552.2385
NaturalGas Unmitigated	0.1776	1.5180	0.6460	9.6900e-003		0.1227	0.1227		0.1227	0.1227		1,937.9149	1,937.9149	0.0371	0.0355	1,949.7087

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	16472.3	0.1776	1.5180	0.6460	9.6900e-003		0.1227	0.1227		0.1227	0.1227		1,937.9149	1,937.9149	0.0371	0.0355	1,949.7087
Total		**0.1776**	**1.5180**	**0.6460**	**9.6900e-003**		**0.1227**	**0.1227**		**0.1227**	**0.1227**		**1,937.9149**	**1,937.9149**	**0.0371**	**0.0355**	**1,949.7087**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Single Family Housing	13.1142	0.1414	1.2086	0.5143	7.7100e-003		0.0977	0.0977		0.0977	0.0977		1,542.8490	1,542.8490	0.0296	0.0283	1,552.2385
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.1414**	**1.2086**	**0.5143**	**7.7100e-003**		**0.0977**	**0.0977**		**0.0977**	**0.0977**		**1,542.8490**	**1,542.8490**	**0.0296**	**0.0283**	**1,552.2385**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	344.0410	4.6069	421.3047	0.1359		56.9006	56.9006		56.8989	56.8989	5,900.5316	2,568.7828	8,469.3144	4.7378	0.4792	8,717.3727
Unmitigated	344.0410	4.6069	421.3047	0.1359		56.9006	56.9006		56.8989	56.8989	5,900.5316	2,568.7828	8,469.3144	4.7378	0.4792	8,717.3727

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.2983					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	7.2032					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	335.0541	4.4252	405.7199	0.1351		56.8160	56.8160		56.8143	56.8143	5,900.5316	2,541.0000	8,441.5316	4.7099	0.4792	8,689.0042

Landscaping	0.4854	0.1817	15.5848	8.1000e-004		0.0846	0.0846		0.0846	0.0846		27.7828	27.7828	0.0279		28.3685
Total	**344.0410**	**4.6069**	**421.3047**	**0.1359**		**56.9006**	**56.9006**		**56.8989**	**56.8989**	**5,900.5316**	**2,568.7828**	**8,469.3144**	**4.7378**	**0.4792**	**8,717.3727**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.2983					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	7.2032					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	335.0541	4.4252	405.7199	0.1351		56.8160	56.8160		56.8143	56.8143	5,900.5316	2,541.0000	8,441.5316	4.7099	0.4792	8,689.0042
Landscaping	0.4854	0.1817	15.5848	8.1000e-004		0.0846	0.0846		0.0846	0.0846		27.7828	27.7828	0.0279		28.3685
Total	**344.0410**	**4.6069**	**421.3047**	**0.1359**		**56.9006**	**56.9006**		**56.8989**	**56.8989**	**5,900.5316**	**2,568.7828**	**8,469.3144**	**4.7378**	**0.4792**	**8,717.3727**

A.2 - Health Risk Assessment Output

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Appendix A-2

Assessment of Health Risks to the Proposed Laurel Ranch Subdivision Project
March 8, 2016

Appendix A-2 summarizes the methods, assumptions, and results of a health risk assessment that evaluates the potential health impacts from toxics air emissions from the Laurel Ranch Subdivision Project (Project) construction on nearby residents as well as the impacts of nearby sources of toxics air emissions on the residents of the Project.

1.0 Assessment of Health Risk Impacts

There are basically two types of land use projects that have the potential to cause public health risk impacts: Type A - Land use projects with toxic emissions that impact nearby receptors, and Type B - Land use projects that place receptors in the vicinity of existing sources of toxics emissions.

Type A project examples include (project impacting receptors):

- Construction projects
- Combustion related power plants,
- Gasoline dispensing facilities,
- Asphalt batch plants,
- Warehouse distribution centers,
- Quarry operations, and
- Other stationary sources that emit toxic substances.

Type B project examples include (project impacted by existing nearby toxic sources):

- Residential, commercial, and institutional developments proposed to be located in the vicinity of existing toxic emission sources such as:
    - Stationary sources,
    - High traffic roads
    - Freeways,
    - Rail yards, and
    - Ports.

The construction and operation of a residential project involves both types of land use projects:

- Type A: involves the impacts of the project's construction toxics air contaminant (TAC) emissions on nearby sensitive receptors, and
- Type B: once the residential project is complete and operational, the cumulative impacts from nearby TAC emission sources on the sensitive receptors located within the project.

This health risk assessment evaluates the potential health risk impacts from both types of land use projects. This health risk assessment involves the following processes: estimate the TAC emissions of concern, estimate the dispersion of these emissions from the respective emission sources affecting nearby receptors, and estimate the resulting health risk impacts at these receptors.

1. 1 Health Risk Significance Thresholds

The BAAQMD adopted thresholds of significance in May 2010 in its CEQA Air Quality Guidelines (Guidelines)[1] for air quality and greenhouse gas impacts of projects and plans proposed in Bay Area. Although the Guidelines are currently not in effect due to a legal challenge, they provide thresholds supported by substantial evidence that can be used by local agencies based on their own authority to adopt and use thresholds. These thresholds have been adopted for this health risk assessment. The BAAQMD thresholds for health impacts are provided in Table 1. In terms of this assessment, the significance thresholds for the Project Impact scenario apply to the Project's construction impacts on nearby sensitive receptors (Type A assessment) while the Community Cumulative Impact scenario applies to the cumulative impacts of surrounding sources of TAC emissions on the Project's residential receptors (Type B assessment).

Table 1: BAAQMD Health Risk Significance Thresholds

Scenario	Cancer Risk (in a million)[1]	Chronic Hazard Index[2]	Acute Hazard Index[3]	$PM_{2.5}$[4] (mg/m^3)
Project Impact	10	1	1	0.3
Community Cumulative Impact[5]	100	10	10	0.8

Notes:
BAAQMD = Bay Area Air Quality Management District.
[1] Cancer risk units are in number of additional cancer incidents out of one million people.
[2] Non-cancer chronic hazard index is the ratio of the annual average concentration of pollutants to the chronic reference exposure level.
[3] Non-cancer acute hazard index is the ratio of the 1-hour average concentration of pollutants to the acute reference exposure level.
[4] $PM_{2.5}$ = annual average particulate matter with aerodynamic diameter less than 2.5 microns.
[5] Community Cumulative Impacts are determined based on an assessment of TAC emissions from emission sources located within a radius of 1,000 feet from the project (also known the zone of influence).
Source: BAAQMD, 2010[1].

[1] BAAQMD 2010. California Environmental Quality Act Air Quality Guidelines. Website: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/draft_baaqmd_ceqa_guidelines_may_2010_final.pdf?la=en:

1.2 Estimation of Construction Toxics Air Contaminant Emissions and Impacts (TYPE A Assessment)

This section describes the assumptions, methods, and impacts of the Project's construction emissions on the surrounding environment as a Type A land use assessment. Specific focus is placed on assessment the health risks from several different toxic air contaminant emissions from Project construction.

1.2.1 Estimation of Construction Emissions

Air pollutant emissions can be estimated by using emission factors and a level of activity. Emission factors represent the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant , for example, grams of diesel particulate matter (DPM) per mile traveled or per horsepower per hour of operation. The California Air Resources Board (ARB) has published emission factors for on-road mobile vehicles in the Emission Factors (EMFAC) mobile source emissions model, and emission factors for off-road equipment and vehicles in the OFFROAD emissions model. An air emissions model (or calculator) combines the emission factors and the various levels of activity and outputs the emissions for the various pollutants and pieces of equipment.

The construction of the Project would result in the emissions of toxics air contaminants (TACs) the most important of which is diesel particulate matter (DPM). Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. Diesel exhaust is a major source of ultrafine particulate pollution as well, and studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. Other emissions of concern include those labeled at total organic gas (TOG) emissions which are important is causing non-cancer health impacts.

The air emissions model applied to estimate the Project's construction emissions was the California Emissions Estimator Model (CalEEMod) version 2013.2.2. The CalEEMod model was developed in cooperation with several air districts throughout the State and is designed as a uniform platform for government agencies, land use planners, and environmental professionals in quantifying potential air pollutant emissions associated with construction and operation from a variety of land uses.

The Project construction was assumed to commence in January 2017 and end October 2018 (see Appendix A-1 of the Project Initial Study for the assumption on the construction activities, schedule, and equipment inventory). Based on the construction schedule and equipment inventory derived from the CalEEMod model, Table 2 summarizes the Project's annual and maximum daily construction DPM emissions and maximum hourly total organic gas (TOG) emissions prior to the application of mitigation. Note that the annual DPM emissions are necessary in calculating the Project's cancer risks, chronic non-cancer hazards, and annual $PM_{2.5}$ impacts while the hourly DPM and TOG emissions are used in estimating the Project's acute non-cancer hazards.

Table 2: Project Construction DPM and TOG Emissions – No Mitigation

Year	Diesel Particulate Matter (DPM as $PM_{2.5}$ Exhaust)		Total Organic Gases (TOG)
	Annual Emissions (tons/year)	Maximum Hourly Emissions (pounds/hour)	Maximum Hourly Emissions (pounds/hour)
2017	0.335	0.415	0.856
2018	0.106	0.190	0.427
Source: CalEEMod model output for construction; see Appendix A-1 of the Initial Study			

1.2.2 Air Dispersion Modeling of Construction Impacts

To estimate pollutant impacts at locations surrounding the Project, use was made of an air dispersion model identified as the Industrial Source complex Mode (ISC) air dispersion model that is approved by the BAAQMD for performing health risk assessments. The ISC model is an air quality assessment tool developed by the US Environmental Protection Agency that is used to simulate the transport and dispersion of the Project's construction emissions through the air to specific locations surrounding the project known as receptor locations. The ISC model uses the construction emissions, representative meteorological data, and locations of the emission source and surrounding receptors to estimate construction impacts at the receptors.

Based on a review of the site plan, the construction emissions were assumed to be distributed uniformly over an area of approximately 54 acres in size within the ISC air dispersion model with an emission release height of 5 meters. Construction was assumed to take place 8 hours per day, 5 days per week. The meteorological data necessary to operate the ISC model were taken from the BAAQMD Bethel Island air monitoring station for the years 2001 to 2005.

1.2.3 Locations of Sensitive Receptors

The receptor locations included in the AERMOD model consisted of the existing residences located to the west of the Project and land uses zoned as residential to the south of the Project.

1.2.4 Estimating Health Risks

The following section discusses the methods, assumption, and results of the health risk assessment of the toxics air emissions from the Project construction on nearby sensitive/residential receptors.

About Health Risk Assessments

A Health Risk Assessment (HRA) is a guide that helps to determine whether current or future exposures to a chemical or substance in the environment could affect the health of a population. In general, risk depends on the following factors:

- How much of a chemical is present in an environmental medium (e.g., air);

- How much contact (exposure) a person has with the contaminated environmental medium; and
- The inherent toxicity of the chemical.

The HRA of TACs requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risks at each sensitive receptor location. The State of California Office of Environmental Health Hazards Assessment (OEHHA) develops methods for conducting health risk assessments. As defined under the Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588 [Chapter 1252, Statutes of 1987, California Health and Safety Code Section 44306]), "A health risk assessment means a detailed comprehensive analysis prepared pursuant to Section 44361 to evaluate and predict the dispersion of hazardous substances in the environment and the potential for exposure of human populations and to assess and quantify both the individual and population-wide health risks associated with those levels of exposure."

Estimates of health impacts that could potentially affect sensitive receptors were derived from the emissions of DPM and TOG using the methodology described below. This methodology is based on the assumptions published by the BAAQMD (BAAQMD 2012)[2] and (BAAQMD 2016: Draft)[3] and incorporates the effects of increased sensitivities of young children to exposures to TACs.

Cancer Risk

Cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer as a direct result of exposure to potential carcinogens over a specified exposure duration. The estimated risk is expressed as a probability. The cancer risk attributed to a chemical is calculated by multiplying the chemical intake or dose at the human exchange boundaries (e.g., lungs) by the chemical-specific cancer potency factor (CPF). A risk level of 1 in a million implies a likelihood that up to one person, out of one million equally exposed people would contract cancer if exposed continuously (24 hours per day) to the levels of toxic air contaminants over a specified duration of time. This risk would be an excess cancer risk that is in addition to any cancer risk borne by a person not exposed to these air toxics.

DPM constitutes the vast majority of health effects from the emissions of TACs during construction. The cancer risk from DPM is calculated by multiplying the average air concentration of DPM calculated using the ISC air dispersion model at each receptor location and an inhalation exposure factor as expressed in Equation 1 below.

---

[2] BAAQMD 2012. Recommended Methods for Screening and Modeling Local Risks and Hazards/ Web Site: http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/risk-modeling-approach-may-2012.pdf?la=en

[3] BAAQMD 2016: Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines. Website: http://www.baaqmd.gov/~/media/files/planning-and-research/rules-and-regs/workshops/2016/reg-2-5/hra-guidelines_clean_jan_2016-pdf.pdf?la=en

Cancer Risk = C_{DPM} x Inhalation Exposure Factor (EQ-1)

Where:

Cancer Risk = Total individual excess cancer risk defined as the cancer risk a hypothetical individual faces if exposed to carcinogenic emissions from a particular source for specified exposure durations; this risk is defined as an excess risk because it is above and beyond the background cancer risk to the population; cancer risk is expressed in terms of risk per million exposed individuals.

C_{DPM} = Period average DPM air concentration calculated from the air dispersion model in $\mu g/m^3$

Inhalation is the most important exposure pathway to impact human health from TACs and the inhalation exposure factor is defined as follows:

Inhalation Exposure Factor = CPF x EF x ED x AAF / AT (EQ-2)

Where:

CPF = Inhalation cancer potency factor for the TAC: 1.1 $(mg/kg\text{-}day)^{-1}$ for DPM

EF = Exposure frequency (350 days/year)

ED = Exposure duration (length of the construction period)

AT = Averaging time period over which exposure is averaged (25,550 days)

AAF = set of age-specific adjustment factors that include age sensitivity factors (ASF), daily breathing rates (DBR), and time at home factors (TAH)

Cancer Risk Age-Specific Adjustment Factors, AAF

The BAAQMD recommends a set of assumptions for estimating cancer risks that incorporate early-in-life cancer risk adjustment factors that account for the increased sensitivity and susceptibility of infants and young children to exposures to airborne carcinogens. These adjustment factors include age-sensitivity weighting factors, age-specific daily breathing rates, and age-specific time-at-home factors. The BAAQMD recommend values for the various cancer risk parameters shown in Equation 2 for sensitive/residential receptors are provided in Table 3 as applied to children and adults. Note that because of the short duration of the Project construction (approximately $1^{3/4}$ years), the age-specific adjustment factors for the third trimester and 0-2 years of age apply in estimating cancer risks from Project construction. A cancer risk of zero would apply to all years beyond year 2.

Table 3: Exposure Assumptions for Cancer Risk – OEHHA/BAAQMD Guidance

Receptor Type	Exposure Frequency		Exposure Duration (years)	Age Sensitivity Factors (ASF)	Time at Home Factor (TAH) (%)	Daily Breathing Rate[(1)] (DBR) (L/kg-day)
	Hours/ day	Days/year				
Sensitive/Residential - Children						
3rd Trimester	24	350	0.25	10	85	361
0-2 years	24	350	2	10	85	1,090
Sensitive/Residential - Adults						
Adults	24	350	2	1	73	233

Notes:

(1) The daily breathing rates recommended by the BAAQMD for sensitive/residential receptors assume the 95th percentile breathing rates for all individuals less than 2 years of age and 80th percentile for adults
(L/kg-day) = liters per kilogram body weight per day
Source: BAAQMD 2016

Non-cancer Hazards

Separate from cancer risk impacts, exposures to TACs can also cause chronic (long-term) and acute (short-term) related non-cancer illnesses such as reproductive effects, respiratory effects, eye sensitivity, immune effects, kidney effects, blood effects, central nervous system, birth defects, or other adverse environmental effects. Risk characterization for non-cancer health risks from TACs is expressed as a hazard index (HI). The HI is a ratio of the predicted concentration of a project's emissions to a concentration considered acceptable to public health professionals, termed the Reference Exposure Level (REL). This is a separate and distinct analysis from the analysis conducted for cancer risk. For chronic or long-term exposures to DPM, the California OEHHA has assigned a chronic non-cancer REL of 5 µg/m^3 for DPM[4]. DPM has effects on the respiratory system, which accounts for essentially all of its potential chronic non-cancer hazards. Therefore, the only HI calculated was for the respiratory system.

Exposures to toxics air contaminants can also have short-term or acute non-cancer effects, typically dealing with exposures over an hour or so. The California OEHHA has not defined a reference exposure level for DPM appropriate for estimating acute non-cancer hazards from DPM. Therefore, to estimate the potential acute non-cancer impacts from the Project construction, it was necessary to examine the

[4] OEHHA 2015. Table of All RELs. Website: http://oehha.ca.gov/air/allrels.html

various individual chemical components (or chemical species) that comprise the emissions from the diesel construction equipment. For this purpose, use was made of emission source profiles for TOG and DPM that provide estimates of the various chemical components that comprise the exhaust from diesel construction equipment. From this information, an estimate can be made of the maximum one-hour average concentration levels of the Project's various chemical species from which an acute non-cancer hazard index can be determined.

1.2.5 Results of the Project Construction Health Risk Assessment

The potential health impacts to sensitive/residential receptor locations surrounding the Project from the construction of the Project are shown in Table 4 prior to the application of mitigation. As noted from Table 4, the construction of the Project would exceed the BAAQMD's cancer risk significance threshold of 10 in one million. These maximum health impacts occur at locations within the area zoned as future residential along the southern property line of the Project. Therefore, without mitigation, the Project would result in significant health risk impacts.

Table 4: Maximum Project Impacts from the Project Construction (Without Mitigation)

Health Impact	Risk (risk per million)	Significance Threshold (risk/million)	Exceeds Threshold ?
Cancer Risk – Children Cancer Risk - Adults	23.8 0.5	10 10	Yes No
Health Impact	**Hazard Index**	**Significance Threshold**	**Exceeds Threshold ?**
Chronic Non-cancer Hazard Index	0.03	1.0	No
Acute Non-cancer Hazard Index	0.05	1.0	No
Health Impact	**Annual Concentration ($\mu g/m^3$)**	**Significance Threshold ($\mu g/m^3$)**	**Exceeds Threshold ?**
Annual $PM_{2.5}$	0.12	0.3	No
Source: see Attachment A			

Level of Significance Before Mitigation

Potentially significant

Mitigation

The following mitigation measure is required to reduce the Project health impacts to less than significant.

MM Air-01 Off-road diesel-powered construction equipment greater than 50 horsepower shall meet United States Environmental Protection Agency Tier III off-road emissions standards. A copy of each unit's certified tier specification shall be available for inspection by the City of Rancho Cucamonga at the time of mobilization of each applicable unit of equipment.

Level of Significance After Mitigation

Less than significant. Table 5 summarizes the maximum health impacts from Project construction after mitigation. As noted the maximum impacts are less than the significance thresholds for cancer risk.

Table 5: Maximum Project Impacts from the Project Construction (With Mitigation)

Health Impact	Risk (risk per million)	Significance Threshold (risk/million)	Exceeds Threshold ?
Cancer Risk - Children	9.8	10	No
Source: see Attachment A			

1.3 Estimation of Cumulative Health Impacts (TYPE B Assessment)

A Type B assessment examines the potential health impacts from nearby sources of TAC emissions on the Project's residential land uses once the project commences operation. The BAAQMD recommends that the Type B assessment identify all sources of TAC emissions within a 1,000 foot zone of influence of an affected project. The BAAQMD has developed and published a series of internet-based assessment tools that can be used to identify such emission sources and quantify their respective health impacts. These tools include a highway screening tool, roadway screening tool, and a stationary source screening tool.

1.3.1 TAC Emission Sources Located Within 1,000 Feet of the Project

Based on a review of the various BAAQMD internet-based assessment tools, there are two sources of TAC emissions that are within the 1,000 foot zone of influence of the Project. These emission sources are shown in Table 6.

Table 6: Identification of TAC Emission Sources Within1,000 feet of the Project

Emission Source	Location
Verizon Wireless Generator Facility ID:18888	Adjacent to the Project at the northern boundary
State Route 4	Adjacent to the Project along the eastern boundary
Source: BAAQMD Stationary Source Screening Analysis Tool and Google Earth	

The BAAQMD internet-based stationary source assessment tool was used to estimate the health impacts from the Verizon Wireless facility. However, the BAAQMD highway screening tool does not include a health impact assessment for State Route 4. Therefore, it was necessary to develop a health risk assessment for State Route 4. To assess the impacts from State Route 4, an hour-by-hour profile of vehicle traffic along State Route 4 was developed using traffic count information collected by the California Department of Transportation (CDOT) as part of their Performance Measurement System (PeMS)[5]. The PeMS system collects real-time traffic information from over 39,000 individual detectors. These sensors span the freeway system across all major metropolitan areas of the State of California. The collected data include traffic volumes, vehicle speeds, and truck percentages. The most recent full year of PeMs data is from 2014. Two PeMs monitoring detectors are located near the Laurel Road and State Route 4 interchange. From this information, traffic profiles for each hour of the day were prepared for the southbound and northbound lanes of State Route 4. The traffic profiles included, for each traffic direction and hour of the day, vehicle volumes, average vehicle speed, and vehicle mix (trucks vs passenger vehicles). Emissions of DPM and TOG were derived from this information based on the relevant emission factor information for the identified vehicle types and their speeds. The assessment process for State Route 4 is presented in Attachment B.

Table 7 summarizes the estimated cumulative health impacts from both the stationary source (Verizon Wireless generator) and State Route 4 on the residential locations within the Project. As noted from Table 7, the cumulative health impacts from the two TAC emission sources do not exceed the BAAQMD cumulative health significance thresholds.

Table 7: Summary of Cumulative Health Impacts from TAC Emission Sources Within 1,000 Feet of the Project

Health Impact	Risk (risk per million)	Cumulative Significance Threshold (risk/million)	Exceeds Threshold ?
Cancer Risk > Verizon Wireless > State Route 4 Total	 0.3 3.2 3.5	100	No
Health Impact	**Hazard Index**	**Cumulative Significance Threshold**	**Exceeds Threshold ?**
Chronic Non-cancer Hazard Index > Verizon Wireless > State Route 4 Total	 0.001 0.001 0.002	10	No
Acute Non-cancer Hazard Index	0.001	10	No

[5] California Department of Transportation 2015: Caltrans Performance Measurement System (PeMS). Website: http://pems.dot.ca.gov/

> Verizon Wireless > State Route 4 Total	0.005 0.006		
Health Impact	**Annual Concentration ($\mu g/m^3$)**	**Cumulative Significance Threshold ($\mu g/m^3$)**	**Exceeds Threshold ?**
Annual $PM_{2.5}$ > Verizon Wireless >State Route 4 Total	 0.0035 0.0032 0.0067	0.8	No
Source: Attachment B			

Attachment A
Project Construction Emissions and Health Risk Impacts

Laurel Ranch Project

Estimate of Annual DPM Construction Emissions (as PM2.5 Exhaust)

Construction Period: January 2017 to October 2018

Annual Construction DPM Emisisons - from CalEEMod model run

Size of Construction Area 54 acres or 206047 square meters

Construction Activities	**1/1/2017 to 12/31/2017**	**1/1/2018 to 10/26/2018**
Days/week	5	5
Hours/day	8	8
Construction Days/year	260	215
Calendar Days	365	298

Annual Construction DPM Emissions - No Mitigation

	2017	**2018**
Total (tons/year)	0.3354	0.1064
Total (lbs/day)	2.580	0.990
Total (g/sec)	0.0407	0.0156
Size of the construction are source (m2)	206047	206047

Construction Area Source Emission:

2017 (g/m2-sec)	**2018 (g/m2-sec)**
1.97386E-07	7.5723E-08

Annual Construction DPM Emissions - With Mitigation(Tier III)

	2017	**2018**
Total (tons/year)	0.1466	0.0661
Total (lbs/day)	1.1277	0.6149
Total (g/sec)	0.0178	0.0097
Size of the construction area source (m2)	206047	206047

Construction Area Source Emission:

2017 (g/m2-sec)	**2018 (g/m2-sec)**
8.62755E-08	4.7042E-08

Laurel Ranch Project

Sample Output

Etimates of Annual DPM Air Concentrations from Construction

Annual Average DPM Emissions

	No Mitigation	
2017	1.97E-07	g/m2-sec
2018	7.57E-08	g/m2-sec

X (m)	Y (m)	Annual DPM With Unit Emissions x 10^-3 (ug/m3)	2017 Annual DPM Actual Emissions No Mitigation (ug/m3)	2018 Annual DPM Actual Emissions No Mitigation (ug/m3)	Maximum Annual Average No Mitigation (ug/m3)
609213.938	4203701.5	8.989	0.0018	0.0007	0.0018
609238.938	4203701.5	9.436	0.0019	0.0007	0.0019
609263.938	4203701.5	9.928	0.0020	0.0008	0.0020
609288.938	4203701.5	10.470	0.0021	0.0008	0.0021
609313.938	4203701.5	11.068	0.0022	0.0008	0.0022
609338.938	4203701.5	11.729	0.0023	0.0009	0.0023
609363.938	4203701.5	12.459	0.0025	0.0009	0.0025
609388.938	4203701.5	13.268	0.0026	0.0010	0.0026
609413.938	4203701.5	14.165	0.0028	0.0011	0.0028
609438.938	4203701.5	15.158	0.0030	0.0011	0.0030
609463.938	4203701.5	16.259	0.0032	0.0012	0.0032
609488.938	4203701.5	17.482	0.0035	0.0013	0.0035
609513.938	4203701.5	18.839	0.0037	0.0014	0.0037
609538.938	4203701.5	20.349	0.0040	0.0015	0.0040
609563.938	4203701.5	22.032	0.0043	0.0017	0.0043
609588.938	4203701.5	23.923	0.0047	0.0018	0.0047
609613.938	4203701.5	26.084	0.0051	0.0020	0.0051
609638.938	4203701.5	28.595	0.0056	0.0022	0.0056
609663.938	4203701.5	31.538	0.0062	0.0024	0.0062
609688.938	4203701.5	35.007	0.0069	0.0027	0.0069
609713.938	4203701.5	39.071	0.0077	0.0030	0.0077
609738.938	4203701.5	43.677	0.0086	0.0033	0.0086
609763.938	4203701.5	48.726	0.0096	0.0037	0.0096
609788.938	4203701.5	53.949	0.0106	0.0041	0.0106
609813.938	4203701.5	59.126	0.0117	0.0045	0.0117
609838.938	4203701.5	64.120	0.0127	0.0049	0.0127
609863.938	4203701.5	68.872	0.0136	0.0052	0.0136
609888.938	4203701.5	73.327	0.0145	0.0056	0.0145

Laurel Ranch Project

Sample Output

30-year Lifetime Cancer Risk from Project Construction - DPM Emissions
Without Construction Mitigation

	Child-2017	Child-2017	Child-2018		
Age	3rd Trimester	0	1	Adult	
DBR (95th%)	361	1090	1090	233	80th % for Adults
ASF	10	10	10	1	
TAH	0.85	0.85	0.85	0.73	
Duration	0.25	0.75	0.82	1	
Frequency	350	350	350	350	
Averaging time	25550	25550	25550	25550	
CPF	1.1	1.1	1.1	1.1	
Unit Risk Factor by Age Group	11.56	104.71	114.48	2.56	

Cancer Risk = DPM Concentration x Unit Risk Factor By Age Group

X	Y	3rd Trimester 2017	0 2017	1 2018	Child Total Cancer Risk	Adult Total Cancer Risk
(m)	(m)	(risk/million)	(risk/million)	(risk/million)	(risk/million)	(risk/million)
609213.938	4203701.5	0.02	0.19	0.08	0.28421	0.0063
609238.938	4203701.5	0.02	0.20	0.08	0.29835	0.0066
609263.938	4203701.5	0.02	0.21	0.09	0.31391	0.0069
609288.938	4203701.5	0.02	0.22	0.09	0.33104	0.0073
609313.938	4203701.5	0.03	0.23	0.10	0.34995	0.0077
609338.938	4203701.5	0.03	0.24	0.10	0.37084	0.0082
609363.938	4203701.5	0.03	0.26	0.11	0.39394	0.0087
609388.938	4203701.5	0.03	0.27	0.12	0.41952	0.0093
609413.938	4203701.5	0.03	0.29	0.12	0.44786	0.0099
609438.938	4203701.5	0.03	0.31	0.13	0.47927	0.0106
609463.938	4203701.5	0.04	0.34	0.14	0.51409	0.0114
609488.938	4203701.5	0.04	0.36	0.15	0.55276	0.0122
609513.938	4203701.5	0.04	0.39	0.16	0.59567	0.0132
609538.938	4203701.5	0.05	0.42	0.18	0.64341	0.0142
609563.938	4203701.5	0.05	0.46	0.19	0.69661	0.0154
609588.938	4203701.5	0.05	0.49	0.21	0.75639	0.0167
609613.938	4203701.5	0.06	0.54	0.23	0.82473	0.0183
609638.938	4203701.5	0.07	0.59	0.25	0.90411	0.0200
609663.938	4203701.5	0.07	0.65	0.27	0.99717	0.0221
609688.938	4203701.5	0.08	0.72	0.30	1.10685	0.0245
609713.938	4203701.5	0.09	0.81	0.34	1.23534	0.0273
609738.938	4203701.5	0.10	0.90	0.38	1.38100	0.0306

Laurel Ranch Project

Sample Output

Etimates of Annual DPM Air Concentrations from Construction

Annual Average DEP Emissions

	With Mitigation	
2017	8.63E-08	g/m2-sec
2018	4.70E-08	g/m2-sec

X (m)	Y (m)	Annual DPM With Unit Emissions x 10^-3 (ug/m3)	2017 Annual DPM Actual Emissions With Mitigation (ug/m3)	2018 Annual DPM Actual Emissions With Mitigation (ug/m3)	Maximum Annual DPM Actual Emissions With Mitigation (ug/m3)
609213.938	4203701.5	8.989	0.0008	0.0004	0.0008
609238.938	4203701.5	9.436	0.0008	0.0004	0.0008
609263.938	4203701.5	9.928	0.0009	0.0005	0.0009
609288.938	4203701.5	10.470	0.0009	0.0005	0.0009
609313.938	4203701.5	11.068	0.0010	0.0005	0.0010
609338.938	4203701.5	11.729	0.0010	0.0006	0.0010
609363.938	4203701.5	12.459	0.0011	0.0006	0.0011
609388.938	4203701.5	13.268	0.0011	0.0006	0.0011
609413.938	4203701.5	14.165	0.0012	0.0007	0.0012
609438.938	4203701.5	15.158	0.0013	0.0007	0.0013
609463.938	4203701.5	16.259	0.0014	0.0008	0.0014
609488.938	4203701.5	17.482	0.0015	0.0008	0.0015
609513.938	4203701.5	18.839	0.0016	0.0009	0.0016
609538.938	4203701.5	20.349	0.0018	0.0010	0.0018
609563.938	4203701.5	22.032	0.0019	0.0010	0.0019
609588.938	4203701.5	23.923	0.0021	0.0011	0.0021
609613.938	4203701.5	26.084	0.0023	0.0012	0.0023
609638.938	4203701.5	28.595	0.0025	0.0013	0.0025
609663.938	4203701.5	31.538	0.0027	0.0015	0.0027
609688.938	4203701.5	35.007	0.0030	0.0016	0.0030
609713.938	4203701.5	39.071	0.0034	0.0018	0.0034
609738.938	4203701.5	43.677	0.0038	0.0021	0.0038
609763.938	4203701.5	48.726	0.0042	0.0023	0.0042
609788.938	4203701.5	53.949	0.0047	0.0025	0.0047
609813.938	4203701.5	59.126	0.0051	0.0028	0.0051
609838.938	4203701.5	64.120	0.0055	0.0030	0.0055
609863.938	4203701.5	68.872	0.0059	0.0032	0.0059
609888.938	4203701.5	73.327	0.0063	0.0034	0.0063

Laurel Ranch Project

Sample Output

30-year Lifetime Cancer Risk from Project Construction - DPM Emissions
With Construction Mitigation

	Child-2017	Child-2017	Child-2018		
Age	3rd Trimester	0	1	Adult	
DBR (95th%)	361	1090	1090	233	80th % for Adults
ASF	10	10	10	1	
TAH	0.85	0.85	0.85	0.73	
Duration	0.25	0.75	0.82	1	
Frequency	350	350	350	350	
Averaging time	25550	25550	25550	25550	
CPF	1.1	1.1	1.1	1.1	
Unit Risk Factor by Age Group	11.56	104.71	114.48	2.56	

Cancer Risk = DPM Concentration x Unit Risk Factor By Age Group

X	Y	3rd Trimester 2017	0 2017	1 2018	Child Total Cancer Risk	Adult Total Cancer Risk
(m)	(m)	(risk/million)	(risk/million)	(risk/million)	(risk/million)	(risk/million)
609213.938	4203701.5	0.01	0.08	0.05	0.13858	0.0031
609238.938	4203701.5	0.01	0.09	0.05	0.14547	0.0032
609263.938	4203701.5	0.01	0.09	0.05	0.15306	0.0034
609288.938	4203701.5	0.01	0.09	0.06	0.16141	0.0036
609313.938	4203701.5	0.01	0.10	0.06	0.17063	0.0038
609338.938	4203701.5	0.01	0.11	0.06	0.18081	0.0040
609363.938	4203701.5	0.01	0.11	0.07	0.19208	0.0043
609388.938	4203701.5	0.01	0.12	0.07	0.20455	0.0045
609413.938	4203701.5	0.01	0.13	0.08	0.21837	0.0048
609438.938	4203701.5	0.02	0.14	0.08	0.23368	0.0052
609463.938	4203701.5	0.02	0.15	0.09	0.25066	0.0056
609488.938	4203701.5	0.02	0.16	0.09	0.26951	0.0060
609513.938	4203701.5	0.02	0.17	0.10	0.29043	0.0064
609538.938	4203701.5	0.02	0.18	0.11	0.31371	0.0070
609563.938	4203701.5	0.02	0.20	0.12	0.33965	0.0075
609588.938	4203701.5	0.02	0.22	0.13	0.36880	0.0082
609613.938	4203701.5	0.03	0.24	0.14	0.40212	0.0089
609638.938	4203701.5	0.03	0.26	0.15	0.44083	0.0098
609663.938	4203701.5	0.03	0.28	0.17	0.48620	0.0108
609688.938	4203701.5	0.03	0.32	0.19	0.53968	0.0120
609713.938	4203701.5	0.04	0.35	0.21	0.60233	0.0134
609738.938	4203701.5	0.04	0.39	0.24	0.67335	0.0149

Laurel Ranch Project

Sample Output

Etimates of Chronic Hazard Index from Construction DPM Emissions

Chronic Non-Cancer REL for DPM: **5** ug/m3

X (m)	Y (m)	Chronic HI No Mitigation	Chronic HI With Mitigation
609213.938	4203701.500	0.0004	0.0002
609238.938	4203701.500	0.0004	0.0002
609263.938	4203701.500	0.0004	0.0002
609288.938	4203701.500	0.0004	0.0002
609313.938	4203701.500	0.0004	0.0002
609338.938	4203701.500	0.0005	0.0002
609363.938	4203701.500	0.0005	0.0002
609388.938	4203701.500	0.0005	0.0002
609413.938	4203701.500	0.0006	0.0002
609438.938	4203701.500	0.0006	0.0003
609463.938	4203701.500	0.0006	0.0003
609488.938	4203701.500	0.0007	0.0003
609513.938	4203701.500	0.0007	0.0003
609538.938	4203701.500	0.0008	0.0004
609563.938	4203701.500	0.0009	0.0004
609588.938	4203701.500	0.0009	0.0004
609613.938	4203701.500	0.0010	0.0005
609638.938	4203701.500	0.0011	0.0005
609663.938	4203701.500	0.0012	0.0005
609688.938	4203701.500	0.0014	0.0006
609713.938	4203701.500	0.0015	0.0007
609738.938	4203701.500	0.0017	0.0008
609763.938	4203701.500	0.0019	0.0008
609788.938	4203701.500	0.0021	0.0009
609813.938	4203701.500	0.0023	0.0010
609838.938	4203701.500	0.0025	0.0011

Laurel Ranch Project

Estimate of Short-Term TOG Exhaust Emissions (assumed to 1.11 times the estimated ROG emissions)

Construction Period: January 2017 to October 2018

Daily Construction TOG Emisisons - from CalEEMod model run

Size of the construction area source in 2017: **206047 square meters**

Construction Exhaust TOG Emissions 2017 - No Mitigation

	pounds/day	Hours per Day Construction	Emissions (pounds/hr)	Emissions (grams/sec)	Emissions (grams/m2-sec)
Site Prep	5.006	8	0.626	7.89E-02	3.83E-07
Grading	6.849	8	0.856	1.08E-01	5.24E-07
Bldg Const	3.952	8	0.494	6.23E-02	3.02E-07
Paving	0.000	8	0.000	0.00E+00	0.00E+00
Arch Coating	0.000	8	0.000	0.00E+00	0.00E+00
		Max Emissions	8.56E-01	1.08E-01	5.24E-07

Size of the construction area source in 2018: **206047 square meters**

Construction Exhaust TOG Emissions 2018 - No Mitigation

	pounds/day	Hours per Day Construction	Emissions (pounds/hr)	Emissions (grams/sec)	Emissions (grams/m2-sec)
Site Prep	0.000	8	0.000	0.00E+00	0.00E+00
Grading	0.000	8	0.000	0.00E+00	0.00E+00
Bldg Const	3.419	8	0.427	5.39E-02	2.62E-07
Paving	1.843	8	0.230	2.90E-02	1.41E-07
Arch Coating	0.377	8	0.047	5.95E-03	2.89E-08
		Max Emissions	4.27E-01	5.39E-02	2.62E-07

Laurel Ranch Project

Estimate of Short-Term DPM (as PM2.5) Exhaust Emissions

Construction Period: January 2017 to October 2018

Daily Construction DPM Emisisons - from CalEEMod model run

Size of the construction area source in 2017: **206047 square meters**

Construction PM2.5 Emissions 2017 - No Mitigation

	pounds/day	Hours per Day Construction	Emissions (pounds/hr)	Emissions (grams/sec)	Emissions (grams/m2-sec)
Site Prep	2.756	8	0.345	4.34E-02	2.11E-07
Grading	3.319	8	0.415	5.23E-02	2.54E-07
Bldg Const	1.811	8	0.226	2.85E-02	1.39E-07
Paving	0.000	8	0.000	0.00E+00	0.00E+00
Arch Coating	0.000	8	0.000	0.00E+00	0.00E+00
		Max Emissions	4.15E-01	5.23E-02	2.54E-07

Size of the construction area source in 2018: **206047 square meters**

Construction PM2.5 Emissions 2018 - No Mitigation

	pounds/day	Hours per Day Construction	Emissions (pounds/hr)	Emissions (grams/sec)	Emissions (grams/m2-sec)
Site Prep	0.000	8	0.000	0.00E+00	0.00E+00
Grading	0.000	8	0.000	0.00E+00	0.00E+00
Bldg Const	1.520	8	0.190	2.40E-02	1.16E-07
Paving	0.940	8	0.118	1.48E-02	7.19E-08
Arch Coating	0.151	8	0.019	2.38E-03	1.16E-08
		Max Emissions	1.90E-01	2.40E-02	1.16E-07

Laurel Ranch Project

Sample Output

Etimates of Hourly DPM (as PM2.5) and TOG Air Concentrations from Construction

Maximum 1-hour DPM Emission	2.54E-07 g/m2-sec
Maximum 1-hour TOG Emission	5.24E-07 /m2-sec

X (m)	Y (m)	Hourly Concentrations with Unit Emissions (ug/m3) x0.001	Hourly DPM Concentrations Actual Emissions No Mitigation (ug/m3)	Hourly TOG Concentrations Actual Emissions No Mitigation (ug/m3)
609213.938	4203701.500	6372.2	1.6181	3.3388
609238.938	4203701.500	6553.7	1.6642	3.4340
609263.938	4203701.500	6724.5	1.7075	3.5234
609288.938	4203701.500	6942.0	1.7627	3.6374
609313.938	4203701.500	7157.9	1.8176	3.7505
609338.938	4203701.500	7352.3	1.8669	3.8523
609363.938	4203701.500	7590.6	1.9274	3.9772
609388.938	4203701.500	8165.5	2.0734	4.2784
609413.938	4203701.500	8718.2	2.2138	4.5681
609438.938	4203701.500	9229.1	2.3435	4.8357
609463.938	4203701.500	9713.6	2.4665	5.0896
609488.938	4203701.500	10980.1	2.7881	5.7532
609513.938	4203701.500	12191.6	3.0958	6.3880
609538.938	4203701.500	13245.0	3.3632	6.9400
609563.938	4203701.500	13943.0	3.5405	7.3057
609588.938	4203701.500	14168.9	3.5978	7.4241
609613.938	4203701.500	13888.4	3.5266	7.2771
609638.938	4203701.500	13329.6	3.3847	6.9843
609663.938	4203701.500	12682.5	3.2204	6.6452
609688.938	4203701.500	13427.8	3.4096	7.0357
609713.938	4203701.500	13959.8	3.5447	7.3145
609738.938	4203701.500	14409.1	3.6588	7.5499
609763.938	4203701.500	14834.6	3.7669	7.7728
609788.938	4203701.500	15125.4	3.8407	7.9252
609813.938	4203701.500	15188.4	3.8567	7.9582
609838.938	4203701.500	14975.1	3.8025	7.8465
609863.938	4203701.500	14481.5	3.6772	7.5879

Laurel Ranch Project No Mitigation Sample Output

Etimates of Acute Non-Cancer Hazard Index from Construction DPM and TOG Emissions

Acute Non-Cancer REL for DPM: 2351.7 ug/m3
Acute Non-Cancer REL for TOG: 279.6 ug/m3

X (m)	Y (m)	Acute NCHI HI from DPM No Mitigation	Acute NCHI HI from TOG No Mitigation	Total Acute HI No Mitigation
609213.938	4203701.500	0.0007	0.0119	0.0126
609238.938	4203701.500	0.0007	0.0123	0.0130
609263.938	4203701.500	0.0007	0.0126	0.0133
609288.938	4203701.500	0.0007	0.0130	0.0138
609313.938	4203701.500	0.0008	0.0134	0.0142
609338.938	4203701.500	0.0008	0.0138	0.0146
609363.938	4203701.500	0.0008	0.0142	0.0150
609388.938	4203701.500	0.0009	0.0153	0.0162
609413.938	4203701.500	0.0009	0.0163	0.0173
609438.938	4203701.500	0.0010	0.0173	0.0183
609463.938	4203701.500	0.0010	0.0182	0.0193
609488.938	4203701.500	0.0012	0.0206	0.0218
609513.938	4203701.500	0.0013	0.0228	0.0242
609538.938	4203701.500	0.0014	0.0248	0.0263
609563.938	4203701.500	0.0015	0.0261	0.0276
609588.938	4203701.500	0.0015	0.0266	0.0281
609613.938	4203701.500	0.0015	0.0260	0.0275
609638.938	4203701.500	0.0014	0.0250	0.0264
609663.938	4203701.500	0.0014	0.0238	0.0251
609688.938	4203701.500	0.0014	0.0252	0.0266
609713.938	4203701.500	0.0015	0.0262	0.0277
609738.938	4203701.500	0.0016	0.0270	0.0286
609763.938	4203701.500	0.0016	0.0278	0.0294
609788.938	4203701.500	0.0016	0.0283	0.0300
609813.938	4203701.500	0.0016	0.0285	0.0301
609838.938	4203701.500	0.0016	0.0281	0.0297
609863.938	4203701.500	0.0016	0.0271	0.0287
609888.938	4203701.500	0.0016	0.0279	0.0295
609913.938	4203701.500	0.0016	0.0284	0.0300
609938.938	4203701.500	0.0016	0.0283	0.0300
609963.938	4203701.500	0.0016	0.0283	0.0299
609988.938	4203701.500	0.0016	0.0277	0.0293

Laurel Ranch Project

Estimate of Acute Non-Cancer Hazard Index - Construction

Diesel Exhaust TOG Profile and Estimate of Acute Non-Cancer Hazard Index

Only those chemicals that have an acute REL are listed

1-hour TOG Concentration: 1.00 ug/m3

Toxic Compound	ARB Speciation 818 (%TOG)	Acute REL (ug/m3)	Acute Non-Cancer Hazard Quotient
Acetaldehyde	7.350%	470	0.000
Benzene	2.000%	27	0.001
Formaldehyde	14.710%	55	0.003
Methyl Alcohol	0.030%	28000	0.000
MethlethylKetone	1.480%	13000	0.000
Styrene	0.060%	21000	0.000
Toluene	1.470%	37000	0.000
M-Xylenes	0.610%	22000	0.000
O-Xylene	0.340%	22000	0.000
P-Xylene	0.100%	22000	0.000
1-3 Butadiene	0.190%	660	0.000

Acute Hazard Index from TOG	**279.60**

Diesel Exhaust PM Profile and Estimate of Acute Non-Cancer Hazard Index

Only those chemicals that have an acute REL are listed

1-hour DPM Concentration: 1.00 ug/m3

Toxic Compounc	ARB Speciation 425 (%PM2.5)	Acute REL (ug/m3)	Acute Non-Cancer Hazard Quotient
Arsenic	0.000%	0.2	0.000
Copper	0.003%	100	0.000
Chlorine	0.027%	210	0.000
Nickel	0.002%	0.2	0.000
Mercury	0.003%	0.6	0.000
Sulfate	1.740%	120	0.000
Manganese	0.002%	0.17	0.000

Hazard Index from PM2.5	**2351.66**

Laurel Ranch Project

Sample Output

Etimates of Annual Exhaust Air Concentrations from Construction

X (m)	Y (m)	2017 Exhaust Emissions No Mitigation (ug/m3)	2018 Exhaust Emissions No Mitigation (ug/m3)	Maximum PM2.5 No Mitigation (ug/m3)
609213.938	4203701.5	0.0018	0.0007	0.0018
609238.938	4203701.5	0.0019	0.0007	0.0019
609263.938	4203701.5	0.0020	0.0008	0.0020
609288.938	4203701.5	0.0021	0.0008	0.0021
609313.938	4203701.5	0.0022	0.0008	0.0022
609338.938	4203701.5	0.0023	0.0009	0.0023
609363.938	4203701.5	0.0025	0.0009	0.0025
609388.938	4203701.5	0.0026	0.0010	0.0026
609413.938	4203701.5	0.0028	0.0011	0.0028
609438.938	4203701.5	0.0030	0.0011	0.0030
609463.938	4203701.5	0.0032	0.0012	0.0032
609488.938	4203701.5	0.0035	0.0013	0.0035
609513.938	4203701.5	0.0037	0.0014	0.0037
609538.938	4203701.5	0.0040	0.0015	0.0040
609563.938	4203701.5	0.0043	0.0017	0.0043
609588.938	4203701.5	0.0047	0.0018	0.0047
609613.938	4203701.5	0.0051	0.0020	0.0051
609638.938	4203701.5	0.0056	0.0022	0.0056
609663.938	4203701.5	0.0062	0.0024	0.0062
609688.938	4203701.5	0.0069	0.0027	0.0069
609713.938	4203701.5	0.0077	0.0030	0.0077
609738.938	4203701.5	0.0086	0.0033	0.0086
609763.938	4203701.5	0.0096	0.0037	0.0096
609788.938	4203701.5	0.0106	0.0041	0.0106
609813.938	4203701.5	0.0117	0.0045	0.0117
609838.938	4203701.5	0.0127	0.0049	0.0127

609863.938	4203701.5	0.0136	0.0052	0.0136
609888.938	4203701.5	0.0145	0.0056	0.0145
609913.938	4203701.5	0.0153	0.0059	0.0153
609938.938	4203701.5	0.0161	0.0062	0.0161
609963.938	4203701.5	0.0169	0.0065	0.0169
609988.938	4203701.5	0.0176	0.0068	0.0176

Laurel Ranch Project

Sample Output

Etimates of Annual Exhaust Air Concentrations from Construction

X (m)	Y (m)	2017 Exhaust Emissions Mitigation (ug/m3)	2018 Exhaust Emissions Mitigation (ug/m3)	Maximum PM2.5 Mitigation (ug/m3)
609213.938	4203701.5	0.0008	0.0004	0.0008
609238.938	4203701.5	0.0008	0.0004	0.0008
609263.938	4203701.5	0.0009	0.0005	0.0009
609288.938	4203701.5	0.0009	0.0005	0.0009
609313.938	4203701.5	0.0010	0.0005	0.0010
609338.938	4203701.5	0.0010	0.0006	0.0010
609363.938	4203701.5	0.0011	0.0006	0.0011
609388.938	4203701.5	0.0011	0.0006	0.0011
609413.938	4203701.5	0.0012	0.0007	0.0012
609438.938	4203701.5	0.0013	0.0007	0.0013
609463.938	4203701.5	0.0014	0.0008	0.0014
609488.938	4203701.5	0.0015	0.0008	0.0015
609513.938	4203701.5	0.0016	0.0009	0.0016
609538.938	4203701.5	0.0018	0.0010	0.0018
609563.938	4203701.5	0.0019	0.0010	0.0019
609588.938	4203701.5	0.0021	0.0011	0.0021
609613.938	4203701.5	0.0023	0.0012	0.0023
609638.938	4203701.5	0.0025	0.0013	0.0025
609663.938	4203701.5	0.0027	0.0015	0.0027
609688.938	4203701.5	0.0030	0.0016	0.0030
609713.938	4203701.5	0.0034	0.0018	0.0034
609738.938	4203701.5	0.0038	0.0021	0.0038
609763.938	4203701.5	0.0042	0.0023	0.0042
609788.938	4203701.5	0.0047	0.0025	0.0047
609813.938	4203701.5	0.0051	0.0028	0.0051
609838.938	4203701.5	0.0055	0.0030	0.0055

609863.938	4203701.5	0.0059	0.0032	0.0059
609888.938	4203701.5	0.0063	0.0034	0.0063
609913.938	4203701.5	0.0067	0.0036	0.0067
609938.938	4203701.5	0.0070	0.0038	0.0070

♀ *** ISCST3 - VERSION 02035 *** *** Laurel Road Project *** 03/03/16
*** Construction Impacts - Unit Emissions *** 14:30:06
**MODELOPTs: PAGE 1
CONC URBAN ELEV DFAULT

*** MODEL SETUP OPTIONS SUMMARY ***

**Intermediate Terrain Processing 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 Regulatory DEFAULT Options:
1. Final Plume Rise.
2. Stack-tip Downwash.
3. Buoyancy-induced Dispersion.
4. Use Calms Processing Routine.
5. Not Use Missing Data Processing Routine.
6. Default Wind Profile Exponents.
7. Default Vertical Potential Temperature Gradients.
8. "Upper Bound" Values for Supersquat Buildings.
9. No Exponential Decay for URBAN/Non-SO2

**Model Accepts Receptors on ELEV Terrain.

**Model Assumes No FLAGPOLE Receptor Heights.

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates PERIOD Averages

**This Run Includes: 2 Source(s); 3 Source Group(s); and 1016 Receptor(s)

**The Model Assumes A Pollutant Type of: UNITEMIS

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

**Output Options Selected:
Model Outputs Tables of PERIOD Averages by Receptor
Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**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 = 1.3 MB of RAM.

**Input Runstream File: Construction.INP
**Output Print File: Construction.OUT
**Detailed Error/Message File: CONSTR~1.ERR
♀ *** ISCST3 - VERSION 02035 *** *** Laurel Road Project *** 03/03/16
*** Construction Impacts - Unit Emissions *** 14:30:06
**MODELOPTs: PAGE 2
CONC URBAN ELEV DFAULT

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	EMISSION RATE SCALAR VARY BY
PAREA1	0	0.10000E-02	609719.4	4203892.5	48.3	5.00	20	0.00	SHRDOW
PAREA2	0	0.10000E-02	609719.6	4203893.5	48.3	1.00	19	0.00	SHRDOW

*** SOURCE IDs DEFINING SOURCE GROUPS ***

GROUP ID	SOURCE IDs
EXHAUST	PAREA1 ,
FUGITIVE	PAREA2 ,
ALL	PAREA1 , PAREA2 ,

* SOURCE EMISSION RATE SCALARS WHICH VARY SEASONALLY, DIURNALLY AND BY DAY OF WEEK (SHRDOW) *

SOURCE ID = PAREA1 ; SOURCE TYPE = AREAPOLY :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
SEASON = WINTER; DAY OF WEEK = WEEKDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.1000E+01	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
SEASON = SPRING; DAY OF WEEK = WEEKDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.1000E+01	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
SEASON = SUMMER; DAY OF WEEK = WEEKDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.1000E+01	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
SEASON = FALL ; DAY OF WEEK = WEEKDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.1000E+01	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
SEASON = WINTER; DAY OF WEEK = SATURDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
SEASON = SPRING; DAY OF WEEK = SATURDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
SEASON = SUMMER; DAY OF WEEK = SATURDAY															
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
SEASON = FALL ; DAY OF WEEK = SATURDAY															

Construction

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

SEASON = WINTER; DAY OF WEEK = SUNDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

SEASON = SPRING; DAY OF WEEK = SUNDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

SEASON = SUMMER; DAY OF WEEK = SUNDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

SEASON = FALL ; DAY OF WEEK = SUNDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY SEASONALLY, DIURNALLY AND BY DAY OF WEEK (SHRDOW) *

SOURCE ID = PAREA2 ; SOURCE TYPE = AREAPOLY :

HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR

SEASON = WINTER; DAY OF WEEK = WEEKDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

SEASON = SPRING; DAY OF WEEK = WEEKDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

SEASON = SUMMER; DAY OF WEEK = WEEKDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

SEASON = FALL ; DAY OF WEEK = WEEKDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .1000E+01 10 .1000E+01 11 .1000E+01 12 .1000E+01 13 .1000E+01 14 .1000E+01 15 .1000E+01 16 .1000E+01
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

SEASON = WINTER; DAY OF WEEK = SATURDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

SEASON = SPRING; DAY OF WEEK = SATURDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

SEASON = SUMMER; DAY OF WEEK = SATURDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

SEASON = FALL ; DAY OF WEEK = SATURDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

SEASON = WINTER; DAY OF WEEK = SUNDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

SEASON = SPRING; DAY OF WEEK = SUNDAY

1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

Construction
SEASON = SUMMER; DAY OF WEEK = SUNDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00
SEASON = FALL ; DAY OF WEEK = SUNDAY
1 .0000E+00 2 .0000E+00 3 .0000E+00 4 .0000E+00 5 .0000E+00 6 .0000E+00 7 .0000E+00 8 .0000E+00
9 .0000E+00 10 .0000E+00 11 .0000E+00 12 .0000E+00 13 .0000E+00 14 .0000E+00 15 .0000E+00 16 .0000E+00
17 .0000E+00 18 .0000E+00 19 .0000E+00 20 .0000E+00 21 .0000E+00 22 .0000E+00 23 .0000E+00 24 .0000E+00

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(	609213.9,	4203701.5,	61.7,	0.0);	(609238.9,	4203701.5,	59.0, 0.0);
(	609263.9,	4203701.5,	55.1,	0.0);	(609288.9,	4203701.5,	51.5, 0.0);
(	609313.9,	4203701.5,	49.1,	0.0);	(609338.9,	4203701.5,	47.6, 0.0);
(	609363.9,	4203701.5,	46.7,	0.0);	(609388.9,	4203701.5,	45.0, 0.0);
(	609413.9,	4203701.5,	44.0,	0.0);	(609438.9,	4203701.5,	44.0, 0.0);
(	609463.9,	4203701.5,	44.7,	0.0);	(609488.9,	4203701.5,	45.4, 0.0);
(	609513.9,	4203701.5,	46.3,	0.0);	(609538.9,	4203701.5,	48.0, 0.0);
(	609563.9,	4203701.5,	52.0,	0.0);	(609588.9,	4203701.5,	56.2, 0.0);
(	609613.9,	4203701.5,	57.7,	0.0);	(609638.9,	4203701.5,	58.2, 0.0);
(	609663.9,	4203701.5,	57.6,	0.0);	(609688.9,	4203701.5,	55.1, 0.0);
(	609713.9,	4203701.5,	58.0,	0.0);	(609738.9,	4203701.5,	60.0, 0.0);
(	609763.9,	4203701.5,	63.7,	0.0);	(609788.9,	4203701.5,	66.2, 0.0);
(	609813.9,	4203701.5,	68.1,	0.0);	(609838.9,	4203701.5,	69.0, 0.0);
(	609863.9,	4203701.5,	70.0,	0.0);	(609888.9,	4203701.5,	71.7, 0.0);
(	609913.9,	4203701.5,	73.2,	0.0);	(609938.9,	4203701.5,	73.1, 0.0);
(	609963.9,	4203701.5,	71.8,	0.0);	(609988.9,	4203701.5,	66.0, 0.0);
(	610013.9,	4203701.5,	60.0,	0.0);	(610038.9,	4203701.5,	54.6, 0.0);
(	610063.9,	4203701.5,	53.8,	0.0);	(610088.9,	4203701.5,	54.5, 0.0);
(	610113.9,	4203701.5,	56.0,	0.0);	(610138.9,	4203701.5,	59.1, 0.0);
(	610163.9,	4203701.5,	61.0,	0.0);	(610188.9,	4203701.5,	60.2, 0.0);
(	610213.9,	4203701.5,	58.1,	0.0);	(610238.9,	4203701.5,	55.8, 0.0);
(	610263.9,	4203701.5,	53.6,	0.0);	(610288.9,	4203701.5,	51.0, 0.0);
(	610313.9,	4203701.5,	49.0,	0.0);	(610338.9,	4203701.5,	48.1, 0.0);
(	610363.9,	4203701.5,	48.2,	0.0);	(610388.9,	4203701.5,	46.5, 0.0);
(	610413.9,	4203701.5,	43.3,	0.0);	(610438.9,	4203701.5,	40.0, 0.0);
(	609213.9,	4203726.5,	56.7,	0.0);	(609238.9,	4203726.5,	55.1, 0.0);
(	609263.9,	4203726.5,	50.6,	0.0);	(609288.9,	4203726.5,	48.5, 0.0);
(	609313.9,	4203726.5,	46.9,	0.0);	(609338.9,	4203726.5,	46.1, 0.0);
(	609363.9,	4203726.5,	45.8,	0.0);	(609388.9,	4203726.5,	45.0, 0.0);
(	609413.9,	4203726.5,	44.9,	0.0);	(609438.9,	4203726.5,	44.2, 0.0);
(	609463.9,	4203726.5,	44.8,	0.0);	(609488.9,	4203726.5,	46.0, 0.0);
(	609513.9,	4203726.5,	47.8,	0.0);	(609538.9,	4203726.5,	50.0, 0.0);
(	609563.9,	4203726.5,	55.6,	0.0);	(609588.9,	4203726.5,	60.8, 0.0);
(	609613.9,	4203726.5,	63.7,	0.0);	(609638.9,	4203726.5,	64.0, 0.0);
(	609663.9,	4203726.5,	62.4,	0.0);	(609688.9,	4203726.5,	58.7, 0.0);
(	609713.9,	4203726.5,	56.5,	0.0);	(609738.9,	4203726.5,	58.9, 0.0);
(	609763.9,	4203726.5,	62.4,	0.0);	(609788.9,	4203726.5,	65.4, 0.0);
(	609813.9,	4203726.5,	68.3,	0.0);	(609838.9,	4203726.5,	69.0, 0.0);
(	609863.9,	4203726.5,	69.2,	0.0);	(609888.9,	4203726.5,	71.7, 0.0);
(	609913.9,	4203726.5,	73.4,	0.0);	(609938.9,	4203726.5,	73.2, 0.0);
(	609963.9,	4203726.5,	71.2,	0.0);	(609988.9,	4203726.5,	66.7, 0.0);
(	610013.9,	4203726.5,	59.3,	0.0);	(610038.9,	4203726.5,	53.8, 0.0);
(	610063.9,	4203726.5,	51.4,	0.0);	(610088.9,	4203726.5,	51.1, 0.0);
(	610113.9,	4203726.5,	52.0,	0.0);	(610138.9,	4203726.5,	53.5, 0.0);
(	610163.9,	4203726.5,	55.4,	0.0);	(610188.9,	4203726.5,	55.5, 0.0);

*** DISCRETE CARTESIAN RECEPTORS ***

(610213.9, 4203726.5,	54.1,	0.0);	(610238.9, 4203726.5,	52.3,	0.0);
(610263.9, 4203726.5,	50.6,	0.0);	(610288.9, 4203726.5,	49.2,	0.0);
(610313.9, 4203726.5,	48.1,	0.0);	(610338.9, 4203726.5,	46.5,	0.0);
(610363.9, 4203726.5,	46.3,	0.0);	(610388.9, 4203726.5,	44.5,	0.0);
(610413.9, 4203726.5,	42.2,	0.0);	(610438.9, 4203726.5,	40.0,	0.0);
(609213.9, 4203751.5,	51.2,	0.0);	(609238.9, 4203751.5,	51.1,	0.0);
(609263.9, 4203751.5,	48.1,	0.0);	(609288.9, 4203751.5,	47.2,	0.0);
(609313.9, 4203751.5,	46.3,	0.0);	(609338.9, 4203751.5,	46.0,	0.0);
(609363.9, 4203751.5,	45.8,	0.0);	(609388.9, 4203751.5,	45.6,	0.0);
(609413.9, 4203751.5,	45.1,	0.0);	(609438.9, 4203751.5,	44.7,	0.0);
(609463.9, 4203751.5,	45.2,	0.0);	(609488.9, 4203751.5,	47.1,	0.0);
(609513.9, 4203751.5,	50.5,	0.0);	(609538.9, 4203751.5,	53.1,	0.0);
(609563.9, 4203751.5,	58.0,	0.0);	(609588.9, 4203751.5,	62.4,	0.0);
(609613.9, 4203751.5,	65.9,	0.0);	(609638.9, 4203751.5,	65.8,	0.0);
(609663.9, 4203751.5,	62.7,	0.0);	(609688.9, 4203751.5,	59.3,	0.0);
(609713.9, 4203751.5,	57.7,	0.0);	(609738.9, 4203751.5,	59.1,	0.0);
(609763.9, 4203751.5,	62.2,	0.0);	(609788.9, 4203751.5,	65.5,	0.0);
(609813.9, 4203751.5,	67.5,	0.0);	(609838.9, 4203751.5,	68.1,	0.0);
(609863.9, 4203751.5,	67.7,	0.0);	(609888.9, 4203751.5,	69.1,	0.0);
(609913.9, 4203751.5,	70.9,	0.0);	(609938.9, 4203751.5,	70.7,	0.0);
(609963.9, 4203751.5,	67.8,	0.0);	(609988.9, 4203751.5,	64.4,	0.0);
(610013.9, 4203751.5,	57.3,	0.0);	(610038.9, 4203751.5,	52.7,	0.0);
(610063.9, 4203751.5,	50.0,	0.0);	(610088.9, 4203751.5,	49.1,	0.0);
(610113.9, 4203751.5,	48.8,	0.0);	(610138.9, 4203751.5,	49.4,	0.0);
(610163.9, 4203751.5,	50.5,	0.0);	(610188.9, 4203751.5,	50.6,	0.0);
(610213.9, 4203751.5,	49.9,	0.0);	(610238.9, 4203751.5,	48.7,	0.0);
(610263.9, 4203751.5,	47.0,	0.0);	(610288.9, 4203751.5,	46.8,	0.0);
(610313.9, 4203751.5,	45.8,	0.0);	(610338.9, 4203751.5,	44.7,	0.0);
(610363.9, 4203751.5,	44.5,	0.0);	(610388.9, 4203751.5,	43.3,	0.0);
(610413.9, 4203751.5,	41.7,	0.0);	(610438.9, 4203751.5,	39.9,	0.0);
(609213.9, 4203776.5,	50.8,	0.0);	(609238.9, 4203776.5,	50.0,	0.0);
(609263.9, 4203776.5,	47.6,	0.0);	(609288.9, 4203776.5,	47.0,	0.0);
(609313.9, 4203776.5,	46.3,	0.0);	(609338.9, 4203776.5,	46.0,	0.0);
(609363.9, 4203776.5,	45.9,	0.0);	(609388.9, 4203776.5,	45.8,	0.0);
(609413.9, 4203776.5,	45.1,	0.0);	(609438.9, 4203776.5,	44.9,	0.0);
(609463.9, 4203776.5,	45.3,	0.0);	(609488.9, 4203776.5,	47.2,	0.0);
(609513.9, 4203776.5,	50.7,	0.0);	(609538.9, 4203776.5,	53.9,	0.0);
(609563.9, 4203776.5,	58.5,	0.0);	(609588.9, 4203776.5,	62.5,	0.0);
(609613.9, 4203776.5,	65.9,	0.0);	(609638.9, 4203776.5,	66.0,	0.0);
(609663.9, 4203776.5,	62.9,	0.0);	(609688.9, 4203776.5,	59.5,	0.0);
(609713.9, 4203776.5,	58.1,	0.0);	(609738.9, 4203776.5,	59.2,	0.0);
(609763.9, 4203776.5,	62.0,	0.0);	(609788.9, 4203776.5,	65.1,	0.0);
(609813.9, 4203776.5,	67.3,	0.0);	(609838.9, 4203776.5,	67.8,	0.0);
(609863.9, 4203776.5,	67.4,	0.0);	(609888.9, 4203776.5,	68.4,	0.0);
(609913.9, 4203776.5,	70.1,	0.0);	(609938.9, 4203776.5,	70.3,	0.0);

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(609963.9, 4203776.5,	67.8,	0.0);	(609988.9, 4203776.5,	63.7,	0.0);
(610013.9, 4203776.5,	56.8,	0.0);	(610038.9, 4203776.5,	52.6,	0.0);
(610063.9, 4203776.5,	50.0,	0.0);	(610088.9, 4203776.5,	48.7,	0.0);
(610113.9, 4203776.5,	48.4,	0.0);	(610138.9, 4203776.5,	48.5,	0.0);
(610163.9, 4203776.5,	49.3,	0.0);	(610188.9, 4203776.5,	49.4,	0.0);
(610213.9, 4203776.5,	49.2,	0.0);	(610238.9, 4203776.5,	48.2,	0.0);
(610263.9, 4203776.5,	46.8,	0.0);	(610288.9, 4203776.5,	46.2,	0.0);
(610313.9, 4203776.5,	45.2,	0.0);	(610338.9, 4203776.5,	44.4,	0.0);
(610363.9, 4203776.5,	44.1,	0.0);	(610388.9, 4203776.5,	43.3,	0.0);
(610413.9, 4203776.5,	41.8,	0.0);	(610438.9, 4203776.5,	39.9,	0.0);
(609213.9, 4203801.5,	47.1,	0.0);	(609238.9, 4203801.5,	47.1,	0.0);
(609263.9, 4203801.5,	47.0,	0.0);	(609288.9, 4203801.5,	46.9,	0.0);

(609313.9, 4203801.5, 46.5, 0.0); (609338.9, 4203801.5, 46.8, 0.0);
(609363.9, 4203801.5, 47.9, 0.0); (609388.9, 4203801.5, 47.8, 0.0);
(609413.9, 4203801.5, 46.8, 0.0); (609438.9, 4203801.5, 44.7, 0.0);
(609463.9, 4203801.5, 46.2, 0.0); (609488.9, 4203801.5, 49.4, 0.0);
(609513.9, 4203801.5, 53.4, 0.0); (609538.9, 4203801.5, 57.8, 0.0);
(609563.9, 4203801.5, 61.8, 0.0); (609588.9, 4203801.5, 64.6, 0.0);
(609613.9, 4203801.5, 66.4, 0.0); (609638.9, 4203801.5, 66.3, 0.0);
(609663.9, 4203801.5, 64.9, 0.0); (609688.9, 4203801.5, 62.6, 0.0);
(609713.9, 4203801.5, 58.2, 0.0); (609738.9, 4203801.5, 56.8, 0.0);
(609763.9, 4203801.5, 60.3, 0.0); (609788.9, 4203801.5, 63.1, 0.0);
(609813.9, 4203801.5, 64.1, 0.0); (609838.9, 4203801.5, 64.0, 0.0);
(609863.9, 4203801.5, 62.5, 0.0); (609888.9, 4203801.5, 64.1, 0.0);
(609913.9, 4203801.5, 65.7, 0.0); (609938.9, 4203801.5, 66.0, 0.0);
(609963.9, 4203801.5, 64.5, 0.0); (609988.9, 4203801.5, 60.0, 0.0);
(610013.9, 4203801.5, 54.3, 0.0); (610038.9, 4203801.5, 51.4, 0.0);
(610063.9, 4203801.5, 49.6, 0.0); (610088.9, 4203801.5, 48.5, 0.0);
(610113.9, 4203801.5, 47.8, 0.0); (610138.9, 4203801.5, 47.1, 0.0);
(610163.9, 4203801.5, 47.0, 0.0); (610188.9, 4203801.5, 45.5, 0.0);
(610213.9, 4203801.5, 44.6, 0.0); (610238.9, 4203801.5, 43.8, 0.0);
(610263.9, 4203801.5, 43.0, 0.0); (610288.9, 4203801.5, 42.2, 0.0);
(610313.9, 4203801.5, 42.1, 0.0); (610338.9, 4203801.5, 42.1, 0.0);
(610363.9, 4203801.5, 42.1, 0.0); (610388.9, 4203801.5, 41.5, 0.0);
(610413.9, 4203801.5, 40.3, 0.0); (610438.9, 4203801.5, 38.2, 0.0);
(609213.9, 4203826.5, 47.8, 0.0); (609238.9, 4203826.5, 47.0, 0.0);
(609263.9, 4203826.5, 47.0, 0.0); (609288.9, 4203826.5, 47.1, 0.0);
(609313.9, 4203826.5, 48.3, 0.0); (609338.9, 4203826.5, 50.0, 0.0);
(609363.9, 4203826.5, 51.9, 0.0); (609388.9, 4203826.5, 52.9, 0.0);
(609413.9, 4203826.5, 50.0, 0.0); (609438.9, 4203826.5, 48.0, 0.0);
(609463.9, 4203826.5, 48.2, 0.0); (609488.9, 4203826.5, 50.7, 0.0);
(609513.9, 4203826.5, 55.1, 0.0); (609538.9, 4203826.5, 61.0, 0.0);
(609563.9, 4203826.5, 65.9, 0.0); (609588.9, 4203826.5, 66.8, 0.0);
(609613.9, 4203826.5, 66.2, 0.0); (609638.9, 4203826.5, 64.8, 0.0);
(609663.9, 4203826.5, 62.5, 0.0); (609688.9, 4203826.5, 59.1, 0.0);

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(609713.9, 4203826.5, 57.0, 0.0); (609738.9, 4203826.5, 54.6, 0.0);
(609763.9, 4203826.5, 58.5, 0.0); (609788.9, 4203826.5, 60.9, 0.0);
(609813.9, 4203826.5, 61.7, 0.0); (609838.9, 4203826.5, 60.0, 0.0);
(609863.9, 4203826.5, 56.2, 0.0); (609888.9, 4203826.5, 58.2, 0.0);
(609913.9, 4203826.5, 59.8, 0.0); (609938.9, 4203826.5, 59.9, 0.0);
(609963.9, 4203826.5, 58.4, 0.0); (609988.9, 4203826.5, 55.0, 0.0);
(610013.9, 4203826.5, 51.1, 0.0); (610038.9, 4203826.5, 48.6, 0.0);
(610063.9, 4203826.5, 50.6, 0.0); (610088.9, 4203826.5, 51.6, 0.0);
(610113.9, 4203826.5, 51.5, 0.0); (610138.9, 4203826.5, 50.0, 0.0);
(610163.9, 4203826.5, 48.0, 0.0); (610188.9, 4203826.5, 45.2, 0.0);
(610213.9, 4203826.5, 43.0, 0.0); (610238.9, 4203826.5, 41.7, 0.0);
(610263.9, 4203826.5, 41.0, 0.0); (610288.9, 4203826.5, 41.0, 0.0);
(610313.9, 4203826.5, 40.0, 0.0); (610338.9, 4203826.5, 40.0, 0.0);
(610363.9, 4203826.5, 39.5, 0.0); (610388.9, 4203826.5, 38.7, 0.0);
(610413.9, 4203826.5, 37.8, 0.0); (610438.9, 4203826.5, 37.0, 0.0);
(609213.9, 4203851.5, 47.8, 0.0); (609238.9, 4203851.5, 47.0, 0.0);
(609263.9, 4203851.5, 47.0, 0.0); (609288.9, 4203851.5, 48.9, 0.0);
(609313.9, 4203851.5, 52.2, 0.0); (609338.9, 4203851.5, 54.9, 0.0);
(609363.9, 4203851.5, 56.8, 0.0); (609388.9, 4203851.5, 56.9, 0.0);
(609413.9, 4203851.5, 55.9, 0.0); (609438.9, 4203851.5, 51.3, 0.0);
(609463.9, 4203851.5, 50.3, 0.0); (609488.9, 4203851.5, 52.0, 0.0);
(609513.9, 4203851.5, 55.2, 0.0); (609538.9, 4203851.5, 61.0, 0.0);
(609563.9, 4203851.5, 66.9, 0.0); (609588.9, 4203851.5, 67.6, 0.0);
(609613.9, 4203851.5, 63.3, 0.0); (609638.9, 4203851.5, 60.0, 0.0);
(609663.9, 4203851.5, 57.5, 0.0); (609688.9, 4203851.5, 54.0, 0.0);
(609713.9, 4203851.5, 50.1, 0.0); (609738.9, 4203851.5, 51.2, 0.0);
(609763.9, 4203851.5, 54.4, 0.0); (609788.9, 4203851.5, 55.9, 0.0);

(609813.9, 4203851.5, 56.0, 0.0); (609838.9, 4203851.5, 55.0, 0.0);
(609863.9, 4203851.5, 53.1, 0.0); (609888.9, 4203851.5, 54.1, 0.0);
(609913.9, 4203851.5, 54.5, 0.0); (609938.9, 4203851.5, 54.0, 0.0);
(609963.9, 4203851.5, 52.8, 0.0); (609988.9, 4203851.5, 51.0, 0.0);
(610013.9, 4203851.5, 48.1, 0.0); (610038.9, 4203851.5, 47.3, 0.0);
(610063.9, 4203851.5, 50.9, 0.0); (610088.9, 4203851.5, 54.0, 0.0);
(610113.9, 4203851.5, 57.5, 0.0); (610138.9, 4203851.5, 56.9, 0.0);
(610163.9, 4203851.5, 53.0, 0.0); (610188.9, 4203851.5, 49.0, 0.0);
(610213.9, 4203851.5, 45.2, 0.0); (610238.9, 4203851.5, 43.0, 0.0);
(610263.9, 4203851.5, 41.8, 0.0); (610288.9, 4203851.5, 41.0, 0.0);
(610313.9, 4203851.5, 38.0, 0.0); (610338.9, 4203851.5, 37.3, 0.0);
(610363.9, 4203851.5, 37.2, 0.0); (610388.9, 4203851.5, 37.0, 0.0);
(610413.9, 4203851.5, 36.8, 0.0); (610438.9, 4203851.5, 36.0, 0.0);
(609213.9, 4203876.5, 48.6, 0.0); (609238.9, 4203876.5, 47.9, 0.0);
(609263.9, 4203876.5, 47.3, 0.0); (609288.9, 4203876.5, 51.2, 0.0);
(609313.9, 4203876.5, 55.3, 0.0); (609338.9, 4203876.5, 58.5, 0.0);
(609363.9, 4203876.5, 60.8, 0.0); (609388.9, 4203876.5, 61.5, 0.0);
(609413.9, 4203876.5, 60.4, 0.0); (609438.9, 4203876.5, 55.2, 0.0);

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(609463.9, 4203876.5, 53.3, 0.0); (609488.9, 4203876.5, 54.4, 0.0);
(609513.9, 4203876.5, 57.4, 0.0); (609538.9, 4203876.5, 61.1, 0.0);
(609563.9, 4203876.5, 66.8, 0.0); (609588.9, 4203876.5, 68.4, 0.0);
(609613.9, 4203876.5, 64.7, 0.0); (609638.9, 4203876.5, 60.8, 0.0);
(609663.9, 4203876.5, 56.4, 0.0); (609688.9, 4203876.5, 51.4, 0.0);
(609713.9, 4203876.5, 48.3, 0.0); (609738.9, 4203876.5, 48.5, 0.0);
(609763.9, 4203876.5, 50.2, 0.0); (609788.9, 4203876.5, 50.9, 0.0);
(609813.9, 4203876.5, 50.7, 0.0); (609838.9, 4203876.5, 52.2, 0.0);
(609863.9, 4203876.5, 52.0, 0.0); (609888.9, 4203876.5, 50.0, 0.0);
(609913.9, 4203876.5, 49.2, 0.0); (609938.9, 4203876.5, 48.5, 0.0);
(609963.9, 4203876.5, 47.8, 0.0); (609988.9, 4203876.5, 46.4, 0.0);
(610013.9, 4203876.5, 44.5, 0.0); (610038.9, 4203876.5, 46.2, 0.0);
(610063.9, 4203876.5, 51.3, 0.0); (610088.9, 4203876.5, 56.8, 0.0);
(610113.9, 4203876.5, 61.4, 0.0); (610138.9, 4203876.5, 61.2, 0.0);
(610163.9, 4203876.5, 55.9, 0.0); (610188.9, 4203876.5, 51.2, 0.0);
(610213.9, 4203876.5, 47.4, 0.0); (610238.9, 4203876.5, 44.5, 0.0);
(610263.9, 4203876.5, 41.5, 0.0); (610288.9, 4203876.5, 40.0, 0.0);
(610313.9, 4203876.5, 38.0, 0.0); (610338.9, 4203876.5, 36.4, 0.0);
(610363.9, 4203876.5, 36.1, 0.0); (610388.9, 4203876.5, 35.7, 0.0);
(610413.9, 4203876.5, 34.9, 0.0); (610438.9, 4203876.5, 34.2, 0.0);
(609213.9, 4203901.5, 50.1, 0.0); (609238.9, 4203901.5, 49.0, 0.0);
(609263.9, 4203901.5, 49.4, 0.0); (609288.9, 4203901.5, 53.1, 0.0);
(609313.9, 4203901.5, 57.0, 0.0); (609338.9, 4203901.5, 61.0, 0.0);
(609363.9, 4203901.5, 64.5, 0.0); (609388.9, 4203901.5, 65.8, 0.0);
(609413.9, 4203901.5, 63.1, 0.0); (609438.9, 4203901.5, 57.4, 0.0);
(609463.9, 4203901.5, 55.2, 0.0); (609488.9, 4203901.5, 56.5, 0.0);
(609513.9, 4203901.5, 59.8, 0.0); (609538.9, 4203901.5, 62.6, 0.0);
(609563.9, 4203901.5, 67.4, 0.0); (609588.9, 4203901.5, 69.2, 0.0);
(609613.9, 4203901.5, 66.1, 0.0); (609638.9, 4203901.5, 61.0, 0.0);
(609663.9, 4203901.5, 54.4, 0.0); (609688.9, 4203901.5, 49.1, 0.0);
(609713.9, 4203901.5, 45.5, 0.0); (609213.9, 4203926.5, 50.3, 0.0);
(609238.9, 4203926.5, 49.3, 0.0); (609263.9, 4203926.5, 50.1, 0.0);
(609288.9, 4203926.5, 53.4, 0.0); (609313.9, 4203926.5, 57.1, 0.0);
(609338.9, 4203926.5, 61.0, 0.0); (609363.9, 4203926.5, 64.8, 0.0);
(609388.9, 4203926.5, 66.7, 0.0); (609413.9, 4203926.5, 63.6, 0.0);
(609438.9, 4203926.5, 58.1, 0.0); (609463.9, 4203926.5, 55.8, 0.0);
(609488.9, 4203926.5, 56.7, 0.0); (609513.9, 4203926.5, 59.8, 0.0);
(609538.9, 4203926.5, 63.0, 0.0); (609563.9, 4203926.5, 67.5, 0.0);
(609588.9, 4203926.5, 69.2, 0.0); (609613.9, 4203926.5, 66.5, 0.0);
(609638.9, 4203926.5, 61.4, 0.0); (609663.9, 4203926.5, 54.6, 0.0);
(609688.9, 4203926.5, 48.7, 0.0); (609713.9, 4203926.5, 44.9, 0.0);
(609213.9, 4203951.5, 51.9, 0.0); (609238.9, 4203951.5, 52.0, 0.0);

(609263.9, 4203951.5, 52.9, 0.0); (609288.9, 4203951.5, 54.1, 0.0);
(609313.9, 4203951.5, 57.1, 0.0); (609338.9, 4203951.5, 60.9, 0.0);
(609363.9, 4203951.5, 64.8, 0.0); (609388.9, 4203951.5, 67.4, 0.0);

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(609413.9, 4203951.5, 63.2, 0.0); (609438.9, 4203951.5, 59.4, 0.0);
(609463.9, 4203951.5, 58.2, 0.0); (609488.9, 4203951.5, 59.0, 0.0);
(609513.9, 4203951.5, 61.0, 0.0); (609538.9, 4203951.5, 63.8, 0.0);
(609563.9, 4203951.5, 65.1, 0.0); (609588.9, 4203951.5, 65.8, 0.0);
(609613.9, 4203951.5, 63.1, 0.0); (609638.9, 4203951.5, 58.6, 0.0);
(609663.9, 4203951.5, 52.8, 0.0); (609688.9, 4203951.5, 46.3, 0.0);
(609713.9, 4203951.5, 43.2, 0.0); (609213.9, 4203976.5, 53.2, 0.0);
(609238.9, 4203976.5, 55.0, 0.0); (609263.9, 4203976.5, 55.9, 0.0);
(609288.9, 4203976.5, 56.0, 0.0); (609313.9, 4203976.5, 57.6, 0.0);
(609338.9, 4203976.5, 59.6, 0.0); (609363.9, 4203976.5, 61.7, 0.0);
(609388.9, 4203976.5, 64.9, 0.0); (609413.9, 4203976.5, 62.1, 0.0);
(609438.9, 4203976.5, 61.0, 0.0); (609463.9, 4203976.5, 60.1, 0.0);
(609488.9, 4203976.5, 59.7, 0.0); (609513.9, 4203976.5, 59.2, 0.0);
(609538.9, 4203976.5, 59.0, 0.0); (609563.9, 4203976.5, 58.1, 0.0);
(609588.9, 4203976.5, 56.6, 0.0); (609613.9, 4203976.5, 54.9, 0.0);
(609638.9, 4203976.5, 52.1, 0.0); (609663.9, 4203976.5, 48.2, 0.0);
(609688.9, 4203976.5, 44.1, 0.0); (609713.9, 4203976.5, 42.0, 0.0);
(609213.9, 4204001.5, 55.4, 0.0); (609238.9, 4204001.5, 58.0, 0.0);
(609263.9, 4204001.5, 61.9, 0.0); (609288.9, 4204001.5, 62.4, 0.0);
(609313.9, 4204001.5, 61.2, 0.0); (609338.9, 4204001.5, 60.8, 0.0);
(609363.9, 4204001.5, 60.6, 0.0); (609388.9, 4204001.5, 63.0, 0.0);
(609413.9, 4204001.5, 65.9, 0.0); (609438.9, 4204001.5, 64.8, 0.0);
(609463.9, 4204001.5, 63.0, 0.0); (609488.9, 4204001.5, 60.8, 0.0);
(609513.9, 4204001.5, 57.5, 0.0); (609538.9, 4204001.5, 54.0, 0.0);
(609563.9, 4204001.5, 50.1, 0.0); (609588.9, 4204001.5, 48.6, 0.0);
(609613.9, 4204001.5, 47.8, 0.0); (609638.9, 4204001.5, 46.1, 0.0);
(609663.9, 4204001.5, 43.8, 0.0); (609688.9, 4204001.5, 43.0, 0.0);
(609713.9, 4204001.5, 41.0, 0.0); (609213.9, 4204026.5, 62.2, 0.0);
(609238.9, 4204026.5, 63.8, 0.0); (609263.9, 4204026.5, 69.2, 0.0);
(609288.9, 4204026.5, 71.9, 0.0); (609313.9, 4204026.5, 69.6, 0.0);
(609338.9, 4204026.5, 67.2, 0.0); (609363.9, 4204026.5, 65.5, 0.0);
(609388.9, 4204026.5, 64.2, 0.0); (609413.9, 4204026.5, 66.8, 0.0);
(609438.9, 4204026.5, 66.5, 0.0); (609463.9, 4204026.5, 63.3, 0.0);
(609488.9, 4204026.5, 59.3, 0.0); (609513.9, 4204026.5, 55.3, 0.0);
(609538.9, 4204026.5, 49.6, 0.0); (609563.9, 4204026.5, 46.4, 0.0);
(609588.9, 4204026.5, 43.9, 0.0); (609613.9, 4204026.5, 42.5, 0.0);
(609638.9, 4204026.5, 41.7, 0.0); (609663.9, 4204026.5, 42.0, 0.0);
(609688.9, 4204026.5, 42.0, 0.0); (609713.9, 4204026.5, 41.1, 0.0);
(609213.9, 4204051.5, 70.8, 0.0); (609238.9, 4204051.5, 70.0, 0.0);
(609263.9, 4204051.5, 72.2, 0.0); (609288.9, 4204051.5, 73.7, 0.0);
(609313.9, 4204051.5, 71.4, 0.0); (609338.9, 4204051.5, 68.7, 0.0);
(609363.9, 4204051.5, 66.7, 0.0); (609388.9, 4204051.5, 64.9, 0.0);
(609413.9, 4204051.5, 65.3, 0.0); (609438.9, 4204051.5, 63.6, 0.0);
(609463.9, 4204051.5, 60.2, 0.0); (609488.9, 4204051.5, 56.0, 0.0);
(609513.9, 4204051.5, 50.5, 0.0); (609538.9, 4204051.5, 46.6, 0.0);

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(609563.9, 4204051.5, 45.2, 0.0); (609588.9, 4204051.5, 44.0, 0.0);
(609613.9, 4204051.5, 43.8, 0.0); (609638.9, 4204051.5, 45.1, 0.0);

(609663.9, 4204051.5, 46.1, 0.0); (609688.9, 4204051.5, 45.4, 0.0);
(609713.9, 4204051.5, 43.4, 0.0); (609213.9, 4204076.5, 71.5, 0.0);
(609238.9, 4204076.5, 71.6, 0.0); (609263.9, 4204076.5, 72.8, 0.0);
(609288.9, 4204076.5, 73.5, 0.0); (609313.9, 4204076.5, 71.7, 0.0);
(609338.9, 4204076.5, 69.2, 0.0); (609363.9, 4204076.5, 66.9, 0.0);
(609388.9, 4204076.5, 65.2, 0.0); (609413.9, 4204076.5, 64.8, 0.0);
(609438.9, 4204076.5, 62.7, 0.0); (609463.9, 4204076.5, 59.8, 0.0);
(609488.9, 4204076.5, 55.8, 0.0); (609513.9, 4204076.5, 50.5, 0.0);
(609538.9, 4204076.5, 46.1, 0.0); (609563.9, 4204076.5, 45.0, 0.0);
(609588.9, 4204076.5, 44.2, 0.0); (609613.9, 4204076.5, 44.5, 0.0);
(609638.9, 4204076.5, 45.6, 0.0); (609663.9, 4204076.5, 46.5, 0.0);
(609688.9, 4204076.5, 46.3, 0.0); (609713.9, 4204076.5, 44.0, 0.0);
(609213.9, 4204101.5, 76.1, 0.0); (609238.9, 4204101.5, 74.4, 0.0);
(609263.9, 4204101.5, 67.8, 0.0); (609288.9, 4204101.5, 67.3, 0.0);
(609313.9, 4204101.5, 66.0, 0.0); (609338.9, 4204101.5, 64.8, 0.0);
(609363.9, 4204101.5, 64.0, 0.0); (609388.9, 4204101.5, 63.9, 0.0);
(609413.9, 4204101.5, 62.2, 0.0); (609438.9, 4204101.5, 60.9, 0.0);
(609463.9, 4204101.5, 57.4, 0.0); (609488.9, 4204101.5, 52.9, 0.0);
(609513.9, 4204101.5, 48.1, 0.0); (609538.9, 4204101.5, 45.3, 0.0);
(609563.9, 4204101.5, 46.0, 0.0); (609588.9, 4204101.5, 47.8, 0.0);
(609613.9, 4204101.5, 50.9, 0.0); (609638.9, 4204101.5, 52.9, 0.0);
(609663.9, 4204101.5, 53.3, 0.0); (609688.9, 4204101.5, 52.5, 0.0);
(609713.9, 4204101.5, 48.8, 0.0); (609213.9, 4204126.5, 68.8, 0.0);
(609238.9, 4204126.5, 67.0, 0.0); (609263.9, 4204126.5, 60.2, 0.0);
(609288.9, 4204126.5, 59.5, 0.0); (609313.9, 4204126.5, 59.7, 0.0);
(609338.9, 4204126.5, 60.8, 0.0); (609363.9, 4204126.5, 63.0, 0.0);
(609388.9, 4204126.5, 63.0, 0.0); (609413.9, 4204126.5, 63.0, 0.0);
(609438.9, 4204126.5, 60.2, 0.0); (609463.9, 4204126.5, 56.8, 0.0);
(609488.9, 4204126.5, 53.0, 0.0); (609513.9, 4204126.5, 48.6, 0.0);
(609538.9, 4204126.5, 47.0, 0.0); (609563.9, 4204126.5, 48.0, 0.0);
(609588.9, 4204126.5, 52.5, 0.0); (609613.9, 4204126.5, 56.9, 0.0);
(609638.9, 4204126.5, 59.6, 0.0); (609663.9, 4204126.5, 61.2, 0.0);
(609688.9, 4204126.5, 58.9, 0.0); (609713.9, 4204126.5, 54.0, 0.0);
(609213.9, 4204151.5, 56.4, 0.0); (609238.9, 4204151.5, 56.1, 0.0);
(609263.9, 4204151.5, 53.2, 0.0); (609288.9, 4204151.5, 56.9, 0.0);
(609313.9, 4204151.5, 59.7, 0.0); (609338.9, 4204151.5, 61.5, 0.0);
(609363.9, 4204151.5, 61.9, 0.0); (609388.9, 4204151.5, 61.0, 0.0);
(609413.9, 4204151.5, 60.0, 0.0); (609438.9, 4204151.5, 59.1, 0.0);
(609463.9, 4204151.5, 57.2, 0.0); (609488.9, 4204151.5, 54.1, 0.0);
(609513.9, 4204151.5, 50.5, 0.0); (609538.9, 4204151.5, 48.0, 0.0);
(609563.9, 4204151.5, 50.0, 0.0); (609588.9, 4204151.5, 55.5, 0.0);
(609613.9, 4204151.5, 60.8, 0.0); (609638.9, 4204151.5, 63.8, 0.0);
(609663.9, 4204151.5, 65.2, 0.0); (609688.9, 4204151.5, 61.9, 0.0);

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(609713.9, 4204151.5, 57.0, 0.0); (609213.9, 4204176.5, 52.2, 0.0);
(609238.9, 4204176.5, 51.6, 0.0); (609263.9, 4204176.5, 53.0, 0.0);
(609288.9, 4204176.5, 55.0, 0.0); (609313.9, 4204176.5, 56.4, 0.0);
(609338.9, 4204176.5, 56.4, 0.0); (609363.9, 4204176.5, 55.3, 0.0);
(609388.9, 4204176.5, 54.8, 0.0); (609413.9, 4204176.5, 56.4, 0.0);
(609438.9, 4204176.5, 60.0, 0.0); (609463.9, 4204176.5, 59.0, 0.0);
(609488.9, 4204176.5, 56.3, 0.0); (609513.9, 4204176.5, 53.7, 0.0);
(609538.9, 4204176.5, 50.2, 0.0); (609563.9, 4204176.5, 52.7, 0.0);
(609588.9, 4204176.5, 56.0, 0.0); (609613.9, 4204176.5, 61.3, 0.0);
(609638.9, 4204176.5, 65.3, 0.0); (609663.9, 4204176.5, 67.8, 0.0);
(609688.9, 4204176.5, 65.4, 0.0); (609713.9, 4204176.5, 59.8, 0.0);
(609213.9, 4204201.5, 53.4, 0.0); (609238.9, 4204201.5, 52.8, 0.0);
(609263.9, 4204201.5, 55.1, 0.0); (609288.9, 4204201.5, 56.8, 0.0);
(609313.9, 4204201.5, 56.3, 0.0); (609338.9, 4204201.5, 54.4, 0.0);
(609363.9, 4204201.5, 52.3, 0.0); (609388.9, 4204201.5, 52.6, 0.0);
(609413.9, 4204201.5, 54.0, 0.0); (609438.9, 4204201.5, 57.4, 0.0);
(609463.9, 4204201.5, 57.1, 0.0); (609488.9, 4204201.5, 56.2, 0.0);

(609513.9, 4204201.5, 56.4, 0.0); (609538.9, 4204201.5, 56.4, 0.0);
(609563.9, 4204201.5, 57.0, 0.0); (609588.9, 4204201.5, 59.3, 0.0);
(609613.9, 4204201.5, 63.0, 0.0); (609638.9, 4204201.5, 67.1, 0.0);
(609663.9, 4204201.5, 69.8, 0.0); (609688.9, 4204201.5, 66.8, 0.0);
(609713.9, 4204201.5, 63.0, 0.0); (609213.9, 4204226.5, 53.7, 0.0);
(609238.9, 4204226.5, 53.4, 0.0); (609263.9, 4204226.5, 55.6, 0.0);
(609288.9, 4204226.5, 57.2, 0.0); (609313.9, 4204226.5, 56.3, 0.0);
(609338.9, 4204226.5, 54.2, 0.0); (609363.9, 4204226.5, 52.2, 0.0);
(609388.9, 4204226.5, 52.3, 0.0); (609413.9, 4204226.5, 53.5, 0.0);
(609438.9, 4204226.5, 56.4, 0.0); (609463.9, 4204226.5, 56.7, 0.0);
(609488.9, 4204226.5, 56.5, 0.0); (609513.9, 4204226.5, 57.0, 0.0);
(609538.9, 4204226.5, 58.1, 0.0); (609563.9, 4204226.5, 58.1, 0.0);
(609588.9, 4204226.5, 60.2, 0.0); (609613.9, 4204226.5, 63.1, 0.0);
(609638.9, 4204226.5, 66.9, 0.0); (609663.9, 4204226.5, 70.1, 0.0);
(609688.9, 4204226.5, 67.0, 0.0); (609713.9, 4204226.5, 63.7, 0.0);
(609213.9, 4204251.5, 59.8, 0.0); (609238.9, 4204251.5, 60.0, 0.0);
(609263.9, 4204251.5, 63.5, 0.0); (609288.9, 4204251.5, 65.9, 0.0);
(609313.9, 4204251.5, 64.8, 0.0); (609338.9, 4204251.5, 62.6, 0.0);
(609363.9, 4204251.5, 60.3, 0.0); (609388.9, 4204251.5, 55.9, 0.0);
(609413.9, 4204251.5, 53.3, 0.0); (609438.9, 4204251.5, 54.0, 0.0);
(609463.9, 4204251.5, 54.2, 0.0); (609488.9, 4204251.5, 54.8, 0.0);
(609513.9, 4204251.5, 56.4, 0.0); (609538.9, 4204251.5, 60.2, 0.0);
(609563.9, 4204251.5, 66.2, 0.0); (609588.9, 4204251.5, 67.6, 0.0);
(609613.9, 4204251.5, 69.6, 0.0); (609638.9, 4204251.5, 71.7, 0.0);
(609663.9, 4204251.5, 72.2, 0.0); (609688.9, 4204251.5, 70.7, 0.0);
(609713.9, 4204251.5, 67.1, 0.0); (609213.9, 4204276.5, 66.2, 0.0);
(609238.9, 4204276.5, 68.0, 0.0); (609263.9, 4204276.5, 73.8, 0.0);
(609288.9, 4204276.5, 74.5, 0.0); (609313.9, 4204276.5, 72.8, 0.0);

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(609338.9, 4204276.5, 70.6, 0.0); (609363.9, 4204276.5, 67.6, 0.0);
(609388.9, 4204276.5, 62.8, 0.0); (609413.9, 4204276.5, 56.0, 0.0);
(609438.9, 4204276.5, 52.6, 0.0); (609463.9, 4204276.5, 54.3, 0.0);
(609488.9, 4204276.5, 57.5, 0.0); (609513.9, 4204276.5, 62.1, 0.0);
(609538.9, 4204276.5, 68.9, 0.0); (609563.9, 4204276.5, 74.8, 0.0);
(609588.9, 4204276.5, 76.4, 0.0); (609613.9, 4204276.5, 76.4, 0.0);
(609638.9, 4204276.5, 75.9, 0.0); (609663.9, 4204276.5, 74.6, 0.0);
(609688.9, 4204276.5, 73.0, 0.0); (609713.9, 4204276.5, 71.0, 0.0);
(609213.9, 4204301.5, 74.3, 0.0); (609238.9, 4204301.5, 77.9, 0.0);
(609263.9, 4204301.5, 80.9, 0.0); (609288.9, 4204301.5, 78.8, 0.0);
(609313.9, 4204301.5, 75.8, 0.0); (609338.9, 4204301.5, 72.8, 0.0);
(609363.9, 4204301.5, 69.5, 0.0); (609388.9, 4204301.5, 62.0, 0.0);
(609413.9, 4204301.5, 55.1, 0.0); (609438.9, 4204301.5, 51.6, 0.0);
(609463.9, 4204301.5, 54.3, 0.0); (609488.9, 4204301.5, 59.4, 0.0);
(609513.9, 4204301.5, 66.7, 0.0); (609538.9, 4204301.5, 76.8, 0.0);
(609563.9, 4204301.5, 81.8, 0.0); (609588.9, 4204301.5, 80.8, 0.0);
(609613.9, 4204301.5, 79.8, 0.0); (609638.9, 4204301.5, 78.6, 0.0);
(609663.9, 4204301.5, 76.9, 0.0); (609688.9, 4204301.5, 77.9, 0.0);
(609713.9, 4204301.5, 75.9, 0.0); (609213.9, 4204326.5, 78.5, 0.0);
(609238.9, 4204326.5, 80.6, 0.0); (609263.9, 4204326.5, 80.9, 0.0);
(609288.9, 4204326.5, 78.3, 0.0); (609313.9, 4204326.5, 74.3, 0.0);
(609338.9, 4204326.5, 70.0, 0.0); (609363.9, 4204326.5, 64.3, 0.0);
(609388.9, 4204326.5, 59.2, 0.0); (609413.9, 4204326.5, 53.4, 0.0);
(609438.9, 4204326.5, 50.9, 0.0); (609463.9, 4204326.5, 55.3, 0.0);
(609488.9, 4204326.5, 62.5, 0.0); (609513.9, 4204326.5, 70.8, 0.0);
(609538.9, 4204326.5, 79.3, 0.0); (609563.9, 4204326.5, 81.0, 0.0);
(609588.9, 4204326.5, 80.8, 0.0); (609613.9, 4204326.5, 79.1, 0.0);
(609638.9, 4204326.5, 77.4, 0.0); (609663.9, 4204326.5, 76.7, 0.0);
(609688.9, 4204326.5, 75.2, 0.0); (609713.9, 4204326.5, 73.2, 0.0);
(609213.9, 4204351.5, 78.9, 0.0); (609238.9, 4204351.5, 80.1, 0.0);
(609263.9, 4204351.5, 79.9, 0.0); (609288.9, 4204351.5, 76.2, 0.0);
(609313.9, 4204351.5, 71.7, 0.0); (609338.9, 4204351.5, 66.7, 0.0);

(609363.9, 4204351.5, 61.3, 0.0); (609388.9, 4204351.5, 57.3, 0.0);
(609413.9, 4204351.5, 51.3, 0.0); (609438.9, 4204351.5, 49.3, 0.0);
(609463.9, 4204351.5, 54.4, 0.0); (609488.9, 4204351.5, 62.4, 0.0);
(609513.9, 4204351.5, 70.9, 0.0); (609538.9, 4204351.5, 75.8, 0.0);
(609563.9, 4204351.5, 77.1, 0.0); (609588.9, 4204351.5, 76.6, 0.0);
(609613.9, 4204351.5, 74.3, 0.0); (609638.9, 4204351.5, 72.7, 0.0);
(609663.9, 4204351.5, 71.3, 0.0); (609688.9, 4204351.5, 71.2, 0.0);
(609713.9, 4204351.5, 69.3, 0.0); (609213.9, 4204376.5, 78.7, 0.0);
(609238.9, 4204376.5, 79.9, 0.0); (609263.9, 4204376.5, 79.6, 0.0);
(609288.9, 4204376.5, 75.8, 0.0); (609313.9, 4204376.5, 71.4, 0.0);
(609338.9, 4204376.5, 66.7, 0.0); (609363.9, 4204376.5, 61.4, 0.0);
(609388.9, 4204376.5, 56.9, 0.0); (609413.9, 4204376.5, 50.9, 0.0);
(609438.9, 4204376.5, 49.2, 0.0); (609463.9, 4204376.5, 53.8, 0.0);

CONC URBAN ELEV DFAULT

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(609488.9, 4204376.5, 61.6, 0.0); (609513.9, 4204376.5, 70.1, 0.0);
(609538.9, 4204376.5, 74.7, 0.0); (609563.9, 4204376.5, 76.1, 0.0);
(609588.9, 4204376.5, 75.4, 0.0); (609613.9, 4204376.5, 73.4, 0.0);
(609638.9, 4204376.5, 71.9, 0.0); (609663.9, 4204376.5, 70.9, 0.0);
(609688.9, 4204376.5, 70.2, 0.0); (609713.9, 4204376.5, 68.3, 0.0);
(609213.9, 4204401.5, 77.5, 0.0); (609238.9, 4204401.5, 78.9, 0.0);
(609263.9, 4204401.5, 78.8, 0.0); (609288.9, 4204401.5, 75.2, 0.0);
(609313.9, 4204401.5, 70.7, 0.0); (609338.9, 4204401.5, 66.5, 0.0);
(609363.9, 4204401.5, 62.5, 0.0); (609388.9, 4204401.5, 58.7, 0.0);
(609413.9, 4204401.5, 52.2, 0.0); (609438.9, 4204401.5, 48.1, 0.0);
(609463.9, 4204401.5, 51.3, 0.0); (609488.9, 4204401.5, 57.6, 0.0);
(609513.9, 4204401.5, 65.0, 0.0); (609538.9, 4204401.5, 69.9, 0.0);
(609563.9, 4204401.5, 71.0, 0.0); (609588.9, 4204401.5, 69.5, 0.0);
(609613.9, 4204401.5, 67.9, 0.0); (609638.9, 4204401.5, 66.5, 0.0);
(609663.9, 4204401.5, 65.0, 0.0); (609688.9, 4204401.5, 64.2, 0.0);
(609713.9, 4204401.5, 63.2, 0.0); (609213.9, 4204426.5, 76.7, 0.0);
(609238.9, 4204426.5, 74.1, 0.0); (609263.9, 4204426.5, 73.1, 0.0);
(609288.9, 4204426.5, 73.8, 0.0); (609313.9, 4204426.5, 71.0, 0.0);
(609338.9, 4204426.5, 68.3, 0.0); (609363.9, 4204426.5, 66.0, 0.0);
(609388.9, 4204426.5, 61.9, 0.0); (609413.9, 4204426.5, 55.9, 0.0);
(609438.9, 4204426.5, 48.0, 0.0); (609463.9, 4204426.5, 49.1, 0.0);
(609488.9, 4204426.5, 53.4, 0.0); (609513.9, 4204426.5, 59.2, 0.0);
(609538.9, 4204426.5, 64.0, 0.0); (609563.9, 4204426.5, 65.1, 0.0);
(609588.9, 4204426.5, 64.1, 0.0); (609613.9, 4204426.5, 60.9, 0.0);
(609638.9, 4204426.5, 58.5, 0.0); (609663.9, 4204426.5, 56.5, 0.0);
(609688.9, 4204426.5, 58.0, 0.0); (609713.9, 4204426.5, 58.1, 0.0);
(609213.9, 4204451.5, 72.5, 0.0); (609238.9, 4204451.5, 69.1, 0.0);
(609263.9, 4204451.5, 67.1, 0.0); (609288.9, 4204451.5, 65.7, 0.0);
(609313.9, 4204451.5, 64.7, 0.0); (609338.9, 4204451.5, 63.2, 0.0);
(609363.9, 4204451.5, 60.7, 0.0); (609388.9, 4204451.5, 59.0, 0.0);
(609413.9, 4204451.5, 54.0, 0.0); (609438.9, 4204451.5, 45.9, 0.0);
(609463.9, 4204451.5, 44.7, 0.0); (609488.9, 4204451.5, 47.9, 0.0);
(609513.9, 4204451.5, 54.0, 0.0); (609538.9, 4204451.5, 58.0, 0.0);
(609563.9, 4204451.5, 58.0, 0.0); (609588.9, 4204451.5, 54.0, 0.0);
(609613.9, 4204451.5, 51.7, 0.0); (609638.9, 4204451.5, 50.5, 0.0);
(609663.9, 4204451.5, 50.5, 0.0); (609688.9, 4204451.5, 51.1, 0.0);
(609713.9, 4204451.5, 52.1, 0.0); (609213.9, 4204476.5, 66.3, 0.0);
(609238.9, 4204476.5, 63.5, 0.0); (609263.9, 4204476.5, 59.8, 0.0);
(609288.9, 4204476.5, 57.3, 0.0); (609313.9, 4204476.5, 54.7, 0.0);
(609338.9, 4204476.5, 51.7, 0.0); (609363.9, 4204476.5, 48.5, 0.0);
(609388.9, 4204476.5, 47.1, 0.0); (609413.9, 4204476.5, 45.7, 0.0);
(609438.9, 4204476.5, 42.7, 0.0); (609463.9, 4204476.5, 41.7, 0.0);
(609488.9, 4204476.5, 43.5, 0.0); (609513.9, 4204476.5, 45.2, 0.0);
(609538.9, 4204476.5, 49.5, 0.0); (609563.9, 4204476.5, 49.6, 0.0);
(609588.9, 4204476.5, 46.5, 0.0); (609613.9, 4204476.5, 45.2, 0.0);

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(609638.9, 4204476.5,	45.2,	0.0);	(609663.9, 4204476.5,	45.7,	0.0);
(609688.9, 4204476.5,	46.5,	0.0);	(609713.9, 4204476.5,	49.2,	0.0);
(609213.9, 4204501.5,	65.7,	0.0);	(609238.9, 4204501.5,	64.1,	0.0);
(609263.9, 4204501.5,	59.7,	0.0);	(609288.9, 4204501.5,	54.6,	0.0);
(609313.9, 4204501.5,	50.5,	0.0);	(609338.9, 4204501.5,	46.3,	0.0);
(609363.9, 4204501.5,	41.9,	0.0);	(609388.9, 4204501.5,	39.3,	0.0);
(609413.9, 4204501.5,	39.7,	0.0);	(609438.9, 4204501.5,	39.6,	0.0);
(609463.9, 4204501.5,	39.0,	0.0);	(609488.9, 4204501.5,	39.0,	0.0);
(609513.9, 4204501.5,	39.6,	0.0);	(609538.9, 4204501.5,	40.8,	0.0);
(609563.9, 4204501.5,	40.2,	0.0);	(609588.9, 4204501.5,	38.6,	0.0);
(609613.9, 4204501.5,	38.5,	0.0);	(609638.9, 4204501.5,	39.0,	0.0);
(609663.9, 4204501.5,	39.7,	0.0);	(609688.9, 4204501.5,	43.1,	0.0);
(609713.9, 4204501.5,	46.5,	0.0);	(609213.9, 4204526.5,	65.9,	0.0);
(609238.9, 4204526.5,	64.4,	0.0);	(609263.9, 4204526.5,	59.9,	0.0);
(609288.9, 4204526.5,	54.3,	0.0);	(609313.9, 4204526.5,	50.1,	0.0);
(609338.9, 4204526.5,	45.9,	0.0);	(609363.9, 4204526.5,	41.4,	0.0);
(609388.9, 4204526.5,	37.6,	0.0);	(609413.9, 4204526.5,	38.3,	0.0);
(609438.9, 4204526.5,	38.9,	0.0);	(609463.9, 4204526.5,	38.6,	0.0);
(609488.9, 4204526.5,	38.4,	0.0);	(609513.9, 4204526.5,	38.7,	0.0);
(609538.9, 4204526.5,	38.6,	0.0);	(609563.9, 4204526.5,	37.8,	0.0);
(609588.9, 4204526.5,	37.0,	0.0);	(609613.9, 4204526.5,	37.2,	0.0);
(609638.9, 4204526.5,	38.0,	0.0);	(609663.9, 4204526.5,	39.2,	0.0);
(609688.9, 4204526.5,	42.3,	0.0);	(609713.9, 4204526.5,	45.9,	0.0);
(609213.9, 4204551.5,	71.7,	0.0);	(609238.9, 4204551.5,	68.6,	0.0);
(609263.9, 4204551.5,	63.0,	0.0);	(609288.9, 4204551.5,	58.2,	0.0);
(609313.9, 4204551.5,	53.7,	0.0);	(609338.9, 4204551.5,	48.5,	0.0);
(609363.9, 4204551.5,	42.4,	0.0);	(609388.9, 4204551.5,	38.1,	0.0);
(609413.9, 4204551.5,	36.2,	0.0);	(609438.9, 4204551.5,	36.2,	0.0);
(609463.9, 4204551.5,	36.2,	0.0);	(609488.9, 4204551.5,	36.2,	0.0);
(609513.9, 4204551.5,	36.3,	0.0);	(609538.9, 4204551.5,	37.0,	0.0);
(609563.9, 4204551.5,	37.0,	0.0);	(609588.9, 4204551.5,	36.9,	0.0);
(609613.9, 4204551.5,	36.5,	0.0);	(609638.9, 4204551.5,	36.6,	0.0);
(609663.9, 4204551.5,	37.7,	0.0);	(609688.9, 4204551.5,	39.2,	0.0);
(609713.9, 4204551.5,	42.0,	0.0);	(609738.4, 4203889.5,	48.3,	0.0);
(609763.4, 4203889.5,	49.7,	0.0);	(609788.4, 4203889.5,	50.5,	0.0);
(609813.4, 4203889.5,	50.5,	0.0);	(609838.4, 4203889.5,	52.0,	0.0);
(609863.4, 4203889.5,	51.9,	0.0);	(609888.4, 4203889.5,	49.7,	0.0);
(609913.4, 4203889.5,	48.8,	0.0);	(609938.4, 4203889.5,	48.2,	0.0);
(609963.4, 4203889.5,	47.8,	0.0);	(609988.4, 4203889.5,	46.1,	0.0);
(610013.4, 4203889.5,	44.3,	0.0);	(610038.4, 4203889.5,	46.1,	0.0);
(610063.4, 4203889.5,	51.1,	0.0);	(610088.4, 4203889.5,	56.4,	0.0);
(610113.4, 4203889.5,	61.7,	0.0);	(610138.4, 4203893.5,	61.2,	0.0);
(610163.4, 4203893.5,	56.1,	0.0);	(610188.4, 4203893.5,	51.5,	0.0);
(610213.4, 4203893.5,	47.8,	0.0);	(610238.4, 4203893.5,	44.7,	0.0);
(610263.4, 4203893.5,	41.5,	0.0);	(610288.4, 4203893.5,	40.0,	0.0);

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(610313.4, 4203893.5,	38.1,	0.0);	(610338.4, 4203893.5,	36.4,	0.0);
(610363.4, 4203893.5,	36.0,	0.0);	(610388.4, 4203893.5,	35.6,	0.0);
(610413.4, 4203893.5,	34.8,	0.0);	(609716.1, 4204329.0,	73.1,	0.0);
(609718.9, 4203892.0,	48.3,	0.0);	(610415.8, 4203905.5,	33.5,	0.0);
(610380.2, 4203944.5,	35.9,	0.0);	(610236.7, 4204012.0,	49.6,	0.0);
(610162.5, 4204082.5,	46.4,	0.0);	(610132.1, 4204052.5,	49.8,	0.0);
(610098.4, 4204082.5,	44.0,	0.0);	(610133.9, 4204110.5,	43.4,	0.0);

(610096.7, 4204185.5, 33.0, 0.0); (610109.6, 4204339.5, 28.9, 0.0);
(610034.1, 4204456.5, 30.4, 0.0); (609991.3, 4204402.5, 39.9, 0.0);
(609919.4, 4204407.0, 46.2, 0.0); (609939.9, 4204280.0, 51.5, 0.0);
(609915.9, 4204233.5, 58.2, 0.0); (609840.4, 4204230.0, 68.3, 0.0);
(609789.5, 4204257.5, 70.2, 0.0); (609788.8, 4204361.0, 60.0, 0.0);
(609849.6, 4204412.0, 47.6, 0.0); (609800.7, 4204410.5, 52.2, 0.0);

CONC URBAN ELEV DFAULT

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1

YR	MN	DY	HR	FLOW VECTOR	SPEED (M/S)	TEMP (K)	STAB CLASS	MIXING HEIGHT (M) RURAL	MIXING HEIGHT (M) URBAN	USTAR	M-O LENGTH (M)	Z-0 (M)	IPCODE	PRATE (mm/HR)
01	01	01	01	269.0	1.21	272.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	02	280.1	1.43	272.9	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	03	271.9	1.74	273.5	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	04	153.6	1.25	273.1	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	05	179.8	1.48	274.1	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	06	180.5	1.56	273.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	07	261.1	1.74	274.4	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	08	348.3	1.52	274.4	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	09	72.0	1.16	274.0	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	10	85.1	1.74	274.5	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	11	219.1	1.79	277.1	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	12	278.9	1.92	278.9	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	13	257.4	2.10	279.5	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	14	293.4	1.92	280.0	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	15	349.5	1.97	282.0	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	16	11.6	1.65	284.2	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	17	335.0	1.34	283.7	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	18	257.2	1.48	280.9	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	19	287.7	1.74	278.8	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	20	317.7	1.52	275.5	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	21	340.6	1.48	273.3	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	22	337.7	1.00	273.4	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	23	257.9	1.00	272.7	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01	01	01	24	307.1	1.00	272.4	6	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.

CONC URBAN ELEV DFAULT

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609213.94	4203701.50	9.00738	609238.94	4203701.50	9.45540
609263.94	4203701.50	9.94806	609288.94	4203701.50	10.49065
609313.94	4203701.50	11.08940	609338.94	4203701.50	11.75092
609363.94	4203701.50	12.48246	609388.94	4203701.50	13.29216
609413.94	4203701.50	14.18923	609438.94	4203701.50	15.18326
609463.94	4203701.50	16.28506	609488.94	4203701.50	17.50850
609513.94	4203701.50	18.86633	609538.94	4203701.50	20.37721
609563.94	4203701.50	22.06108	609588.94	4203701.50	23.95303
609613.94	4203701.50	26.11615	609638.94	4203701.50	28.62891
609663.94	4203701.50	31.57430	609688.94	4203701.50	35.04552
609713.94	4203701.50	39.11180	609738.94	4203701.50	43.72144
609763.94	4203701.50	48.77263	609788.94	4203701.50	53.99902
609813.94	4203701.50	59.18058	609838.94	4203701.50	64.17860
609863.94	4203701.50	68.93540	609888.94	4203701.50	73.39460
609913.94	4203701.50	77.59805	609938.94	4203701.50	81.62372
609963.94	4203701.50	85.53944	609988.94	4203701.50	89.36810
610013.94	4203701.50	93.09573	610038.94	4203701.50	96.67033
610063.94	4203701.50	100.02670	610088.94	4203701.50	103.10279
610113.94	4203701.50	105.84275	610138.94	4203701.50	108.20193
610163.94	4203701.50	110.15170	610188.94	4203701.50	111.66553

610213.94	4203701.50	112.73888	610238.94	4203701.50	113.40546
610263.94	4203701.50	113.67265	610288.94	4203701.50	113.55790
610313.94	4203701.50	113.05782	610338.94	4203701.50	112.19335
610363.94	4203701.50	110.96982	610388.94	4203701.50	109.38458
610413.94	4203701.50	107.52599	610438.94	4203701.50	105.48699
609213.94	4203726.50	9.24404	609238.94	4203726.50	9.71862
609263.94	4203726.50	10.24218	609288.94	4203726.50	10.82042
609313.94	4203726.50	11.46042	609338.94	4203726.50	12.17026
609363.94	4203726.50	12.95922	609388.94	4203726.50	13.83771
609413.94	4203726.50	14.81689	609438.94	4203726.50	15.91025
609463.94	4203726.50	17.13117	609488.94	4203726.50	18.49671
609513.94	4203726.50	20.02647	609538.94	4203726.50	21.74284
609563.94	4203726.50	23.67423	609588.94	4203726.50	25.85816
609613.94	4203726.50	28.35218	609638.94	4203726.50	31.26306
609663.94	4203726.50	34.71433	609688.94	4203726.50	38.82817
609713.94	4203726.50	43.73708	609738.94	4203726.50	49.40613
609763.94	4203726.50	55.63340	609788.94	4203726.50	62.03198
609813.94	4203726.50	68.31470	609838.94	4203726.50	74.32822
609863.94	4203726.50	79.97634	609888.94	4203726.50	85.30835
609913.94	4203726.50	90.42790	609938.94	4203726.50	95.46881

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609963.94	4203726.50	100.43549	609988.94	4203726.50	105.30388
610013.94	4203726.50	109.99398	610038.94	4203726.50	114.41479
610063.94	4203726.50	118.47891	610088.94	4203726.50	122.11227
610113.94	4203726.50	125.25733	610138.94	4203726.50	127.85915
610163.94	4203726.50	129.90724	610188.94	4203726.50	131.37930
610213.94	4203726.50	132.28438	610238.94	4203726.50	132.67039
610263.94	4203726.50	132.58745	610288.94	4203726.50	132.02290
610313.94	4203726.50	130.96576	610338.94	4203726.50	129.42603
610363.94	4203726.50	127.41364	610388.94	4203726.50	124.97236
610413.94	4203726.50	122.20509	610438.94	4203726.50	119.23454
609213.94	4203751.50	9.49381	609238.94	4203751.50	9.99759
609263.94	4203751.50	10.55435	609288.94	4203751.50	11.17091
609313.94	4203751.50	11.85495	609338.94	4203751.50	12.61596
609363.94	4203751.50	13.46479	609388.94	4203751.50	14.41448
609413.94	4203751.50	15.47962	609438.94	4203751.50	16.67734
609463.94	4203751.50	18.02661	609488.94	4203751.50	19.54881
609513.94	4203751.50	21.27085	609538.94	4203751.50	23.22174
609563.94	4203751.50	25.43962	609588.94	4203751.50	27.97642
609613.94	4203751.50	30.89750	609638.94	4203751.50	34.30718
609663.94	4203751.50	38.39902	609688.94	4203751.50	43.36534
609713.94	4203751.50	49.40844	609738.94	4203751.50	56.54602
609763.94	4203751.50	64.41665	609788.94	4203751.50	72.41016
609813.94	4203751.50	80.16697	609838.94	4203751.50	87.49226
609863.94	4203751.50	94.40018	609888.94	4203751.50	101.06564
609913.94	4203751.50	107.63699	609938.94	4203751.50	114.14156
609963.94	4203751.50	120.52259	609988.94	4203751.50	126.66474
610013.94	4203751.50	132.46460	610038.94	4203751.50	137.79196
610063.94	4203751.50	142.54382	610088.94	4203751.50	146.65173
610113.94	4203751.50	150.06915	610138.94	4203751.50	152.77513
610163.94	4203751.50	154.75020	610188.94	4203751.50	156.06050
610213.94	4203751.50	156.66188	610238.94	4203751.50	156.56779
610263.94	4203751.50	155.85893	610288.94	4203751.50	154.53717
610313.94	4203751.50	152.62645	610338.94	4203751.50	150.13644
610363.94	4203751.50	147.08643	610388.94	4203751.50	143.49663
610413.94	4203751.50	139.47467	610438.94	4203751.50	135.21527
609213.94	4203776.50	9.75334	609238.94	4203776.50	10.28857

609263.94	4203776.50	10.88178	609288.94	4203776.50	11.54012
609313.94	4203776.50	12.27241	609338.94	4203776.50	13.08896
609363.94	4203776.50	14.00232	609388.94	4203776.50	15.02761
609413.94	4203776.50	16.18319	609438.94	4203776.50	17.49053

CONC URBAN ELEV DFAULT

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609463.94	4203776.50	18.97521	609488.94	4203776.50	20.66665
609513.94	4203776.50	22.59888	609538.94	4203776.50	24.81527
609563.94	4203776.50	27.36945	609588.94	4203776.50	30.32541
609613.94	4203776.50	33.77971	609638.94	4203776.50	37.85856
609663.94	4203776.50	42.78424	609688.94	4203776.50	48.90509
609713.94	4203776.50	56.54780	609738.94	4203776.50	65.82072
609763.94	4203776.50	76.07851	609788.94	4203776.50	86.34531
609813.94	4203776.50	96.12765	609838.94	4203776.50	105.33617
609863.94	4203776.50	114.23504	609888.94	4203776.50	123.05917
609913.94	4203776.50	131.79947	609938.94	4203776.50	140.31461
609963.94	4203776.50	148.42708	609988.94	4203776.50	155.98106
610013.94	4203776.50	162.85313	610038.94	4203776.50	168.93776
610063.94	4203776.50	174.19559	610088.94	4203776.50	178.60594
610113.94	4203776.50	182.19012	610138.94	4203776.50	184.84236
610163.94	4203776.50	186.56067	610188.94	4203776.50	187.37263
610213.94	4203776.50	187.36443	610238.94	4203776.50	186.52092
610263.94	4203776.50	184.91264	610288.94	4203776.50	182.54883
610313.94	4203776.50	179.44749	610338.94	4203776.50	175.63432
610363.94	4203776.50	171.12047	610388.94	4203776.50	165.88821
610413.94	4203776.50	160.05443	610438.94	4203776.50	153.90788
609213.94	4203801.50	10.01719	609238.94	4203801.50	10.58600
609263.94	4203801.50	11.21814	609288.94	4203801.50	11.92188
609313.94	4203801.50	12.70674	609338.94	4203801.50	13.58448
609363.94	4203801.50	14.56885	609388.94	4203801.50	15.67707
609413.94	4203801.50	16.93074	609438.94	4203801.50	18.35588
609463.94	4203801.50	19.98477	609488.94	4203801.50	21.85667
609513.94	4203801.50	24.01865	609538.94	4203801.50	26.52800
609563.94	4203801.50	29.46155	609588.94	4203801.50	32.92107
609613.94	4203801.50	37.04853	609638.94	4203801.50	42.01265
609663.94	4203801.50	48.09059	609688.94	4203801.50	55.77226
609713.94	4203801.50	65.84602	609738.94	4203801.50	78.68522
609763.94	4203801.50	92.53712	609788.94	4203801.50	106.12299
609813.94	4203801.50	118.88773	609838.94	4203801.50	131.28992
609863.94	4203801.50	143.65552	609888.94	4203801.50	155.80310
609913.94	4203801.50	167.41995	609938.94	4203801.50	178.22775
609963.94	4203801.50	188.05774	609988.94	4203801.50	196.82663
610013.94	4203801.50	204.53712	610038.94	4203801.50	211.23058
610063.94	4203801.50	216.77950	610088.94	4203801.50	221.21808
610113.94	4203801.50	224.57245	610138.94	4203801.50	226.85612
610163.94	4203801.50	228.05862	610188.94	4203801.50	228.14610

CONC URBAN ELEV DFAULT

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

Construction

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
610213.94	4203801.50	227.16319	610238.94	4203801.50	225.21109
610263.94	4203801.50	222.22606	610288.94	4203801.50	218.33876
610313.94	4203801.50	213.49098	610338.94	4203801.50	207.76283
610363.94	4203801.50	201.15378	610388.94	4203801.50	193.51874
610413.94	4203801.50	185.05563	610438.94	4203801.50	175.96460
609213.94	4203826.50	10.27931	609238.94	4203826.50	10.88268
609263.94	4203826.50	11.55515	609288.94	4203826.50	12.30649
609313.94	4203826.50	13.14747	609338.94	4203826.50	14.09095
609363.94	4203826.50	15.15283	609388.94	4203826.50	16.35217
609413.94	4203826.50	17.71416	609438.94	4203826.50	19.26968
609463.94	4203826.50	21.05700	609488.94	4203826.50	23.12575
609513.94	4203826.50	25.53776	609538.94	4203826.50	28.37167
609563.94	4203826.50	31.73454	609588.94	4203826.50	35.77271
609613.94	4203826.50	40.71950	609638.94	4203826.50	46.84562
609663.94	4203826.50	54.55859	609688.94	4203826.50	64.58540
609713.94	4203826.50	78.47495	609738.94	4203826.50	97.16711
609763.94	4203826.50	117.40450	609788.94	4203826.50	136.57135
609813.94	4203826.50	155.17036	609838.94	4203826.50	173.65692
609863.94	4203826.50	191.51079	609888.94	4203826.50	207.62444
609913.94	4203826.50	221.99875	609938.94	4203826.50	234.70782
609963.94	4203826.50	245.83217	609988.94	4203826.50	255.41670
610013.94	4203826.50	263.57474	610038.94	4203826.50	270.36737
610063.94	4203826.50	275.80478	610088.94	4203826.50	279.90915
610113.94	4203826.50	282.69998	610138.94	4203826.50	284.17416
610163.94	4203826.50	284.31818	610188.94	4203826.50	283.15509
610213.94	4203826.50	280.65952	610238.94	4203826.50	276.97745
610263.94	4203826.50	272.07428	610288.94	4203826.50	265.98849
610313.94	4203826.50	258.74405	610338.94	4203826.50	250.29318
610363.94	4203826.50	241.03951	610388.94	4203826.50	230.09888
610413.94	4203826.50	216.93286	610438.94	4203826.50	202.83862
609213.94	4203851.50	10.53410	609238.94	4203851.50	11.17148
609263.94	4203851.50	11.88442	609288.94	4203851.50	12.68366
609313.94	4203851.50	13.58167	609338.94	4203851.50	14.59332
609363.94	4203851.50	15.73642	609388.94	4203851.50	17.03316
609413.94	4203851.50	18.51174	609438.94	4203851.50	20.20865
609463.94	4203851.50	22.17075	609488.94	4203851.50	24.45788
609513.94	4203851.50	27.14843	609538.94	4203851.50	30.34598
609563.94	4203851.50	34.19345	609588.94	4203851.50	38.89943
609613.94	4203851.50	44.81345	609638.94	4203851.50	52.40394
609663.94	4203851.50	62.47188	609688.94	4203851.50	76.33321

♀ *** ISCST3 - VERSION 02035 *** *** Laurel Road Project *** 03/03/16
*** Construction Impacts - Unit Emissions *** 14:30:06
**MODELOPTs: PAGE 24
CONC URBAN ELEV DFAULT

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609713.94	4203851.50	96.97730	609738.94	4203851.50	127.93344
609763.94	4203851.50	160.46663	609788.94	4203851.50	192.38982
609813.94	4203851.50	223.16728	609838.94	4203851.50	250.36548
609863.94	4203851.50	273.48413	609888.94	4203851.50	292.88373
609913.94	4203851.50	309.22168	609938.94	4203851.50	323.02512
609963.94	4203851.50	334.52121	609988.94	4203851.50	344.02740
610013.94	4203851.50	352.21582	610038.94	4203851.50	358.00146
610063.94	4203851.50	362.52679	610088.94	4203851.50	365.62222
610113.94	4203851.50	367.32953	610138.94	4203851.50	368.06430
610163.94	4203851.50	367.26804	610188.94	4203851.50	364.72293
610213.94	4203851.50	360.52289	610238.94	4203851.50	354.52167
610263.94	4203851.50	346.84509	610288.94	4203851.50	337.43243
610313.94	4203851.50	326.65311	610338.94	4203851.50	313.78427
610363.94	4203851.50	299.32928	610388.94	4203851.50	281.87527

610413.94	4203851.50	260.23831	610438.94	4203851.50	236.84990
609213.94	4203876.50	10.77840	609238.94	4203876.50	11.44864
609263.94	4203876.50	12.20043	609288.94	4203876.50	13.04604
609313.94	4203876.50	13.99984	609338.94	4203876.50	15.07885
609363.94	4203876.50	16.30351	609388.94	4203876.50	17.69892
609413.94	4203876.50	19.29719	609438.94	4203876.50	21.14089
609463.94	4203876.50	23.28512	609488.94	4203876.50	25.80382
609513.94	4203876.50	28.79584	609538.94	4203876.50	32.39381
609563.94	4203876.50	36.78324	609588.94	4203876.50	42.26316
609613.94	4203876.50	49.30544	609638.94	4203876.50	58.71213
609663.94	4203876.50	71.91795	609688.94	4203876.50	92.19598
609713.94	4203876.50	126.69976	609738.94	4203876.50	188.83388
609763.94	4203876.50	262.08820	609788.94	4203876.50	321.53244
609813.94	4203876.50	365.44421	609838.94	4203876.50	398.49146
609863.94	4203876.50	423.62469	609888.94	4203876.50	443.67798
609913.94	4203876.50	460.83441	609938.94	4203876.50	474.56497
609963.94	4203876.50	485.65173	609988.94	4203876.50	493.52335
610013.94	4203876.50	499.90002	610038.94	4203876.50	504.41879
610063.94	4203876.50	506.69574	610088.94	4203876.50	507.07681
610113.94	4203876.50	505.53430	610138.94	4203876.50	503.05957
610163.94	4203876.50	499.21378	610188.94	4203876.50	493.59219
610213.94	4203876.50	485.89255	610238.94	4203876.50	476.27469
610263.94	4203876.50	464.39615	610288.94	4203876.50	449.97906
610313.94	4203876.50	433.13516	610338.94	4203876.50	412.93027
610363.94	4203876.50	391.38571	610388.94	4203876.50	363.04630
610413.94	4203876.50	323.47104	610438.94	4203876.50	277.36945

CONC URBAN ELEV DFAULT

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609213.94	4203901.50	11.01332	609238.94	4203901.50	11.71483
609263.94	4203901.50	12.50356	609288.94	4203901.50	13.39326
609313.94	4203901.50	14.40040	609338.94	4203901.50	15.54422
609363.94	4203901.50	16.84812	609388.94	4203901.50	18.34076
609413.94	4203901.50	20.05835	609438.94	4203901.50	22.04860
609463.94	4203901.50	24.37636	609488.94	4203901.50	27.12864
609513.94	4203901.50	30.42582	609538.94	4203901.50	34.43562
609563.94	4203901.50	39.40383	609588.94	4203901.50	45.71603
609613.94	4203901.50	54.00189	609638.94	4203901.50	65.40067
609663.94	4203901.50	82.47341	609688.94	4203901.50	110.97211
609713.94	4203901.50	163.85863	609213.94	4203926.50	11.24609
609238.94	4203926.50	11.97836	609263.94	4203926.50	12.80324
609288.94	4203926.50	13.73636	609313.94	4203926.50	14.79565
609338.94	4203926.50	16.00317	609363.94	4203926.50	17.38546
609388.94	4203926.50	18.97569	609413.94	4203926.50	20.81471
609438.94	4203926.50	22.95709	609463.94	4203926.50	25.47575
609488.94	4203926.50	28.47225	609513.94	4203926.50	32.09073
609538.94	4203926.50	36.53840	609563.94	4203926.50	42.12106
609588.94	4203926.50	49.33993	609613.94	4203926.50	59.04080
609638.94	4203926.50	72.72530	609663.94	4203926.50	93.75793
609688.94	4203926.50	131.25809	609713.94	4203926.50	203.98956
609213.94	4203951.50	11.48800	609238.94	4203951.50	12.25299
609263.94	4203951.50	13.11605	609288.94	4203951.50	14.09407
609313.94	4203951.50	15.20751	609338.94	4203951.50	16.48134
609363.94	4203951.50	17.94568	609388.94	4203951.50	19.63841
609413.94	4203951.50	21.60682	609438.94	4203951.50	23.91324
609463.94	4203951.50	26.64031	609488.94	4203951.50	29.90357
609513.94	4203951.50	33.87102	609538.94	4203951.50	38.78867
609563.94	4203951.50	45.02219	609588.94	4203951.50	53.14711
609613.94	4203951.50	64.25180	609638.94	4203951.50	80.15300

609663.94	4203951.50	105.29801	609688.94	4203951.50	150.86183
609713.94	4203951.50	231.68245	609213.94	4203976.50	11.75084
609238.94	4203976.50	12.55133	609263.94	4203976.50	13.45635
609288.94	4203976.50	14.48356	609313.94	4203976.50	15.65525
609338.94	4203976.50	16.99908	609363.94	4203976.50	18.54963
609388.94	4203976.50	20.34925	609413.94	4203976.50	22.45250
609438.94	4203976.50	24.92876	609463.94	4203976.50	27.87154
609488.94	4203976.50	31.40705	609513.94	4203976.50	35.72322
609538.94	4203976.50	41.09713	609563.94	4203976.50	47.95469
609588.94	4203976.50	56.95736	609613.94	4203976.50	69.36327

CONC URBAN ELEV DFAULT

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609638.94	4203976.50	87.49183	609663.94	4203976.50	116.17053
609688.94	4203976.50	166.07021	609713.94	4203976.50	250.06323
609213.94	4204001.50	12.03978	609238.94	4204001.50	12.87922
609263.94	4204001.50	13.82889	609288.94	4204001.50	14.90847
609313.94	4204001.50	16.14134	609338.94	4204001.50	17.55763
609363.94	4204001.50	19.19436	609388.94	4204001.50	21.09896
609413.94	4204001.50	23.33165	609438.94	4204001.50	25.96987
609463.94	4204001.50	29.11658	609488.94	4204001.50	32.91028
609513.94	4204001.50	37.55499	609538.94	4204001.50	43.35683
609563.94	4204001.50	50.79600	609588.94	4204001.50	60.65556
609613.94	4204001.50	74.31486	609638.94	4204001.50	94.32091
609663.94	4204001.50	125.44028	609688.94	4204001.50	177.59123
609713.94	4204001.50	263.48053	609213.94	4204026.50	12.35220
609238.94	4204026.50	13.23130	609263.94	4204026.50	14.22666
609288.94	4204026.50	15.35860	609313.94	4204026.50	16.65200
609338.94	4204026.50	18.13851	609363.94	4204026.50	19.85738
609388.94	4204026.50	21.85917	609413.94	4204026.50	24.20983
609438.94	4204026.50	26.99407	609463.94	4204026.50	30.32553
609488.94	4204026.50	34.35727	609513.94	4204026.50	39.31044
609538.94	4204026.50	45.52111	609563.94	4204026.50	53.52216
609588.94	4204026.50	64.17606	609613.94	4204026.50	78.91641
609638.94	4204026.50	100.33488	609663.94	4204026.50	132.83150
609688.94	4204026.50	186.21735	609713.94	4204026.50	272.66998
609213.94	4204051.50	12.67845	609238.94	4204051.50	13.59535
609263.94	4204051.50	14.63398	609288.94	4204051.50	15.81522
609313.94	4204051.50	17.16538	609338.94	4204051.50	18.71682
609363.94	4204051.50	20.51112	609388.94	4204051.50	22.60158
609413.94	4204051.50	25.05798	609438.94	4204051.50	27.97293
609463.94	4204051.50	31.47058	609488.94	4204051.50	35.72058
609513.94	4204051.50	40.96484	609538.94	4204051.50	47.56744
609563.94	4204051.50	56.08700	609588.94	4204051.50	67.43114
609613.94	4204051.50	83.02698	609638.94	4204051.50	105.27745
609663.94	4204051.50	138.53731	609688.94	4204051.50	192.78319
609713.94	4204051.50	279.20288	609213.94	4204076.50	13.00645
609238.94	4204076.50	13.95713	609263.94	4204076.50	15.03423
609288.94	4204076.50	16.25959	609313.94	4204076.50	17.66035
609338.94	4204076.50	19.27047	609363.94	4204076.50	21.13299
609388.94	4204076.50	23.30407	609413.94	4204076.50	25.85670
609438.94	4204076.50	28.88995	609463.94	4204076.50	32.53834
609488.94	4204076.50	36.98825	609513.94	4204076.50	42.50205

CONC URBAN ELEV DFAULT

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***

Construction
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609538.94	4204076.50	49.46000	609563.94	4204076.50	58.43536
609588.94	4204076.50	70.30920	609613.94	4204076.50	86.45087
609638.94	4204076.50	109.14866	609663.94	4204076.50	142.82748
609688.94	4204076.50	197.25998	609713.94	4204076.50	283.86285
609213.94	4204101.50	13.32537	609238.94	4204101.50	14.30498
609263.94	4204101.50	15.41470	609288.94	4204101.50	16.67767
609313.94	4204101.50	18.12210	609338.94	4204101.50	19.78329
609363.94	4204101.50	21.70663	609388.94	4204101.50	23.94996
609413.94	4204101.50	26.59084	609438.94	4204101.50	29.73289
609463.94	4204101.50	33.51848	609488.94	4204101.50	38.14616
609513.94	4204101.50	43.89544	609538.94	4204101.50	51.15908
609563.94	4204101.50	60.48555	609588.94	4204101.50	72.71216
609613.94	4204101.50	89.13501	609638.94	4204101.50	111.97343
609663.94	4204101.50	145.79779	609688.94	4204101.50	199.94376
609713.94	4204101.50	286.30380	609213.94	4204126.50	13.62686
609238.94	4204126.50	14.63073	609263.94	4204126.50	15.76789
609288.94	4204126.50	17.06198	609313.94	4204126.50	18.54266
609338.94	4204126.50	20.24708	609363.94	4204126.50	22.22225
609388.94	4204126.50	24.52950	609413.94	4204126.50	27.24932
609438.94	4204126.50	30.48931	609463.94	4204126.50	34.39785
609488.94	4204126.50	39.18088	609513.94	4204126.50	45.11681
609538.94	4204126.50	52.59734	609563.94	4204126.50	62.15634
609588.94	4204126.50	74.57078	609613.94	4204126.50	91.09364
609638.94	4204126.50	113.91582	609663.94	4204126.50	147.58876
609688.94	4204126.50	201.56625	609713.94	4204126.50	287.72665
609213.94	4204151.50	13.90512	609238.94	4204151.50	14.92946
609263.94	4204151.50	16.08934	609288.94	4204151.50	17.40928
609313.94	4204151.50	18.91997	609338.94	4204151.50	20.65989
609363.94	4204151.50	22.67853	609388.94	4204151.50	25.03975
609413.94	4204151.50	27.82712	609438.94	4204151.50	31.15205
609463.94	4204151.50	35.16389	609488.94	4204151.50	40.06443
609513.94	4204151.50	46.12823	609538.94	4204151.50	53.72763
609563.94	4204151.50	63.38706	609588.94	4204151.50	75.85123
609613.94	4204151.50	92.32526	609638.94	4204151.50	114.99142
609663.94	4204151.50	148.28639	609688.94	4204151.50	201.90364
609713.94	4204151.50	286.47968	609213.94	4204176.50	14.15648
609238.94	4204176.50	15.19805	609263.94	4204176.50	16.37729
609288.94	4204176.50	17.71915	609313.94	4204176.50	19.25505
609338.94	4204176.50	21.02497	609363.94	4204176.50	23.07959
609388.94	4204176.50	25.48496	609413.94	4204176.50	28.32676

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609438.94	4204176.50	31.71740	609463.94	4204176.50	35.80334
609488.94	4204176.50	40.77917	609513.94	4204176.50	46.90327
609538.94	4204176.50	54.52505	609563.94	4204176.50	64.14676
609588.94	4204176.50	76.52310	609613.94	4204176.50	92.80679
609638.94	4204176.50	115.17750	609663.94	4204176.50	147.88091
609688.94	4204176.50	201.10226	609713.94	4204176.50	284.24133
609213.94	4204201.50	14.37892	609238.94	4204201.50	15.43514
609263.94	4204201.50	16.63088	609288.94	4204201.50	17.99202

609313.94	4204201.50	19.55020	609338.94	4204201.50	21.34614
609363.94	4204201.50	23.43154	609388.94	4204201.50	25.87276
609413.94	4204201.50	28.75481	609438.94	4204201.50	32.18768
609463.94	4204201.50	36.31383	609488.94	4204201.50	41.31542
609513.94	4204201.50	47.43078	609538.94	4204201.50	54.98605
609563.94	4204201.50	64.46352	609588.94	4204201.50	76.59446
609613.94	4204201.50	92.55024	609638.94	4204201.50	114.46350
609663.94	4204201.50	146.45903	609688.94	4204201.50	198.86620
609713.94	4204201.50	279.59421	609213.94	4204226.50	14.57214
609238.94	4204226.50	15.64049	609263.94	4204226.50	16.85041
609288.94	4204226.50	18.22811	609313.94	4204226.50	19.80606
609338.94	4204226.50	21.62525	609363.94	4204226.50	23.73701
609388.94	4204226.50	26.20637	609413.94	4204226.50	29.11533
609438.94	4204226.50	32.56873	609463.94	4204226.50	36.69795
609488.94	4204226.50	41.67207	609513.94	4204226.50	47.71466
609538.94	4204226.50	55.13229	609563.94	4204226.50	64.37706
609588.94	4204226.50	76.12635	609613.94	4204226.50	91.58265
609638.94	4204226.50	112.83530	609663.94	4204226.50	143.90900
609688.94	4204226.50	195.04549	609713.94	4204226.50	272.16449
609213.94	4204251.50	14.73677	609238.94	4204251.50	15.81470
609263.94	4204251.50	17.03615	609288.94	4204251.50	18.42768
609313.94	4204251.50	20.02198	609338.94	4204251.50	21.85960
609363.94	4204251.50	23.99087	609388.94	4204251.50	26.47808
609413.94	4204251.50	29.39919	609438.94	4204251.50	32.84910
609463.94	4204251.50	36.94796	609488.94	4204251.50	41.85187
609513.94	4204251.50	47.76418	609538.94	4204251.50	54.97405
609563.94	4204251.50	63.90353	609588.94	4204251.50	75.17822
609613.94	4204251.50	89.97934	609638.94	4204251.50	110.29994
609663.94	4204251.50	140.23421	609688.94	4204251.50	189.58406
609713.94	4204251.50	262.67435	609213.94	4204276.50	14.87400
609238.94	4204276.50	15.95877	609263.94	4204276.50	17.18860
609288.94	4204276.50	18.58965	609313.94	4204276.50	20.19456

CONC URBAN ELEV DFAULT

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609338.94	4204276.50	22.04306	609363.94	4204276.50	24.18283
609388.94	4204276.50	26.67247	609413.94	4204276.50	29.58360
609438.94	4204276.50	33.00156	609463.94	4204276.50	37.03643
609488.94	4204276.50	41.82681	609513.94	4204276.50	47.55743
609538.94	4204276.50	54.49051	609563.94	4204276.50	63.00409
609588.94	4204276.50	73.71088	609613.94	4204276.50	87.67407
609638.94	4204276.50	106.75864	609663.94	4204276.50	134.99883
609688.94	4204276.50	181.98254	609713.94	4204276.50	249.70419
609213.94	4204301.50	14.98492	609238.94	4204301.50	16.07358
609263.94	4204301.50	17.30767	609288.94	4204301.50	18.71301
609313.94	4204301.50	20.32118	609338.94	4204301.50	22.16924
609363.94	4204301.50	24.30248	609388.94	4204301.50	26.77408
609413.94	4204301.50	29.64759	609438.94	4204301.50	33.00089
609463.94	4204301.50	36.93051	609488.94	4204301.50	41.55946
609513.94	4204301.50	47.05367	609538.94	4204301.50	53.64633
609563.94	4204301.50	61.66386	609588.94	4204301.50	71.67368
609613.94	4204301.50	84.60012	609638.94	4204301.50	102.12363
609663.94	4204301.50	128.10184	609688.94	4204301.50	171.12399
609713.94	4204301.50	230.90860	609213.94	4204326.50	15.07127
609238.94	4204326.50	16.16089	609263.94	4204326.50	17.39492
609288.94	4204326.50	18.79845	609313.94	4204326.50	20.40097
609338.94	4204326.50	22.23697	609363.94	4204326.50	24.34757
609388.94	4204326.50	26.77957	609413.94	4204326.50	29.59031
609438.94	4204326.50	32.84720	609463.94	4204326.50	36.63411

609488.94	4204326.50	41.05953	609513.94	4204326.50	46.26961
609538.94	4204326.50	52.46535	609563.94	4204326.50	59.92850
609588.94	4204326.50	69.14631	609613.94	4204326.50	80.89285
609638.94	4204326.50	96.56345	609663.94	4204326.50	119.25067
609688.94	4204326.50	155.79430	609713.94	4204326.50	201.88480
609213.94	4204351.50	15.13622	609238.94	4204351.50	16.22357
609263.94	4204351.50	17.45358	609288.94	4204351.50	18.84954
609313.94	4204351.50	20.43874	609338.94	4204351.50	22.25223
609363.94	4204351.50	24.32598	609388.94	4204351.50	26.70214
609413.94	4204351.50	29.42975	609438.94	4204351.50	32.56726
609463.94	4204351.50	36.18682	609488.94	4204351.50	40.38292
609513.94	4204351.50	45.27779	609538.94	4204351.50	51.03660
609563.94	4204351.50	57.90277	609588.94	4204351.50	66.25826
609613.94	4204351.50	76.70171	609638.94	4204351.50	90.26679
609663.94	4204351.50	108.94194	609688.94	4204351.50	136.39590
609713.94	4204351.50	170.46199	609213.94	4204376.50	15.18300

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609238.94	4204376.50	16.26600	609263.94	4204376.50	17.48832
609288.94	4204376.50	18.87189	609313.94	4204376.50	20.44094
609338.94	4204376.50	22.22287	609363.94	4204376.50	24.24971
609388.94	4204376.50	26.55709	609413.94	4204376.50	29.18675
609438.94	4204376.50	32.18876	609463.94	4204376.50	35.62321
609488.94	4204376.50	39.56911	609513.94	4204376.50	44.12449
609538.94	4204376.50	49.41904	609563.94	4204376.50	55.63485
609588.94	4204376.50	63.05164	609613.94	4204376.50	72.05486
609638.94	4204376.50	83.23118	609663.94	4204376.50	97.44259
609688.94	4204376.50	114.69933	609713.94	4204376.50	132.61711
609213.94	4204401.50	15.21531	609238.94	4204401.50	16.29149
609263.94	4204401.50	17.50315	609288.94	4204401.50	18.86957
609313.94	4204401.50	20.41224	609338.94	4204401.50	22.15490
609363.94	4204401.50	24.12492	609388.94	4204401.50	26.35265
609413.94	4204401.50	28.87186	609438.94	4204401.50	31.72385
609463.94	4204401.50	34.95840	609488.94	4204401.50	38.63347
609513.94	4204401.50	42.82427	609538.94	4204401.50	47.62556
609563.94	4204401.50	53.15472	609588.94	4204401.50	59.58418
609613.94	4204401.50	67.08750	609638.94	4204401.50	75.82536
609663.94	4204401.50	85.60974	609688.94	4204401.50	95.56800
609713.94	4204401.50	104.87408	609213.94	4204426.50	15.23477
609238.94	4204426.50	16.30187	609263.94	4204426.50	17.49892
609288.94	4204426.50	18.84319	609313.94	4204426.50	20.35284
609338.94	4204426.50	22.04856	609363.94	4204426.50	23.95263
609388.94	4204426.50	26.08956	609413.94	4204426.50	28.48761
609438.94	4204426.50	31.17828	609463.94	4204426.50	34.19855
609488.94	4204426.50	37.59148	609513.94	4204426.50	41.40758
609538.94	4204426.50	45.70011	609563.94	4204426.50	50.54253
609588.94	4204426.50	55.97366	609613.94	4204426.50	61.99544
609638.94	4204426.50	68.41782	609663.94	4204426.50	74.76871
609688.94	4204426.50	80.53604	609713.94	4204426.50	85.46194
609213.94	4204451.50	15.24152	609238.94	4204451.50	16.29598
609263.94	4204451.50	17.47427	609288.94	4204451.50	18.79051
609313.94	4204451.50	20.26053	609338.94	4204451.50	21.90110
609363.94	4204451.50	23.73011	609388.94	4204451.50	25.76731
609413.94	4204451.50	28.03348	609438.94	4204451.50	30.55287
609463.94	4204451.50	33.34940	609488.94	4204451.50	36.45078
609513.94	4204451.50	39.88340	609538.94	4204451.50	43.66391
609563.94	4204451.50	47.79616	609588.94	4204451.50	52.23137
609613.94	4204451.50	56.82835	609638.94	4204451.50	61.31410

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609663.94	4204451.50	65.36268	609688.94	4204451.50	68.74981
609713.94	4204451.50	71.51061	609213.94	4204476.50	15.23346
609238.94	4204476.50	16.27172	609263.94	4204476.50	17.42585
609288.94	4204476.50	18.70840	609313.94	4204476.50	20.13174
609338.94	4204476.50	21.70944	609363.94	4204476.50	23.45549
609388.94	4204476.50	25.38362	609413.94	4204476.50	27.50937
609438.94	4204476.50	29.84776	609463.94	4204476.50	32.41072
609488.94	4204476.50	35.20951	609513.94	4204476.50	38.24127
609538.94	4204476.50	41.49316	609563.94	4204476.50	44.91078
609588.94	4204476.50	48.39439	609613.94	4204476.50	51.76676
609638.94	4204476.50	54.83184	609663.94	4204476.50	57.43353
609688.94	4204476.50	59.52712	609713.94	4204476.50	61.21267
609213.94	4204501.50	15.20845	609238.94	4204501.50	16.22585
609263.94	4204501.50	17.35114	609288.94	4204501.50	18.59379
609313.94	4204501.50	19.96385	609338.94	4204501.50	21.47121
609363.94	4204501.50	23.12609	609388.94	4204501.50	24.93745
609413.94	4204501.50	26.91421	609438.94	4204501.50	29.06082
609463.94	4204501.50	31.38020	609488.94	4204501.50	33.86256
609513.94	4204501.50	36.48867	609538.94	4204501.50	39.21092
609563.94	4204501.50	41.95503	609588.94	4204501.50	44.60511
609613.94	4204501.50	47.03489	609638.94	4204501.50	49.13683
609663.94	4204501.50	50.86291	609688.94	4204501.50	52.22233
609713.94	4204501.50	53.24817	609213.94	4204526.50	15.16475
609238.94	4204526.50	16.15693	609263.94	4204526.50	17.24801
609288.94	4204526.50	18.44527	609313.94	4204526.50	19.75564
609338.94	4204526.50	21.18630	609363.94	4204526.50	22.74323
609388.94	4204526.50	24.43053	609413.94	4204526.50	26.24958
609438.94	4204526.50	28.19748	609463.94	4204526.50	30.26482
609488.94	4204526.50	32.42908	609513.94	4204526.50	34.65250
609538.94	4204526.50	36.87685	609563.94	4204526.50	39.02445
609588.94	4204526.50	41.00806	609613.94	4204526.50	42.75394
609638.94	4204526.50	44.21910	609663.94	4204526.50	45.39771
609688.94	4204526.50	46.28566	609713.94	4204526.50	46.89911
609213.94	4204551.50	15.10148	609238.94	4204551.50	16.06467
609263.94	4204551.50	17.11699	609288.94	4204551.50	18.26365
609313.94	4204551.50	19.50937	609338.94	4204551.50	20.85760
609363.94	4204551.50	22.31061	609388.94	4204551.50	23.86765
609413.94	4204551.50	25.52326	609438.94	4204551.50	27.26799
609463.94	4204551.50	29.08130	609488.94	4204551.50	30.93202
609513.94	4204551.50	32.77475	609538.94	4204551.50	34.55457

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609563.94	4204551.50	36.20887	609588.94	4204551.50	37.68583
609613.94	4204551.50	38.94873	609638.94	4204551.50	39.98626

609663.94	4204551.50	40.79602	609688.94	4204551.50	41.37276
609713.94	4204551.50	41.76596	609738.38	4203889.50	228.46255
609763.38	4203889.50	335.88058	609788.38	4203889.50	407.32605
609813.38	4203889.50	457.92126	609838.38	4203889.50	495.05844
609863.38	4203889.50	524.10333	609888.38	4203889.50	545.35590
609913.38	4203889.50	565.78326	609938.38	4203889.50	576.61279
609963.38	4203889.50	588.76855	609988.38	4203889.50	598.13324
610013.38	4203889.50	605.20801	610038.38	4203889.50	609.84131
610063.38	4203889.50	612.84052	610088.38	4203889.50	613.67096
610113.38	4203889.50	612.62061	610138.38	4203893.50	638.28113
610163.38	4203893.50	630.68219	610188.38	4203893.50	623.42102
610213.38	4203893.50	613.68591	610238.38	4203893.50	601.21692
610263.38	4203893.50	585.25574	610288.38	4203893.50	565.77802
610313.38	4203893.50	542.61816	610338.38	4203893.50	513.47119
610363.38	4203893.50	483.76126	610388.38	4203893.50	444.75369
610413.38	4203893.50	381.34805	609716.12	4204329.00	200.92114
609718.88	4203892.00	162.99335	610415.75	4203905.50	382.03894
610380.25	4203944.50	317.61349	610236.69	4204012.00	548.33746
610162.50	4204082.50	565.11285	610132.13	4204052.50	741.90399
610098.44	4204082.50	752.98370	610133.94	4204110.50	591.56879
610096.69	4204185.50	567.99408	610109.63	4204339.50	350.08255
610034.13	4204456.50	82.98629	609991.31	4204402.50	219.58508
609919.44	4204407.00	172.81367	609939.94	4204280.00	348.47488
609915.88	4204233.50	382.76611	609840.44	4204230.00	436.35068
609789.50	4204257.50	457.10202	609788.75	4204361.00	214.75482
609849.56	4204412.00	112.90027	609800.69	4204410.50	114.66603

CONC URBAN ELEV DFAULT

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609213.94	4203701.50	9.00033	609238.94	4203701.50	9.44821
609263.94	4203701.50	9.94086	609288.94	4203701.50	10.48354
609313.94	4203701.50	11.08242	609338.94	4203701.50	11.74419
609363.94	4203701.50	12.47592	609388.94	4203701.50	13.28588
609413.94	4203701.50	14.18306	609438.94	4203701.50	15.17715
609463.94	4203701.50	16.27895	609488.94	4203701.50	17.50169
609513.94	4203701.50	18.85970	609538.94	4203701.50	20.36975
609563.94	4203701.50	22.05262	609588.94	4203701.50	23.94404
609613.94	4203701.50	26.10821	609638.94	4203701.50	28.62587
609663.94	4203701.50	31.57867	609688.94	4203701.50	35.06065
609713.94	4203701.50	39.13851	609738.94	4203701.50	43.75577
609763.94	4203701.50	48.80793	609788.94	4203701.50	54.03474
609813.94	4203701.50	59.21206	609838.94	4203701.50	64.21320
609863.94	4203701.50	68.97359	609888.94	4203701.50	73.43293
609913.94	4203701.50	77.63369	609938.94	4203701.50	81.65319
609963.94	4203701.50	85.55983	609988.94	4203701.50	89.37785
610013.94	4203701.50	93.09075	610038.94	4203701.50	96.64980
610063.94	4203701.50	99.98972	610088.94	4203701.50	103.04850
610113.94	4203701.50	105.77238	610138.94	4203701.50	108.11431
610163.94	4203701.50	110.04680	610188.94	4203701.50	111.54147
610213.94	4203701.50	112.59531	610238.94	4203701.50	113.23938
610263.94	4203701.50	113.48144	610288.94	4203701.50	113.33849
610313.94	4203701.50	112.81331	610338.94	4203701.50	111.92387
610363.94	4203701.50	110.68229	610388.94	4203701.50	109.08185
610413.94	4203701.50	107.21446	610438.94	4203701.50	105.17485
609213.94	4203726.50	9.23673	609238.94	4203726.50	9.71111
609263.94	4203726.50	10.23456	609288.94	4203726.50	10.81284
609313.94	4203726.50	11.45291	609338.94	4203726.50	12.16306
609363.94	4203726.50	12.95253	609388.94	4203726.50	13.83140
609413.94	4203726.50	14.81108	609438.94	4203726.50	15.90502

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609463.94	4203726.50	17.12636	609488.94	4203726.50	18.49259
609513.94	4203726.50	20.02277	609538.94	4203726.50	21.73996
609563.94	4203726.50	23.67134	609588.94	4203726.50	25.85590
609613.94	4203726.50	28.35170	609638.94	4203726.50	31.26933
609663.94	4203726.50	34.73285	609688.94	4203726.50	38.86422
609713.94	4203726.50	43.79588	609738.94	4203726.50	49.47829
609763.94	4203726.50	55.71749	609788.94	4203726.50	62.11911
609813.94	4203726.50	68.40479	609838.94	4203726.50	74.42394
609863.94	4203726.50	80.07735	609888.94	4203726.50	85.40730
609913.94	4203726.50	90.52437	609938.94	4203726.50	95.55453

CONC URBAN ELEV DFAULT

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609963.94	4203726.50	100.50772	609988.94	4203726.50	105.35963
610013.94	4203726.50	110.03295	610038.94	4203726.50	114.43538
610063.94	4203726.50	118.48238	610088.94	4203726.50	122.09911
610113.94	4203726.50	125.22804	610138.94	4203726.50	127.82115
610163.94	4203726.50	129.84647	610188.94	4203726.50	131.30069
610213.94	4203726.50	132.18228	610238.94	4203726.50	132.54179
610263.94	4203726.50	132.42480	610288.94	4203726.50	131.82967
610313.94	4203726.50	130.74171	610338.94	4203726.50	129.17357
610363.94	4203726.50	127.13398	610388.94	4203726.50	124.67092
610413.94	4203726.50	121.89089	610438.94	4203726.50	118.91620
609213.94	4203751.50	9.48652	609238.94	4203751.50	9.99010
609263.94	4203751.50	10.54650	609288.94	4203751.50	11.16300
609313.94	4203751.50	11.84722	609338.94	4203751.50	12.60833
609363.94	4203751.50	13.45761	609388.94	4203751.50	14.40801
609413.94	4203751.50	15.47409	609438.94	4203751.50	16.67294
609463.94	4203751.50	18.02335	609488.94	4203751.50	19.54686
609513.94	4203751.50	21.27073	609538.94	4203751.50	23.22375
609563.94	4203751.50	25.44458	609588.94	4203751.50	27.98390
609613.94	4203751.50	30.90941	609638.94	4203751.50	34.32880
609663.94	4203751.50	38.43744	609688.94	4203751.50	43.43811
609713.94	4203751.50	49.51976	609738.94	4203751.50	56.69352
609763.94	4203751.50	64.58572	609788.94	4203751.50	72.59352
609813.94	4203751.50	80.36674	609838.94	4203751.50	87.70395
609863.94	4203751.50	94.61777	609888.94	4203751.50	101.27975
609913.94	4203751.50	107.84049	609938.94	4203751.50	114.32820
609963.94	4203751.50	120.69073	609988.94	4203751.50	126.81864
610013.94	4203751.50	132.60194	610038.94	4203751.50	137.91266
610063.94	4203751.50	142.65187	610088.94	4203751.50	146.74355
610113.94	4203751.50	150.14853	610138.94	4203751.50	152.84026
610163.94	4203751.50	154.79991	610188.94	4203751.50	156.08853
610213.94	4203751.50	156.66376	610238.94	4203751.50	156.53822
610263.94	4203751.50	155.79097	610288.94	4203751.50	154.42426
610313.94	4203751.50	152.47189	610338.94	4203751.50	149.94118
610363.94	4203751.50	146.85181	610388.94	4203751.50	143.22824
610413.94	4203751.50	139.18584	610438.94	4203751.50	134.91525
609213.94	4203776.50	9.74645	609238.94	4203776.50	10.28134
609263.94	4203776.50	10.87423	609288.94	4203776.50	11.53242
609313.94	4203776.50	12.26465	609338.94	4203776.50	13.08134
609363.94	4203776.50	13.99514	609388.94	4203776.50	15.02114
609413.94	4203776.50	16.17790	609438.94	4203776.50	17.48688

CONC URBAN ELEV DFAULT

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***

Construction

INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609463.94	4203776.50	18.97351	609488.94	4203776.50	20.66755
609513.94	4203776.50	22.60265	609538.94	4203776.50	24.82360
609563.94	4203776.50	27.38302	609588.94	4203776.50	30.34684
609613.94	4203776.50	33.81113	609638.94	4203776.50	37.90981
609663.94	4203776.50	42.86710	609688.94	4203776.50	49.05772
609713.94	4203776.50	56.78312	609738.94	4203776.50	66.10965
609763.94	4203776.50	76.42258	609788.94	4203776.50	86.73181
609813.94	4203776.50	96.54983	609838.94	4203776.50	105.77825
609863.94	4203776.50	114.68158	609888.94	4203776.50	123.49493
609913.94	4203776.50	132.22153	609938.94	4203776.50	140.71756
609963.94	4203776.50	148.81642	609988.94	4203776.50	156.35858
610013.94	4203776.50	163.21770	610038.94	4203776.50	169.29764
610063.94	4203776.50	174.54552	610088.94	4203776.50	178.95108
610113.94	4203776.50	182.51929	610138.94	4203776.50	185.15800
610163.94	4203776.50	186.87453	610188.94	4203776.50	187.66397
610213.94	4203776.50	187.61220	610238.94	4203776.50	186.72682
610263.94	4203776.50	185.05782	610288.94	4203776.50	182.62711
610313.94	4203776.50	179.45871	610338.94	4203776.50	175.59589
610363.94	4203776.50	171.01651	610388.94	4203776.50	165.72536
610413.94	4203776.50	159.84889	610438.94	4203776.50	153.67168
609213.94	4203801.50	10.01097	609238.94	4203801.50	10.57942
609263.94	4203801.50	11.21125	609288.94	4203801.50	11.91482
609313.94	4203801.50	12.69965	609338.94	4203801.50	13.57756
609363.94	4203801.50	14.56237	609388.94	4203801.50	15.67139
609413.94	4203801.50	16.92631	609438.94	4203801.50	18.35342
609463.94	4203801.50	19.98505	609488.94	4203801.50	21.86084
609513.94	4203801.50	24.02786	609538.94	4203801.50	26.54395
609563.94	4203801.50	29.48973	609588.94	4203801.50	32.96063
609613.94	4203801.50	37.11266	609638.94	4203801.50	42.10775
609663.94	4203801.50	48.24142	609688.94	4203801.50	56.03893
609713.94	4203801.50	66.30245	609738.94	4203801.50	79.31703
609763.94	4203801.50	93.31348	609788.94	4203801.50	107.00719
609813.94	4203801.50	119.85825	609838.94	4203801.50	132.27190
609863.94	4203801.50	144.61160	609888.94	4203801.50	156.75125
609913.94	4203801.50	168.35924	609938.94	4203801.50	179.16296
609963.94	4203801.50	188.99165	609988.94	4203801.50	197.76254
610013.94	4203801.50	205.47533	610038.94	4203801.50	212.16278
610063.94	4203801.50	217.70805	610088.94	4203801.50	222.14011
610113.94	4203801.50	225.47414	610138.94	4203801.50	227.75226
610163.94	4203801.50	228.93665	610188.94	4203801.50	229.01483

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
610213.94	4203801.50	227.95639	610238.94	4203801.50	225.94510
610263.94	4203801.50	222.87761	610288.94	4203801.50	218.89073
610313.94	4203801.50	213.95102	610338.94	4203801.50	208.11336
610363.94	4203801.50	201.39169	610388.94	4203801.50	193.63884
610413.94	4203801.50	185.06584	610438.94	4203801.50	175.88300
609213.94	4203826.50	10.27399	609238.94	4203826.50	10.87713
609263.94	4203826.50	11.54941	609288.94	4203826.50	12.30068
609313.94	4203826.50	13.14170	609338.94	4203826.50	14.08545

609363.94	4203826.50	15.14792	609388.94	4203826.50	16.34834
609413.94	4203826.50	17.71187	609438.94	4203826.50	19.26976
609463.94	4203826.50	21.06069	609488.94	4203826.50	23.13471
609513.94	4203826.50	25.55390	609538.94	4203826.50	28.39848
609563.94	4203826.50	31.77640	609588.94	4203826.50	35.83612
609613.94	4203826.50	40.82282	609638.94	4203826.50	47.00998
609663.94	4203826.50	54.83582	609688.94	4203826.50	65.06599
609713.94	4203826.50	79.44130	609738.94	4203826.50	98.65868
609763.94	4203826.50	119.33223	609788.94	4203826.50	138.76897
609813.94	4203826.50	157.46040	609838.94	4203826.50	176.01991
609863.94	4203826.50	193.79260	609888.94	4203826.50	210.02307
609913.94	4203826.50	224.45018	609938.94	4203826.50	237.16193
609963.94	4203826.50	248.28737	609988.94	4203826.50	257.84958
610013.94	4203826.50	266.01413	610038.94	4203826.50	272.80096
610063.94	4203826.50	278.23123	610088.94	4203826.50	282.31793
610113.94	4203826.50	285.09229	610138.94	4203826.50	286.55597
610163.94	4203826.50	286.66492	610188.94	4203826.50	285.42871
610213.94	4203826.50	282.90292	610238.94	4203826.50	279.06494
610263.94	4203826.50	274.01358	610288.94	4203826.50	267.77274
610313.94	4203826.50	260.35263	610338.94	4203826.50	251.67340
610363.94	4203826.50	242.19669	610388.94	4203826.50	231.03194
610413.94	4203826.50	217.52403	610438.94	4203826.50	203.14450
609213.94	4203851.50	10.52981	609238.94	4203851.50	11.16715
609263.94	4203851.50	11.88013	609288.94	4203851.50	12.67943
609313.94	4203851.50	13.57777	609338.94	4203851.50	14.59002
609363.94	4203851.50	15.73398	609388.94	4203851.50	17.03223
609413.94	4203851.50	18.51315	609438.94	4203851.50	20.21340
609463.94	4203851.50	22.18043	609488.94	4203851.50	24.47444
609513.94	4203851.50	27.17493	609538.94	4203851.50	30.38820
609563.94	4203851.50	34.25822	609588.94	4203851.50	38.99792
609613.94	4203851.50	44.98117	609638.94	4203851.50	52.69116
609663.94	4203851.50	62.99797	609688.94	4203851.50	77.33631

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609713.94	4203851.50	99.43752	609738.94	4203851.50	132.92757
609763.94	4203851.50	166.98964	609788.94	4203851.50	199.63098
609813.94	4203851.50	230.80515	609838.94	4203851.50	258.15610
609863.94	4203851.50	281.31155	609888.94	4203851.50	300.73590
609913.94	4203851.50	317.05264	609938.94	4203851.50	330.76648
609963.94	4203851.50	342.22540	609988.94	4203851.50	351.67572
610013.94	4203851.50	359.33942	610038.94	4203851.50	365.45663
610063.94	4203851.50	369.92361	610088.94	4203851.50	372.87000
610113.94	4203851.50	374.44806	610138.94	4203851.50	375.08060
610163.94	4203851.50	374.20325	610188.94	4203851.50	371.45535
610213.94	4203851.50	367.04303	610238.94	4203851.50	360.75308
610263.94	4203851.50	352.70432	610288.94	4203851.50	343.02225
610313.94	4203851.50	331.72177	610338.94	4203851.50	318.37750
610363.94	4203851.50	303.53094	610388.94	4203851.50	285.25632
610413.94	4203851.50	262.54495	610438.94	4203851.50	238.10077
609213.94	4203876.50	10.77507	609238.94	4203876.50	11.44549
609263.94	4203876.50	12.19752	609288.94	4203876.50	13.04358
609313.94	4203876.50	13.99796	609338.94	4203876.50	15.07794
609363.94	4203876.50	16.30400	609388.94	4203876.50	17.70157
609413.94	4203876.50	19.30313	609438.94	4203876.50	21.15156
609463.94	4203876.50	23.30268	609488.94	4203876.50	25.83148
609513.94	4203876.50	28.83814	609538.94	4203876.50	32.45840
609563.94	4203876.50	36.88419	609588.94	4203876.50	42.41977
609613.94	4203876.50	49.58784	609638.94	4203876.50	59.21452

609663.94	4203876.50	72.85442	609688.94	4203876.50	94.70826
609713.94	4203876.50	136.76143	609738.94	4203876.50	223.18825
609763.94	4203876.50	306.68588	609788.94	4203876.50	368.44833
609813.94	4203876.50	412.09280	609838.94	4203876.50	443.77530
609863.94	4203876.50	467.68979	609888.94	4203876.50	487.15836
609913.94	4203876.50	503.09042	609938.94	4203876.50	515.07837
609963.94	4203876.50	523.99719	609988.94	4203876.50	530.62805
610013.94	4203876.50	535.25238	610038.94	4203876.50	538.34235
610063.94	4203876.50	539.70251	610088.94	4203876.50	539.45398
610113.94	4203876.50	537.85535	610138.94	4203876.50	534.84753
610163.94	4203876.50	529.99023	610188.94	4203876.50	523.32794
610213.94	4203876.50	514.76892	610238.94	4203876.50	503.63840
610263.94	4203876.50	490.35342	610288.94	4203876.50	474.49097
610313.94	4203876.50	456.33789	610338.94	4203876.50	434.49033
610363.94	4203876.50	410.84973	610388.94	4203876.50	379.54614
610413.94	4203876.50	333.84775	610438.94	4203876.50	282.22971

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609213.94	4203901.50	11.01065	609238.94	4203901.50	11.71248
609263.94	4203901.50	12.50173	609288.94	4203901.50	13.39218
609313.94	4203901.50	14.40020	609338.94	4203901.50	15.54536
609363.94	4203901.50	16.85123	609388.94	4203901.50	18.34678
609413.94	4203901.50	20.06867	609438.94	4203901.50	22.06499
609463.94	4203901.50	24.40171	609488.94	4203901.50	27.16719
609513.94	4203901.50	30.48438	609538.94	4203901.50	34.52584
609563.94	4203901.50	39.54478	609588.94	4203901.50	45.94391
609613.94	4203901.50	54.39632	609638.94	4203901.50	66.19493
609663.94	4203901.50	84.36958	609688.94	4203901.50	117.74788
609713.94	4203901.50	240.77596	609213.94	4203926.50	11.24388
609238.94	4203926.50	11.97663	609263.94	4203926.50	12.80220
609288.94	4203926.50	13.73597	609313.94	4203926.50	14.79655
609338.94	4203926.50	16.00578	609363.94	4203926.50	17.39052
609388.94	4203926.50	18.98415	609413.94	4203926.50	20.82843
609438.94	4203926.50	22.97811	609463.94	4203926.50	25.50767
609488.94	4203926.50	28.52074	609513.94	4203926.50	32.16457
609538.94	4203926.50	36.65284	609563.94	4203926.50	42.30663
609588.94	4203926.50	49.65454	609613.94	4203926.50	59.62398
609638.94	4203926.50	73.93782	609663.94	4203926.50	96.82740
609688.94	4203926.50	143.13156	609713.94	4203926.50	317.75970
609213.94	4203951.50	11.48589	609238.94	4203951.50	12.25134
609263.94	4203951.50	13.11523	609288.94	4203951.50	14.09431
609313.94	4203951.50	15.20922	609338.94	4203951.50	16.48505
609363.94	4203951.50	17.95223	609388.94	4203951.50	19.64923
609413.94	4203951.50	21.62386	609438.94	4203951.50	23.93926
609463.94	4203951.50	26.68005	609488.94	4203951.50	29.96453
609513.94	4203951.50	33.96519	609538.94	4203951.50	38.93711
609563.94	4203951.50	45.26456	609588.94	4203951.50	53.56562
609613.94	4203951.50	65.02663	609638.94	4203951.50	81.74585
609663.94	4203951.50	109.23514	609688.94	4203951.50	165.47218
609713.94	4203951.50	352.33566	609213.94	4203976.50	11.74878
609238.94	4203976.50	12.54995	609263.94	4203976.50	13.45576
609288.94	4203976.50	14.48434	609313.94	4203976.50	15.65788
609338.94	4203976.50	17.00436	609363.94	4203976.50	18.55852
609388.94	4203976.50	20.36358	609413.94	4203976.50	22.47442
609438.94	4203976.50	24.96217	609463.94	4203976.50	27.92220
609488.94	4203976.50	31.48450	609513.94	4203976.50	35.84193
609538.94	4203976.50	41.28306	609563.94	4203976.50	48.25517
609588.94	4203976.50	57.46946	609613.94	4203976.50	70.28843

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609638.94	4203976.50	89.37736	609663.94	4203976.50	120.74223
609688.94	4203976.50	181.99675	609713.94	4203976.50	374.78281
609213.94	4204001.50	12.03814	609238.94	4204001.50	12.87837
609263.94	4204001.50	13.82917	609288.94	4204001.50	14.91043
609313.94	4204001.50	16.14563	609338.94	4204001.50	17.56523
609363.94	4204001.50	19.20667	609388.94	4204001.50	21.11806
609413.94	4204001.50	23.36022	609438.94	4204001.50	26.01231
609463.94	4204001.50	29.17946	609488.94	4204001.50	33.00475
609513.94	4204001.50	37.69760	609538.94	4204001.50	43.57646
609563.94	4204001.50	51.14489	609588.94	4204001.50	61.23609
609613.94	4204001.50	75.36392	609638.94	4204001.50	96.42410
609663.94	4204001.50	130.39140	609688.94	4204001.50	194.10025
609713.94	4204001.50	388.39496	609213.94	4204026.50	12.35150
609238.94	4204026.50	13.23163	609263.94	4204026.50	14.22840
609288.94	4204026.50	15.36247	609313.94	4204026.50	16.65882
609338.94	4204026.50	18.14945	609363.94	4204026.50	19.87396
609388.94	4204026.50	21.88365	609413.94	4204026.50	24.24539
609438.94	4204026.50	27.04566	609463.94	4204026.50	30.40031
609488.94	4204026.50	34.46694	609513.94	4204026.50	39.47289
609538.94	4204026.50	45.76672	609563.94	4204026.50	53.90837
609588.94	4204026.50	64.81291	609613.94	4204026.50	80.05457
609638.94	4204026.50	102.57717	609663.94	4204026.50	137.96938
609688.94	4204026.50	203.03032	609713.94	4204026.50	397.83237
609213.94	4204051.50	12.67926	609238.94	4204051.50	13.59749
609263.94	4204051.50	14.63795	609288.94	4204051.50	15.82177
609313.94	4204051.50	17.17541	609338.94	4204051.50	18.73158
609363.94	4204051.50	20.53232	609388.94	4204051.50	22.63169
609413.94	4204051.50	25.10047	609438.94	4204051.50	28.03271
609463.94	4204051.50	31.55526	609488.94	4204051.50	35.84213
609513.94	4204051.50	41.14241	609538.94	4204051.50	47.83434
609563.94	4204051.50	56.50240	609588.94	4204051.50	68.11172
609613.94	4204051.50	84.22682	609638.94	4204051.50	107.59166
609663.94	4204051.50	143.74446	609688.94	4204051.50	209.62645
609713.94	4204051.50	404.98587	609213.94	4204076.50	13.00922
609238.94	4204076.50	13.96158	609263.94	4204076.50	15.04094
609288.94	4204076.50	16.26914	609313.94	4204076.50	17.67376
609338.94	4204076.50	19.28910	609363.94	4204076.50	21.15866
609388.94	4204076.50	23.33929	609413.94	4204076.50	25.90501
609438.94	4204076.50	28.95656	609463.94	4204076.50	32.63094
609488.94	4204076.50	37.11926	609513.94	4204076.50	42.69101

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609538.94	4204076.50	49.74186	609563.94	4204076.50	58.87079
609588.94	4204076.50	71.01602	609613.94	4204076.50	87.67910

609638.94	4204076.50	111.48402	609663.94	4204076.50	148.02661
609688.94	4204076.50	214.38362	609713.94	4204076.50	415.36224
609213.94	4204101.50	13.33018	609238.94	4204101.50	14.31179
609263.94	4204101.50	15.42404	609288.94	4204101.50	16.69028
609313.94	4204101.50	18.13894	609338.94	4204101.50	19.80565
609363.94	4204101.50	21.73638	609388.94	4204101.50	23.98975
609413.94	4204101.50	26.64406	609438.94	4204101.50	29.80491
609463.94	4204101.50	33.61726	609488.94	4204101.50	38.28421
609513.94	4204101.50	44.09289	609538.94	4204101.50	51.44962
609563.94	4204101.50	60.93386	609588.94	4204101.50	73.43292
609613.94	4204101.50	90.37262	609638.94	4204101.50	114.29711
609663.94	4204101.50	150.95227	609688.94	4204101.50	216.98924
609713.94	4204101.50	421.04510	609213.94	4204126.50	13.63362
609238.94	4204126.50	14.63977	609263.94	4204126.50	15.77969
609288.94	4204126.50	17.07743	609313.94	4204126.50	18.56277
609338.94	4204126.50	20.27293	609363.94	4204126.50	22.25567
609388.94	4204126.50	24.57320	609413.94	4204126.50	27.30670
609438.94	4204126.50	30.56561	609463.94	4204126.50	34.50135
609488.94	4204126.50	39.32407	609513.94	4204126.50	45.32013
609538.94	4204126.50	52.89511	609563.94	4204126.50	62.60936
609588.94	4204126.50	75.29316	609613.94	4204126.50	92.31777
609638.94	4204126.50	116.18885	609663.94	4204126.50	152.66838
609688.94	4204126.50	218.46861	609713.94	4204126.50	422.84946
609213.94	4204151.50	13.91362	609238.94	4204151.50	14.94039
609263.94	4204151.50	16.10332	609288.94	4204151.50	17.42716
609313.94	4204151.50	18.94261	609338.94	4204151.50	20.68863
609363.94	4204151.50	22.71516	609388.94	4204151.50	25.08665
609413.94	4204151.50	27.88799	609438.94	4204151.50	31.23191
609463.94	4204151.50	35.27098	609488.94	4204151.50	40.21047
609513.94	4204151.50	46.33451	609538.94	4204151.50	54.02737
609563.94	4204151.50	63.83783	609588.94	4204151.50	76.56284
609613.94	4204151.50	93.52968	609638.94	4204151.50	117.21085
609663.94	4204151.50	153.25966	609688.94	4204151.50	218.54996
609713.94	4204151.50	427.11917	609213.94	4204176.50	14.16633
609238.94	4204176.50	15.21052	609263.94	4204176.50	16.39295
609288.94	4204176.50	17.73881	609313.94	4204176.50	19.27973
609338.94	4204176.50	21.05584	609363.94	4204176.50	23.11856
609388.94	4204176.50	25.53439	609413.94	4204176.50	28.39016

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609438.94	4204176.50	31.80006	609463.94	4204176.50	35.91299
609488.94	4204176.50	40.92807	609513.94	4204176.50	47.11044
609538.94	4204176.50	54.82231	609563.94	4204176.50	64.58871
609588.94	4204176.50	77.21305	609613.94	4204176.50	93.97018
609638.94	4204176.50	117.32726	609663.94	4204176.50	152.73103
609688.94	4204176.50	217.33813	609713.94	4204176.50	430.37851
609213.94	4204201.50	14.38990	609238.94	4204201.50	15.44874
609263.94	4204201.50	16.64777	609288.94	4204201.50	18.01288
609313.94	4204201.50	19.57607	609338.94	4204201.50	21.37840
609363.94	4204201.50	23.47196	609388.94	4204201.50	25.92370
609413.94	4204201.50	28.82003	609438.94	4204201.50	32.27214
609463.94	4204201.50	36.42490	609488.94	4204201.50	41.46479
609513.94	4204201.50	47.63667	609538.94	4204201.50	55.27728
609563.94	4204201.50	64.89055	609588.94	4204201.50	77.25639
609613.94	4204201.50	93.64264	609638.94	4204201.50	116.52175
609663.94	4204201.50	151.14026	609688.94	4204201.50	214.65494
609713.94	4204201.50	427.83365	609213.94	4204226.50	14.58403
609238.94	4204226.50	15.65497	609263.94	4204226.50	16.86800

609288.94	4204226.50	18.24978	609313.94	4204226.50	19.83267
609338.94	4204226.50	21.65804	609363.94	4204226.50	23.77791
609388.94	4204226.50	26.25788	609413.94	4204226.50	29.18103
609438.94	4204226.50	32.65337	609463.94	4204226.50	36.80937
609488.94	4204226.50	41.82080	609513.94	4204226.50	47.91645
609538.94	4204226.50	55.41406	609563.94	4204226.50	64.78597
609588.94	4204226.50	76.75636	609613.94	4204226.50	92.62122
609638.94	4204226.50	114.78638	609663.94	4204226.50	148.42073
609688.94	4204226.50	210.39598	609713.94	4204226.50	422.73395
609213.94	4204251.50	14.74926	609238.94	4204251.50	15.82978
609263.94	4204251.50	17.05439	609288.94	4204251.50	18.44978
609313.94	4204251.50	20.04888	609338.94	4204251.50	21.89278
609363.94	4204251.50	24.03191	609388.94	4204251.50	26.52962
609413.94	4204251.50	29.46440	609438.94	4204251.50	32.93299
609463.94	4204251.50	37.05720	609488.94	4204251.50	41.99630
609513.94	4204251.50	47.95959	609538.94	4204251.50	55.24404
609563.94	4204251.50	64.29132	609588.94	4204251.50	75.76888
609613.94	4204251.50	90.95107	609638.94	4204251.50	112.11715
609663.94	4204251.50	144.52779	609688.94	4204251.50	204.53206
609713.94	4204251.50	418.44434	609213.94	4204276.50	14.88684
609238.94	4204276.50	15.97419	609263.94	4204276.50	17.20713
609288.94	4204276.50	18.61213	609313.94	4204276.50	20.22180

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609338.94	4204276.50	22.07626	609363.94	4204276.50	24.22375
609388.94	4204276.50	26.72332	609413.94	4204276.50	29.64759
609438.94	4204276.50	33.08301	609463.94	4204276.50	37.14146
609488.94	4204276.50	41.96477	609513.94	4204276.50	47.74209
609538.94	4204276.50	54.74485	609563.94	4204276.50	63.36969
609588.94	4204276.50	74.25302	609613.94	4204276.50	88.56830
609638.94	4204276.50	108.43415	609663.94	4204276.50	138.99796
609688.94	4204276.50	196.46324	609713.94	4204276.50	407.19077
609213.94	4204301.50	14.99789	609238.94	4204301.50	16.08920
609263.94	4204301.50	17.32627	609288.94	4204301.50	18.73540
609313.94	4204301.50	20.34827	609338.94	4204301.50	22.20216
609363.94	4204301.50	24.34289	609388.94	4204301.50	26.82425
609413.94	4204301.50	29.71008	609438.94	4204301.50	33.07962
609463.94	4204301.50	37.03149	609488.94	4204301.50	41.69034
609513.94	4204301.50	47.22641	609538.94	4204301.50	53.88094
609563.94	4204301.50	61.99676	609588.94	4204301.50	72.16755
609613.94	4204301.50	85.40937	609638.94	4204301.50	103.63615
609663.94	4204301.50	131.65327	609688.94	4204301.50	184.77744
609713.94	4204301.50	389.38760	609213.94	4204326.50	15.08423
609238.94	4204326.50	16.17626	609263.94	4204326.50	17.41324
609288.94	4204326.50	18.82056	609313.94	4204326.50	20.42757
609338.94	4204326.50	22.26949	609363.94	4204326.50	24.38730
609388.94	4204326.50	26.82861	609413.94	4204326.50	29.65097
609438.94	4204326.50	32.92353	609463.94	4204326.50	36.73084
609488.94	4204326.50	41.18360	609513.94	4204326.50	46.43139
609538.94	4204326.50	52.68255	609563.94	4204326.50	60.23206
609588.94	4204326.50	69.59074	609613.94	4204326.50	81.60715
609638.94	4204326.50	97.87594	609663.94	4204326.50	122.38501
609688.94	4204326.50	167.44046	609713.94	4204326.50	337.24490
609213.94	4204351.50	15.14874	609238.94	4204351.50	16.23841
609263.94	4204351.50	17.47138	609288.94	4204351.50	18.87087
609313.94	4204351.50	20.46448	609338.94	4204351.50	22.28342
609363.94	4204351.50	24.36413	609388.94	4204351.50	26.74906
609413.94	4204351.50	29.48763	609438.94	4204351.50	32.63940

609463.94	4204351.50	36.27775	609488.94	4204351.50	40.49849
609513.94	4204351.50	45.42685	609538.94	4204351.50	51.23618
609563.94	4204351.50	58.17752	609588.94	4204351.50	66.65582
609613.94	4204351.50	77.32336	609638.94	4204351.50	91.37257
609663.94	4204351.50	111.35575	609688.94	4204351.50	143.70895
609713.94	4204351.50	203.14516	609213.94	4204376.50	15.19484

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609238.94	4204376.50	16.28013	609263.94	4204376.50	17.50522
609288.94	4204376.50	18.89217	609313.94	4204376.50	20.46533
609338.94	4204376.50	22.25246	609363.94	4204376.50	24.28546
609388.94	4204376.50	26.60080	609413.94	4204376.50	29.24054
609438.94	4204376.50	32.25502	609463.94	4204376.50	35.70581
609488.94	4204376.50	39.67398	609513.94	4204376.50	44.25817
609538.94	4204376.50	49.59495	609563.94	4204376.50	55.87420
609588.94	4204376.50	63.38847	609613.94	4204376.50	72.56950
609638.94	4204376.50	84.10794	609663.94	4204376.50	99.10943
609688.94	4204376.50	118.57165	609713.94	4204376.50	143.12807
609213.94	4204401.50	15.22658	609238.94	4204401.50	16.30484
609263.94	4204401.50	17.51910	609288.94	4204401.50	18.88854
609313.94	4204401.50	20.43507	609338.94	4204401.50	22.18241
609363.94	4204401.50	24.15820	609388.94	4204401.50	26.39301
609413.94	4204401.50	28.92126	609438.94	4204401.50	31.78455
609463.94	4204401.50	35.03334	609488.94	4204401.50	38.72697
609513.94	4204401.50	42.94326	609538.94	4204401.50	47.78012
609563.94	4204401.50	53.36102	609588.94	4204401.50	59.87185
609613.94	4204401.50	67.51057	609638.94	4204401.50	76.49834
609663.94	4204401.50	86.79553	609688.94	4204401.50	97.89799
609713.94	4204401.50	109.72630	609213.94	4204426.50	15.24565
609238.94	4204426.50	16.31468	609263.94	4204426.50	17.51408
609288.94	4204426.50	18.86134	609313.94	4204426.50	20.37461
609338.94	4204426.50	22.07468	609363.94	4204426.50	23.98425
609388.94	4204426.50	26.12770	609413.94	4204426.50	28.53401
609438.94	4204426.50	31.23493	609463.94	4204426.50	34.26841
609488.94	4204426.50	37.67826	609513.94	4204426.50	41.51739
609538.94	4204426.50	45.84196	609563.94	4204426.50	50.72910
609588.94	4204426.50	56.23312	609613.94	4204426.50	62.36072
609638.94	4204426.50	68.97403	609663.94	4204426.50	75.69709
609688.94	4204426.50	82.14866	609713.94	4204426.50	88.30820
609213.94	4204451.50	15.25224	609238.94	4204451.50	16.30874
609263.94	4204451.50	17.48945	609288.94	4204451.50	18.80857
609313.94	4204451.50	20.28211	609338.94	4204451.50	21.92695
609363.94	4204451.50	23.76117	609388.94	4204451.50	25.80474
609413.94	4204451.50	28.07892	609438.94	4204451.50	30.60805
609463.94	4204451.50	33.41716	609488.94	4204451.50	36.53457
609513.94	4204451.50	39.98829	609538.94	4204451.50	43.79713
609563.94	4204451.50	47.96959	609588.94	4204451.50	52.46526
609613.94	4204451.50	57.15897	609638.94	4204451.50	61.80600

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609663.94	4204451.50	66.12691	609688.94	4204451.50	69.94893
609713.94	4204451.50	73.37295	609213.94	4204476.50	15.24460
609238.94	4204476.50	16.28481	609263.94	4204476.50	17.44144
609288.94	4204476.50	18.72685	609313.94	4204476.50	20.15363
609338.94	4204476.50	21.73554	609363.94	4204476.50	23.48658
609388.94	4204476.50	25.42098	609413.94	4204476.50	27.55433
609438.94	4204476.50	29.90198	609463.94	4204476.50	32.47622
609488.94	4204476.50	35.28970	609513.94	4204476.50	38.34064
609538.94	4204476.50	41.61816	609563.94	4204476.50	45.07235
609588.94	4204476.50	48.61069	609613.94	4204476.50	52.06936
609638.94	4204476.50	55.27071	609663.94	4204476.50	58.07761
609688.94	4204476.50	60.46653	609713.94	4204476.50	62.54708
609213.94	4204501.50	15.22007	609238.94	4204501.50	16.23944
609263.94	4204501.50	17.36706	609288.94	4204501.50	18.61252
609313.94	4204501.50	19.98592	609338.94	4204501.50	21.49723
609363.94	4204501.50	23.15692	609388.94	4204501.50	24.97397
609413.94	4204501.50	26.95755	609438.94	4204501.50	29.11268
609463.94	4204501.50	31.44233	609488.94	4204501.50	33.93802
609513.94	4204501.50	36.58147	609538.94	4204501.50	39.32788
609563.94	4204501.50	42.10659	609588.94	4204501.50	44.80977
609613.94	4204501.50	47.31959	609638.94	4204501.50	49.53769
609663.94	4204501.50	51.42467	609688.94	4204501.50	52.99164
609713.94	4204501.50	54.24584	609213.94	4204526.50	15.17653
609238.94	4204526.50	16.17067	609263.94	4204526.50	17.26405
609288.94	4204526.50	18.46384	609313.94	4204526.50	19.77733
609338.94	4204526.50	21.21161	609363.94	4204526.50	22.77281
609388.94	4204526.50	24.46529	609413.94	4204526.50	26.29046
609438.94	4204526.50	28.24608	609463.94	4204526.50	30.32295
609488.94	4204526.50	32.49977	609513.94	4204526.50	34.74023
609538.94	4204526.50	36.98878	609563.94	4204526.50	39.17196
609588.94	4204526.50	41.20749	609613.94	4204526.50	43.02695
609638.94	4204526.50	44.59092	609663.94	4204526.50	45.89340
609688.94	4204526.50	46.91959	609713.94	4204526.50	47.65487
609213.94	4204551.50	15.11320	609238.94	4204551.50	16.07812
609263.94	4204551.50	17.13244	609288.94	4204551.50	18.28144
609313.94	4204551.50	19.52993	609338.94	4204551.50	20.88153
609363.94	4204551.50	22.33825	609388.94	4204551.50	23.90008
609413.94	4204551.50	25.56143	609438.94	4204551.50	27.31338
609463.94	4204551.50	29.13611	609488.94	4204551.50	30.99961
609513.94	4204551.50	32.86029	609538.94	4204551.50	34.66551

CONC URBAN ELEV DFAULT

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609563.94	4204551.50	36.35596	609588.94	4204551.50	37.88274
609613.94	4204551.50	39.21126	609638.94	4204551.50	40.32941
609663.94	4204551.50	41.22947	609688.94	4204551.50	41.89250
609713.94	4204551.50	42.34909	609738.38	4203889.50	441.07507
609763.38	4203889.50	570.86176	609788.38	4203889.50	634.85217
609813.38	4203889.50	671.90887	609838.38	4203889.50	697.79968
609863.38	4203889.50	715.56726	609888.38	4203889.50	726.59637
609913.38	4203889.50	732.62659	609938.38	4203889.50	736.01581
609963.38	4203889.50	737.86957	609988.38	4203889.50	737.85315
610013.38	4203889.50	736.60895	610038.38	4203889.50	734.15692
610063.38	4203889.50	730.38470	610088.38	4203889.50	724.61304
610113.38	4203889.50	717.48792	610138.38	4203893.50	802.35693

610163.38	4203893.50	787.89026	610188.38	4203893.50	771.31213
610213.38	4203893.50	753.09424	610238.38	4203893.50	732.57880
610263.38	4203893.50	709.14624	610288.38	4203893.50	683.12079
610313.38	4203893.50	652.23328	610338.38	4203893.50	615.62604
610363.38	4203893.50	575.00208	610388.38	4203893.50	525.37585
610413.38	4203893.50	429.50305	609716.12	4204329.00	349.19763
609718.88	4203892.00	244.14877	610415.75	4203905.50	501.37445
610380.25	4203944.50	425.64777	610236.69	4204012.00	876.49915
610162.50	4204082.50	906.35986	610132.13	4204052.50	1310.91052
610098.44	4204082.50	1324.20801	610133.94	4204110.50	960.90851
610096.69	4204185.50	968.16058	610109.63	4204339.50	692.55414
610034.13	4204456.50	123.99709	609991.31	4204402.50	450.88101
609919.44	4204407.00	265.40332	609939.94	4204280.00	598.61102
609915.88	4204233.50	681.08899	609840.44	4204230.00	688.27997
609789.50	4204257.50	893.12512	609788.75	4204361.00	582.43445
609849.56	4204412.00	145.25838	609800.69	4204410.50	247.54764

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609213.94	4203701.50	18.00768	609238.94	4203701.50	18.90364
609263.94	4203701.50	19.88892	609288.94	4203701.50	20.97415
609313.94	4203701.50	22.17182	609338.94	4203701.50	23.49508
609363.94	4203701.50	24.95837	609388.94	4203701.50	26.57804
609413.94	4203701.50	28.37232	609438.94	4203701.50	30.36041
609463.94	4203701.50	32.56398	609488.94	4203701.50	35.01012
609513.94	4203701.50	37.72599	609538.94	4203701.50	40.74694
609563.94	4203701.50	44.11361	609588.94	4203701.50	47.89700
609613.94	4203701.50	52.22428	609638.94	4203701.50	57.25461
609663.94	4203701.50	63.15283	609688.94	4203701.50	70.10622
609713.94	4203701.50	78.25034	609738.94	4203701.50	87.47716
609763.94	4203701.50	97.58031	609788.94	4203701.50	108.03362
609813.94	4203701.50	118.39201	609838.94	4203701.50	128.39116
609863.94	4203701.50	137.90775	609888.94	4203701.50	146.82614
609913.94	4203701.50	155.23119	609938.94	4203701.50	163.27682
609963.94	4203701.50	171.09833	609988.94	4203701.50	178.74509
610013.94	4203701.50	186.18642	610038.94	4203701.50	193.32071
610063.94	4203701.50	200.01613	610088.94	4203701.50	206.15154
610113.94	4203701.50	211.61450	610138.94	4203701.50	216.31604
610163.94	4203701.50	220.19894	610188.94	4203701.50	223.20703
610213.94	4203701.50	225.33412	610238.94	4203701.50	226.64427
610263.94	4203701.50	227.15402	610288.94	4203701.50	226.89601
610313.94	4203701.50	225.87111	610338.94	4203701.50	224.11699
610363.94	4203701.50	221.65302	610388.94	4203701.50	218.46596
610413.94	4203701.50	214.74048	610438.94	4203701.50	210.66200
609213.94	4203726.50	18.48076	609238.94	4203726.50	19.42977
609263.94	4203726.50	20.47674	609288.94	4203726.50	21.63325
609313.94	4203726.50	22.91334	609338.94	4203726.50	24.33330
609363.94	4203726.50	25.91176	609388.94	4203726.50	27.66910
609413.94	4203726.50	29.62792	609438.94	4203726.50	31.81525
609463.94	4203726.50	34.25747	609488.94	4203726.50	36.98925
609513.94	4203726.50	40.04919	609538.94	4203726.50	43.48270
609563.94	4203726.50	47.34554	609588.94	4203726.50	51.71389
609613.94	4203726.50	56.70374	609638.94	4203726.50	62.53249
609663.94	4203726.50	69.44705	609688.94	4203726.50	77.69228
609713.94	4203726.50	87.53284	609738.94	4203726.50	98.88446
609763.94	4203726.50	111.35056	609788.94	4203726.50	124.15101
609813.94	4203726.50	136.71948	609838.94	4203726.50	148.75064
609863.94	4203726.50	160.05315	609888.94	4203726.50	170.71536
609913.94	4203726.50	180.95203	609938.94	4203726.50	191.02286

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609963.94	4203726.50	200.94307	609988.94	4203726.50	210.66380
610013.94	4203726.50	220.02611	610038.94	4203726.50	228.85081
610063.94	4203726.50	236.96144	610088.94	4203726.50	244.21150
610113.94	4203726.50	250.48425	610138.94	4203726.50	255.68050
610163.94	4203726.50	259.75311	610188.94	4203726.50	262.68015
610213.94	4203726.50	264.46783	610238.94	4203726.50	265.21170
610263.94	4203726.50	265.01141	610288.94	4203726.50	263.85382
610313.94	4203726.50	261.70724	610338.94	4203726.50	258.59912
610363.94	4203726.50	254.54816	610388.94	4203726.50	249.64272
610413.94	4203726.50	244.09666	610438.94	4203726.50	238.15106
609213.94	4203751.50	18.98031	609238.94	4203751.50	19.98771
609263.94	4203751.50	21.10085	609288.94	4203751.50	22.33393
609313.94	4203751.50	23.70216	609338.94	4203751.50	25.22426
609363.94	4203751.50	26.92239	609388.94	4203751.50	28.82248
609413.94	4203751.50	30.95363	609438.94	4203751.50	33.35022
609463.94	4203751.50	36.04995	609488.94	4203751.50	39.09559
609513.94	4203751.50	42.54159	609538.94	4203751.50	46.44548
609563.94	4203751.50	50.88396	609588.94	4203751.50	55.96014
609613.94	4203751.50	61.80672	609638.94	4203751.50	68.63586
609663.94	4203751.50	76.83636	609688.94	4203751.50	86.80319
609713.94	4203751.50	98.92807	609738.94	4203751.50	113.23963
609763.94	4203751.50	129.00203	609788.94	4203751.50	145.00302
609813.94	4203751.50	160.53238	609838.94	4203751.50	175.19479
609863.94	4203751.50	189.01767	609888.94	4203751.50	202.34439
609913.94	4203751.50	215.47748	609938.94	4203751.50	228.47018
609963.94	4203751.50	241.21288	609988.94	4203751.50	253.48280
610013.94	4203751.50	265.06711	610038.94	4203751.50	275.70493
610063.94	4203751.50	285.19424	610088.94	4203751.50	293.39511
610113.94	4203751.50	300.21698	610138.94	4203751.50	305.61465
610163.94	4203751.50	309.54794	610188.94	4203751.50	312.14960
610213.94	4203751.50	313.32465	610238.94	4203751.50	313.10733
610263.94	4203751.50	311.64890	610288.94	4203751.50	308.96280
610313.94	4203751.50	305.09702	610338.94	4203751.50	300.07730
610363.94	4203751.50	293.93896	610388.94	4203751.50	286.72427
610413.94	4203751.50	278.66034	610438.94	4203751.50	270.13062
609213.94	4203776.50	19.49976	609238.94	4203776.50	20.56991
609263.94	4203776.50	21.75599	609288.94	4203776.50	23.07255
609313.94	4203776.50	24.53706	609338.94	4203776.50	26.17030
609363.94	4203776.50	27.99744	609388.94	4203776.50	30.04872
609413.94	4203776.50	32.36108	609438.94	4203776.50	34.97746

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609463.94	4203776.50	37.94873	609488.94	4203776.50	41.33419
609513.94	4203776.50	45.20157	609538.94	4203776.50	49.63868

609563.94	4203776.50	54.75242	609588.94	4203776.50	60.67215
609613.94	4203776.50	67.59079	609638.94	4203776.50	75.76823
609663.94	4203776.50	85.65118	609688.94	4203776.50	97.96255
609713.94	4203776.50	113.33071	609738.94	4203776.50	131.93024
609763.94	4203776.50	152.50076	609788.94	4203776.50	173.07658
609813.94	4203776.50	192.67497	609838.94	4203776.50	211.11334
609863.94	4203776.50	228.91650	609888.94	4203776.50	246.55389
609913.94	4203776.50	264.02112	609938.94	4203776.50	281.03284
609963.94	4203776.50	297.24219	609988.94	4203776.50	312.33902
610013.94	4203776.50	326.07230	610038.94	4203776.50	338.23624
610063.94	4203776.50	348.74042	610088.94	4203776.50	357.55737
610113.94	4203776.50	364.71014	610138.94	4203776.50	370.00003
610163.94	4203776.50	373.43378	610188.94	4203776.50	375.03748
610213.94	4203776.50	374.97607	610238.94	4203776.50	373.24799
610263.94	4203776.50	369.97153	610288.94	4203776.50	365.17593
610313.94	4203776.50	358.90454	610338.94	4203776.50	351.22952
610363.94	4203776.50	342.13669	610388.94	4203776.50	331.61401
610413.94	4203776.50	319.90356	610438.94	4203776.50	307.57892
609213.94	4203801.50	20.02816	609238.94	4203801.50	21.16538
609263.94	4203801.50	22.42943	609288.94	4203801.50	23.83671
609313.94	4203801.50	25.40636	609338.94	4203801.50	27.16203
609363.94	4203801.50	29.13119	609388.94	4203801.50	31.34839
609413.94	4203801.50	33.85706	609438.94	4203801.50	36.70932
609463.94	4203801.50	39.96976	609488.94	4203801.50	43.71735
609513.94	4203801.50	48.04646	609538.94	4203801.50	53.07174
609563.94	4203801.50	58.95115	609588.94	4203801.50	65.88155
609613.94	4203801.50	74.16098	609638.94	4203801.50	84.12025
609663.94	4203801.50	96.33180	609688.94	4203801.50	111.81113
609713.94	4203801.50	132.14828	609738.94	4203801.50	158.00197
609763.94	4203801.50	185.85037	609788.94	4203801.50	213.12816
609813.94	4203801.50	238.74521	609838.94	4203801.50	263.56076
609863.94	4203801.50	288.26559	609888.94	4203801.50	312.55557
609913.94	4203801.50	335.77939	609938.94	4203801.50	357.39053
609963.94	4203801.50	377.04852	609988.94	4203801.50	394.58829
610013.94	4203801.50	410.01315	610038.94	4203801.50	423.39441
610063.94	4203801.50	434.48651	610088.94	4203801.50	443.35831
610113.94	4203801.50	450.04623	610138.94	4203801.50	454.60724
610163.94	4203801.50	456.99561	610188.94	4203801.50	457.15897

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
610213.94	4203801.50	455.11816	610238.94	4203801.50	451.15707
610263.94	4203801.50	445.10281	610288.94	4203801.50	437.22900
610313.94	4203801.50	427.44315	610338.94	4203801.50	415.87595
610363.94	4203801.50	402.54611	610388.94	4203801.50	387.15759
610413.94	4203801.50	370.12137	610438.94	4203801.50	351.84714
609213.94	4203826.50	20.55331	609238.94	4203826.50	21.75981
609263.94	4203826.50	23.10454	609288.94	4203826.50	24.60716
609313.94	4203826.50	26.28915	609338.94	4203826.50	28.17642
609363.94	4203826.50	30.30075	609388.94	4203826.50	32.70052
609413.94	4203826.50	35.42606	609438.94	4203826.50	38.53936
609463.94	4203826.50	42.11763	609488.94	4203826.50	46.26042
609513.94	4203826.50	51.09166	609538.94	4203826.50	56.76996
609563.94	4203826.50	63.51094	609588.94	4203826.50	71.60879
609613.94	4203826.50	81.54211	609638.94	4203826.50	93.85554
609663.94	4203826.50	109.39448	609688.94	4203826.50	129.65114
609713.94	4203826.50	157.91663	609738.94	4203826.50	195.82521
609763.94	4203826.50	236.73396	609788.94	4203826.50	275.33984
609813.94	4203826.50	312.63058	609838.94	4203826.50	349.67886

609863.94	4203826.50	385.30325	609888.94	4203826.50	417.64789
609913.94	4203826.50	446.44818	609938.94	4203826.50	471.86795
609963.94	4203826.50	494.11829	609988.94	4203826.50	513.27063
610013.94	4203826.50	529.58942	610038.94	4203826.50	543.16840
610063.94	4203826.50	554.03583	610088.94	4203826.50	562.22681
610113.94	4203826.50	567.79272	610138.94	4203826.50	570.72858
610163.94	4203826.50	570.98297	610188.94	4203826.50	568.58527
610213.94	4203826.50	563.56335	610238.94	4203826.50	556.04242
610263.94	4203826.50	546.08673	610288.94	4203826.50	533.76147
610313.94	4203826.50	519.09827	610338.94	4203826.50	501.96442
610363.94	4203826.50	483.23581	610388.94	4203826.50	461.13300
610413.94	4203826.50	434.45715	610438.94	4203826.50	405.98224
609213.94	4203851.50	21.06389	609238.94	4203851.50	22.33863
609263.94	4203851.50	23.76454	609288.94	4203851.50	25.36310
609313.94	4203851.50	27.15945	609338.94	4203851.50	29.18338
609363.94	4203851.50	31.47042	609388.94	4203851.50	34.06540
609413.94	4203851.50	37.02491	609438.94	4203851.50	40.42208
609463.94	4203851.50	44.35121	609488.94	4203851.50	48.93229
609513.94	4203851.50	54.32339	609538.94	4203851.50	60.73422
609563.94	4203851.50	68.45171	609588.94	4203851.50	77.89729
609613.94	4203851.50	89.79425	609638.94	4203851.50	105.09459
609663.94	4203851.50	125.46995	609688.94	4203851.50	153.66901

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609713.94	4203851.50	196.41446	609738.94	4203851.50	260.86057
609763.94	4203851.50	327.45505	609788.94	4203851.50	392.02121
609813.94	4203851.50	453.97232	609838.94	4203851.50	508.52151
609863.94	4203851.50	554.79578	609888.94	4203851.50	593.62079
609913.94	4203851.50	626.27008	609938.94	4203851.50	653.78876
609963.94	4203851.50	676.74548	609988.94	4203851.50	695.70184
610013.94	4203851.50	711.55359	610038.94	4203851.50	723.45819
610063.94	4203851.50	732.44806	610088.94	4203851.50	738.49121
610113.94	4203851.50	741.77740	610138.94	4203851.50	743.14752
610163.94	4203851.50	741.47003	610188.94	4203851.50	736.17792
610213.94	4203851.50	727.56519	610238.94	4203851.50	715.27734
610263.94	4203851.50	699.55084	610288.94	4203851.50	680.45667
610313.94	4203851.50	658.37579	610338.94	4203851.50	632.16046
610363.94	4203851.50	602.85901	610388.94	4203851.50	567.13379
610413.94	4203851.50	522.78296	610438.94	4203851.50	474.95093
609213.94	4203876.50	21.55350	609238.94	4203876.50	22.89416
609263.94	4203876.50	24.39791	609288.94	4203876.50	26.08966
609313.94	4203876.50	27.99781	609338.94	4203876.50	30.15680
609363.94	4203876.50	32.60752	609388.94	4203876.50	35.40046
609413.94	4203876.50	38.60024	609438.94	4203876.50	42.29245
609463.94	4203876.50	46.58778	609488.94	4203876.50	51.63526
609513.94	4203876.50	57.63380	609538.94	4203876.50	64.85222
609563.94	4203876.50	73.66739	609588.94	4203876.50	84.68275
609613.94	4203876.50	98.89310	609638.94	4203876.50	117.92645
609663.94	4203876.50	144.77223	609688.94	4203876.50	186.90414
609713.94	4203876.50	263.46082	609738.94	4203876.50	412.02179
609763.94	4203876.50	568.77399	609788.94	4203876.50	689.97931
609813.94	4203876.50	777.53210	609838.94	4203876.50	842.26617
609863.94	4203876.50	891.31836	609888.94	4203876.50	930.83624
609913.94	4203876.50	963.92096	609938.94	4203876.50	989.64386
609963.94	4203876.50	1009.64642	609988.94	4203876.50	1024.14819
610013.94	4203876.50	1035.15259	610038.94	4203876.50	1042.76062
610063.94	4203876.50	1046.40088	610088.94	4203876.50	1046.53149
610113.94	4203876.50	1043.38599	610138.94	4203876.50	1037.90820

610163.94	4203876.50	1029.20142	610188.94	4203876.50	1016.91864
610213.94	4203876.50	1000.65796	610238.94	4203876.50	979.91034
610263.94	4203876.50	954.74689	610288.94	4203876.50	924.46826
610313.94	4203876.50	889.47589	610338.94	4203876.50	847.42090
610363.94	4203876.50	802.23560	610388.94	4203876.50	742.59064
610413.94	4203876.50	657.31995	610438.94	4203876.50	559.59760

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609213.94	4203901.50	22.02395	609238.94	4203901.50	23.42727
609263.94	4203901.50	25.00529	609288.94	4203901.50	26.78543
609313.94	4203901.50	28.80062	609338.94	4203901.50	31.08957
609363.94	4203901.50	33.69932	609388.94	4203901.50	36.68750
609413.94	4203901.50	40.12696	609438.94	4203901.50	44.11361
609463.94	4203901.50	48.77806	609488.94	4203901.50	54.29574
609513.94	4203901.50	60.91019	609538.94	4203901.50	68.96143
609563.94	4203901.50	78.94843	609588.94	4203901.50	91.65993
609613.94	4203901.50	108.39819	609638.94	4203901.50	131.59543
609663.94	4203901.50	166.84270	609688.94	4203901.50	228.71964
609713.94	4203901.50	404.63391	609213.94	4203926.50	22.48998
609238.94	4203926.50	23.95499	609263.94	4203926.50	25.60544
609288.94	4203926.50	27.47238	609313.94	4203926.50	29.59212
609338.94	4203926.50	32.00888	609363.94	4203926.50	34.77596
609388.94	4203926.50	37.95984	609413.94	4203926.50	41.64311
609438.94	4203926.50	45.93519	609463.94	4203926.50	50.98339
609488.94	4203926.50	56.99311	609513.94	4203926.50	64.25518
609538.94	4203926.50	73.19117	609563.94	4203926.50	84.42747
609588.94	4203926.50	98.99429	609613.94	4203926.50	118.66451
609638.94	4203926.50	146.66319	609663.94	4203926.50	190.58487
609688.94	4203926.50	274.38937	609713.94	4203926.50	521.74896
609213.94	4203951.50	22.97385	609238.94	4203951.50	24.50435
609263.94	4203951.50	26.23127	609288.94	4203951.50	28.18839
609313.94	4203951.50	30.41673	609338.94	4203951.50	32.96632
609363.94	4203951.50	35.89792	609388.94	4203951.50	39.28760
609413.94	4203951.50	43.23070	609438.94	4203951.50	47.85244
609463.94	4203951.50	53.32038	609488.94	4203951.50	59.86803
609513.94	4203951.50	67.83624	609538.94	4203951.50	77.72581
609563.94	4203951.50	90.28677	609588.94	4203951.50	106.71236
609613.94	4203951.50	129.27832	609638.94	4203951.50	161.89865
609663.94	4203951.50	214.53244	609688.94	4203951.50	316.33322
609713.94	4203951.50	584.01715	609213.94	4203976.50	23.49960
609238.94	4203976.50	25.10127	609263.94	4203976.50	26.91210
609288.94	4203976.50	28.96786	609313.94	4203976.50	31.31313
609338.94	4203976.50	34.00338	609363.94	4203976.50	37.10817
609388.94	4203976.50	40.71279	609413.94	4203976.50	44.92686
609438.94	4203976.50	49.89094	609463.94	4203976.50	55.79359
609488.94	4203976.50	62.89149	609513.94	4203976.50	71.56506
609538.94	4203976.50	82.38020	609563.94	4203976.50	96.20959
609588.94	4203976.50	114.42635	609613.94	4203976.50	139.65160

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609638.94	4203976.50	176.86925	609663.94	4203976.50	236.91202
609688.94	4203976.50	348.06635	609713.94	4203976.50	624.84467
609213.94	4204001.50	24.07794	609238.94	4204001.50	25.75757
609263.94	4204001.50	27.65804	609288.94	4204001.50	29.81889
609313.94	4204001.50	32.28703	609338.94	4204001.50	35.12280
609363.94	4204001.50	38.40097	609388.94	4204001.50	42.21707
609413.94	4204001.50	46.69185	609438.94	4204001.50	51.98220
609463.94	4204001.50	58.29598	609488.94	4204001.50	65.91481
609513.94	4204001.50	75.25246	609538.94	4204001.50	86.93336
609563.94	4204001.50	101.94080	609588.94	4204001.50	121.89130
609613.94	4204001.50	149.67896	609638.94	4204001.50	190.74460
609663.94	4204001.50	255.83141	609688.94	4204001.50	371.69156
609713.94	4204001.50	651.87451	609213.94	4204026.50	24.70371
609238.94	4204026.50	26.46289	609263.94	4204026.50	28.45505
609288.94	4204026.50	30.72104	609313.94	4204026.50	33.31082
609338.94	4204026.50	36.28793	609363.94	4204026.50	39.73127
609388.94	4204026.50	43.74272	609413.94	4204026.50	48.45522
609438.94	4204026.50	54.03964	609463.94	4204026.50	60.72594
609488.94	4204026.50	68.82412	609513.94	4204026.50	78.78330
609538.94	4204026.50	91.28752	609563.94	4204026.50	107.43060
609588.94	4204026.50	128.98853	609613.94	4204026.50	158.97079
609638.94	4204026.50	202.91197	609663.94	4204026.50	270.80048
609688.94	4204026.50	389.24710	609713.94	4204026.50	670.50281
609213.94	4204051.50	25.35766	609238.94	4204051.50	27.19282
609263.94	4204051.50	29.27188	609288.94	4204051.50	31.63695
609313.94	4204051.50	34.34072	609338.94	4204051.50	37.44836
609363.94	4204051.50	41.04343	609388.94	4204051.50	45.23312
609413.94	4204051.50	50.15838	609438.94	4204051.50	56.00557
609463.94	4204051.50	63.02581	609488.94	4204051.50	71.56274
609513.94	4204051.50	82.10719	609538.94	4204051.50	95.40169
609563.94	4204051.50	112.58929	609588.94	4204051.50	135.54253
609613.94	4204051.50	167.25378	609638.94	4204051.50	212.86858
609663.94	4204051.50	282.28159	609688.94	4204051.50	402.40884
609713.94	4204051.50	684.18732	609213.94	4204076.50	26.01564
609238.94	4204076.50	27.91872	609263.94	4204076.50	30.07509
609288.94	4204076.50	32.52868	609313.94	4204076.50	35.33413
609338.94	4204076.50	38.55948	609363.94	4204076.50	42.29160
609388.94	4204076.50	46.64342	609413.94	4204076.50	51.76168
609438.94	4204076.50	57.84650	609463.94	4204076.50	65.16911
609488.94	4204076.50	74.10736	609513.94	4204076.50	85.19308

CONC URBAN ELEV DFAULT

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609538.94	4204076.50	99.20181	609563.94	4204076.50	117.30562
609588.94	4204076.50	141.32504	609613.94	4204076.50	174.12941
609638.94	4204076.50	220.63234	609663.94	4204076.50	290.85300
609688.94	4204076.50	411.64273	609713.94	4204076.50	699.22400
609213.94	4204101.50	26.65553	609238.94	4204101.50	28.61670
609263.94	4204101.50	30.83873	609288.94	4204101.50	33.36791
609313.94	4204101.50	36.26100	609338.94	4204101.50	39.58892
609363.94	4204101.50	43.44302	609388.94	4204101.50	47.93965
609413.94	4204101.50	53.23489	609438.94	4204101.50	59.53783
609463.94	4204101.50	67.13567	609488.94	4204101.50	76.43037
609513.94	4204101.50	87.98829	609538.94	4204101.50	102.60854
609563.94	4204101.50	121.41956	609588.94	4204101.50	146.14511

609613.94	4204101.50	179.50771	609638.94	4204101.50	226.27058
609663.94	4204101.50	296.74942	609688.94	4204101.50	416.93237
609713.94	4204101.50	707.34894	609213.94	4204126.50	27.26049
609238.94	4204126.50	29.27053	609263.94	4204126.50	31.54757
609288.94	4204126.50	34.13937	609313.94	4204126.50	37.10545
609338.94	4204126.50	40.52002	609363.94	4204126.50	44.47789
609388.94	4204126.50	49.10274	609413.94	4204126.50	54.55610
609438.94	4204126.50	61.05494	609463.94	4204126.50	68.89920
609488.94	4204126.50	78.50485	609513.94	4204126.50	90.43687
609538.94	4204126.50	105.49236	609563.94	4204126.50	124.76569
609588.94	4204126.50	149.86378	609613.94	4204126.50	183.41090
609638.94	4204126.50	230.10376	609663.94	4204126.50	300.25705
609688.94	4204126.50	420.03391	609713.94	4204126.50	710.57605
609213.94	4204151.50	27.81870	609238.94	4204151.50	29.86984
609263.94	4204151.50	32.19266	609288.94	4204151.50	34.83640
609313.94	4204151.50	37.86260	609338.94	4204151.50	41.34851
609363.94	4204151.50	45.39362	609388.94	4204151.50	50.12638
609413.94	4204151.50	55.71492	609438.94	4204151.50	62.38390
609463.94	4204151.50	70.43472	609488.94	4204151.50	80.27502
609513.94	4204151.50	92.46266	609538.94	4204151.50	107.75468
609563.94	4204151.50	127.22495	609588.94	4204151.50	152.41399
609613.94	4204151.50	185.85475	609638.94	4204151.50	232.20227
609663.94	4204151.50	301.54556	609688.94	4204151.50	420.45285
609713.94	4204151.50	713.59894	609213.94	4204176.50	28.32279
609238.94	4204176.50	30.40856	609263.94	4204176.50	32.77026
609288.94	4204176.50	35.45789	609313.94	4204176.50	38.53475
609338.94	4204176.50	42.08082	609363.94	4204176.50	46.19806
609388.94	4204176.50	51.01938	609413.94	4204176.50	56.71705

CONC URBAN ELEV DFAULT

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609438.94	4204176.50	63.51741	609463.94	4204176.50	71.71638
609488.94	4204176.50	81.70714	609513.94	4204176.50	94.01356
609538.94	4204176.50	109.34718	609563.94	4204176.50	128.73532
609588.94	4204176.50	153.73648	609613.94	4204176.50	186.77678
609638.94	4204176.50	232.50464	609663.94	4204176.50	300.61142
609688.94	4204176.50	418.44016	609713.94	4204176.50	714.61804
609213.94	4204201.50	28.76877	609238.94	4204201.50	30.88388
609263.94	4204201.50	33.27872	609288.94	4204201.50	36.00486
609313.94	4204201.50	39.12618	609338.94	4204201.50	42.72448
609363.94	4204201.50	46.90347	609388.94	4204201.50	51.79649
609413.94	4204201.50	57.57476	609438.94	4204201.50	64.45980
609463.94	4204201.50	72.73862	609488.94	4204201.50	82.78020
609513.94	4204201.50	95.06742	609538.94	4204201.50	110.26328
609563.94	4204201.50	129.35405	609588.94	4204201.50	153.85042
609613.94	4204201.50	186.19278	609638.94	4204201.50	230.98503
609663.94	4204201.50	297.59845	609688.94	4204201.50	413.52121
609713.94	4204201.50	707.42633	609213.94	4204226.50	29.15625
609238.94	4204226.50	31.29543	609263.94	4204226.50	33.71841
609288.94	4204226.50	36.47781	609313.94	4204226.50	39.63866
609338.94	4204226.50	43.28321	609363.94	4204226.50	47.51484
609388.94	4204226.50	52.46424	609413.94	4204226.50	58.29627
609438.94	4204226.50	65.22204	609463.94	4204226.50	73.50726
609488.94	4204226.50	83.49274	609513.94	4204226.50	95.63084
609538.94	4204226.50	110.54626	609563.94	4204226.50	129.16295
609588.94	4204226.50	152.88263	609613.94	4204226.50	184.20340
609638.94	4204226.50	227.62134	609663.94	4204226.50	292.32932
609688.94	4204226.50	405.44199	609713.94	4204226.50	694.89685
609213.94	4204251.50	29.48603	609238.94	4204251.50	31.64448

609263.94	4204251.50	34.09054	609288.94	4204251.50	36.87737
609313.94	4204251.50	40.07089	609338.94	4204251.50	43.75233
609363.94	4204251.50	48.02269	609388.94	4204251.50	53.00764
609413.94	4204251.50	58.86358	609438.94	4204251.50	65.78204
609463.94	4204251.50	74.00518	609488.94	4204251.50	83.84824
609513.94	4204251.50	95.72366	609538.94	4204251.50	110.21811
609563.94	4204251.50	128.19476	609588.94	4204251.50	150.94685
609613.94	4204251.50	180.93071	609638.94	4204251.50	222.41660
609663.94	4204251.50	284.76193	609688.94	4204251.50	394.11542
609713.94	4204251.50	681.11700	609213.94	4204276.50	29.76089
609238.94	4204276.50	31.93300	609263.94	4204276.50	34.39569
609288.94	4204276.50	37.20176	609313.94	4204276.50	40.41637

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609338.94	4204276.50	44.11928	609363.94	4204276.50	48.40656
609388.94	4204276.50	53.39574	609413.94	4204276.50	59.23109
609438.94	4204276.50	66.08459	609463.94	4204276.50	74.17786
609488.94	4204276.50	83.79139	609513.94	4204276.50	95.29950
609538.94	4204276.50	109.23537	609563.94	4204276.50	126.37403
609588.94	4204276.50	147.96358	609613.94	4204276.50	176.24286
609638.94	4204276.50	215.19255	609663.94	4204276.50	273.99655
609688.94	4204276.50	378.44479	609713.94	4204276.50	656.89557
609213.94	4204301.50	29.98275	609238.94	4204301.50	32.16277
609263.94	4204301.50	34.63388	609288.94	4204301.50	37.44841
609313.94	4204301.50	40.66946	609338.94	4204301.50	44.37144
609363.94	4204301.50	48.64534	609388.94	4204301.50	53.59828
609413.94	4204301.50	59.35783	609438.94	4204301.50	66.08052
609463.94	4204301.50	73.96187	609488.94	4204301.50	83.24986
609513.94	4204301.50	94.28009	609538.94	4204301.50	107.52738
609563.94	4204301.50	123.66063	609588.94	4204301.50	143.84155
609613.94	4204301.50	170.00951	609638.94	4204301.50	205.75975
609663.94	4204301.50	259.75543	609688.94	4204301.50	355.90182
609713.94	4204301.50	620.29523	609213.94	4204326.50	30.15553
609238.94	4204326.50	32.33717	609263.94	4204326.50	34.80818
609288.94	4204326.50	37.61904	609313.94	4204326.50	40.82854
609338.94	4204326.50	44.50649	609363.94	4204326.50	48.73484
609388.94	4204326.50	53.60818	609413.94	4204326.50	59.24108
609438.94	4204326.50	65.77070	609463.94	4204326.50	73.36504
609488.94	4204326.50	82.24313	609513.94	4204326.50	92.70107
609538.94	4204326.50	105.14779	609563.94	4204326.50	120.16045
609588.94	4204326.50	138.73721	609613.94	4204326.50	162.49974
609638.94	4204326.50	194.43939	609663.94	4204326.50	241.63586
609688.94	4204326.50	323.23468	609713.94	4204326.50	539.12805
609213.94	4204351.50	30.28494	609238.94	4204351.50	32.46197
609263.94	4204351.50	34.92498	609288.94	4204351.50	37.72037
609313.94	4204351.50	40.90323	609338.94	4204351.50	44.53554
609363.94	4204351.50	48.69016	609388.94	4204351.50	53.45117
609413.94	4204351.50	58.91730	609438.94	4204351.50	65.20657
609463.94	4204351.50	72.46458	609488.94	4204351.50	80.88126
609513.94	4204351.50	90.70461	609538.94	4204351.50	102.27281
609563.94	4204351.50	116.08036	609588.94	4204351.50	132.91409
609613.94	4204351.50	154.02496	609638.94	4204351.50	181.63948
609663.94	4204351.50	220.29745	609688.94	4204351.50	280.10498
609713.94	4204351.50	373.60681	609213.94	4204376.50	30.37781

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609238.94	4204376.50	32.54613	609263.94	4204376.50	34.99351
609288.94	4204376.50	37.76406	609313.94	4204376.50	40.90620
609338.94	4204376.50	44.47531	609363.94	4204376.50	48.53520
609388.94	4204376.50	53.15784	609413.94	4204376.50	58.42713
609438.94	4204376.50	64.44379	609463.94	4204376.50	71.32903
609488.94	4204376.50	79.24310	609513.94	4204376.50	88.38258
609538.94	4204376.50	99.01394	609563.94	4204376.50	111.50930
609588.94	4204376.50	126.44022	609613.94	4204376.50	144.62425
609638.94	4204376.50	167.33911	609663.94	4204376.50	196.55174
609688.94	4204376.50	233.27095	609713.94	4204376.50	275.74475
609213.94	4204401.50	30.44187	609238.94	4204401.50	32.59628
609263.94	4204401.50	35.02214	609288.94	4204401.50	37.75814
609313.94	4204401.50	40.84728	609338.94	4204401.50	44.33727
609363.94	4204401.50	48.28314	609388.94	4204401.50	52.74564
609413.94	4204401.50	57.79300	609438.94	4204401.50	63.50832
609463.94	4204401.50	69.99163	609488.94	4204401.50	77.36040
609513.94	4204401.50	85.76754	609538.94	4204401.50	95.40565
609563.94	4204401.50	106.51564	609588.94	4204401.50	119.45609
609613.94	4204401.50	134.59814	609638.94	4204401.50	152.32382
609663.94	4204401.50	172.40508	609688.94	4204401.50	193.46613
609713.94	4204401.50	214.60071	609213.94	4204426.50	30.48041
609238.94	4204426.50	32.61654	609263.94	4204426.50	35.01305
609288.94	4204426.50	37.70456	609313.94	4204426.50	40.72739
609338.94	4204426.50	44.12319	609363.94	4204426.50	47.93684
609388.94	4204426.50	52.21727	609413.94	4204426.50	57.02166
609438.94	4204426.50	62.41309	609463.94	4204426.50	68.46703
609488.94	4204426.50	75.26982	609513.94	4204426.50	82.92476
609538.94	4204426.50	91.54195	609563.94	4204426.50	101.27151
609588.94	4204426.50	112.20670	609613.94	4204426.50	124.35632
609638.94	4204426.50	137.39172	609663.94	4204426.50	150.46579
609688.94	4204426.50	162.68463	609713.94	4204426.50	173.77029
609213.94	4204451.50	30.49369	609238.94	4204451.50	32.60467
609263.94	4204451.50	34.96371	609288.94	4204451.50	37.59913
609313.94	4204451.50	40.54258	609338.94	4204451.50	43.82806
609363.94	4204451.50	47.49128	609388.94	4204451.50	51.57207
609413.94	4204451.50	56.11242	609438.94	4204451.50	61.16088
609463.94	4204451.50	66.76657	609488.94	4204451.50	72.98531
609513.94	4204451.50	79.87174	609538.94	4204451.50	87.46103
609563.94	4204451.50	95.76564	609588.94	4204451.50	104.69660
609613.94	4204451.50	113.98736	609638.94	4204451.50	123.11985

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609663.94	4204451.50	131.48952	609688.94	4204451.50	138.69887
609713.94	4204451.50	144.88356	609213.94	4204476.50	30.47807
609238.94	4204476.50	32.55650	609263.94	4204476.50	34.86725
609288.94	4204476.50	37.43517	609313.94	4204476.50	40.28535
609338.94	4204476.50	43.44499	609363.94	4204476.50	46.94208
609388.94	4204476.50	50.80455	609413.94	4204476.50	55.06370

609438.94	4204476.50	59.74971	609463.94	4204476.50	64.88694
609488.94	4204476.50	70.49919	609513.94	4204476.50	76.58186
609538.94	4204476.50	83.11123	609563.94	4204476.50	89.98311
609588.94	4204476.50	97.00513	609613.94	4204476.50	103.83614
609638.94	4204476.50	110.10239	609663.94	4204476.50	115.51103
609688.94	4204476.50	119.99368	609713.94	4204476.50	123.75994
609213.94	4204501.50	30.42852	609238.94	4204501.50	32.46528
609263.94	4204501.50	34.71821	609288.94	4204501.50	37.20636
609313.94	4204501.50	39.94976	609338.94	4204501.50	42.96833
609363.94	4204501.50	46.28298	609388.94	4204501.50	49.91135
609413.94	4204501.50	53.87160	609438.94	4204501.50	58.17347
609463.94	4204501.50	62.82243	609488.94	4204501.50	67.80055
609513.94	4204501.50	73.07006	609538.94	4204501.50	78.53864
609563.94	4204501.50	84.06174	609588.94	4204501.50	89.41488
609613.94	4204501.50	94.35445	609638.94	4204501.50	98.67437
609663.94	4204501.50	102.28754	609688.94	4204501.50	105.21398
609713.94	4204501.50	107.49409	609213.94	4204526.50	30.34130
609238.94	4204526.50	32.32762	609263.94	4204526.50	34.51199
609288.94	4204526.50	36.90908	609313.94	4204526.50	39.53297
609338.94	4204526.50	42.39794	609363.94	4204526.50	45.51606
609388.94	4204526.50	48.89574	609413.94	4204526.50	52.54004
609438.94	4204526.50	56.44354	609463.94	4204526.50	60.58770
609488.94	4204526.50	64.92889	609513.94	4204526.50	69.39274
609538.94	4204526.50	73.86565	609563.94	4204526.50	78.19641
609588.94	4204526.50	82.21547	609613.94	4204526.50	85.78088
609638.94	4204526.50	88.81010	609663.94	4204526.50	91.29124
609688.94	4204526.50	93.20529	609713.94	4204526.50	94.55405
609213.94	4204551.50	30.21464	609238.94	4204551.50	32.14279
609263.94	4204551.50	34.24947	609288.94	4204551.50	36.54507
609313.94	4204551.50	39.03925	609338.94	4204551.50	41.73914
609363.94	4204551.50	44.64883	609388.94	4204551.50	47.76772
609413.94	4204551.50	51.08466	609438.94	4204551.50	54.58134
609463.94	4204551.50	58.21740	609488.94	4204551.50	61.93165
609513.94	4204551.50	65.63495	609538.94	4204551.50	69.21995

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609563.94	4204551.50	72.56474	609588.94	4204551.50	75.56844
609613.94	4204551.50	78.16010	609638.94	4204551.50	80.31582
609663.94	4204551.50	82.02556	609688.94	4204551.50	83.26532
609713.94	4204551.50	84.11518	609738.38	4203889.50	669.53662
609763.38	4203889.50	906.73956	609788.38	4203889.50	1042.18115
609813.38	4203889.50	1129.83081	609838.38	4203889.50	1192.85400
609863.38	4203889.50	1239.67126	609888.38	4203889.50	1271.95068
609913.38	4203889.50	1298.40723	609938.38	4203889.50	1312.62781
609963.38	4203889.50	1326.63745	609988.38	4203889.50	1335.98389
610013.38	4203889.50	1341.81494	610038.38	4203889.50	1343.99634
610063.38	4203889.50	1343.22290	610088.38	4203889.50	1338.28003
610113.38	4203889.50	1330.10388	610138.38	4203893.50	1440.62976
610163.38	4203893.50	1418.57227	610188.38	4203893.50	1394.73267
610213.38	4203893.50	1366.77222	610238.38	4203893.50	1333.79297
610263.38	4203893.50	1294.40369	610288.38	4203893.50	1248.90271
610313.38	4203893.50	1194.84937	610338.38	4203893.50	1129.09460
610363.38	4203893.50	1058.76599	610388.38	4203893.50	970.13202
610413.38	4203893.50	810.85199	609716.12	4204329.00	550.11804
609718.88	4203892.00	407.14145	610415.75	4203905.50	883.41357
610380.25	4203944.50	743.25891	610236.69	4204012.00	1424.83911
610162.50	4204082.50	1471.47559	610132.13	4204052.50	2052.81396
610098.44	4204082.50	2077.19580	610133.94	4204110.50	1552.47607

610096.69	4204185.50	1536.15173	610109.63	4204339.50	1042.63574
610034.13	4204456.50	206.98241	609991.31	4204402.50	670.46436
609919.44	4204407.00	438.21347	609939.94	4204280.00	947.08533
609915.88	4204233.50	1063.85364	609840.44	4204230.00	1124.63354
609789.50	4204257.50	1350.22327	609788.75	4204361.00	797.18890
609849.56	4204412.00	258.15707	609800.69	4204410.50	362.21115

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609213.94	4203701.50	6372.18115	(02020609)	609238.94	4203701.50	6553.73779	(02020609)
609263.94	4203701.50	6724.52734	(02020609)	609288.94	4203701.50	6941.97363	(05111509)
609313.94	4203701.50	7157.87012	(05111509)	609338.94	4203701.50	7352.25342	(05111509)
609363.94	4203701.50	7590.59473	(03121009)	609388.94	4203701.50	8165.46582	(03121009)
609413.94	4203701.50	8718.22559	(03121009)	609438.94	4203701.50	9229.08203	(03121009)
609463.94	4203701.50	9713.58887	(01110609)	609488.94	4203701.50	10980.08500	(01110609)
609513.94	4203701.50	12191.64840	(01110609)	609538.94	4203701.50	13245.03120	(01110609)
609563.94	4203701.50	13943.03030	(02020409)	609588.94	4203701.50	14168.93650	(02020409)
609613.94	4203701.50	13888.37210	(02020409)	609638.94	4203701.50	13329.61620	(02020409)
609663.94	4203701.50	12682.52150	(02020409)	609688.94	4203701.50	13427.76070	(05012509)
609713.94	4203701.50	13959.79880	(05012509)	609738.94	4203701.50	14409.09960	(05012509)
609763.94	4203701.50	14834.55370	(05012509)	609788.94	4203701.50	15125.35640	(05012509)
609813.94	4203701.50	15188.38280	(05012509)	609838.94	4203701.50	14975.05960	(05012509)
609863.94	4203701.50	14481.52340	(05012509)	609888.94	4203701.50	14874.80470	(03122209)
609913.94	4203701.50	15131.95020	(03122209)	609938.94	4203701.50	15120.84180	(03110609)
609963.94	4203701.50	15106.03320	(05122309)	609988.94	4203701.50	14783.09860	(05122309)
610013.94	4203701.50	15016.95900	(03111309)	610038.94	4203701.50	14993.22950	(03111309)
610063.94	4203701.50	14553.16500	(03111309)	610088.94	4203701.50	14619.70410	(03112509)
610113.94	4203701.50	14850.32030	(03112509)	610138.94	4203701.50	14705.94630	(03112509)
610163.94	4203701.50	14055.57030	(03112509)	610188.94	4203701.50	13451.89750	(01111409)
610213.94	4203701.50	13512.50980	(01111409)	610238.94	4203701.50	13358.39060	(03110409)
610263.94	4203701.50	13502.42190	(02112609)	610288.94	4203701.50	13644.56740	(02112609)
610313.94	4203701.50	13650.29000	(03110409)	610338.94	4203701.50	13744.08300	(03110409)
610363.94	4203701.50	13683.19430	(03110409)	610388.94	4203701.50	13327.15040	(03110409)
610413.94	4203701.50	12626.02730	(04121009)	610438.94	4203701.50	11876.44530	(04111509)
609213.94	4203726.50	6351.57617	(02020609)	609238.94	4203726.50	6572.24268	(02020609)
609263.94	4203726.50	6790.99561	(02020609)	609288.94	4203726.50	7006.08057	(02020609)
609313.94	4203726.50	7214.05322	(02020609)	609338.94	4203726.50	7463.94482	(05111509)
609363.94	4203726.50	7717.87793	(05111509)	609388.94	4203726.50	7950.69043	(05111509)
609413.94	4203726.50	8530.41406	(03121009)	609438.94	4203726.50	9145.02344	(03121009)
609463.94	4203726.50	9731.71680	(03121009)	609488.94	4203726.50	10418.88770	(01110609)
609513.94	4203726.50	11817.99710	(01110609)	609538.94	4203726.50	13161.95120	(01110609)
609563.94	4203726.50	14328.61040	(01110609)	609588.94	4203726.50	15061.75290	(02020409)
609613.94	4203726.50	15172.57130	(02020409)	609638.94	4203726.50	14740.06740	(02020409)
609663.94	4203726.50	14116.77340	(02020409)	609688.94	4203726.50	14069.82910	(05012509)
609713.94	4203726.50	14678.76760	(05012509)	609738.94	4203726.50	15149.64650	(05012509)
609763.94	4203726.50	15638.89650	(05012509)	609788.94	4203726.50	16022.08890	(05012509)
609813.94	4203726.50	16183.80570	(05012509)	609838.94	4203726.50	16059.03420	(05012509)
609863.94	4203726.50	15633.06930	(05012509)	609888.94	4203726.50	15761.71090	(03122209)
609913.94	4203726.50	16081.69040	(03122209)	609938.94	4203726.50	16092.42770	(03122209)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609963.94	4203726.50	16092.48540	(05122309)	609988.94	4203726.50	15797.05570	(05122309)
610013.94	4203726.50	15983.54590	(03111309)	610038.94	4203726.50	15962.76170	(03111309)
610063.94	4203726.50	15497.84860	(03111309)	610088.94	4203726.50	15618.35940	(03112509)
610113.94	4203726.50	15824.11910	(03112509)	610138.94	4203726.50	15603.43850	(03112509)
610163.94	4203726.50	14814.71880	(03112509)	610188.94	4203726.50	14390.31350	(01111409)
610213.94	4203726.50	14348.91310	(01111409)	610238.94	4203726.50	14238.62600	(03110409)
610263.94	4203726.50	14474.56350	(02112609)	610288.94	4203726.50	14535.08010	(02112609)
610313.94	4203726.50	14595.05960	(03110409)	610338.94	4203726.50	14633.14360	(03110409)
610363.94	4203726.50	14401.69340	(03110409)	610388.94	4203726.50	13754.07810	(03110409)
610413.94	4203726.50	12858.04390	(04121009)	610438.94	4203726.50	12990.02830	(04111509)
609213.94	4203751.50	6923.86133	(04112509)	609238.94	4203751.50	6880.87500	(04112509)
609263.94	4203751.50	6811.20508	(04112509)	609288.94	4203751.50	7015.76270	(02020609)
609313.94	4203751.50	7273.08154	(02020609)	609338.94	4203751.50	7532.90430	(02020609)
609363.94	4203751.50	7791.68262	(02020609)	609388.94	4203751.50	8081.81201	(05111509)
609413.94	4203751.50	8391.79004	(05111509)	609438.94	4203751.50	8934.31738	(03121009)
609463.94	4203751.50	9617.36328	(03121009)	609488.94	4203751.50	10288.94530	(03121009)
609513.94	4203751.50	11255.60250	(01110609)	609538.94	4203751.50	12784.78120	(01110609)
609563.94	4203751.50	14296.14060	(01110609)	609588.94	4203751.50	15611.23540	(01110609)
609613.94	4203751.50	16365.26760	(02020409)	609638.94	4203751.50	16304.32910	(02020409)
609663.94	4203751.50	15744.57230	(02020409)	609688.94	4203751.50	15048.74410	(02020409)
609713.94	4203751.50	15539.83500	(05012509)	609738.94	4203751.50	16017.02730	(05012509)
609763.94	4203751.50	16561.47660	(05012509)	609788.94	4203751.50	17038.24410	(05012509)
609813.94	4203751.50	17306.31250	(05012509)	609838.94	4203751.50	17279.73830	(05012509)
609863.94	4203751.50	16932.90430	(05012509)	609888.94	4203751.50	16788.90430	(03122209)
609913.94	4203751.50	17177.39450	(03122209)	609938.94	4203751.50	17244.32230	(03122209)
609963.94	4203751.50	17229.18550	(05122309)	609988.94	4203751.50	16963.70510	(05122309)
610013.94	4203751.50	17103.04880	(03111309)	610038.94	4203751.50	17084.84380	(03111309)
610063.94	4203751.50	16594.82230	(03111309)	610088.94	4203751.50	16774.00590	(03112509)
610113.94	4203751.50	16944.82230	(03112509)	610138.94	4203751.50	16632.16800	(03112509)
610163.94	4203751.50	15681.15620	(03112509)	610188.94	4203751.50	15459.64650	(01111409)
610213.94	4203751.50	15276.08010	(01111409)	610238.94	4203751.50	15368.08790	(02112609)
610263.94	4203751.50	15589.90620	(02112609)	610288.94	4203751.50	15561.87500	(03110409)
610313.94	4203751.50	15688.64060	(03110409)	610338.94	4203751.50	15594.20020	(03110409)
610363.94	4203751.50	15077.20700	(03110409)	610388.94	4203751.50	14135.00100	(04121009)
610413.94	4203751.50	14033.25390	(04111509)	610438.94	4203751.50	14170.22270	(04111509)
609213.94	4203776.50	7809.40576	(04112509)	609238.94	4203776.50	7874.72607	(04112509)
609263.94	4203776.50	7918.46387	(04112509)	609288.94	4203776.50	7937.42090	(04112509)
609313.94	4203776.50	7927.23828	(04112509)	609338.94	4203776.50	7880.65967	(04112509)
609363.94	4203776.50	7835.64746	(02020609)	609388.94	4203776.50	8155.94678	(02020609)
609413.94	4203776.50	8485.58008	(02020609)	609438.94	4203776.50	8831.76367	(05111509)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609463.94	4203776.50	9389.09570	(03121009)	609488.94	4203776.50	10147.69340	(03121009)
609513.94	4203776.50	10913.76170	(03121009)	609538.94	4203776.50	12202.96970	(01110609)
609563.94	4203776.50	13914.37600	(01110609)	609588.94	4203776.50	15648.62110	(01110609)
609613.94	4203776.50	17162.80860	(01110609)	609638.94	4203776.50	17896.74410	(02020409)
609663.94	4203776.50	17593.38670	(02020409)	609688.94	4203776.50	16937.63090	(02020409)
609713.94	4203776.50	16591.37890	(05012509)	609738.94	4203776.50	17056.16210	(05012509)
609763.94	4203776.50	17641.65430	(05012509)	609788.94	4203776.50	18210.96290	(05012509)
609813.94	4203776.50	18592.73240	(05012509)	609838.94	4203776.50	18676.50590	(05012509)
609863.94	4203776.50	18418.07230	(05012509)	609888.94	4203776.50	17993.48050	(03122209)
609913.94	4203776.50	18455.52730	(03122209)	609938.94	4203776.50	18584.25200	(03122209)
609963.94	4203776.50	18554.54880	(05122309)	609988.94	4203776.50	18321.80470	(05122309)
610013.94	4203776.50	18414.35550	(03111309)	610038.94	4203776.50	18397.58400	(03111309)

610063.94	4203776.50	17881.13280 (03111309)	610088.94	4203776.50	18123.76370 (03112509)
610113.94	4203776.50	18249.36520 (03112509)	610138.94	4203776.50	17826.88280 (03112509)
610163.94	4203776.50	16682.98440 (03112509)	610188.94	4203776.50	16685.45700 (01111409)
610213.94	4203776.50	16428.87700 (03110409)	610238.94	4203776.50	16726.72850 (02112609)
610263.94	4203776.50	16859.01370 (02112609)	610288.94	4203776.50	16893.41600 (03110409)
610313.94	4203776.50	16937.49610 (03110409)	610338.94	4203776.50	16585.36130 (03110409)
610363.94	4203776.50	15634.20610 (03110409)	610388.94	4203776.50	15327.79880 (04111509)
610413.94	4203776.50	15455.24610 (04111509)	610438.94	4203776.50	15420.60940 (04111509)
609213.94	4203801.50	8438.12500 (04112509)	609238.94	4203801.50	8605.11328 (04112509)
609263.94	4203801.50	8766.81738 (04112509)	609288.94	4203801.50	8919.12793 (04112509)
609313.94	4203801.50	9056.32715 (04112509)	609338.94	4203801.50	9173.15625 (04112509)
609363.94	4203801.50	9261.25684 (04112509)	609388.94	4203801.50	9310.69629 (04112509)
609413.94	4203801.50	9312.00781 (04112509)	609438.94	4203801.50	9252.88184 (04112509)
609463.94	4203801.50	9339.67383 (02020609)	609488.94	4203801.50	9901.18555 (03121009)
609513.94	4203801.50	10753.90140 (03121009)	609538.94	4203801.50	11626.29690 (03121009)
609563.94	4203801.50	13280.58690 (01110609)	609588.94	4203801.50	15258.15620 (01110609)
609613.94	4203801.50	17288.13870 (01110609)	609638.94	4203801.50	19087.28910 (01110609)
609663.94	4203801.50	19690.50000 (02020409)	609688.94	4203801.50	19150.75780 (02020409)
609713.94	4203801.50	18410.18360 (02020409)	609738.94	4203801.50	18320.13480 (05012509)
609763.94	4203801.50	18923.45310 (05012509)	609788.94	4203801.50	19579.31250 (05012509)
609813.94	4203801.50	20081.94140 (05012509)	609838.94	4203801.50	20293.15620 (05012509)
609863.94	4203801.50	20134.43950 (05012509)	609888.94	4203801.50	19620.35550 (05012509)
609913.94	4203801.50	19959.78910 (03122209)	609938.94	4203801.50	20152.53120 (03122209)
609963.94	4203801.50	20112.47270 (03110609)	609988.94	4203801.50	19912.98240 (05122309)
610013.94	4203801.50	19959.35160 (03111309)	610038.94	4203801.50	19941.92380 (03111309)
610063.94	4203801.50	19398.34570 (03111309)	610088.94	4203801.50	19711.02150 (03112509)
610113.94	4203801.50	19779.14260 (03112509)	610138.94	4203801.50	19225.01370 (03112509)
610163.94	4203801.50	18062.62110 (01111409)	610188.94	4203801.50	18096.94140 (01111409)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC (YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC (YYMMDDHH)
610213.94	4203801.50	18012.98830 (02112609)	610238.94	4203801.50	18334.91990 (02112609)
610263.94	4203801.50	18312.83010 (03110409)	610288.94	4203801.50	18483.90820 (03110409)
610313.94	4203801.50	18321.91210 (03110409)	610338.94	4203801.50	17529.40430 (03110409)
610363.94	4203801.50	16859.05470 (04111509)	610388.94	4203801.50	16974.17580 (04111509)
610413.94	4203801.50	16971.93550 (04111509)	610438.94	4203801.50	16741.40430 (04111509)
609213.94	4203826.50	8774.82227 (04112509)	609238.94	4203826.50	9017.60059 (04112509)
609263.94	4203826.50	9267.51367 (04112509)	609288.94	4203826.50	9527.45117 (04112509)
609313.94	4203826.50	9792.57227 (04112509)	609338.94	4203826.50	10061.18070 (04112509)
609363.94	4203826.50	10330.29000 (04112509)	609388.94	4203826.50	10592.87500 (04112509)
609413.94	4203826.50	10838.58110 (04112509)	609438.94	4203826.50	11058.63480 (04112509)
609463.94	4203826.50	11232.43850 (04112509)	609488.94	4203826.50	11337.32520 (04112509)
609513.94	4203826.50	11349.22950 (04112509)	609538.94	4203826.50	11451.61820 (03121009)
609563.94	4203826.50	12547.80270 (01110609)	609588.94	4203826.50	14623.99320 (01110609)
609613.94	4203826.50	16889.95120 (01110609)	609638.94	4203826.50	19331.42970 (01110609)
609663.94	4203826.50	21539.72460 (02020409)	609688.94	4203826.50	21752.71090 (02020409)
609713.94	4203826.50	21048.26760 (02020409)	609738.94	4203826.50	20238.98440 (02020409)
609763.94	4203826.50	20398.73240 (05012509)	609788.94	4203826.50	21131.27340 (05012509)
609813.94	4203826.50	21759.44920 (05012509)	609838.94	4203826.50	22138.10940 (05012509)
609863.94	4203826.50	22094.20700 (05012509)	609888.94	4203826.50	21667.48630 (05012509)
609913.94	4203826.50	21691.64840 (03122209)	609938.94	4203826.50	21955.61520 (03122209)
609963.94	4203826.50	21917.93550 (03110609)	609988.94	4203826.50	21742.84960 (05122309)
610013.94	4203826.50	21743.35550 (03111309)	610038.94	4203826.50	21726.91600 (03111309)
610063.94	4203826.50	21157.23630 (03111309)	610088.94	4203826.50	21551.11720 (03112509)
610113.94	4203826.50	21550.56250 (03112509)	610138.94	4203826.50	20840.36330 (03112509)
610163.94	4203826.50	19839.13670 (01111409)	610188.94	4203826.50	19704.69730 (01111409)
610213.94	4203826.50	19982.81250 (02112609)	610238.94	4203826.50	20209.48630 (02112609)
610263.94	4203826.50	20303.43550 (03110409)	610288.94	4203826.50	20340.18550 (03110409)
610313.94	4203826.50	19768.40430 (03110409)	610338.94	4203826.50	18790.39060 (04111509)

Construction

610363.94	4203826.50	18889.55080	(04111509)	610388.94	4203826.50	18870.35940	(04111509)
610413.94	4203826.50	18587.16020	(04111509)	610438.94	4203826.50	18874.05660	(05121209)
609213.94	4203851.50	8862.01758	(04112509)	609238.94	4203851.50	9142.81738	(04112509)
609263.94	4203851.50	9442.46094	(04112509)	609288.94	4203851.50	9761.12109	(04112509)
609313.94	4203851.50	10101.47850	(04112509)	609338.94	4203851.50	10465.13960	(04112509)
609363.94	4203851.50	10852.83790	(04112509)	609388.94	4203851.50	11265.01950	(04112509)
609413.94	4203851.50	11703.80370	(04112509)	609438.94	4203851.50	12167.17290	(04112509)
609463.94	4203851.50	12651.36430	(04112509)	609488.94	4203851.50	13148.53220	(04112509)
609513.94	4203851.50	13642.08110	(04112509)	609538.94	4203851.50	14100.69730	(04112509)
609563.94	4203851.50	14470.04200	(04112509)	609588.94	4203851.50	14666.74800	(04112509)
609613.94	4203851.50	16249.38090	(01110609)	609638.94	4203851.50	18895.60740	(01110609)
609663.94	4203851.50	21918.63090	(01110609)	609688.94	4203851.50	24452.28120	(02020409)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609713.94	4203851.50	24060.51560	(02020409)	609738.94	4203851.50	23291.39260	(02020409)
609763.94	4203851.50	22411.50200	(02020409)	609788.94	4203851.50	22723.86720	(05012509)
609813.94	4203851.50	23498.67770	(05012509)	609838.94	4203851.50	24016.52730	(05012509)
609863.94	4203851.50	24111.65820	(05012509)	609888.94	4203851.50	23792.17190	(05012509)
609913.94	4203851.50	23446.99410	(03122209)	609938.94	4203851.50	23797.12700	(03122209)
609963.94	4203851.50	23766.10350	(03110609)	609988.94	4203851.50	23625.67190	(05122309)
610013.94	4203851.50	23522.62110	(03111309)	610038.94	4203851.50	23519.11910	(03111309)
610063.94	4203851.50	23004.62500	(03112509)	610088.94	4203851.50	23434.08980	(03112509)
610113.94	4203851.50	23362.22460	(03112509)	610138.94	4203851.50	22476.09770	(03112509)
610163.94	4203851.50	21752.03130	(03110409)	610188.94	4203851.50	21817.67770	(03110409)
610213.94	4203851.50	22190.95310	(02112609)	610238.94	4203851.50	22387.41210	(03110409)
610263.94	4203851.50	22613.27930	(03110409)	610288.94	4203851.50	22314.88870	(03110409)
610313.94	4203851.50	21281.13090	(04111509)	610338.94	4203851.50	21359.49610	(04111509)
610363.94	4203851.50	21323.91800	(04111509)	610388.94	4203851.50	21660.59180	(05121209)
610413.94	4203851.50	21954.28910	(05121209)	610438.94	4203851.50	22103.83010	(05121209)
609213.94	4203876.50	8783.82227	(04112509)	609238.94	4203876.50	9076.82910	(04112509)
609263.94	4203876.50	9390.70313	(04112509)	609288.94	4203876.50	9728.54102	(04112509)
609313.94	4203876.50	10093.57710	(04112509)	609338.94	4203876.50	10489.84670	(04112509)
609363.94	4203876.50	10921.03120	(04112509)	609388.94	4203876.50	11391.92970	(04112509)
609413.94	4203876.50	11909.24510	(04112509)	609438.94	4203876.50	12478.39550	(04112509)
609463.94	4203876.50	13108.87210	(04112509)	609488.94	4203876.50	13809.57030	(04112509)
609513.94	4203876.50	14593.47170	(04112509)	609538.94	4203876.50	15472.66800	(04112509)
609563.94	4203876.50	16462.45700	(04112509)	609588.94	4203876.50	17570.85350	(04112509)
609613.94	4203876.50	18783.49610	(04112509)	609638.94	4203876.50	19990.14260	(04112509)
609663.94	4203876.50	21486.22660	(01110609)	609688.94	4203876.50	24870.22850	(01110609)
609713.94	4203876.50	25884.14840	(02020409)	609738.94	4203876.50	25242.87500	(02020409)
609763.94	4203876.50	24457.50390	(02020409)	609788.94	4203876.50	23558.64650	(02020409)
609813.94	4203876.50	23867.74020	(05012509)	609838.94	4203876.50	24569.30470	(05012509)
609863.94	4203876.50	24856.26370	(05012509)	609888.94	4203876.50	24694.02340	(05012509)
609913.94	4203876.50	24131.24020	(05012509)	609938.94	4203876.50	24467.37300	(03122209)
609963.94	4203876.50	24477.06050	(03110609)	609988.94	4203876.50	24401.01170	(05122309)
610013.94	4203876.50	24352.80860	(03111309)	610038.94	4203876.50	24380.78320	(03111309)
610063.94	4203876.50	24030.69530	(03112509)	610088.94	4203876.50	24451.75590	(03112509)
610113.94	4203876.50	24317.28320	(03112509)	610138.94	4203876.50	23277.38480	(03110409)
610163.94	4203876.50	23311.46480	(03110409)	610188.94	4203876.50	23543.77150	(03110409)
610213.94	4203876.50	23942.07810	(03110409)	610238.94	4203876.50	24354.73830	(03110409)
610263.94	4203876.50	24389.07810	(03110409)	610288.94	4203876.50	24675.91210	(05121209)
610313.94	4203876.50	25112.50390	(05121209)	610338.94	4203876.50	25501.91020	(05121209)
610363.94	4203876.50	25839.28130	(05121209)	610388.94	4203876.50	26089.56840	(05121209)
610413.94	4203876.50	26121.65820	(05121209)	610438.94	4203876.50	25655.09380	(05121209)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609213.94	4203901.50	9113.50879	(01111609)	609238.94	4203901.50	9398.31152	(01111609)
609263.94	4203901.50	9704.21484	(01111609)	609288.94	4203901.50	10033.85250	(01111609)
609313.94	4203901.50	10389.94530	(01111609)	609338.94	4203901.50	10776.38180	(01111609)
609363.94	4203901.50	11197.07810	(01111609)	609388.94	4203901.50	11657.43160	(01111609)
609413.94	4203901.50	12164.02930	(01111609)	609438.94	4203901.50	12724.92580	(01111609)
609463.94	4203901.50	13349.43070	(01111609)	609488.94	4203901.50	14050.48340	(01111609)
609513.94	4203901.50	14845.16700	(01111609)	609538.94	4203901.50	15755.28030	(01111609)
609563.94	4203901.50	16810.79100	(01111609)	609588.94	4203901.50	18049.41020	(01111609)
609613.94	4203901.50	19515.41600	(01111609)	609638.94	4203901.50	21244.70700	(01111609)
609663.94	4203901.50	23122.11910	(01111609)	609688.94	4203901.50	24608.40820	(04112509)
609713.94	4203901.50	25579.68950	(02020409)	609213.94	4203926.50	9244.70508	(03011609)
609238.94	4203926.50	9542.69629	(03011609)	609263.94	4203926.50	9863.42090	(03011609)
609288.94	4203926.50	10209.70310	(03011609)	609313.94	4203926.50	10584.60550	(03011609)
609338.94	4203926.50	10991.57810	(03011609)	609363.94	4203926.50	11436.14260	(03011609)
609388.94	4203926.50	11923.36820	(03011609)	609413.94	4203926.50	12459.69340	(03011609)
609438.94	4203926.50	13054.18650	(03011609)	609463.94	4203926.50	13715.51950	(03011609)
609488.94	4203926.50	14458.37110	(03011609)	609513.94	4203926.50	15298.48630	(03011609)
609538.94	4203926.50	16257.49120	(03011609)	609563.94	4203926.50	17362.78520	(03011609)
609588.94	4203926.50	18649.69920	(03011609)	609613.94	4203926.50	20162.68950	(03011609)
609638.94	4203926.50	21928.80270	(03011609)	609663.94	4203926.50	23832.10550	(03011609)
609688.94	4203926.50	25267.80660	(03011609)	609713.94	4203926.50	25086.22270	(01110609)
609213.94	4203951.50	9192.78906	(03011609)	609238.94	4203951.50	9488.76270	(03011609)
609263.94	4203951.50	9806.09277	(03011609)	609288.94	4203951.50	10148.27830	(03011609)
609313.94	4203951.50	10517.90920	(03011609)	609338.94	4203951.50	10919.44820	(03011609)
609363.94	4203951.50	11356.95020	(03011609)	609388.94	4203951.50	11836.29980	(03011609)
609413.94	4203951.50	12362.80960	(03011609)	609438.94	4203951.50	12945.16990	(03011609)
609463.94	4203951.50	13593.73340	(03011609)	609488.94	4203951.50	14320.73240	(03011609)
609513.94	4203951.50	15142.69630	(03011609)	609538.94	4203951.50	16080.31740	(03011609)
609563.94	4203951.50	17161.97460	(03011609)	609588.94	4203951.50	18424.70310	(03011609)
609613.94	4203951.50	19910.61720	(03011609)	609638.94	4203951.50	21648.50000	(03011609)
609663.94	4203951.50	23520.38090	(03011609)	609688.94	4203951.50	24904.03520	(03011609)
609713.94	4203951.50	24928.88480	(01110609)	609213.94	4203976.50	9017.45801	(03011609)
609238.94	4203976.50	9303.23438	(03011609)	609263.94	4203976.50	9609.49414	(03011609)
609288.94	4203976.50	9939.22461	(03011609)	609313.94	4203976.50	10295.72660	(03011609)
609338.94	4203976.50	10682.14060	(03011609)	609363.94	4203976.50	11102.82910	(03011609)
609388.94	4203976.50	11564.29790	(03011609)	609413.94	4203976.50	12072.00680	(03011609)
609438.94	4203976.50	12634.57620	(03011609)	609463.94	4203976.50	13261.47170	(03011609)
609488.94	4203976.50	13965.08690	(03011609)	609513.94	4203976.50	14763.11040	(03011609)
609538.94	4203976.50	15676.34280	(03011609)	609563.94	4203976.50	16732.39840	(03011609)
609588.94	4203976.50	17968.11520	(03011609)	609613.94	4203976.50	19425.54100	(03011609)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609638.94	4203976.50	21132.62700	(03011609)	609663.94	4203976.50	22968.71090	(03011609)
609688.94	4203976.50	24303.41800	(03011609)	609713.94	4203976.50	24030.74020	(01110609)
609213.94	4204001.50	8785.71094	(03011609)	609238.94	4204001.50	9063.00488	(03011609)
609263.94	4204001.50	9359.95996	(03011609)	609288.94	4204001.50	9678.38867	(03011609)
609313.94	4204001.50	10021.67290	(03011609)	609338.94	4204001.50	10393.70310	(03011609)
609363.94	4204001.50	10798.88670	(03011609)	609388.94	4204001.50	11242.89750	(03011609)

609413.94	4204001.50	11732.22170 (03011609)	609438.94	4204001.50	12274.73830 (03011609)
609463.94	4204001.50	12880.87010 (03011609)	609488.94	4204001.50	13563.27640 (03011609)
609513.94	4204001.50	14338.28520 (03011609)	609538.94	4204001.50	15227.74610 (03011609)
609563.94	4204001.50	16259.35940 (03011609)	609588.94	4204001.50	17469.34770 (03011609)
609613.94	4204001.50	18900.59380 (03011609)	609638.94	4204001.50	20579.52930 (03011609)
609663.94	4204001.50	22645.92580 (05012009)	609688.94	4204001.50	24354.54100 (05012009)
609713.94	4204001.50	24221.98830 (05012009)	609213.94	4204026.50	8532.02246 (03011609)
609238.94	4204026.50	8806.43359 (03011609)	609263.94	4204026.50	9098.30371 (03011609)
609288.94	4204026.50	9410.34766 (03011609)	609313.94	4204026.50	9745.44043 (03011609)
609338.94	4204026.50	10107.66500 (03011609)	609363.94	4204026.50	10501.38570 (03011609)
609388.94	4204026.50	10931.55470 (03011609)	609413.94	4204026.50	11405.87010 (03011609)
609438.94	4204026.50	11931.90040 (03011609)	609463.94	4204026.50	12520.00590 (03011609)
609488.94	4204026.50	13226.32810 (05012009)	609513.94	4204026.50	14271.69240 (05012009)
609538.94	4204026.50	15431.23050 (05012009)	609563.94	4204026.50	16734.31450 (05012009)
609588.94	4204026.50	18213.91990 (05012009)	609613.94	4204026.50	19916.26950 (05012009)
609638.94	4204026.50	21863.69140 (05012009)	609663.94	4204026.50	23928.71880 (05012009)
609688.94	4204026.50	25531.97660 (05012009)	609713.94	4204026.50	25310.10160 (05012009)
609213.94	4204051.50	8256.96973 (03011609)	609238.94	4204051.50	8533.73730 (03011609)
609263.94	4204051.50	8827.75488 (03011609)	609288.94	4204051.50	9141.00391 (03011609)
609313.94	4204051.50	9475.72559 (03011609)	609338.94	4204051.50	9836.29199 (03011609)
609363.94	4204051.50	10458.05660 (05012009)	609388.94	4204051.50	11123.97170 (05012009)
609413.94	4204051.50	11835.09770 (05012009)	609438.94	4204051.50	12598.55080 (05012009)
609463.94	4204051.50	13423.08890 (05012009)	609488.94	4204051.50	14322.09280 (05012009)
609513.94	4204051.50	15309.49710 (05012009)	609538.94	4204051.50	16406.86520 (05012009)
609563.94	4204051.50	17641.92770 (05012009)	609588.94	4204051.50	19050.43160 (05012009)
609613.94	4204051.50	20673.70310 (05012009)	609638.94	4204051.50	22539.48630 (05012009)
609663.94	4204051.50	24512.60160 (05012009)	609688.94	4204051.50	25993.20310 (05012009)
609713.94	4204051.50	25666.32620 (05012009)	609213.94	4204076.50	8267.79004 (05012009)
609238.94	4204076.50	8716.03125 (05012009)	609263.94	4204076.50	9188.55078 (05012009)
609288.94	4204076.50	9685.39160 (05012009)	609313.94	4204076.50	10208.84080 (05012009)
609338.94	4204076.50	10760.08110 (05012009)	609363.94	4204076.50	11342.82030 (05012009)
609388.94	4204076.50	11961.70410 (05012009)	609413.94	4204076.50	12620.86430 (05012009)
609438.94	4204076.50	13328.45900 (05012009)	609463.94	4204076.50	14094.06350 (05012009)
609488.94	4204076.50	14928.80270 (05012009)	609513.94	4204076.50	15848.34380 (05012009)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC (YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC (YYMMDDHH)
609538.94	4204076.50	16874.55860 (05012009)	609563.94	4204076.50	18031.99610 (05012009)
609588.94	4204076.50	19361.49020 (05012009)	609613.94	4204076.50	20897.17190 (05012009)
609638.94	4204076.50	22671.21290 (05012009)	609663.94	4204076.50	24548.63480 (05012009)
609688.94	4204076.50	26017.83200 (04111809)	609713.94	4204076.50	25764.34770 (04111809)
609213.94	4204101.50	9024.58301 (05012009)	609238.94	4204101.50	9443.84180 (05012009)
609263.94	4204101.50	9882.04004 (05012009)	609288.94	4204101.50	10339.16110 (05012009)
609313.94	4204101.50	10818.79100 (05012009)	609338.94	4204101.50	11323.26950 (05012009)
609363.94	4204101.50	11855.25290 (05012009)	609388.94	4204101.50	12417.62300 (05012009)
609413.94	4204101.50	13021.18750 (05012009)	609438.94	4204101.50	13666.74220 (05012009)
609463.94	4204101.50	14369.14450 (05012009)	609488.94	4204101.50	15135.08110 (05012009)
609513.94	4204101.50	15985.42380 (05012009)	609538.94	4204101.50	16935.71680 (05012009)
609563.94	4204101.50	18015.78910 (05012009)	609588.94	4204101.50	19261.44340 (05012009)
609613.94	4204101.50	20887.43550 (04111809)	609638.94	4204101.50	22753.43750 (04111809)
609663.94	4204101.50	24729.37500 (04111809)	609688.94	4204101.50	26193.99610 (04111809)
609713.94	4204101.50	25828.90430 (05012009)	609213.94	4204126.50	9507.37793 (05012009)
609238.94	4204126.50	9888.59473 (05012009)	609263.94	4204126.50	10283.01460 (05012009)
609288.94	4204126.50	10694.83980 (05012009)	609313.94	4204126.50	11125.45800 (05012009)
609338.94	4204126.50	11579.72660 (05012009)	609363.94	4204126.50	12055.54690 (05012009)
609388.94	4204126.50	12564.70210 (05012009)	609413.94	4204126.50	13106.96480 (05012009)
609438.94	4204126.50	13694.00000 (05012009)	609463.94	4204126.50	14331.53420 (05012009)
609488.94	4204126.50	15033.56640 (05012009)	609513.94	4204126.50	15938.26460 (04111809)
609538.94	4204126.50	16971.73830 (04111809)	609563.94	4204126.50	18131.33590 (04111809)

609588.94	4204126.50	19452.92580 (04111809)	609613.94	4204126.50	20979.83590 (04111809)
609638.94	4204126.50	22737.87890 (04111809)	609663.94	4204126.50	24769.99220 (04030809)
609688.94	4204126.50	26362.21680 (04030809)	609713.94	4204126.50	27041.81840 (04030809)
609213.94	4204151.50	9748.36719 (05012009)	609238.94	4204151.50	10085.85160 (05012009)
609263.94	4204151.50	10436.67970 (05012009)	609288.94	4204151.50	10801.40430 (05012009)
609313.94	4204151.50	11185.52830 (05012009)	609338.94	4204151.50	11588.05660 (05012009)
609363.94	4204151.50	12015.35640 (05012009)	609388.94	4204151.50	12469.93850 (05012009)
609413.94	4204151.50	13040.25100 (04111809)	609438.94	4204151.50	13707.27340 (04111809)
609463.94	4204151.50	14423.79200 (04111809)	609488.94	4204151.50	15199.37400 (04111809)
609513.94	4204151.50	16051.29980 (04111809)	609538.94	4204151.50	16998.00590 (04111809)
609563.94	4204151.50	18067.07030 (04111809)	609588.94	4204151.50	19432.61910 (04030809)
609613.94	4204151.50	21044.70510 (04030809)	609638.94	4204151.50	22892.20120 (04030809)
609663.94	4204151.50	24852.59380 (04030809)	609688.94	4204151.50	26370.08980 (04111609)
609713.94	4204151.50	27191.58010 (04111609)	609213.94	4204176.50	9787.44922 (05012009)
609238.94	4204176.50	10084.58890 (05012009)	609263.94	4204176.50	10392.86130 (05012009)
609288.94	4204176.50	10716.12700 (05012009)	609313.94	4204176.50	11096.16600 (04111809)
609338.94	4204176.50	11578.77150 (04111809)	609363.94	4204176.50	12082.67290 (04111809)
609388.94	4204176.50	12611.63280 (04111809)	609413.94	4204176.50	13171.62300 (04111809)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC (YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC (YYMMDDHH)
609438.94	4204176.50	13768.62210 (04111809)	609463.94	4204176.50	14411.56450 (04111809)
609488.94	4204176.50	15111.74220 (04111809)	609513.94	4204176.50	16025.94820 (04030809)
609538.94	4204176.50	17052.93950 (04030809)	609563.94	4204176.50	18198.70120 (04030809)
609588.94	4204176.50	19499.19530 (04030809)	609613.94	4204176.50	20997.57810 (04030809)
609638.94	4204176.50	22827.66410 (04111609)	609663.94	4204176.50	24974.83590 (04111609)
609688.94	4204176.50	26628.20510 (04111609)	609713.94	4204176.50	27190.98440 (04111609)
609213.94	4204201.50	9679.33301 (04111809)	609238.94	4204201.50	10053.46780 (04111809)
609263.94	4204201.50	10436.69240 (04111809)	609288.94	4204201.50	10832.11430 (04111809)
609313.94	4204201.50	11241.39360 (04111809)	609338.94	4204201.50	11665.54980 (04111809)
609363.94	4204201.50	12109.29790 (04111809)	609388.94	4204201.50	12576.48050 (04111809)
609413.94	4204201.50	13072.59380 (04111809)	609438.94	4204201.50	13746.16800 (04030809)
609463.94	4204201.50	14468.18160 (04030809)	609488.94	4204201.50	15244.13870 (04030809)
609513.94	4204201.50	16087.96000 (04030809)	609538.94	4204201.50	17019.04690 (04030809)
609563.94	4204201.50	18064.68360 (04030809)	609588.94	4204201.50	19476.39450 (04111609)
609613.94	4204201.50	21121.38280 (04111609)	609638.94	4204201.50	23001.11130 (04111609)
609663.94	4204201.50	25001.35350 (04111609)	609688.94	4204201.50	26482.32620 (04111609)
609713.94	4204201.50	26846.77930 (04111609)	609213.94	4204226.50	9830.16406 (04111809)
609238.94	4204226.50	10154.03420 (04111809)	609263.94	4204226.50	10487.99020 (04111809)
609288.94	4204226.50	10830.90820 (04111809)	609313.94	4204226.50	11185.68460 (04111809)
609338.94	4204226.50	11566.66210 (04030809)	609363.94	4204226.50	12090.42770 (04030809)
609388.94	4204226.50	12635.58790 (04030809)	609413.94	4204226.50	13205.92970 (04030809)
609438.94	4204226.50	13807.39550 (04030809)	609463.94	4204226.50	14448.23830 (04030809)
609488.94	4204226.50	15139.80370 (04030809)	609513.94	4204226.50	15995.43070 (04111609)
609538.94	4204226.50	17061.23830 (04111609)	609563.94	4204226.50	18240.69530 (04111609)
609588.94	4204226.50	19568.17770 (04111609)	609613.94	4204226.50	21087.42190 (04111609)
609638.94	4204226.50	22830.40230 (04111609)	609663.94	4204226.50	24680.44530 (04111609)
609688.94	4204226.50	26706.83790 (04110809)	609713.94	4204226.50	27598.70120 (04110809)
609213.94	4204251.50	9800.06543 (04111809)	609238.94	4204251.50	10077.42580 (04111809)
609263.94	4204251.50	10395.67290 (04030809)	609288.94	4204251.50	10817.51070 (04030809)
609313.94	4204251.50	11248.43160 (04030809)	609338.94	4204251.50	11691.58110 (04030809)
609363.94	4204251.50	12148.42480 (04030809)	609388.94	4204251.50	12622.71090 (04030809)
609413.94	4204251.50	13120.05470 (04030809)	609438.94	4204251.50	13657.53910 (04111609)
609463.94	4204251.50	14428.83200 (04111609)	609488.94	4204251.50	15249.39940 (04111609)
609513.94	4204251.50	16132.00390 (04111609)	609538.94	4204251.50	17093.33590 (04111609)
609563.94	4204251.50	18160.25590 (04111609)	609588.94	4204251.50	19368.13870 (04111609)
609613.94	4204251.50	20762.99220 (04111609)	609638.94	4204251.50	22691.38090 (04110809)
609663.94	4204251.50	25166.51370 (04110809)	609688.94	4204251.50	27053.07030 (04110809)
609713.94	4204251.50	26816.91020 (05112409)	609213.94	4204276.50	9796.42188 (04030809)

609238.94	4204276.50	10148.85350	(04030809)	609263.94	4204276.50	10505.24120	(04030809)
609288.94	4204276.50	10866.96680	(04030809)	609313.94	4204276.50	11234.50980	(04030809)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609338.94	4204276.50	11611.27830	(04030809)	609363.94	4204276.50	11999.98930	(04030809)
609388.94	4204276.50	12549.25980	(04111609)	609413.94	4204276.50	13173.48440	(04111609)
609438.94	4204276.50	13822.69430	(04111609)	609463.94	4204276.50	14503.56250	(04111609)
609488.94	4204276.50	15226.21480	(04111609)	609513.94	4204276.50	16002.80180	(04111609)
609538.94	4204276.50	16850.33200	(04111609)	609563.94	4204276.50	17793.47070	(04111609)
609588.94	4204276.50	19163.00980	(04110809)	609613.94	4204276.50	20993.77540	(04110809)
609638.94	4204276.50	23092.71880	(04110809)	609663.94	4204276.50	25403.41410	(05112409)
609688.94	4204276.50	27060.44140	(05112409)	609713.94	4204276.50	26425.68950	(05112409)
609213.94	4204301.50	9835.02832	(04030809)	609238.94	4204301.50	10128.68650	(04030809)
609263.94	4204301.50	10423.63670	(04030809)	609288.94	4204301.50	10721.61040	(04030809)
609313.94	4204301.50	11115.84180	(04111609)	609338.94	4204301.50	11618.32130	(04111609)
609363.94	4204301.50	12128.84080	(04111609)	609388.94	4204301.50	12650.91700	(04111609)
609413.94	4204301.50	13186.77150	(04111609)	609438.94	4204301.50	13739.85250	(04111609)
609463.94	4204301.50	14314.69430	(04111609)	609488.94	4204301.50	14918.51370	(04111609)
609513.94	4204301.50	15558.72070	(04111609)	609538.94	4204301.50	16659.33790	(04110809)
609563.94	4204301.50	18008.81640	(04110809)	609588.94	4204301.50	19503.37500	(04110809)
609613.94	4204301.50	21174.13480	(04110809)	609638.94	4204301.50	23037.46680	(05112409)
609663.94	4204301.50	24907.31050	(05112409)	609688.94	4204301.50	25540.21480	(05112409)
609713.94	4204301.50	25269.08790	(04110909)	609213.94	4204326.50	9691.82031	(04030809)
609238.94	4204326.50	9972.19922	(04111609)	609263.94	4204326.50	10392.78420	(04111609)
609288.94	4204326.50	10813.77730	(04111609)	609313.94	4204326.50	11236.09570	(04111609)
609338.94	4204326.50	11657.67580	(04111609)	609363.94	4204326.50	12080.78120	(04111609)
609388.94	4204326.50	12505.58110	(04111609)	609413.94	4204326.50	12932.22850	(04111609)
609438.94	4204326.50	13361.82620	(04111609)	609463.94	4204326.50	13800.39840	(04110809)
609488.94	4204326.50	14789.51170	(04110809)	609513.94	4204326.50	15837.06640	(04110809)
609538.94	4204326.50	16950.49410	(04110809)	609563.94	4204326.50	18132.24800	(04110809)
609588.94	4204326.50	19386.31840	(05112409)	609613.94	4204326.50	20663.64650	(05112409)
609638.94	4204326.50	21828.86910	(05112409)	609663.94	4204326.50	22537.20700	(05112409)
609688.94	4204326.50	25397.90820	(04110909)	609713.94	4204326.50	25038.16600	(02112709)
609213.94	4204351.50	9752.44434	(04111609)	609238.94	4204351.50	10106.68260	(04111609)
609263.94	4204351.50	10454.62700	(04111609)	609288.94	4204351.50	10796.75200	(04111609)
609313.94	4204351.50	11131.30660	(04111609)	609338.94	4204351.50	11456.53810	(04111609)
609363.94	4204351.50	11771.69630	(04111609)	609388.94	4204351.50	12073.72950	(04111609)
609413.94	4204351.50	12501.54100	(04110809)	609438.94	4204351.50	13322.61820	(04110809)
609463.94	4204351.50	14169.32810	(04110809)	609488.94	4204351.50	15038.51370	(04110809)
609513.94	4204351.50	15921.91700	(04110809)	609538.94	4204351.50	16813.69530	(05112409)
609563.94	4204351.50	17671.59960	(05112409)	609588.94	4204351.50	18430.44340	(05112409)
609613.94	4204351.50	19007.20510	(05112409)	609638.94	4204351.50	19861.44730	(04110909)
609663.94	4204351.50	22859.12700	(04110909)	609688.94	4204351.50	25140.18360	(04110909)
609713.94	4204351.50	24075.28910	(02021209)	609213.94	4204376.50	9763.86035	(04111609)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)

609238.94	4204376.50	10039.68360 (04111609)	609263.94	4204376.50	10303.45800 (04111609)
609288.94	4204376.50	10551.91700 (04111609)	609313.94	4204376.50	10782.57620 (04111609)
609338.94	4204376.50	10992.39550 (04111609)	609363.94	4204376.50	11432.16410 (04110809)
609388.94	4204376.50	12130.37110 (04110809)	609413.94	4204376.50	12835.06450 (04110809)
609438.94	4204376.50	13539.88280 (04110809)	609463.94	4204376.50	14234.18070 (04110809)
609488.94	4204376.50	14907.93160 (05112409)	609513.94	4204376.50	15529.40720 (05112409)
609538.94	4204376.50	16054.33300 (05112409)	609563.94	4204376.50	16436.00390 (05112409)
609588.94	4204376.50	16639.34570 (05112409)	609613.94	4204376.50	17901.09570 (04110909)
609638.94	4204376.50	20313.09380 (04110909)	609663.94	4204376.50	22564.25200 (04110909)
609688.94	4204376.50	23609.65430 (02021209)	609713.94	4204376.50	23863.67580 (04022009)
609213.94	4204401.50	9575.86230 (04111609)	609238.94	4204401.50	9763.83105 (04111609)
609263.94	4204401.50	9931.13477 (04111609)	609288.94	4204401.50	10074.26270 (04111609)
609313.94	4204401.50	10530.74220 (04110809)	609338.94	4204401.50	11136.13480 (04110809)
609363.94	4204401.50	11737.44530 (04110809)	609388.94	4204401.50	12326.65430 (04110809)
609413.94	4204401.50	12892.81740 (04110809)	609438.94	4204401.50	13427.87210 (05112409)
609463.94	4204401.50	13906.18550 (05112409)	609488.94	4204401.50	14295.52930 (05112409)
609513.94	4204401.50	14563.38090 (05112409)	609538.94	4204401.50	14681.36330 (05112409)
609563.94	4204401.50	14628.24610 (05112409)	609588.94	4204401.50	16340.91310 (04110909)
609613.94	4204401.50	18268.93160 (04110909)	609638.94	4204401.50	19988.33010 (04110909)
609663.94	4204401.50	20944.14060 (02021209)	609688.94	4204401.50	21578.59960 (04022009)
609713.94	4204401.50	22252.77930 (02120609)	609213.94	4204426.50	9191.16113 (04111609)
609238.94	4204426.50	9285.14258 (04111609)	609263.94	4204426.50	9757.42578 (04110809)
609288.94	4204426.50	10291.20410 (04110809)	609313.94	4204426.50	10814.02340 (04110809)
609338.94	4204426.50	11318.78320 (04110809)	609363.94	4204426.50	11794.77540 (04110809)
609388.94	4204426.50	12235.22070 (05112409)	609413.94	4204426.50	12620.54590 (05112409)
609438.94	4204426.50	12926.05960 (05112409)	609463.94	4204426.50	13127.99220 (05112409)
609488.94	4204426.50	13203.47460 (05112409)	609513.94	4204426.50	13126.70120 (05112409)
609538.94	4204426.50	13472.19530 (04110909)	609563.94	4204426.50	15053.28910 (04110909)
609588.94	4204426.50	16623.36330 (04110909)	609613.94	4204426.50	17949.52340 (04110909)
609638.94	4204426.50	18657.72850 (05110309)	609663.94	4204426.50	19021.74800 (02021209)
609688.94	4204426.50	19956.07230 (04022009)	609713.94	4204426.50	20657.39450 (02120609)
609213.94	4204451.50	9084.88770 (04110809)	609238.94	4204451.50	9561.59082 (04110809)
609263.94	4204451.50	10023.89360 (04110809)	609288.94	4204451.50	10464.83590 (04110809)
609313.94	4204451.50	10874.98540 (04110809)	609338.94	4204451.50	11247.62300 (05112409)
609363.94	4204451.50	11569.83590 (05112409)	609388.94	4204451.50	11821.25290 (05112409)
609413.94	4204451.50	11982.58890 (05112409)	609438.94	4204451.50	12036.56250 (05112409)
609463.94	4204451.50	11961.86040 (05112409)	609488.94	4204451.50	11746.52730 (05112409)
609513.94	4204451.50	12622.15530 (04110909)	609538.94	4204451.50	13972.79980 (04110909)
609563.94	4204451.50	15279.45210 (04110909)	609588.94	4204451.50	16332.27930 (04110909)
609613.94	4204451.50	16891.64060 (05110309)	609638.94	4204451.50	17298.77730 (02021209)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC (YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC (YYMMDDHH)
609663.94	4204451.50	17709.39450 (04022009)	609688.94	4204451.50	18079.01370 (04022009)
609713.94	4204451.50	18934.33590 (02120609)	609213.94	4204476.50	9337.91699 (04110809)
609238.94	4204476.50	9729.56641 (04110809)	609263.94	4204476.50	10089.62010 (04110809)
609288.94	4204476.50	10412.38670 (05112409)	609313.94	4204476.50	10690.19530 (05112409)
609338.94	4204476.50	10904.62600 (05112409)	609363.94	4204476.50	11041.01070 (05112409)
609388.94	4204476.50	11085.99120 (05112409)	609413.94	4204476.50	11021.84670 (05112409)
609438.94	4204476.50	10840.91210 (05112409)	609463.94	4204476.50	10678.68260 (04110909)
609488.94	4204476.50	11865.80660 (04110909)	609513.94	4204476.50	13044.96390 (04110909)
609538.94	4204476.50	14156.52730 (04110909)	609563.94	4204476.50	15019.47660 (04110909)
609588.94	4204476.50	15469.02050 (05120709)	609613.94	4204476.50	15822.74020 (02021209)
609638.94	4204476.50	15663.63480 (02021209)	609663.94	4204476.50	16587.29100 (04022009)
609688.94	4204476.50	16816.68750 (02120609)	609713.94	4204476.50	17205.28320 (02120609)
609213.94	4204501.50	9409.03223 (04110809)	609238.94	4204501.50	9694.92676 (05112409)
609263.94	4204501.50	9940.46191 (05112409)	609288.94	4204501.50	10128.94240 (05112409)
609313.94	4204501.50	10249.60350 (05112409)	609338.94	4204501.50	10291.01370 (05112409)
609363.94	4204501.50	10240.34470 (05112409)	609388.94	4204501.50	10091.88960 (05112409)

Construction

609413.94	4204501.50	9841.84180	(05112409)	609438.94	4204501.50	10132.50000	(04110909)
609463.94	4204501.50	11201.33010	(04110909)	609488.94	4204501.50	12245.17680	(04110909)
609513.94	4204501.50	13201.14940	(04110909)	609538.94	4204501.50	13927.72270	(04110909)
609563.94	4204501.50	14302.88280	(02112709)	609588.94	4204501.50	14563.57810	(02021209)
609613.94	4204501.50	14614.83980	(02021209)	609638.94	4204501.50	15007.08300	(04022009)
609663.94	4204501.50	15268.08590	(04022009)	609688.94	4204501.50	15790.76760	(02120609)
609713.94	4204501.50	15869.62990	(02122509)	609213.94	4204526.50	9290.49707	(05112409)
609238.94	4204526.50	9461.07227	(05112409)	609263.94	4204526.50	9571.30371	(05112409)
609288.94	4204526.50	9613.30664	(05112409)	609313.94	4204526.50	9576.55273	(05112409)
609338.94	4204526.50	9456.33984	(05112409)	609363.94	4204526.50	9249.52148	(05112409)
609388.94	4204526.50	9019.34570	(02112009)	609413.94	4204526.50	9641.54980	(04110909)
609438.94	4204526.50	10607.00980	(04110909)	609463.94	4204526.50	11543.17580	(04110909)
609488.94	4204526.50	12378.58200	(04110909)	609513.94	4204526.50	13002.64160	(04110909)
609538.94	4204526.50	13322.37990	(02112709)	609563.94	4204526.50	13484.78710	(02021209)
609588.94	4204526.50	13681.21580	(02021209)	609613.94	4204526.50	13440.93460	(04022009)
609638.94	4204526.50	14215.31640	(04022009)	609663.94	4204526.50	13925.66990	(04022009)
609688.94	4204526.50	14726.88670	(02120609)	609713.94	4204526.50	14835.80180	(02122509)
609213.94	4204551.50	8981.85645	(05112409)	609238.94	4204551.50	9025.99023	(05112409)
609263.94	4204551.50	9001.44727	(05112409)	609288.94	4204551.50	8905.52441	(05112409)
609313.94	4204551.50	8735.45605	(05112409)	609338.94	4204551.50	8493.80957	(02112009)
609363.94	4204551.50	8372.06738	(02112009)	609388.94	4204551.50	9198.04590	(04110909)
609413.94	4204551.50	10078.86040	(04110909)	609438.94	4204551.50	10920.66990	(04110909)
609463.94	4204551.50	11659.35250	(04110909)	609488.94	4204551.50	12206.49020	(04110909)
609513.94	4204551.50	12483.09280	(02112709)	609538.94	4204551.50	12652.84960	(05110309)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: EXHAUST ***
INCLUDING SOURCE(S): PAREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609563.94	4204551.50	12841.57030	(02021209)	609588.94	4204551.50	12664.01860	(02021209)
609613.94	4204551.50	13063.77250	(04022009)	609638.94	4204551.50	13273.17480	(04022009)
609663.94	4204551.50	13314.66890	(02120609)	609688.94	4204551.50	13676.01370	(02120609)
609713.94	4204551.50	13870.25680	(02122509)	609738.38	4203889.50	25917.49220	(02020409)
609763.38	4203889.50	25176.60160	(02020409)	609788.38	4203889.50	24300.04880	(02020409)
609813.38	4203889.50	24119.77540	(05012509)	609838.38	4203889.50	24834.19140	(05012509)
609863.38	4203889.50	25194.74220	(05012509)	609888.38	4203889.50	25110.90620	(05012509)
609913.38	4203889.50	24613.31450	(05012509)	609938.38	4203889.50	24850.38670	(03122209)
609963.38	4203889.50	24900.25200	(03122209)	609988.38	4203889.50	24841.23830	(05122309)
610013.38	4203889.50	23982.35740	(03111309)	610038.38	4203889.50	24028.32620	(03111309)
610063.38	4203889.50	23697.19140	(03112509)	610088.38	4203889.50	24115.25590	(03112509)
610113.38	4203889.50	23963.17190	(03112509)	610138.38	4203893.50	23136.86130	(03110409)
610163.38	4203893.50	23799.41020	(05121209)	610188.38	4203893.50	24511.63670	(05121209)
610213.38	4203893.50	25185.18550	(05121209)	610238.38	4203893.50	25812.26560	(05121209)
610263.38	4203893.50	26393.42970	(05121209)	610288.38	4203893.50	26924.47270	(05121209)
610313.38	4203893.50	27402.59960	(05121209)	610338.38	4203893.50	27871.38090	(05121209)
610363.38	4203893.50	28221.21090	(05121209)	610388.38	4203893.50	28355.57620	(05121209)
610413.38	4203893.50	28689.52540	(03120409)	609716.12	4204329.00	24781.16020	(05110309)
609718.88	4203892.00	26315.75000	(02020409)	610415.75	4203905.50	29627.25980	(03120409)
610380.25	4203944.50	26534.12700	(03120409)	610236.69	4204012.00	24865.15040	(03120409)
610162.50	4204082.50	22465.19920	(03120409)	610132.13	4204052.50	22081.54880	(03120409)
610098.44	4204082.50	21848.38480	(03120409)	610133.94	4204110.50	21598.14650	(02110409)
610096.69	4204185.50	22191.87110	(05020809)	610109.63	4204339.50	24668.85740	(05013109)
610034.13	4204456.50	25391.06450	(01121309)	609991.31	4204402.50	24036.12890	(01121309)
609919.44	4204407.00	25035.24800	(04022009)	609939.94	4204280.00	22880.80080	(02021209)
609915.88	4204233.50	22610.39260	(04110909)	609840.44	4204230.00	23146.92770	(05120709)
609789.50	4204257.50	23684.73440	(04110909)	609788.75	4204361.00	20261.74610	(01111509)
609849.56	4204412.00	16571.99410	(02021209)	609800.69	4204410.50	17610.71480	(01121309)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609213.94	4203701.50	6418.43311	(02020609)	609238.94	4203701.50	6601.77295	(02020609)
609263.94	4203701.50	6774.00098	(02020609)	609288.94	4203701.50	7001.82324	(05111509)
609313.94	4203701.50	7220.13574	(05111509)	609338.94	4203701.50	7416.33203	(05111509)
609363.94	4203701.50	7692.01318	(03121009)	609388.94	4203701.50	8275.52832	(03121009)
609413.94	4203701.50	8836.78516	(03121009)	609438.94	4203701.50	9354.77832	(03121009)
609463.94	4203701.50	9884.59473	(01110609)	609488.94	4203701.50	11169.76950	(01110609)
609513.94	4203701.50	12420.25100	(01110609)	609538.94	4203701.50	13489.00590	(01110609)
609563.94	4203701.50	14192.49900	(02020409)	609588.94	4203701.50	14405.75490	(02020409)
609613.94	4203701.50	14107.11430	(02020409)	609638.94	4203701.50	13534.30270	(02020409)
609663.94	4203701.50	12876.07420	(02020409)	609688.94	4203701.50	13766.16310	(05012509)
609713.94	4203701.50	14313.97660	(05012509)	609738.94	4203701.50	14775.43650	(05012509)
609763.94	4203701.50	15206.20900	(05012509)	609788.94	4203701.50	15494.65430	(05012509)
609813.94	4203701.50	15549.63570	(05012509)	609838.94	4203701.50	15324.69040	(05012509)
609863.94	4203701.50	14816.49800	(05012509)	609888.94	4203701.50	15264.04980	(03122209)
609913.94	4203701.50	15514.77050	(03122209)	609938.94	4203701.50	15503.89060	(03110609)
609963.94	4203701.50	15482.66020	(05122309)	609988.94	4203701.50	15148.71970	(05122309)
610013.94	4203701.50	15397.17770	(03111309)	610038.94	4203701.50	15363.90430	(03111309)
610063.94	4203701.50	14912.08110	(03111309)	610088.94	4203701.50	14988.60060	(03112509)
610113.94	4203701.50	15211.02340	(03112509)	610138.94	4203701.50	15055.18070	(03112509)
610163.94	4203701.50	14393.00880	(03112509)	610188.94	4203701.50	13766.67870	(01111409)
610213.94	4203701.50	13818.37500	(01111409)	610238.94	4203701.50	13585.73830	(03110409)
610263.94	4203701.50	13794.71880	(02112609)	610288.94	4203701.50	13934.55270	(02112609)
610313.94	4203701.50	13909.03120	(03110409)	610338.94	4203701.50	14007.65820	(03110409)
610363.94	4203701.50	13946.39550	(03110409)	610388.94	4203701.50	13582.13180	(03110409)
610413.94	4203701.50	12856.43360	(04121009)	610438.94	4203701.50	11982.73340	(04111509)
609213.94	4203726.50	6401.82715	(02020609)	609238.94	4203726.50	6625.19873	(02020609)
609263.94	4203726.50	6847.12305	(02020609)	609288.94	4203726.50	7065.52441	(02020609)
609313.94	4203726.50	7276.72852	(02020609)	609338.94	4203726.50	7537.40869	(05111509)
609363.94	4203726.50	7795.88721	(05111509)	609388.94	4203726.50	8032.69385	(05111509)
609413.94	4203726.50	8654.41309	(03121009)	609438.94	4203726.50	9282.18652	(03121009)
609463.94	4203726.50	9881.07227	(03121009)	609488.94	4203726.50	10619.30960	(01110609)
609513.94	4203726.50	12055.21190	(01110609)	609538.94	4203726.50	13439.06740	(01110609)
609563.94	4203726.50	14629.84770	(01110609)	609588.94	4203726.50	15372.40140	(02020409)
609613.94	4203726.50	15467.55080	(02020409)	609638.94	4203726.50	15016.60450	(02020409)
609663.94	4203726.50	14379.66020	(02020409)	609688.94	4203726.50	14493.60840	(05012509)
609713.94	4203726.50	15120.37210	(05012509)	609738.94	4203726.50	15605.96580	(05012509)
609763.94	4203726.50	16104.04390	(05012509)	609788.94	4203726.50	16486.32230	(05012509)
609813.94	4203726.50	16640.74220	(05012509)	609838.94	4203726.50	16502.96290	(05012509)
609863.94	4203726.50	16063.32320	(05012509)	609888.94	4203726.50	16249.61130	(03122209)
609913.94	4203726.50	16562.87110	(03122209)	609938.94	4203726.50	16562.71880	(03122209)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609963.94	4203726.50	16565.88870	(05122309)	609988.94	4203726.50	16258.90720	(05122309)
610013.94	4203726.50	16459.65430	(03111309)	610038.94	4203726.50	16428.54690	(03111309)
610063.94	4203726.50	15950.60350	(03111309)	610088.94	4203726.50	16077.96580	(03112509)
610113.94	4203726.50	16273.55660	(03112509)	610138.94	4203726.50	16039.62890	(03112509)
610163.94	4203726.50	15237.36910	(03112509)	610188.94	4203726.50	14780.06930	(01111409)
610213.94	4203726.50	14727.89360	(01111409)	610238.94	4203726.50	14588.35550	(02112609)

610263.94	4203726.50	14837.62600	(02112609)	610288.94	4203726.50	14892.28420	(02112609)
610313.94	4203726.50	14922.32030	(03110409)	610338.94	4203726.50	14961.96390	(03110409)
610363.94	4203726.50	14724.72750	(03110409)	610388.94	4203726.50	14056.82320	(03110409)
610413.94	4203726.50	13125.96580	(04121009)	610438.94	4203726.50	13135.70210	(04111509)
609213.94	4203751.50	6926.43213	(04112509)	609238.94	4203751.50	6880.65186	(04112509)
609263.94	4203751.50	6822.12256	(02020609)	609288.94	4203751.50	7079.88477	(02020609)
609313.94	4203751.50	7342.22949	(02020609)	609338.94	4203751.50	7608.00635	(02020609)
609363.94	4203751.50	7872.85889	(02020609)	609388.94	4203751.50	8175.58447	(05111509)
609413.94	4203751.50	8493.45508	(05111509)	609438.94	4203751.50	9075.53711	(03121009)
609463.94	4203751.50	9776.14746	(03121009)	609488.94	4203751.50	10468.07420	(03121009)
609513.94	4203751.50	11492.79200	(01110609)	609538.94	4203751.50	13072.58790	(01110609)
609563.94	4203751.50	14642.64160	(01110609)	609588.94	4203751.50	15998.97270	(01110609)
609613.94	4203751.50	16768.22460	(02020409)	609638.94	4203751.50	16689.79100	(02020409)
609663.94	4203751.50	16112.00590	(02020409)	609688.94	4203751.50	15401.26660	(02020409)
609713.94	4203751.50	16114.69730	(05012509)	609738.94	4203751.50	16608.58980	(05012509)
609763.94	4203751.50	17166.64060	(05012509)	609788.94	4203751.50	17644.68950	(05012509)
609813.94	4203751.50	17905.76170	(05012509)	609838.94	4203751.50	17864.04300	(05012509)
609863.94	4203751.50	17502.05470	(05012509)	609888.94	4203751.50	17424.48630	(03122209)
609913.94	4203751.50	17803.06640	(03122209)	609938.94	4203751.50	17858.78130	(03122209)
609963.94	4203751.50	17846.80860	(05122309)	609988.94	4203751.50	17568.88870	(05122309)
610013.94	4203751.50	17721.02730	(03111309)	610038.94	4203751.50	17691.22270	(03111309)
610063.94	4203751.50	17186.58590	(03111309)	610088.94	4203751.50	17368.63870	(03112509)
610113.94	4203751.50	17526.45120	(03112509)	610138.94	4203751.50	17198.64260	(03112509)
610163.94	4203751.50	16230.56930	(03112509)	610188.94	4203751.50	15960.61620	(01111409)
610213.94	4203751.50	15763.82230	(01111409)	610238.94	4203751.50	15838.42090	(02112609)
610263.94	4203751.50	16055.01460	(02112609)	610288.94	4203751.50	15983.12790	(03110409)
610313.94	4203751.50	16113.04490	(03110409)	610338.94	4203751.50	16015.16110	(03110409)
610363.94	4203751.50	15481.84670	(03110409)	610388.94	4203751.50	14497.89260	(04121009)
610413.94	4203751.50	14230.33400	(04111509)	610438.94	4203751.50	14372.36520	(04111509)
609213.94	4203776.50	7830.72607	(04112509)	609238.94	4203776.50	7893.75879	(04112509)
609263.94	4203776.50	7936.08496	(04112509)	609288.94	4203776.50	7952.39600	(04112509)
609313.94	4203776.50	7938.70801	(04112509)	609338.94	4203776.50	7888.90771	(04112509)
609363.94	4203776.50	7923.79883	(02020609)	609388.94	4203776.50	8253.98145	(02020609)
609413.94	4203776.50	8594.24805	(02020609)	609438.94	4203776.50	8956.86621	(05111509)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609463.94	4203776.50	9551.00977	(03121009)	609488.94	4203776.50	10333.37210	(03121009)
609513.94	4203776.50	11130.12700	(03121009)	609538.94	4203776.50	12490.71190	(01110609)
609563.94	4203776.50	14274.92680	(01110609)	609588.94	4203776.50	16097.31640	(01110609)
609613.94	4203776.50	17691.18360	(01110609)	609638.94	4203776.50	18451.70700	(02020409)
609663.94	4203776.50	18128.66410	(02020409)	609688.94	4203776.50	17456.24020	(02020409)
609713.94	4203776.50	17387.76170	(05012509)	609738.94	4203776.50	17868.32810	(05012509)
609763.94	4203776.50	18474.76760	(05012509)	609788.94	4203776.50	19047.96290	(05012509)
609813.94	4203776.50	19423.00000	(05012509)	609838.94	4203776.50	19485.02340	(05012509)
609863.94	4203776.50	19210.11130	(05012509)	609888.94	4203776.50	18867.47850	(03122209)
609913.94	4203776.50	19313.81450	(03122209)	609938.94	4203776.50	19428.75000	(03122209)
609963.94	4203776.50	19402.40820	(05122309)	609988.94	4203776.50	19155.96680	(05122309)
610013.94	4203776.50	19259.67190	(03111309)	610038.94	4203776.50	19229.26760	(03111309)
610063.94	4203776.50	18695.78710	(03111309)	610088.94	4203776.50	18934.26560	(03112509)
610113.94	4203776.50	19041.98630	(03112509)	610138.94	4203776.50	18600.29690	(03112509)
610163.94	4203776.50	17434.68360	(03112509)	610188.94	4203776.50	17363.19920	(01111409)
610213.94	4203776.50	17022.53710	(02112609)	610238.94	4203776.50	17360.68750	(02112609)
610263.94	4203776.50	17482.42190	(02112609)	610288.94	4203776.50	17466.81050	(03110409)
610313.94	4203776.50	17508.38090	(03110409)	610338.94	4203776.50	17143.65620	(03110409)
610363.94	4203776.50	16155.62010	(03110409)	610388.94	4203776.50	15611.20610	(04111509)
610413.94	4203776.50	15743.97950	(04111509)	610438.94	4203776.50	15760.49610	(04111509)
609213.94	4203801.50	8478.57031	(04112509)	609238.94	4203801.50	8645.90234	(04112509)
609263.94	4203801.50	8808.05957	(04112509)	609288.94	4203801.50	8961.42871	(04112509)

609313.94	4203801.50	9097.96875	(04112509)	609338.94	4203801.50	9214.38965	(04112509)
609363.94	4203801.50	9300.23828	(04112509)	609388.94	4203801.50	9346.31055	(04112509)
609413.94	4203801.50	9343.99023	(04112509)	609438.94	4203801.50	9280.65039	(04112509)
609463.94	4203801.50	9492.56152	(02020609)	609488.94	4203801.50	10092.84280	(03121009)
609513.94	4203801.50	10973.92680	(03121009)	609538.94	4203801.50	11892.10160	(03121009)
609563.94	4203801.50	13676.79880	(01110609)	609588.94	4203801.50	15727.31150	(01110609)
609613.94	4203801.50	17912.66990	(01110609)	609638.94	4203801.50	19873.56050	(02020409)
609663.94	4203801.50	20526.24410	(02020409)	609688.94	4203801.50	19967.69140	(02020409)
609713.94	4203801.50	19206.67970	(02020409)	609738.94	4203801.50	19532.37890	(05012509)
609763.94	4203801.50	20171.64650	(05012509)	609788.94	4203801.50	20834.80860	(05012509)
609813.94	4203801.50	21330.47850	(05012509)	609838.94	4203801.50	21500.60550	(05012509)
609863.94	4203801.50	21320.43750	(05012509)	609888.94	4203801.50	20783.89450	(05012509)
609913.94	4203801.50	21230.93360	(03122209)	609938.94	4203801.50	21403.74020	(03122209)
609963.94	4203801.50	21364.87700	(05122309)	609988.94	4203801.50	21149.05860	(05122309)
610013.94	4203801.50	21202.86330	(03111309)	610038.94	4203801.50	21168.67770	(03111309)
610063.94	4203801.50	20602.73830	(03111309)	610088.94	4203801.50	20893.77930	(03112509)
610113.94	4203801.50	20940.96480	(03112509)	610138.94	4203801.50	20361.43550	(03112509)
610163.94	4203801.50	19070.75780	(01111409)	610188.94	4203801.50	19084.16800	(01111409)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
610213.94	4203801.50	18938.82810	(02112609)	610238.94	4203801.50	19249.05470	(02112609)
610263.94	4203801.50	19181.03120	(02112609)	610288.94	4203801.50	19311.86720	(03110409)
610313.94	4203801.50	19139.19340	(03110409)	610338.94	4203801.50	18314.35740	(03110409)
610363.94	4203801.50	17285.12890	(04111509)	610388.94	4203801.50	17405.35350	(04111509)
610413.94	4203801.50	17405.40230	(04111509)	610438.94	4203801.50	17167.25000	(04111509)
609213.94	4203826.50	8830.88867	(04112509)	609238.94	4203826.50	9076.95313	(04112509)
609263.94	4203826.50	9331.79395	(04112509)	609288.94	4203826.50	9595.08203	(04112509)
609313.94	4203826.50	9864.61621	(04112509)	609338.94	4203826.50	10138.27930	(04112509)
609363.94	4203826.50	10411.25880	(04112509)	609388.94	4203826.50	10676.72170	(04112509)
609413.94	4203826.50	10926.82520	(04112509)	609438.94	4203826.50	11148.63090	(04112509)
609463.94	4203826.50	11322.60060	(04112509)	609488.94	4203826.50	11426.08980	(04112509)
609513.94	4203826.50	11433.43550	(04112509)	609538.94	4203826.50	11724.62110	(03121009)
609563.94	4203826.50	12893.93850	(01110609)	609588.94	4203826.50	15079.13480	(01110609)
609613.94	4203826.50	17537.77340	(01110609)	609638.94	4203826.50	20291.09180	(01110609)
609663.94	4203826.50	22899.11130	(02020409)	609688.94	4203826.50	23190.68550	(02020409)
609713.94	4203826.50	22483.57620	(02020409)	609738.94	4203826.50	21886.40620	(05012509)
609763.94	4203826.50	22543.64840	(05012509)	609788.94	4203826.50	23284.10940	(05012509)
609813.94	4203826.50	23904.32420	(05012509)	609838.94	4203826.50	24174.67190	(05012509)
609863.94	4203826.50	24094.24220	(05012509)	609888.94	4203826.50	23633.77150	(05012509)
609913.94	4203826.50	23808.11130	(03122209)	609938.94	4203826.50	24037.84180	(03122209)
609963.94	4203826.50	23992.03320	(03110609)	609988.94	4203826.50	23794.02540	(05122309)
610013.94	4203826.50	23794.83400	(03111309)	610038.94	4203826.50	23749.70310	(03111309)
610063.94	4203826.50	23148.00980	(03111309)	610088.94	4203826.50	23484.71290	(03112509)
610113.94	4203826.50	23451.75200	(03112509)	610138.94	4203826.50	22701.85550	(03112509)
610163.94	4203826.50	21485.41410	(01111409)	610188.94	4203826.50	21298.13280	(01111409)
610213.94	4203826.50	21474.17770	(02112609)	610238.94	4203826.50	21677.00390	(02112609)
610263.94	4203826.50	21640.18360	(03110409)	610288.94	4203826.50	21662.34180	(03110409)
610313.94	4203826.50	21061.19920	(03110409)	610338.94	4203826.50	19554.35550	(04121009)
610363.94	4203826.50	19601.02730	(04111509)	610388.94	4203826.50	19581.89060	(04111509)
610413.94	4203826.50	19284.78120	(04111509)	610438.94	4203826.50	19314.92380	(05121209)
609213.94	4203851.50	8927.48828	(04112509)	609238.94	4203851.50	9214.59766	(04112509)
609263.94	4203851.50	9521.14551	(04112509)	609288.94	4203851.50	9846.88086	(04112509)
609313.94	4203851.50	10196.46880	(04112509)	609338.94	4203851.50	10568.86820	(04112509)
609363.94	4203851.50	10967.04490	(04112509)	609388.94	4203851.50	11392.50980	(04112509)
609413.94	4203851.50	11844.47460	(04112509)	609438.94	4203851.50	12323.26070	(04112509)
609463.94	4203851.50	12827.77050	(04112509)	609488.94	4203851.50	13344.81840	(04112509)
609513.94	4203851.50	13859.27440	(04112509)	609538.94	4203851.50	14341.61820	(04112509)
609563.94	4203851.50	14732.51760	(04112509)	609588.94	4203851.50	14942.68070	(04112509)

609613.94	4203851.50	16887.77540	(01110609)	609638.94	4203851.50	19908.48440	(01110609)
609663.94	4203851.50	23656.92580	(01110609)	609688.94	4203851.50	27490.93750	(02020409)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609713.94	4203851.50	27211.87110	(02020409)	609738.94	4203851.50	26367.86910	(02020409)
609763.94	4203851.50	26164.44530	(05012509)	609788.94	4203851.50	26942.37890	(05012509)
609813.94	4203851.50	27666.04690	(05012509)	609838.94	4203851.50	28131.91410	(05012509)
609863.94	4203851.50	28144.04300	(05012509)	609888.94	4203851.50	27751.96090	(05012509)
609913.94	4203851.50	27637.95700	(03122209)	609938.94	4203851.50	27911.19530	(03122209)
609963.94	4203851.50	27846.64450	(03110609)	609988.94	4203851.50	27648.98830	(05122309)
610013.94	4203851.50	27583.77540	(03111309)	610038.94	4203851.50	27512.65230	(03111309)
610063.94	4203851.50	26873.99220	(03112509)	610088.94	4203851.50	27227.26760	(03112509)
610113.94	4203851.50	27087.45700	(03112509)	610138.94	4203851.50	26118.94140	(03112509)
610163.94	4203851.50	24891.32030	(01111409)	610188.94	4203851.50	24678.23240	(02112609)
610213.94	4203851.50	25087.65620	(02112609)	610238.94	4203851.50	25054.75780	(02112609)
610263.94	4203851.50	25180.49610	(03110409)	610288.94	4203851.50	24839.96290	(03110409)
610313.94	4203851.50	23473.75780	(03110409)	610338.94	4203851.50	22761.93950	(04111509)
610363.94	4203851.50	22715.33010	(04111509)	610388.94	4203851.50	22555.83590	(05121209)
610413.94	4203851.50	22839.61130	(05121209)	610438.94	4203851.50	22970.86520	(05121209)
609213.94	4203876.50	8853.44727	(04112509)	609238.94	4203876.50	9153.38867	(04112509)
609263.94	4203876.50	9475.12207	(04112509)	609288.94	4203876.50	9822.59473	(04112509)
609313.94	4203876.50	10198.65230	(04112509)	609338.94	4203876.50	10607.52440	(04112509)
609363.94	4203876.50	11053.26070	(04112509)	609388.94	4203876.50	11542.39550	(04112509)
609413.94	4203876.50	12080.54980	(04112509)	609438.94	4203876.50	12676.27730	(04112509)
609463.94	4203876.50	13339.61720	(04112509)	609488.94	4203876.50	14080.80370	(04112509)
609513.94	4203876.50	14919.73730	(04112509)	609538.94	4203876.50	15872.42380	(04112509)
609563.94	4203876.50	16963.58590	(04112509)	609588.94	4203876.50	18219.20310	(04112509)
609613.94	4203876.50	19657.25390	(04112509)	609638.94	4203876.50	21215.41210	(04112509)
609663.94	4203876.50	23271.37700	(01110609)	609688.94	4203876.50	29203.73830	(01110609)
609713.94	4203876.50	35565.55080	(02020409)	609738.94	4203876.50	34665.69530	(02020409)
609763.94	4203876.50	33629.79300	(02020409)	609788.94	4203876.50	33816.94920	(05012509)
609813.94	4203876.50	34580.05080	(05012509)	609838.94	4203876.50	35095.20700	(05012509)
609863.94	4203876.50	35175.78120	(05012509)	609888.94	4203876.50	34804.21480	(05012509)
609913.94	4203876.50	34305.32810	(03122209)	609938.94	4203876.50	34584.50390	(03122209)
609963.94	4203876.50	34452.24220	(03110609)	609988.94	4203876.50	34203.60940	(05122309)
610013.94	4203876.50	34027.76560	(03111309)	610038.94	4203876.50	33880.60160	(03111309)
610063.94	4203876.50	33251.95310	(03112509)	610088.94	4203876.50	33495.87500	(03112509)
610113.94	4203876.50	33189.24220	(03112509)	610138.94	4203876.50	31915.86910	(03112509)
610163.94	4203876.50	30526.29300	(01111409)	610188.94	4203876.50	30730.82620	(02112609)
610213.94	4203876.50	30972.73830	(02112609)	610238.94	4203876.50	31023.22270	(03110409)
610263.94	4203876.50	30915.97660	(03110409)	610288.94	4203876.50	29800.14650	(03110409)
610313.94	4203876.50	28156.45700	(04111509)	610338.94	4203876.50	28280.03320	(05121209)
610363.94	4203876.50	28553.43750	(05121209)	610388.94	4203876.50	28738.85350	(05121209)
610413.94	4203876.50	28689.24020	(05121209)	610438.94	4203876.50	28093.73440	(05121209)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)

609213.94	4203901.50	9168.32031 (01111609)	609238.94	4203901.50	9458.88867 (01111609)
609263.94	4203901.50	9771.62500 (01111609)	609288.94	4203901.50	10109.02150 (01111609)
609313.94	4203901.50	10474.35840 (01111609)	609338.94	4203901.50	10871.01070 (01111609)
609363.94	4203901.50	11304.21000 (01111609)	609388.94	4203901.50	11780.31350 (01111609)
609413.94	4203901.50	12306.19240 (01111609)	609438.94	4203901.50	12891.15920 (01111609)
609463.94	4203901.50	13547.68460 (01111609)	609488.94	4203901.50	14291.10550 (01111609)
609513.94	4203901.50	15143.14160 (01111609)	609538.94	4203901.50	16133.73340 (01111609)
609563.94	4203901.50	17307.03520 (01111609)	609588.94	4203901.50	18733.09180 (01111609)
609613.94	4203901.50	20524.94530 (01111609)	609638.94	4203901.50	22889.68360 (01111609)
609663.94	4203901.50	26305.16800 (04112509)	609688.94	4203901.50	31764.57230 (04112509)
609713.94	4203901.50	41792.53520 (02020409)	609213.94	4203926.50	9307.91797 (03011609)
609238.94	4203926.50	9612.76758 (03011609)	609263.94	4203926.50	9941.37207 (03011609)
609288.94	4203926.50	10296.83500 (03011609)	609313.94	4203926.50	10682.66410 (03011609)
609338.94	4203926.50	11102.89550 (03011609)	609363.94	4203926.50	11562.47660 (03011609)
609388.94	4203926.50	12068.80180 (03011609)	609413.94	4203926.50	12628.54000 (03011609)
609438.94	4203926.50	13251.27050 (03011609)	609463.94	4203926.50	13950.54690 (03011609)
609488.94	4203926.50	14741.42290 (03011609)	609513.94	4203926.50	15646.63480 (03011609)
609538.94	4203926.50	16696.34380 (03011609)	609563.94	4203926.50	17935.12890 (03011609)
609588.94	4203926.50	19428.25980 (03011609)	609613.94	4203926.50	21287.75390 (03011609)
609638.94	4203926.50	23716.15040 (03011609)	609663.94	4203926.50	27149.04100 (03011609)
609688.94	4203926.50	32617.68160 (03011609)	609713.94	4203926.50	41880.33980 (03011609)
609213.94	4203951.50	9262.06055 (03011609)	609238.94	4203951.50	9564.83789 (03011609)
609263.94	4203951.50	9890.81055 (03011609)	609288.94	4203951.50	10243.01660 (03011609)
609313.94	4203951.50	10624.64260 (03011609)	609338.94	4203951.50	11039.43070 (03011609)
609363.94	4203951.50	11493.42770 (03011609)	609388.94	4203951.50	11992.18260 (03011609)
609413.94	4203951.50	12543.24900 (03011609)	609438.94	4203951.50	13155.31450 (03011609)
609463.94	4203951.50	13841.90530 (03011609)	609488.94	4203951.50	14618.18260 (03011609)
609513.94	4203951.50	15505.94340 (03011609)	609538.94	4203951.50	16535.42380 (03011609)
609563.94	4203951.50	17750.01170 (03011609)	609588.94	4203951.50	19218.34570 (03011609)
609613.94	4203951.50	21051.28710 (03011609)	609638.94	4203951.50	23452.34570 (03011609)
609663.94	4203951.50	26857.42970 (03011609)	609688.94	4203951.50	32311.98440 (03011609)
609713.94	4203951.50	41513.28120 (03011609)	609213.94	4203976.50	9087.41504 (03011609)
609238.94	4203976.50	9380.88086 (03011609)	609263.94	4203976.50	9695.92090 (03011609)
609288.94	4203976.50	10035.52050 (03011609)	609313.94	4203976.50	10403.52150 (03011609)
609338.94	4203976.50	10803.67770 (03011609)	609363.94	4203976.50	11240.67190 (03011609)
609388.94	4203976.50	11721.37400 (03011609)	609413.94	4203976.50	12253.81350 (03011609)
609438.94	4203976.50	12845.85940 (03011609)	609463.94	4203976.50	13510.98050 (03011609)
609488.94	4203976.50	14264.02830 (03011609)	609513.94	4203976.50	15127.47070 (03011609)
609538.94	4203976.50	16131.66500 (03011609)	609563.94	4203976.50	17321.01760 (03011609)
609588.94	4203976.50	18762.46290 (03011609)	609613.94	4203976.50	20567.75390 (03011609)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC (YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC (YYMMDDHH)
609638.94	4203976.50	22940.70310 (03011609)	609663.94	4203976.50	26320.89260 (03011609)
609688.94	4203976.50	31757.98050 (03011609)	609713.94	4203976.50	40897.26950 (03011609)
609213.94	4204001.50	8854.71777 (03011609)	609238.94	4204001.50	9139.35449 (03011609)
609263.94	4204001.50	9444.58203 (03011609)	609288.94	4204001.50	9772.47559 (03011609)
609313.94	4204001.50	10127.09860 (03011609)	609338.94	4204001.50	10512.32520 (03011609)
609363.94	4204001.50	10933.69040 (03011609)	609388.94	4204001.50	11396.98730 (03011609)
609413.94	4204001.50	11910.11130 (03011609)	609438.94	4204001.50	12482.29690 (03011609)
609463.94	4204001.50	13126.22850 (03011609)	609488.94	4204001.50	13857.70610 (03011609)
609513.94	4204001.50	14698.18550 (03011609)	609538.94	4204001.50	15678.68650 (03011609)
609563.94	4204001.50	16843.00590 (03011609)	609588.94	4204001.50	18258.85550 (03011609)
609613.94	4204001.50	20038.00000 (03011609)	609638.94	4204001.50	22386.38670 (03011609)
609663.94	4204001.50	25941.89260 (05012009)	609688.94	4204001.50	31698.87500 (05012009)
609713.94	4204001.50	41250.02730 (05012009)	609213.94	4204026.50	8598.75000 (03011609)
609238.94	4204026.50	8879.72559 (03011609)	609263.94	4204026.50	9179.27148 (03011609)
609288.94	4204026.50	9500.14453 (03011609)	609313.94	4204026.50	9846.23438 (03011609)
609338.94	4204026.50	10221.47850 (03011609)	609363.94	4204026.50	10630.75290 (03011609)

609388.94	4204026.50	11079.98830 (03011609)	609413.94	4204026.50	11577.43360 (03011609)
609438.94	4204026.50	12132.56350 (03011609)	609463.94	4204026.50	12757.94820 (03011609)
609488.94	4204026.50	13469.27730 (03011609)	609513.94	4204026.50	14570.78610 (05012009)
609538.94	4204026.50	15822.88480 (05012009)	609563.94	4204026.50	17258.94920 (05012009)
609588.94	4204026.50	18945.06450 (05012009)	609613.94	4204026.50	20994.82620 (05012009)
609638.94	4204026.50	23613.43550 (05012009)	609663.94	4204026.50	27249.74800 (05012009)
609688.94	4204026.50	32945.86720 (05012009)	609713.94	4204026.50	42373.37890 (05012009)
609213.94	4204051.50	8321.57324 (03011609)	609238.94	4204051.50	8604.50488 (03011609)
609263.94	4204051.50	8905.71191 (03011609)	609288.94	4204051.50	9227.52734 (03011609)
609313.94	4204051.50	9572.34961 (03011609)	609338.94	4204051.50	9945.08008 (03011609)
609363.94	4204051.50	10545.87500 (05012009)	609388.94	4204051.50	11232.13960 (05012009)
609413.94	4204051.50	11968.18550 (05012009)	609438.94	4204051.50	12762.58690 (05012009)
609463.94	4204051.50	13626.69040 (05012009)	609488.94	4204051.50	14574.20310 (05012009)
609513.94	4204051.50	15627.37790 (05012009)	609538.94	4204051.50	16815.96090 (05012009)
609563.94	4204051.50	18183.02540 (05012009)	609588.94	4204051.50	19795.50780 (05012009)
609613.94	4204051.50	21765.97270 (05012009)	609638.94	4204051.50	24301.13670 (05012009)
609663.94	4204051.50	27845.91210 (05012009)	609688.94	4204051.50	33464.26170 (05012009)
609713.94	4204051.50	42749.33980 (05012009)	609213.94	4204076.50	8298.72852 (05012009)
609238.94	4204076.50	8754.80957 (05012009)	609263.94	4204076.50	9236.72266 (05012009)
609288.94	4204076.50	9743.83203 (05012009)	609313.94	4204076.50	10279.20900 (05012009)
609338.94	4204076.50	10844.59380 (05012009)	609363.94	4204076.50	11444.09960 (05012009)
609388.94	4204076.50	12083.72750 (05012009)	609413.94	4204076.50	12767.22850 (05012009)
609438.94	4204076.50	13504.52830 (05012009)	609463.94	4204076.50	14308.59570 (05012009)
609488.94	4204076.50	15191.05370 (05012009)	609513.94	4204076.50	16176.18260 (05012009)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC (YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC (YYMMDDHH)
609538.94	4204076.50	17291.41410 (05012009)	609563.94	4204076.50	18580.94340 (05012009)
609588.94	4204076.50	20112.43160 (05012009)	609613.94	4204076.50	21993.64060 (05012009)
609638.94	4204076.50	24436.37110 (05012009)	609663.94	4204076.50	27885.83200 (05012009)
609688.94	4204076.50	33417.11720 (05012009)	609713.94	4204076.50	42865.76170 (04111809)
609213.94	4204101.50	9065.38770 (05012009)	609238.94	4204101.50	9492.48535 (05012009)
609263.94	4204101.50	9939.81934 (05012009)	609288.94	4204101.50	10407.20410 (05012009)
609313.94	4204101.50	10898.85350 (05012009)	609338.94	4204101.50	11416.78810 (05012009)
609363.94	4204101.50	11965.15720 (05012009)	609388.94	4204101.50	12547.60350 (05012009)
609413.94	4204101.50	13174.65140 (05012009)	609438.94	4204101.50	13849.32420 (05012009)
609463.94	4204101.50	14588.91990 (05012009)	609488.94	4204101.50	15402.77340 (05012009)
609513.94	4204101.50	16317.44340 (05012009)	609538.94	4204101.50	17356.40040 (05012009)
609563.94	4204101.50	18566.29690 (05012009)	609588.94	4204101.50	20014.21290 (05012009)
609613.94	4204101.50	21950.90820 (04111809)	609638.94	4204101.50	24474.44730 (04111809)
609663.94	4204101.50	28004.59770 (04111809)	609688.94	4204101.50	33629.14450 (04111809)
609713.94	4204101.50	42957.54690 (04030809)	609213.94	4204126.50	9555.71680 (05012009)
609238.94	4204126.50	9944.10059 (05012009)	609263.94	4204126.50	10347.25200 (05012009)
609288.94	4204126.50	10769.45310 (05012009)	609313.94	4204126.50	11211.67290 (05012009)
609338.94	4204126.50	11678.55370 (05012009)	609363.94	4204126.50	12171.14750 (05012009)
609388.94	4204126.50	12699.96190 (05012009)	609413.94	4204126.50	13264.29590 (05012009)
609438.94	4204126.50	13880.51950 (05012009)	609463.94	4204126.50	14553.72270 (05012009)
609488.94	4204126.50	15303.24800 (05012009)	609513.94	4204126.50	16254.40230 (04111809)
609538.94	4204126.50	17374.82030 (04111809)	609563.94	4204126.50	18660.94530 (04111809)
609588.94	4204126.50	20180.30080 (04111809)	609613.94	4204126.50	22044.29880 (04111809)
609638.94	4204126.50	24459.52540 (04111809)	609663.94	4204126.50	27967.94730 (04030809)
609688.94	4204126.50	33692.50390 (04030809)	609713.94	4204126.50	43159.94920 (04030809)
609213.94	4204151.50	9801.09277 (05012009)	609238.94	4204151.50	10145.83590 (05012009)
609263.94	4204151.50	10505.07620 (05012009)	609288.94	4204151.50	10880.36910 (05012009)
609313.94	4204151.50	11274.77930 (05012009)	609338.94	4204151.50	11690.47070 (05012009)
609363.94	4204151.50	12133.08110 (05012009)	609388.94	4204151.50	12606.11910 (05012009)
609413.94	4204151.50	13186.52150 (04111809)	609438.94	4204151.50	13882.08980 (04111809)
609463.94	4204151.50	14633.71190 (04111809)	609488.94	4204151.50	15455.78320 (04111809)
609513.94	4204151.50	16369.35940 (04111809)	609538.94	4204151.50	17402.00780 (04111809)

Construction

609563.94	4204151.50	18597.08200	(04111809)	609588.94	4204151.50	20132.40430	(04030809)
609613.94	4204151.50	22072.83200	(04030809)	609638.94	4204151.50	24561.78120	(04030809)
609663.94	4204151.50	28051.25780	(04030809)	609688.94	4204151.50	33655.99610	(04030809)
609713.94	4204151.50	43318.43360	(04111609)	609213.94	4204176.50	9842.64063	(05012009)
609238.94	4204176.50	10146.83890	(05012009)	609263.94	4204176.50	10464.41990	(05012009)
609288.94	4204176.50	10795.93260	(05012009)	609313.94	4204176.50	11176.35840	(04111809)
609338.94	4204176.50	11672.14750	(04111809)	609363.94	4204176.50	12191.16600	(04111809)
609388.94	4204176.50	12738.42480	(04111809)	609413.94	4204176.50	13320.88090	(04111809)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609438.94	4204176.50	13945.02340	(04111809)	609463.94	4204176.50	14623.21390	(04111809)
609488.94	4204176.50	15368.57810	(04111809)	609513.94	4204176.50	16328.99410	(04030809)
609538.94	4204176.50	17439.01760	(04030809)	609563.94	4204176.50	18706.83200	(04030809)
609588.94	4204176.50	20198.59770	(04030809)	609613.94	4204176.50	22025.14840	(04030809)
609638.94	4204176.50	24422.38670	(04111609)	609663.94	4204176.50	28054.50000	(04111609)
609688.94	4204176.50	33822.71090	(04111609)	609713.94	4204176.50	43395.08590	(04111609)
609213.94	4204201.50	9726.82520	(04111809)	609238.94	4204201.50	10108.16800	(04111809)
609263.94	4204201.50	10500.82910	(04111809)	609288.94	4204201.50	10904.39650	(04111809)
609313.94	4204201.50	11324.19430	(04111809)	609338.94	4204201.50	11760.97950	(04111809)
609363.94	4204201.50	12219.52640	(04111809)	609388.94	4204201.50	12704.49410	(04111809)
609413.94	4204201.50	13222.04100	(04111809)	609438.94	4204201.50	13912.19730	(04030809)
609463.94	4204201.50	14668.13180	(04030809)	609488.94	4204201.50	15487.98830	(04030809)
609513.94	4204201.50	16390.67770	(04030809)	609538.94	4204201.50	17404.48630	(04030809)
609563.94	4204201.50	18571.75000	(04030809)	609588.94	4204201.50	20137.59570	(04111609)
609613.94	4204201.50	22096.63480	(04111609)	609638.94	4204201.50	24595.72660	(04111609)
609663.94	4204201.50	28091.26950	(04111609)	609688.94	4204201.50	33719.82810	(04111609)
609713.94	4204201.50	43238.35160	(04110809)	609213.94	4204226.50	9879.72852	(04111809)
609238.94	4204226.50	10211.18460	(04111809)	609263.94	4204226.50	10552.65430	(04111809)
609288.94	4204226.50	10904.56150	(04111809)	609313.94	4204226.50	11269.67380	(04111809)
609338.94	4204226.50	11654.24220	(04030809)	609363.94	4204226.50	12192.30860	(04030809)
609388.94	4204226.50	12754.76370	(04030809)	609413.94	4204226.50	13346.41500	(04030809)
609438.94	4204226.50	13973.95900	(04030809)	609463.94	4204226.50	14648.09770	(04030809)
609488.94	4204226.50	15382.88670	(04030809)	609513.94	4204226.50	16278.47850	(04111609)
609538.94	4204226.50	17423.12300	(04111609)	609563.94	4204226.50	18718.33400	(04111609)
609588.94	4204226.50	20227.74220	(04111609)	609613.94	4204226.50	22060.54300	(04111609)
609638.94	4204226.50	24423.96680	(04111609)	609663.94	4204226.50	27777.46880	(04111609)
609688.94	4204226.50	33433.86720	(04110809)	609713.94	4204226.50	43770.07420	(04110809)
609213.94	4204251.50	9851.29883	(04111809)	609238.94	4204251.50	10135.23140	(04111809)
609263.94	4204251.50	10453.23540	(04030809)	609288.94	4204251.50	10884.18360	(04030809)
609313.94	4204251.50	11325.40330	(04030809)	609338.94	4204251.50	11780.37700	(04030809)
609363.94	4204251.50	12251.08110	(04030809)	609388.94	4204251.50	12742.23730	(04030809)
609413.94	4204251.50	13260.25100	(04030809)	609438.94	4204251.50	13812.31050	(04030809)
609463.94	4204251.50	14613.92090	(04111609)	609488.94	4204251.50	15476.05270	(04111609)
609513.94	4204251.50	16414.33200	(04111609)	609538.94	4204251.50	17453.31250	(04111609)
609563.94	4204251.50	18634.34770	(04111609)	609588.94	4204251.50	20021.51170	(04111609)
609613.94	4204251.50	21724.32030	(04111609)	609638.94	4204251.50	24108.63870	(04110809)
609663.94	4204251.50	27853.88870	(04110809)	609688.94	4204251.50	33869.70310	(04110809)
609713.94	4204251.50	44016.69920	(05112409)	609213.94	4204276.50	9841.68750	(04030809)
609238.94	4204276.50	10200.45900	(04030809)	609263.94	4204276.50	10564.47850	(04030809)
609288.94	4204276.50	10934.56740	(04030809)	609313.94	4204276.50	11311.79490	(04030809)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609338.94	4204276.50	11699.92970	(04030809)	609363.94	4204276.50	12102.08300	(04030809)
609388.94	4204276.50	12658.11620	(04111609)	609413.94	4204276.50	13302.20610	(04111609)
609438.94	4204276.50	13975.78710	(04111609)	609463.94	4204276.50	14687.83890	(04111609)
609488.94	4204276.50	15450.91890	(04111609)	609513.94	4204276.50	16281.85060	(04111609)
609538.94	4204276.50	17205.60550	(04111609)	609563.94	4204276.50	18260.50590	(04111609)
609588.94	4204276.50	19735.77540	(04110809)	609613.94	4204276.50	21842.30270	(04110809)
609638.94	4204276.50	24481.57030	(04110809)	609663.94	4204276.50	28089.23240	(04110809)
609688.94	4204276.50	33907.97270	(05112409)	609713.94	4204276.50	43220.12500	(05112409)
609213.94	4204301.50	9881.12207	(04030809)	609238.94	4204301.50	10180.74320	(04030809)
609263.94	4204301.50	10483.33890	(04030809)	609288.94	4204301.50	10788.76170	(04030809)
609313.94	4204301.50	11184.42480	(04111609)	609338.94	4204301.50	11698.03910	(04111609)
609363.94	4204301.50	12221.64650	(04111609)	609388.94	4204301.50	12759.37790	(04111609)
609413.94	4204301.50	13314.30760	(04111609)	609438.94	4204301.50	13890.76270	(04111609)
609463.94	4204301.50	14495.51270	(04111609)	609488.94	4204301.50	15138.08200	(04111609)
609513.94	4204301.50	15830.09180	(04111609)	609538.94	4204301.50	16968.27540	(04110809)
609563.94	4204301.50	18418.51950	(04110809)	609588.94	4204301.50	20071.37300	(04110809)
609613.94	4204301.50	22012.93550	(04110809)	609638.94	4204301.50	24404.29300	(05112409)
609663.94	4204301.50	27541.41410	(05112409)	609688.94	4204301.50	32260.28710	(05112409)
609713.94	4204301.50	42103.77340	(04110909)	609213.94	4204326.50	9737.91211	(04030809)
609238.94	4204326.50	10017.77340	(04111609)	609263.94	4204326.50	10444.89260	(04111609)
609288.94	4204326.50	10873.24710	(04111609)	609313.94	4204326.50	11304.81740	(04111609)
609338.94	4204326.50	11736.96970	(04111609)	609363.94	4204326.50	12172.56050	(04111609)
609388.94	4204326.50	12612.17870	(04111609)	609413.94	4204326.50	13056.80860	(04111609)
609438.94	4204326.50	13508.29300	(04111609)	609463.94	4204326.50	13966.75780	(04111609)
609488.94	4204326.50	14979.22950	(04110809)	609513.94	4204326.50	16074.96000	(04110809)
609538.94	4204326.50	17255.07030	(04110809)	609563.94	4204326.50	18533.10740	(04110809)
609588.94	4204326.50	19936.75000	(05112409)	609613.94	4204326.50	21467.13870	(05112409)
609638.94	4204326.50	23123.09570	(05112409)	609663.94	4204326.50	25020.19140	(05112409)
609688.94	4204326.50	30550.78120	(04110909)	609713.94	4204326.50	41751.73830	(05120709)
609213.94	4204351.50	9792.51270	(04111609)	609238.94	4204351.50	10152.31350	(04111609)
609263.94	4204351.50	10506.40920	(04111609)	609288.94	4204351.50	10855.77540	(04111609)
609313.94	4204351.50	11199.07320	(04111609)	609338.94	4204351.50	11534.15920	(04111609)
609363.94	4204351.50	11860.72070	(04111609)	609388.94	4204351.50	12176.66310	(04111609)
609413.94	4204351.50	12606.15920	(04110809)	609438.94	4204351.50	13448.60450	(04110809)
609463.94	4204351.50	14321.40820	(04110809)	609488.94	4204351.50	15224.34960	(04110809)
609513.94	4204351.50	16153.15230	(04110809)	609538.94	4204351.50	17105.67970	(05112409)
609563.94	4204351.50	18051.64060	(05112409)	609588.94	4204351.50	18944.74610	(05112409)
609613.94	4204351.50	19747.56840	(05112409)	609638.94	4204351.50	20761.36910	(04110909)
609663.94	4204351.50	24654.77540	(04110909)	609688.94	4204351.50	30167.56050	(04110909)
609713.94	4204351.50	35783.60550	(02021209)	609213.94	4204376.50	9803.56543	(04111609)

♀*** ISCST3 - VERSION 02035 *** *** Laurel Road Project *** 03/03/16

*** Construction Impacts - Unit Emissions *** 14:30:06

**MODELOPTs: PAGE 82

CONC URBAN ELEV DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609238.94	4204376.50	10084.98540	(04111609)	609263.94	4204376.50	10354.62500	(04111609)
609288.94	4204376.50	10609.89160	(04111609)	609313.94	4204376.50	10848.19240	(04111609)
609338.94	4204376.50	11067.19140	(04111609)	609363.94	4204376.50	11505.70900	(04110809)
609388.94	4204376.50	12217.49710	(04110809)	609413.94	4204376.50	12938.41410	(04110809)
609438.94	4204376.50	13662.48340	(04110809)	609463.94	4204376.50	14381.06250	(04110809)
609488.94	4204376.50	15086.13960	(05112409)	609513.94	4204376.50	15747.58890	(05112409)
609538.94	4204376.50	16326.38870	(05112409)	609563.94	4204376.50	16782.81050	(05112409)
609588.94	4204376.50	17099.58010	(05112409)	609613.94	4204376.50	18422.27150	(04110909)
609638.94	4204376.50	21189.09180	(04110909)	609663.94	4204376.50	24214.98240	(04110909)
609688.94	4204376.50	26671.47660	(02021209)	609713.94	4204376.50	29466.09960	(04022009)

Construction

609213.94	4204401.50	9615.02246 (04111609)	609238.94	4204401.50	9808.20117 (04111609)
609263.94	4204401.50	9980.70508 (04111609)	609288.94	4204401.50	10129.89840 (04111609)
609313.94	4204401.50	10583.65230 (04110809)	609338.94	4204401.50	11198.02340 (04110809)
609363.94	4204401.50	11809.88180 (04110809)	609388.94	4204401.50	12411.47170 (04110809)
609413.94	4204401.50	12992.90140 (04110809)	609438.94	4204401.50	13544.85160 (05112409)
609463.94	4204401.50	14045.01950 (05112409)	609488.94	4204401.50	14459.65430 (05112409)
609513.94	4204401.50	14761.87300 (05112409)	609538.94	4204401.50	14922.74610 (05112409)
609563.94	4204401.50	14921.76370 (05112409)	609588.94	4204401.50	16681.51760 (04110909)
609613.94	4204401.50	18771.71680 (04110909)	609638.94	4204401.50	20752.28710 (04110909)
609663.94	4204401.50	22097.81250 (02021209)	609688.94	4204401.50	23306.73830 (04022009)
609713.94	4204401.50	24943.50590 (02120609)	609213.94	4204426.50	9229.70215 (04111609)
609238.94	4204426.50	9327.67480 (04111609)	609263.94	4204426.50	9795.92578 (04110809)
609288.94	4204426.50	10335.73730 (04110809)	609313.94	4204426.50	10866.02150 (04110809)
609338.94	4204426.50	11379.30760 (04110809)	609363.94	4204426.50	11865.30470 (04110809)
609388.94	4204426.50	12316.19430 (05112409)	609413.94	4204426.50	12713.41600 (05112409)
609438.94	4204426.50	13034.06540 (05112409)	609463.94	4204426.50	13253.48050 (05112409)
609488.94	4204426.50	13348.90920 (05112409)	609513.94	4204426.50	13294.43650 (05112409)
609538.94	4204426.50	13666.74610 (04110909)	609563.94	4204426.50	15286.61230 (04110909)
609588.94	4204426.50	16940.79100 (04110909)	609613.94	4204426.50	18378.59380 (04110909)
609638.94	4204426.50	19237.46290 (05110309)	609663.94	4204426.50	19832.86130 (02021209)
609688.94	4204426.50	21122.02340 (04022009)	609713.94	4204426.50	22293.64060 (02120609)
609213.94	4204451.50	9113.04102 (04110809)	609238.94	4204451.50	9594.25879 (04110809)
609263.94	4204451.50	10061.94340 (04110809)	609288.94	4204451.50	10508.63480 (04110809)
609313.94	4204451.50	10925.77930 (04110809)	609338.94	4204451.50	11305.05270 (05112409)
609363.94	4204451.50	11635.77930 (05112409)	609388.94	4204451.50	11896.08690 (05112409)
609413.94	4204451.50	12067.63380 (05112409)	609438.94	4204451.50	12132.87210 (05112409)
609463.94	4204451.50	12070.23730 (05112409)	609488.94	4204451.50	11868.27830 (05112409)
609513.94	4204451.50	12750.71000 (04110909)	609538.94	4204451.50	14138.76560 (04110909)
609563.94	4204451.50	15492.64840 (04110909)	609588.94	4204451.50	16602.75980 (04110909)
609613.94	4204451.50	17234.35940 (05110309)	609638.94	4204451.50	17746.13480 (02021209)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609663.94	4204451.50	18269.06840	(04022009)	609688.94	4204451.50	18889.99220	(04022009)
609713.94	4204451.50	20022.38670	(02120609)	609213.94	4204476.50	9365.75000	(04110809)
609238.94	4204476.50	9761.99316	(04110809)	609263.94	4204476.50	10126.19530	(04110809)
609288.94	4204476.50	10454.28220	(05112409)	609313.94	4204476.50	10737.48240	(05112409)
609338.94	4204476.50	10958.12010	(05112409)	609363.94	4204476.50	11101.48440	(05112409)
609388.94	4204476.50	11153.04690	(05112409)	609413.94	4204476.50	11096.98140	(05112409)
609438.94	4204476.50	10924.85550	(05112409)	609463.94	4204476.50	10756.33890	(04110909)
609488.94	4204476.50	11962.96190	(04110909)	609513.94	4204476.50	13166.04880	(04110909)
609538.94	4204476.50	14306.46880	(04110909)	609563.94	4204476.50	15202.18850	(04110909)
609588.94	4204476.50	15691.41990	(05120709)	609613.94	4204476.50	16098.01660	(02021209)
609638.94	4204476.50	16012.28320	(02021209)	609663.94	4204476.50	17031.81250	(04022009)
609688.94	4204476.50	17329.16210	(02120609)	609713.94	4204476.50	17962.96290	(02120609)
609213.94	4204501.50	9436.01270	(04110809)	609238.94	4204501.50	9725.76563	(05112409)
609263.94	4204501.50	9974.96484	(05112409)	609288.94	4204501.50	10168.22360	(05112409)
609313.94	4204501.50	10293.24020	(05112409)	609338.94	4204501.50	10340.10250	(05112409)
609363.94	4204501.50	10295.33790	(05112409)	609388.94	4204501.50	10153.30960	(05112409)
609413.94	4204501.50	9911.14746	(05112409)	609438.94	4204501.50	10193.16990	(04110909)
609463.94	4204501.50	11275.41110	(04110909)	609488.94	4204501.50	12335.63770	(04110909)
609513.94	4204501.50	13309.98440	(04110909)	609538.94	4204501.50	14057.38670	(04110909)
609563.94	4204501.50	14456.84960	(02112709)	609588.94	4204501.50	14745.37500	(02021209)
609613.94	4204501.50	14844.00100	(02021209)	609638.94	4204501.50	15262.28910	(04022009)
609663.94	4204501.50	15619.12010	(04022009)	609688.94	4204501.50	16197.58010	(02120609)
609713.94	4204501.50	16336.48830	(02122509)	609213.94	4204526.50	9316.40137	(05112409)
609238.94	4204526.50	9490.25293	(05112409)	609263.94	4204526.50	9604.20703	(05112409)
609288.94	4204526.50	9650.02441	(05112409)	609313.94	4204526.50	9618.04785	(05112409)
609338.94	4204526.50	9502.98340	(05112409)	609363.94	4204526.50	9302.60059	(05112409)

609388.94	4204526.50	9067.30762	(02112009)	609413.94	4204526.50	9688.59082	(04110909)
609438.94	4204526.50	10663.69240	(04110909)	609463.94	4204526.50	11611.30080	(04110909)
609488.94	4204526.50	12459.44430	(04110909)	609513.94	4204526.50	13098.04000	(04110909)
609538.94	4204526.50	13434.29980	(02112709)	609563.94	4204526.50	13610.86620	(05110309)
609588.94	4204526.50	13840.13570	(02021209)	609613.94	4204526.50	13592.93950	(04022009)
609638.94	4204526.50	14433.93550	(04022009)	609663.94	4204526.50	14204.96000	(04022009)
609688.94	4204526.50	15052.50590	(02120609)	609713.94	4204526.50	15198.66310	(02122509)
609213.94	4204551.50	9006.91797	(05112409)	609238.94	4204551.50	9054.13770	(05112409)
609263.94	4204551.50	9033.63086	(05112409)	609288.94	4204551.50	8942.20312	(05112409)
609313.94	4204551.50	8777.45020	(05112409)	609338.94	4204551.50	8542.72949	(05112409)
609363.94	4204551.50	8413.96582	(02112009)	609388.94	4204551.50	9234.74902	(04110909)
609413.94	4204551.50	10122.69730	(04110909)	609438.94	4204551.50	10972.72560	(04110909)
609463.94	4204551.50	11720.81450	(04110909)	609488.94	4204551.50	12278.75590	(04110909)
609513.94	4204551.50	12566.50000	(02112709)	609538.94	4204551.50	12753.78610	(05110309)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: FUGITIVE ***
INCLUDING SOURCE(S): PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609563.94	4204551.50	12955.62700	(02021209)	609588.94	4204551.50	12810.07710	(02021209)
609613.94	4204551.50	13200.25000	(04022009)	609638.94	4204551.50	13460.42770	(04022009)
609663.94	4204551.50	13492.79000	(02120609)	609688.94	4204551.50	13939.87700	(02120609)
609713.94	4204551.50	14158.96290	(02122509)	609738.38	4203889.50	41983.82420	(02020409)
609763.38	4203889.50	41114.43750	(02020409)	609788.38	4203889.50	39970.69920	(02020409)
609813.38	4203889.50	40069.27340	(05012509)	609838.38	4203889.50	40754.09380	(05012509)
609863.38	4203889.50	40987.78520	(05012509)	609888.38	4203889.50	40727.15630	(05012509)
609913.38	4203889.50	40030.12500	(05012509)	609938.38	4203889.50	38926.43750	(05012509)
609963.38	4203889.50	38256.97270	(03110609)	609988.38	4203889.50	38256.32420	(05122309)
610013.38	4203889.50	38964.55080	(03111309)	610038.38	4203889.50	38869.78120	(03111309)
610063.38	4203889.50	38429.11330	(03112509)	610088.38	4203889.50	38676.87890	(03112509)
610113.38	4203889.50	38335.28910	(03112509)	610138.38	4203893.50	38161.93750	(03110409)
610163.38	4203893.50	38134.89450	(03110409)	610188.38	4203893.50	38310.28520	(03110409)
610213.38	4203893.50	38570.42190	(03110409)	610238.38	4203893.50	38713.24220	(03110409)
610263.38	4203893.50	38165.08200	(03110409)	610288.38	4203893.50	36577.22270	(05121209)
610313.38	4203893.50	36711.90230	(05121209)	610338.38	4203893.50	36803.71880	(05121209)
610363.38	4203893.50	36825.71090	(05121209)	610388.38	4203893.50	36623.92190	(05121209)
610413.38	4203893.50	35795.67970	(05121209)	609716.12	4204329.00	41507.98050	(05110309)
609718.88	4203892.00	42683.45310	(02020409)	610415.75	4203905.50	45449.01560	(03120409)
610380.25	4203944.50	42377.67190	(04121709)	610236.69	4204012.00	42419.07030	(03120409)
610162.50	4204082.50	39549.64840	(03030609)	610132.13	4204052.50	39238.16800	(02110409)
610098.44	4204082.50	37681.32810	(03120409)	610133.94	4204110.50	38483.64450	(04112409)
610096.69	4204185.50	39044.78520	(05013109)	610109.63	4204339.50	42061.84380	(05013109)
610034.13	4204456.50	42481.42190	(01121309)	609991.31	4204402.50	41552.07420	(01121309)
609919.44	4204407.00	42441.78520	(04022009)	609939.94	4204280.00	39711.56640	(02021209)
609915.88	4204233.50	39343.14060	(04110909)	609840.44	4204230.00	40575.52340	(05112409)
609789.50	4204257.50	40065.42970	(04110909)	609788.75	4204361.00	33199.44140	(01121309)
609849.56	4204412.00	20986.29690	(04112409)	609800.69	4204410.50	32251.88870	(01121309)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)

609213.94	4203701.50	12790.61430	(02020609)	609238.94	4203701.50	13155.51070	(02020609)
609263.94	4203701.50	13498.52830	(02020609)	609288.94	4203701.50	13943.79690	(05111509)
609313.94	4203701.50	14378.00590	(05111509)	609338.94	4203701.50	14768.58590	(05111509)
609363.94	4203701.50	15282.60740	(03121009)	609388.94	4203701.50	16440.99410	(03121009)
609413.94	4203701.50	17555.01170	(03121009)	609438.94	4203701.50	18583.85940	(03121009)
609463.94	4203701.50	19598.18360	(01110609)	609488.94	4203701.50	22149.85550	(01110609)
609513.94	4203701.50	24611.89840	(01110609)	609538.94	4203701.50	26734.03710	(01110609)
609563.94	4203701.50	28135.52930	(02020409)	609588.94	4203701.50	28574.69140	(02020409)
609613.94	4203701.50	27995.48630	(02020409)	609638.94	4203701.50	26863.91800	(02020409)
609663.94	4203701.50	25558.59570	(02020409)	609688.94	4203701.50	27193.92380	(05012509)
609713.94	4203701.50	28273.77540	(05012509)	609738.94	4203701.50	29184.53520	(05012509)
609763.94	4203701.50	30040.76170	(05012509)	609788.94	4203701.50	30620.01170	(05012509)
609813.94	4203701.50	30738.01950	(05012509)	609838.94	4203701.50	30299.75000	(05012509)
609863.94	4203701.50	29298.02150	(05012509)	609888.94	4203701.50	30138.85550	(03122209)
609913.94	4203701.50	30646.72070	(03122209)	609938.94	4203701.50	30624.73240	(03110609)
609963.94	4203701.50	30588.69340	(05122309)	609988.94	4203701.50	29931.81840	(05122309)
610013.94	4203701.50	30414.13670	(03111309)	610038.94	4203701.50	30357.13280	(03111309)
610063.94	4203701.50	29465.24610	(03111309)	610088.94	4203701.50	29608.30470	(03112509)
610113.94	4203701.50	30061.34380	(03112509)	610138.94	4203701.50	29761.12700	(03112509)
610163.94	4203701.50	28448.57810	(03112509)	610188.94	4203701.50	27218.57620	(01111409)
610213.94	4203701.50	27330.88480	(01111409)	610238.94	4203701.50	26944.12890	(03110409)
610263.94	4203701.50	27297.14060	(02112609)	610288.94	4203701.50	27579.12110	(02112609)
610313.94	4203701.50	27559.32030	(03110409)	610338.94	4203701.50	27751.74220	(03110409)
610363.94	4203701.50	27629.58980	(03110409)	610388.94	4203701.50	26909.28120	(03110409)
610413.94	4203701.50	25482.46090	(04121009)	610438.94	4203701.50	23859.17970	(04111509)
609213.94	4203726.50	12753.40330	(02020609)	609238.94	4203726.50	13197.44140	(02020609)
609263.94	4203726.50	13638.11910	(02020609)	609288.94	4203726.50	14071.60550	(02020609)
609313.94	4203726.50	14490.78120	(02020609)	609338.94	4203726.50	15001.35350	(05111509)
609363.94	4203726.50	15513.76560	(05111509)	609388.94	4203726.50	15983.38480	(05111509)
609413.94	4203726.50	17184.82810	(03121009)	609438.94	4203726.50	18427.21090	(03121009)
609463.94	4203726.50	19612.78910	(03121009)	609488.94	4203726.50	21038.19730	(01110609)
609513.94	4203726.50	23873.20900	(01110609)	609538.94	4203726.50	26601.01950	(01110609)
609563.94	4203726.50	28958.45700	(01110609)	609588.94	4203726.50	30434.15430	(02020409)
609613.94	4203726.50	30640.12110	(02020409)	609638.94	4203726.50	29756.67190	(02020409)
609663.94	4203726.50	28496.43360	(02020409)	609688.94	4203726.50	28563.43750	(05012509)
609713.94	4203726.50	29799.14060	(05012509)	609738.94	4203726.50	30755.61330	(05012509)
609763.94	4203726.50	31742.94140	(05012509)	609788.94	4203726.50	32508.41020	(05012509)
609813.94	4203726.50	32824.54690	(05012509)	609838.94	4203726.50	32561.99610	(05012509)
609863.94	4203726.50	31696.39260	(05012509)	609888.94	4203726.50	32011.32230	(03122209)
609913.94	4203726.50	32644.56250	(03122209)	609938.94	4203726.50	32655.14650	(03122209)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609963.94	4203726.50	32658.37500	(05122309)	609988.94	4203726.50	32055.96290	(05122309)
610013.94	4203726.50	32443.19920	(03111309)	610038.94	4203726.50	32391.30860	(03111309)
610063.94	4203726.50	31448.45310	(03111309)	610088.94	4203726.50	31696.32420	(03112509)
610113.94	4203726.50	32097.67580	(03112509)	610138.94	4203726.50	31643.06640	(03112509)
610163.94	4203726.50	30052.08790	(03112509)	610188.94	4203726.50	29170.38280	(01111409)
610213.94	4203726.50	29076.80660	(01111409)	610238.94	4203726.50	28812.50390	(02112609)
610263.94	4203726.50	29312.18950	(02112609)	610288.94	4203726.50	29427.36330	(02112609)
610313.94	4203726.50	29517.37890	(03110409)	610338.94	4203726.50	29595.10740	(03110409)
610363.94	4203726.50	29126.42190	(03110409)	610388.94	4203726.50	27810.90230	(03110409)
610413.94	4203726.50	25984.00980	(04121009)	610438.94	4203726.50	26125.73050	(04111509)
609213.94	4203751.50	13850.29300	(04112509)	609238.94	4203751.50	13761.52730	(04112509)
609263.94	4203751.50	13619.01170	(04112509)	609288.94	4203751.50	14095.64750	(02020609)
609313.94	4203751.50	14615.31050	(02020609)	609338.94	4203751.50	15140.91020	(02020609)
609363.94	4203751.50	15664.54100	(02020609)	609388.94	4203751.50	16257.39650	(05111509)
609413.94	4203751.50	16885.24610	(05111509)	609438.94	4203751.50	18009.85550	(03121009)
609463.94	4203751.50	19393.51170	(03121009)	609488.94	4203751.50	20757.01950	(03121009)

609513.94	4203751.50	22748.39450	(01110609)	609538.94	4203751.50	25857.36910	(01110609)
609563.94	4203751.50	28938.78120	(01110609)	609588.94	4203751.50	31610.20700	(01110609)
609613.94	4203751.50	33133.49220	(02020409)	609638.94	4203751.50	32994.12110	(02020409)
609663.94	4203751.50	31856.57810	(02020409)	609688.94	4203751.50	30450.01170	(02020409)
609713.94	4203751.50	31654.53130	(05012509)	609738.94	4203751.50	32625.61720	(05012509)
609763.94	4203751.50	33728.11720	(05012509)	609788.94	4203751.50	34682.93360	(05012509)
609813.94	4203751.50	35212.07420	(05012509)	609838.94	4203751.50	35143.78120	(05012509)
609863.94	4203751.50	34434.96090	(05012509)	609888.94	4203751.50	34213.39060	(03122209)
609913.94	4203751.50	34980.46090	(03122209)	609938.94	4203751.50	35103.10160	(03122209)
609963.94	4203751.50	35075.99220	(05122309)	609988.94	4203751.50	34532.59380	(05122309)
610013.94	4203751.50	34824.07810	(03111309)	610038.94	4203751.50	34776.06640	(03111309)
610063.94	4203751.50	33781.40620	(03111309)	610088.94	4203751.50	34142.64450	(03112509)
610113.94	4203751.50	34471.27340	(03112509)	610138.94	4203751.50	33830.81250	(03112509)
610163.94	4203751.50	31911.72660	(03112509)	610188.94	4203751.50	31420.26170	(01111409)
610213.94	4203751.50	31039.90230	(01111409)	610238.94	4203751.50	31206.50780	(02112609)
610263.94	4203751.50	31644.92190	(02112609)	610288.94	4203751.50	31545.00390	(03110409)
610313.94	4203751.50	31801.68550	(03110409)	610338.94	4203751.50	31609.36130	(03110409)
610363.94	4203751.50	30559.05470	(03110409)	610388.94	4203751.50	28632.89450	(04121009)
610413.94	4203751.50	28263.58790	(04111509)	610438.94	4203751.50	28542.58790	(04111509)
609213.94	4203776.50	15640.13180	(04112509)	609238.94	4203776.50	15768.48440	(04112509)
609263.94	4203776.50	15854.54880	(04112509)	609288.94	4203776.50	15889.81640	(04112509)
609313.94	4203776.50	15865.94630	(04112509)	609338.94	4203776.50	15769.56740	(04112509)
609363.94	4203776.50	15759.44630	(02020609)	609388.94	4203776.50	16409.92770	(02020609)
609413.94	4203776.50	17079.82810	(02020609)	609438.94	4203776.50	17788.62890	(05111509)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609463.94	4203776.50	18940.10550	(03121009)	609488.94	4203776.50	20481.06640	(03121009)
609513.94	4203776.50	22043.88870	(03121009)	609538.94	4203776.50	24693.68160	(01110609)
609563.94	4203776.50	28189.30270	(01110609)	609588.94	4203776.50	31745.93750	(01110609)
609613.94	4203776.50	34853.99220	(01110609)	609638.94	4203776.50	36348.45310	(02020409)
609663.94	4203776.50	35722.05080	(02020409)	609688.94	4203776.50	34393.87110	(02020409)
609713.94	4203776.50	33979.14060	(05012509)	609738.94	4203776.50	34924.49220	(05012509)
609763.94	4203776.50	36116.42190	(05012509)	609788.94	4203776.50	37258.92580	(05012509)
609813.94	4203776.50	38015.73440	(05012509)	609838.94	4203776.50	38161.53120	(05012509)
609863.94	4203776.50	37628.18360	(05012509)	609888.94	4203776.50	36860.96090	(03122209)
609913.94	4203776.50	37769.34380	(03122209)	609938.94	4203776.50	38013.00000	(03122209)
609963.94	4203776.50	37956.95700	(05122309)	609988.94	4203776.50	37477.77340	(05122309)
610013.94	4203776.50	37674.02730	(03111309)	610038.94	4203776.50	37626.85160	(03111309)
610063.94	4203776.50	36576.92190	(03111309)	610088.94	4203776.50	37058.03120	(03112509)
610113.94	4203776.50	37291.35160	(03112509)	610138.94	4203776.50	36427.17970	(03112509)
610163.94	4203776.50	34117.66800	(03112509)	610188.94	4203776.50	34048.65620	(01111409)
610213.94	4203776.50	33406.71880	(02112609)	610238.94	4203776.50	34087.41410	(02112609)
610263.94	4203776.50	34341.43750	(02112609)	610288.94	4203776.50	34360.22660	(03110409)
610313.94	4203776.50	34445.87500	(03110409)	610338.94	4203776.50	33729.01560	(03110409)
610363.94	4203776.50	31789.82620	(03110409)	610388.94	4203776.50	30939.00390	(04111509)
610413.94	4203776.50	31199.22660	(04111509)	610438.94	4203776.50	31181.10550	(04111509)
609213.94	4203801.50	16916.69530	(04112509)	609238.94	4203801.50	17251.01560	(04112509)
609263.94	4203801.50	17574.87700	(04112509)	609288.94	4203801.50	17880.55660	(04112509)
609313.94	4203801.50	18154.29690	(04112509)	609338.94	4203801.50	18387.54690	(04112509)
609363.94	4203801.50	18561.49610	(04112509)	609388.94	4203801.50	18657.00780	(04112509)
609413.94	4203801.50	18655.99800	(04112509)	609438.94	4203801.50	18533.53120	(04112509)
609463.94	4203801.50	18832.23440	(02020609)	609488.94	4203801.50	19994.02730	(03121009)
609513.94	4203801.50	21727.82810	(03121009)	609538.94	4203801.50	23518.39840	(03121009)
609563.94	4203801.50	26957.38670	(01110609)	609588.94	4203801.50	30985.46880	(01110609)
609613.94	4203801.50	35200.80860	(01110609)	609638.94	4203801.50	38960.35550	(01110609)
609663.94	4203801.50	40216.74220	(02020409)	609688.94	4203801.50	39118.44920	(02020409)
609713.94	4203801.50	37616.86330	(02020409)	609738.94	4203801.50	37852.51560	(05012509)
609763.94	4203801.50	39095.10160	(05012509)	609788.94	4203801.50	40414.12110	(05012509)

609813.94	4203801.50	41412.42190	(05012509)	609838.94	4203801.50	41793.76170	(05012509)
609863.94	4203801.50	41454.87500	(05012509)	609888.94	4203801.50	40404.25000	(05012509)
609913.94	4203801.50	41190.72270	(03122209)	609938.94	4203801.50	41556.27340	(03122209)
609963.94	4203801.50	41475.84380	(05122309)	609988.94	4203801.50	41062.03910	(05122309)
610013.94	4203801.50	41162.21480	(03111309)	610038.94	4203801.50	41110.60160	(03111309)
610063.94	4203801.50	40001.08590	(03111309)	610088.94	4203801.50	40604.80080	(03112509)
610113.94	4203801.50	40720.10940	(03112509)	610138.94	4203801.50	39586.44920	(03112509)
610163.94	4203801.50	37133.37890	(01111409)	610188.94	4203801.50	37181.10940	(01111409)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
610213.94	4203801.50	36951.81640	(02112609)	610238.94	4203801.50	37583.97660	(02112609)
610263.94	4203801.50	37465.66800	(02112609)	610288.94	4203801.50	37795.77340	(03110409)
610313.94	4203801.50	37461.10550	(03110409)	610338.94	4203801.50	35843.76170	(03110409)
610363.94	4203801.50	34144.18360	(04111509)	610388.94	4203801.50	34379.53130	(04111509)
610413.94	4203801.50	34377.33590	(04111509)	610438.94	4203801.50	33908.65630	(04111509)
609213.94	4203826.50	17605.71090	(04112509)	609238.94	4203826.50	18094.55470	(04112509)
609263.94	4203826.50	18599.30860	(04112509)	609288.94	4203826.50	19122.53320	(04112509)
609313.94	4203826.50	19657.18750	(04112509)	609338.94	4203826.50	20199.46090	(04112509)
609363.94	4203826.50	20741.54880	(04112509)	609388.94	4203826.50	21269.59770	(04112509)
609413.94	4203826.50	21765.40630	(04112509)	609438.94	4203826.50	22207.26560	(04112509)
609463.94	4203826.50	22555.03910	(04112509)	609488.94	4203826.50	22763.41410	(04112509)
609513.94	4203826.50	22782.66410	(04112509)	609538.94	4203826.50	23176.23830	(03121009)
609563.94	4203826.50	25441.74220	(01110609)	609588.94	4203826.50	29703.12890	(01110609)
609613.94	4203826.50	34427.72660	(01110609)	609638.94	4203826.50	39622.52340	(01110609)
609663.94	4203826.50	44438.83590	(02020409)	609688.94	4203826.50	44943.39840	(02020409)
609713.94	4203826.50	43531.84380	(02020409)	609738.94	4203826.50	41877.73830	(02020409)
609763.94	4203826.50	42942.38280	(05012509)	609788.94	4203826.50	44415.38280	(05012509)
609813.94	4203826.50	45663.77340	(05012509)	609838.94	4203826.50	46312.78120	(05012509)
609863.94	4203826.50	46188.44920	(05012509)	609888.94	4203826.50	45301.25780	(05012509)
609913.94	4203826.50	45499.75780	(03122209)	609938.94	4203826.50	45993.45700	(03122209)
609963.94	4203826.50	45909.96880	(03110609)	609988.94	4203826.50	45536.87500	(05122309)
610013.94	4203826.50	45538.18750	(03111309)	610038.94	4203826.50	45476.61720	(03111309)
610063.94	4203826.50	44305.24610	(03111309)	610088.94	4203826.50	45035.82810	(03112509)
610113.94	4203826.50	45002.31250	(03112509)	610138.94	4203826.50	43542.21880	(03112509)
610163.94	4203826.50	41324.55080	(01111409)	610188.94	4203826.50	41002.82810	(01111409)
610213.94	4203826.50	41456.99220	(02112609)	610238.94	4203826.50	41886.49220	(02112609)
610263.94	4203826.50	41943.61720	(03110409)	610288.94	4203826.50	42002.52730	(03110409)
610313.94	4203826.50	40829.60160	(03110409)	610338.94	4203826.50	38290.07420	(04111509)
610363.94	4203826.50	38490.57810	(04111509)	610388.94	4203826.50	38452.25000	(04111509)
610413.94	4203826.50	37871.94140	(04111509)	610438.94	4203826.50	38188.98050	(05121209)
609213.94	4203851.50	17789.50590	(04112509)	609238.94	4203851.50	18357.41410	(04112509)
609263.94	4203851.50	18963.60550	(04112509)	609288.94	4203851.50	19608.00200	(04112509)
609313.94	4203851.50	20297.94730	(04112509)	609338.94	4203851.50	21034.00780	(04112509)
609363.94	4203851.50	21819.88280	(04112509)	609388.94	4203851.50	22657.52930	(04112509)
609413.94	4203851.50	23548.27730	(04112509)	609438.94	4203851.50	24490.43360	(04112509)
609463.94	4203851.50	25479.13480	(04112509)	609488.94	4203851.50	26493.35160	(04112509)
609513.94	4203851.50	27501.35550	(04112509)	609538.94	4203851.50	28442.31640	(04112509)
609563.94	4203851.50	29202.55860	(04112509)	609588.94	4203851.50	29609.42970	(04112509)
609613.94	4203851.50	33137.15630	(01110609)	609638.94	4203851.50	38804.09380	(01110609)
609663.94	4203851.50	45575.55470	(01110609)	609688.94	4203851.50	51943.21880	(02020409)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609713.94	4203851.50	51272.38670	(02020409)	609738.94	4203851.50	49659.26170	(02020409)
609763.94	4203851.50	48078.08590	(05012509)	609788.94	4203851.50	49666.24610	(05012509)
609813.94	4203851.50	51164.72660	(05012509)	609838.94	4203851.50	52148.44140	(05012509)
609863.94	4203851.50	52255.70310	(05012509)	609888.94	4203851.50	51544.13280	(05012509)
609913.94	4203851.50	51084.95310	(03122209)	609938.94	4203851.50	51708.32030	(03122209)
609963.94	4203851.50	51612.75000	(03110609)	609988.94	4203851.50	51274.66020	(05122309)
610013.94	4203851.50	51106.39840	(03111309)	610038.94	4203851.50	51031.77340	(03111309)
610063.94	4203851.50	49878.61720	(03112509)	610088.94	4203851.50	50661.35940	(03112509)
610113.94	4203851.50	50449.67970	(03112509)	610138.94	4203851.50	48595.03910	(03112509)
610163.94	4203851.50	46613.81250	(01111409)	610188.94	4203851.50	46420.51560	(02112609)
610213.94	4203851.50	47278.60940	(02112609)	610238.94	4203851.50	47375.33200	(03110409)
610263.94	4203851.50	47793.77340	(03110409)	610288.94	4203851.50	47154.85160	(03110409)
610313.94	4203851.50	44504.29300	(03110409)	610338.94	4203851.50	44121.43750	(04111509)
610363.94	4203851.50	44039.25000	(04111509)	610388.94	4203851.50	44216.42970	(05121209)
610413.94	4203851.50	44793.89840	(05121209)	610438.94	4203851.50	45074.69530	(05121209)
609213.94	4203876.50	17637.26950	(04112509)	609238.94	4203876.50	18230.21880	(04112509)
609263.94	4203876.50	18865.82420	(04112509)	609288.94	4203876.50	19551.13670	(04112509)
609313.94	4203876.50	20292.23050	(04112509)	609338.94	4203876.50	21097.37110	(04112509)
609363.94	4203876.50	21974.29300	(04112509)	609388.94	4203876.50	22934.32420	(04112509)
609413.94	4203876.50	23989.79490	(04112509)	609438.94	4203876.50	25154.67190	(04112509)
609463.94	4203876.50	26448.48830	(04112509)	609488.94	4203876.50	27890.37500	(04112509)
609513.94	4203876.50	29513.20900	(04112509)	609538.94	4203876.50	31345.09180	(04112509)
609563.94	4203876.50	33426.04300	(04112509)	609588.94	4203876.50	35790.05470	(04112509)
609613.94	4203876.50	38440.75000	(04112509)	609638.94	4203876.50	41205.55470	(04112509)
609663.94	4203876.50	44757.60160	(01110609)	609688.94	4203876.50	54073.96880	(01110609)
609713.94	4203876.50	61449.69920	(02020409)	609738.94	4203876.50	59908.57030	(02020409)
609763.94	4203876.50	58087.29690	(02020409)	609788.94	4203876.50	56888.32810	(05012509)
609813.94	4203876.50	58447.78910	(05012509)	609838.94	4203876.50	59664.51170	(05012509)
609863.94	4203876.50	60032.04690	(05012509)	609888.94	4203876.50	59498.23830	(05012509)
609913.94	4203876.50	58297.95310	(03122209)	609938.94	4203876.50	59051.87500	(03122209)
609963.94	4203876.50	58929.30470	(03110609)	609988.94	4203876.50	58604.62110	(05122309)
610013.94	4203876.50	58380.57420	(03111309)	610038.94	4203876.50	58261.38280	(03111309)
610063.94	4203876.50	57282.64840	(03112509)	610088.94	4203876.50	57947.63280	(03112509)
610113.94	4203876.50	57506.52340	(03112509)	610138.94	4203876.50	55155.23440	(03112509)
610163.94	4203876.50	53677.30470	(03110409)	610188.94	4203876.50	54120.17970	(02112609)
610213.94	4203876.50	54752.44530	(02112609)	610238.94	4203876.50	55377.96090	(03110409)
610263.94	4203876.50	55305.05470	(03110409)	610288.94	4203876.50	53237.10940	(03110409)
610313.94	4203876.50	53069.32810	(05121209)	610338.94	4203876.50	53781.94530	(05121209)
610363.94	4203876.50	54392.71880	(05121209)	610388.94	4203876.50	54828.42190	(05121209)
610413.94	4203876.50	54810.89840	(05121209)	610438.94	4203876.50	53748.82810	(05121209)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609213.94	4203901.50	18281.82810	(01111609)	609238.94	4203901.50	18857.19920	(01111609)
609263.94	4203901.50	19475.83980	(01111609)	609288.94	4203901.50	20142.87500	(01111609)
609313.94	4203901.50	20864.30470	(01111609)	609338.94	4203901.50	21647.39260	(01111609)
609363.94	4203901.50	22501.28910	(01111609)	609388.94	4203901.50	23437.74610	(01111609)
609413.94	4203901.50	24470.22270	(01111609)	609438.94	4203901.50	25616.08590	(01111609)
609463.94	4203901.50	26897.11520	(01111609)	609488.94	4203901.50	28341.58980	(01111609)
609513.94	4203901.50	29988.30860	(01111609)	609538.94	4203901.50	31889.01370	(01111609)
609563.94	4203901.50	34117.82810	(01111609)	609588.94	4203901.50	36782.50000	(01111609)
609613.94	4203901.50	40040.35940	(01111609)	609638.94	4203901.50	44134.39060	(01111609)
609663.94	4203901.50	49399.02340	(04112509)	609688.94	4203901.50	56372.98050	(04112509)

609713.94	4203901.50	67372.22660	(02020409)	609213.94	4203926.50	18552.62300	(03011609)
609238.94	4203926.50	19155.46480	(03011609)	609263.94	4203926.50	19804.79300	(03011609)
609288.94	4203926.50	20506.53910	(03011609)	609313.94	4203926.50	21267.26950	(03011609)
609338.94	4203926.50	22094.47270	(03011609)	609363.94	4203926.50	22998.61910	(03011609)
609388.94	4203926.50	23992.16990	(03011609)	609413.94	4203926.50	25088.23440	(03011609)
609438.94	4203926.50	26305.45700	(03011609)	609463.94	4203926.50	27666.06640	(03011609)
609488.94	4203926.50	29199.79300	(03011609)	609513.94	4203926.50	30945.12110	(03011609)
609538.94	4203926.50	32953.83590	(03011609)	609563.94	4203926.50	35297.91410	(03011609)
609588.94	4203926.50	38077.96090	(03011609)	609613.94	4203926.50	41450.44530	(03011609)
609638.94	4203926.50	45644.95310	(03011609)	609663.94	4203926.50	50981.14840	(03011609)
609688.94	4203926.50	57885.48830	(03011609)	609713.94	4203926.50	66811.92190	(03011609)
609213.94	4203951.50	18454.84960	(03011609)	609238.94	4203951.50	19053.60160	(03011609)
609263.94	4203951.50	19696.90230	(03011609)	609288.94	4203951.50	20391.29490	(03011609)
609313.94	4203951.50	21142.55080	(03011609)	609338.94	4203951.50	21958.87890	(03011609)
609363.94	4203951.50	22850.37890	(03011609)	609388.94	4203951.50	23828.48240	(03011609)
609413.94	4203951.50	24906.05860	(03011609)	609438.94	4203951.50	26100.48440	(03011609)
609463.94	4203951.50	27435.63870	(03011609)	609488.94	4203951.50	28938.91410	(03011609)
609513.94	4203951.50	30648.64060	(03011609)	609538.94	4203951.50	32615.74220	(03011609)
609563.94	4203951.50	34911.98440	(03011609)	609588.94	4203951.50	37643.04690	(03011609)
609613.94	4203951.50	40961.90620	(03011609)	609638.94	4203951.50	45100.84380	(03011609)
609663.94	4203951.50	50377.81250	(03011609)	609688.94	4203951.50	57216.01950	(03011609)
609713.94	4203951.50	66043.48440	(03011609)	609213.94	4203976.50	18104.87300	(03011609)
609238.94	4203976.50	18684.11520	(03011609)	609263.94	4203976.50	19305.41410	(03011609)
609288.94	4203976.50	19974.74610	(03011609)	609313.94	4203976.50	20699.24800	(03011609)
609338.94	4203976.50	21485.81840	(03011609)	609363.94	4203976.50	22343.50000	(03011609)
609388.94	4203976.50	23285.67190	(03011609)	609413.94	4203976.50	24325.82030	(03011609)
609438.94	4203976.50	25480.43550	(03011609)	609463.94	4203976.50	26772.45310	(03011609)
609488.94	4203976.50	28229.11520	(03011609)	609513.94	4203976.50	29890.58200	(03011609)
609538.94	4203976.50	31808.00780	(03011609)	609563.94	4203976.50	34053.41410	(03011609)
609588.94	4203976.50	36730.57810	(03011609)	609613.94	4203976.50	39993.29690	(03011609)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609638.94	4203976.50	44073.32810	(03011609)	609663.94	4203976.50	49289.60160	(03011609)
609688.94	4203976.50	56061.39840	(03011609)	609713.94	4203976.50	64787.33980	(03011609)
609213.94	4204001.50	17640.42970	(03011609)	609238.94	4204001.50	18202.35940	(03011609)
609263.94	4204001.50	18804.54300	(03011609)	609288.94	4204001.50	19450.86330	(03011609)
609313.94	4204001.50	20148.77150	(03011609)	609338.94	4204001.50	20906.02730	(03011609)
609363.94	4204001.50	21732.57810	(03011609)	609388.94	4204001.50	22639.88480	(03011609)
609413.94	4204001.50	23642.33200	(03011609)	609438.94	4204001.50	24757.03520	(03011609)
609463.94	4204001.50	26007.09770	(03011609)	609488.94	4204001.50	27420.98240	(03011609)
609513.94	4204001.50	29036.47070	(03011609)	609538.94	4204001.50	30906.43360	(03011609)
609563.94	4204001.50	33102.36720	(03011609)	609588.94	4204001.50	35728.20310	(03011609)
609613.94	4204001.50	38938.59380	(03011609)	609638.94	4204001.50	42965.91410	(03011609)
609663.94	4204001.50	48587.82030	(05012009)	609688.94	4204001.50	56053.41410	(05012009)
609713.94	4204001.50	65472.01560	(05012009)	609213.94	4204026.50	17130.77340	(03011609)
609238.94	4204026.50	17686.16020	(03011609)	609263.94	4204026.50	18277.57420	(03011609)
609288.94	4204026.50	18910.49220	(03011609)	609313.94	4204026.50	19591.67580	(03011609)
609338.94	4204026.50	20329.14450	(03011609)	609363.94	4204026.50	21132.13870	(03011609)
609388.94	4204026.50	22011.54300	(03011609)	609413.94	4204026.50	22983.30470	(03011609)
609438.94	4204026.50	24064.46480	(03011609)	609463.94	4204026.50	25277.95310	(03011609)
609488.94	4204026.50	26685.80470	(05012009)	609513.94	4204026.50	28842.47850	(05012009)
609538.94	4204026.50	31254.11520	(05012009)	609563.94	4204026.50	33993.26560	(05012009)
609588.94	4204026.50	37158.98440	(05012009)	609613.94	4204026.50	40911.09380	(05012009)
609638.94	4204026.50	45477.12500	(05012009)	609663.94	4204026.50	51178.46880	(05012009)
609688.94	4204026.50	58477.84380	(05012009)	609713.94	4204026.50	67683.48440	(05012009)
609213.94	4204051.50	16578.54300	(03011609)	609238.94	4204051.50	17138.24220	(03011609)
609263.94	4204051.50	17733.46680	(03011609)	609288.94	4204051.50	18368.53120	(03011609)
609313.94	4204051.50	19048.07420	(03011609)	609338.94	4204051.50	19781.37110	(03011609)

609363.94	4204051.50	21003.93160	(05012009)	609388.94	4204051.50	22356.11130	(05012009)
609413.94	4204051.50	23803.28320	(05012009)	609438.94	4204051.50	25361.13670	(05012009)
609463.94	4204051.50	27049.77930	(05012009)	609488.94	4204051.50	28896.29690	(05012009)
609513.94	4204051.50	30936.87500	(05012009)	609538.94	4204051.50	33222.82810	(05012009)
609563.94	4204051.50	35824.95310	(05012009)	609588.94	4204051.50	38845.93750	(05012009)
609613.94	4204051.50	42439.67580	(05012009)	609638.94	4204051.50	46840.62500	(05012009)
609663.94	4204051.50	52358.51560	(05012009)	609688.94	4204051.50	59457.46480	(05012009)
609713.94	4204051.50	68415.66410	(05012009)	609213.94	4204076.50	16566.51950	(05012009)
609238.94	4204076.50	17470.83980	(05012009)	609263.94	4204076.50	18425.27340	(05012009)
609288.94	4204076.50	19429.22270	(05012009)	609313.94	4204076.50	20488.05080	(05012009)
609338.94	4204076.50	21604.67580	(05012009)	609363.94	4204076.50	22786.91990	(05012009)
609388.94	4204076.50	24045.43160	(05012009)	609413.94	4204076.50	25388.09380	(05012009)
609438.94	4204076.50	26832.98830	(05012009)	609463.94	4204076.50	28402.66020	(05012009)
609488.94	4204076.50	30119.85550	(05012009)	609513.94	4204076.50	32024.52730	(05012009)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609538.94	4204076.50	34165.97270	(05012009)	609563.94	4204076.50	36612.93750	(05012009)
609588.94	4204076.50	39473.92190	(05012009)	609613.94	4204076.50	42890.81250	(05012009)
609638.94	4204076.50	47107.58590	(05012009)	609663.94	4204076.50	52434.46880	(05012009)
609688.94	4204076.50	59422.75000	(04111809)	609713.94	4204076.50	68630.10940	(04111809)
609213.94	4204101.50	18089.97070	(05012009)	609238.94	4204101.50	18936.32810	(05012009)
609263.94	4204101.50	19821.85940	(05012009)	609288.94	4204101.50	20746.36520	(05012009)
609313.94	4204101.50	21717.64450	(05012009)	609338.94	4204101.50	22740.05860	(05012009)
609363.94	4204101.50	23820.41020	(05012009)	609388.94	4204101.50	24965.22660	(05012009)
609413.94	4204101.50	26195.83980	(05012009)	609438.94	4204101.50	27516.06640	(05012009)
609463.94	4204101.50	28958.06450	(05012009)	609488.94	4204101.50	30537.85550	(05012009)
609513.94	4204101.50	32302.86720	(05012009)	609538.94	4204101.50	34292.11720	(05012009)
609563.94	4204101.50	36582.08590	(05012009)	609588.94	4204101.50	39275.65620	(05012009)
609613.94	4204101.50	42838.34380	(04111809)	609638.94	4204101.50	47227.88280	(04111809)
609663.94	4204101.50	52733.97270	(04111809)	609688.94	4204101.50	59823.14060	(04111809)
609713.94	4204101.50	68759.26560	(04030809)	609213.94	4204126.50	19063.09380	(05012009)
609238.94	4204126.50	19832.69530	(05012009)	609263.94	4204126.50	20630.26560	(05012009)
609288.94	4204126.50	21464.29300	(05012009)	609313.94	4204126.50	22337.13090	(05012009)
609338.94	4204126.50	23258.28120	(05012009)	609363.94	4204126.50	24226.69530	(05012009)
609388.94	4204126.50	25264.66410	(05012009)	609413.94	4204126.50	26371.26170	(05012009)
609438.94	4204126.50	27574.51950	(05012009)	609463.94	4204126.50	28885.25780	(05012009)
609488.94	4204126.50	30336.81450	(05012009)	609513.94	4204126.50	32192.66800	(04111809)
609538.94	4204126.50	34346.55860	(04111809)	609563.94	4204126.50	36792.28120	(04111809)
609588.94	4204126.50	39633.22660	(04111809)	609613.94	4204126.50	43024.13280	(04111809)
609638.94	4204126.50	47197.40620	(04111809)	609663.94	4204126.50	52737.93750	(04030809)
609688.94	4204126.50	60054.71880	(04030809)	609713.94	4204126.50	70201.76560	(04030809)
609213.94	4204151.50	19549.46090	(05012009)	609238.94	4204151.50	20231.68750	(05012009)
609263.94	4204151.50	20941.75590	(05012009)	609288.94	4204151.50	21681.77340	(05012009)
609313.94	4204151.50	22460.30860	(05012009)	609338.94	4204151.50	23278.52730	(05012009)
609363.94	4204151.50	24148.43750	(05012009)	609388.94	4204151.50	25076.05860	(05012009)
609413.94	4204151.50	26226.77340	(04111809)	609438.94	4204151.50	27589.36330	(04111809)
609463.94	4204151.50	29057.50390	(04111809)	609488.94	4204151.50	30655.15620	(04111809)
609513.94	4204151.50	32420.66020	(04111809)	609538.94	4204151.50	34400.01560	(04111809)
609563.94	4204151.50	36664.15230	(04111809)	609588.94	4204151.50	39565.02340	(04030809)
609613.94	4204151.50	43117.53910	(04030809)	609638.94	4204151.50	47453.98440	(04030809)
609663.94	4204151.50	52903.85160	(04030809)	609688.94	4204151.50	59935.82030	(04030809)
609713.94	4204151.50	70510.01560	(04111609)	609213.94	4204176.50	19630.08980	(05012009)
609238.94	4204176.50	20231.42770	(05012009)	609263.94	4204176.50	20857.28120	(05012009)
609288.94	4204176.50	21512.05860	(05012009)	609313.94	4204176.50	22272.52340	(04111809)
609338.94	4204176.50	23250.91800	(04111809)	609363.94	4204176.50	24273.83980	(04111809)
609388.94	4204176.50	25350.05860	(04111809)	609413.94	4204176.50	26492.50390	(04111809)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609438.94	4204176.50	27713.64450	(04111809)	609463.94	4204176.50	29034.77730	(04111809)
609488.94	4204176.50	30480.32030	(04111809)	609513.94	4204176.50	32354.94140	(04030809)
609538.94	4204176.50	34491.95700	(04030809)	609563.94	4204176.50	36905.53120	(04030809)
609588.94	4204176.50	39697.79300	(04030809)	609613.94	4204176.50	43022.72660	(04030809)
609638.94	4204176.50	47250.05080	(04111609)	609663.94	4204176.50	53029.33590	(04111609)
609688.94	4204176.50	60450.91410	(04111609)	609713.94	4204176.50	70586.07030	(04111609)
609213.94	4204201.50	19406.15820	(04111809)	609238.94	4204201.50	20161.63670	(04111809)
609263.94	4204201.50	20937.52150	(04111809)	609288.94	4204201.50	21736.51170	(04111809)
609313.94	4204201.50	22565.58790	(04111809)	609338.94	4204201.50	23426.52930	(04111809)
609363.94	4204201.50	24328.82420	(04111809)	609388.94	4204201.50	25280.97460	(04111809)
609413.94	4204201.50	26294.63480	(04111809)	609438.94	4204201.50	27658.36520	(04030809)
609463.94	4204201.50	29136.31250	(04030809)	609488.94	4204201.50	30732.12700	(04030809)
609513.94	4204201.50	32478.63670	(04030809)	609538.94	4204201.50	34423.53120	(04030809)
609563.94	4204201.50	36636.43360	(04030809)	609588.94	4204201.50	39613.99220	(04111609)
609613.94	4204201.50	43218.01560	(04111609)	609638.94	4204201.50	47596.83590	(04111609)
609663.94	4204201.50	53092.62500	(04111609)	609688.94	4204201.50	60202.15620	(04111609)
609713.94	4204201.50	69902.82030	(04111609)	609213.94	4204226.50	19709.89260	(04111809)
609238.94	4204226.50	20365.21880	(04111809)	609263.94	4204226.50	21040.64450	(04111809)
609288.94	4204226.50	21735.46880	(04111809)	609313.94	4204226.50	22455.35940	(04111809)
609338.94	4204226.50	23220.90430	(04030809)	609363.94	4204226.50	24282.73630	(04030809)
609388.94	4204226.50	25390.35160	(04030809)	609413.94	4204226.50	26552.34380	(04030809)
609438.94	4204226.50	27781.35550	(04030809)	609463.94	4204226.50	29096.33590	(04030809)
609488.94	4204226.50	30522.69140	(04030809)	609513.94	4204226.50	32273.91020	(04111609)
609538.94	4204226.50	34484.35940	(04111609)	609563.94	4204226.50	36959.03120	(04111609)
609588.94	4204226.50	39795.92190	(04111609)	609613.94	4204226.50	43147.96480	(04111609)
609638.94	4204226.50	47254.36720	(04111609)	609663.94	4204226.50	52457.91410	(04111609)
609688.94	4204226.50	60140.70310	(04110809)	609713.94	4204226.50	71368.77340	(04110809)
609213.94	4204251.50	19651.36330	(04111809)	609238.94	4204251.50	20212.65620	(04111809)
609263.94	4204251.50	20848.90820	(04030809)	609288.94	4204251.50	21701.69530	(04030809)
609313.94	4204251.50	22573.83590	(04030809)	609338.94	4204251.50	23471.95700	(04030809)
609363.94	4204251.50	24399.50590	(04030809)	609388.94	4204251.50	25364.94920	(04030809)
609413.94	4204251.50	26380.30470	(04030809)	609438.94	4204251.50	27468.20120	(04111609)
609463.94	4204251.50	29042.75390	(04111609)	609488.94	4204251.50	30725.45310	(04111609)
609513.94	4204251.50	32546.33590	(04111609)	609538.94	4204251.50	34546.64840	(04111609)
609563.94	4204251.50	36794.60160	(04111609)	609588.94	4204251.50	39389.64840	(04111609)
609613.94	4204251.50	42487.31250	(04111609)	609638.94	4204251.50	46800.01950	(04110809)
609663.94	4204251.50	53020.40230	(04110809)	609688.94	4204251.50	60922.77340	(04110809)
609713.94	4204251.50	70833.60940	(05112409)	609213.94	4204276.50	19638.10940	(04030809)
609238.94	4204276.50	20349.31250	(04030809)	609263.94	4204276.50	21069.71880	(04030809)
609288.94	4204276.50	21801.53520	(04030809)	609313.94	4204276.50	22546.30470	(04030809)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609338.94	4204276.50	23311.20700	(04030809)	609363.94	4204276.50	24102.07230	(04030809)
609388.94	4204276.50	25207.37500	(04111609)	609413.94	4204276.50	26475.69140	(04111609)
609438.94	4204276.50	27798.48050	(04111609)	609463.94	4204276.50	29191.40230	(04111609)
609488.94	4204276.50	30677.13280	(04111609)	609513.94	4204276.50	32284.65230	(04111609)

609538.94	4204276.50	34055.93750	(04111609)	609563.94	4204276.50	36053.97660	(04111609)
609588.94	4204276.50	38898.78520	(04110809)	609613.94	4204276.50	42836.07810	(04110809)
609638.94	4204276.50	47574.28910	(04110809)	609663.94	4204276.50	53492.34380	(04110809)
609688.94	4204276.50	60968.41410	(05112409)	609713.94	4204276.50	69645.81250	(05112409)
609213.94	4204301.50	19716.15040	(04030809)	609238.94	4204301.50	20309.42970	(04030809)
609263.94	4204301.50	20906.97660	(04030809)	609288.94	4204301.50	21510.37110	(04030809)
609313.94	4204301.50	22300.26560	(04111609)	609338.94	4204301.50	23316.35940	(04111609)
609363.94	4204301.50	24350.48830	(04111609)	609388.94	4204301.50	25410.29490	(04111609)
609413.94	4204301.50	26501.07810	(04111609)	609438.94	4204301.50	27630.61520	(04111609)
609463.94	4204301.50	28810.20700	(04111609)	609488.94	4204301.50	30056.59570	(04111609)
609513.94	4204301.50	31388.81250	(04111609)	609538.94	4204301.50	33627.61330	(04110809)
609563.94	4204301.50	36427.33590	(04110809)	609588.94	4204301.50	39574.75000	(04110809)
609613.94	4204301.50	43187.07030	(04110809)	609638.94	4204301.50	47441.75780	(05112409)
609663.94	4204301.50	52448.72660	(05112409)	609688.94	4204301.50	57800.50000	(05112409)
609713.94	4204301.50	67372.85940	(04110909)	609213.94	4204326.50	19429.73240	(04030809)
609238.94	4204326.50	19989.97270	(04111609)	609263.94	4204326.50	20837.67580	(04111609)
609288.94	4204326.50	21687.02340	(04111609)	609313.94	4204326.50	22540.91410	(04111609)
609338.94	4204326.50	23394.64450	(04111609)	609363.94	4204326.50	24253.34180	(04111609)
609388.94	4204326.50	25117.75980	(04111609)	609413.94	4204326.50	25989.03710	(04111609)
609438.94	4204326.50	26870.11910	(04111609)	609463.94	4204326.50	27759.39450	(04111609)
609488.94	4204326.50	29768.74220	(04110809)	609513.94	4204326.50	31912.02730	(04110809)
609538.94	4204326.50	34205.56250	(04110809)	609563.94	4204326.50	36665.35550	(04110809)
609588.94	4204326.50	39323.07030	(05112409)	609613.94	4204326.50	42130.78520	(05112409)
609638.94	4204326.50	44951.96480	(05112409)	609663.94	4204326.50	47557.39840	(05112409)
609688.94	4204326.50	55948.68750	(04110909)	609713.94	4204326.50	66786.04690	(02112709)
609213.94	4204351.50	19544.95700	(04111609)	609238.94	4204351.50	20258.99610	(04111609)
609263.94	4204351.50	20961.03520	(04111609)	609288.94	4204351.50	21652.52730	(04111609)
609313.94	4204351.50	22330.37890	(04111609)	609338.94	4204351.50	22990.69730	(04111609)
609363.94	4204351.50	23632.41800	(04111609)	609388.94	4204351.50	24250.39260	(04111609)
609413.94	4204351.50	25107.69920	(04110809)	609438.94	4204351.50	26771.22270	(04110809)
609463.94	4204351.50	28490.73630	(04110809)	609488.94	4204351.50	30262.86330	(04110809)
609513.94	4204351.50	32075.07030	(04110809)	609538.94	4204351.50	33919.37500	(05112409)
609563.94	4204351.50	35723.24220	(05112409)	609588.94	4204351.50	37375.18750	(05112409)
609613.94	4204351.50	38754.77340	(05112409)	609638.94	4204351.50	40622.81640	(04110909)
609663.94	4204351.50	47513.90230	(04110909)	609688.94	4204351.50	55307.74220	(04110909)
609713.94	4204351.50	59858.89450	(02021209)	609213.94	4204376.50	19567.42580	(04111609)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609238.94	4204376.50	20124.66800	(04111609)	609263.94	4204376.50	20658.08200	(04111609)
609288.94	4204376.50	21161.80860	(04111609)	609313.94	4204376.50	21630.76950	(04111609)
609338.94	4204376.50	22059.58590	(04111609)	609363.94	4204376.50	22937.87300	(04110809)
609388.94	4204376.50	24347.86720	(04110809)	609413.94	4204376.50	25773.47850	(04110809)
609438.94	4204376.50	27202.36720	(04110809)	609463.94	4204376.50	28615.24220	(04110809)
609488.94	4204376.50	29994.07030	(05112409)	609513.94	4204376.50	31276.99610	(05112409)
609538.94	4204376.50	32380.72270	(05112409)	609563.94	4204376.50	33218.81250	(05112409)
609588.94	4204376.50	33738.92580	(05112409)	609613.94	4204376.50	36323.36720	(04110909)
609638.94	4204376.50	41502.18750	(04110909)	609663.94	4204376.50	46779.23440	(04110909)
609688.94	4204376.50	50281.13280	(02021209)	609713.94	4204376.50	53329.77340	(04022009)
609213.94	4204401.50	19190.88480	(04111609)	609238.94	4204401.50	19572.03120	(04111609)
609263.94	4204401.50	19911.83980	(04111609)	609288.94	4204401.50	20204.16020	(04111609)
609313.94	4204401.50	21114.39450	(04110809)	609338.94	4204401.50	22334.15820	(04110809)
609363.94	4204401.50	23547.32810	(04110809)	609388.94	4204401.50	24738.12500	(04110809)
609413.94	4204401.50	25885.71880	(04110809)	609438.94	4204401.50	26972.72270	(05112409)
609463.94	4204401.50	27951.20510	(05112409)	609488.94	4204401.50	28755.18360	(05112409)
609513.94	4204401.50	29325.25390	(05112409)	609538.94	4204401.50	29604.10940	(05112409)
609563.94	4204401.50	29550.00980	(05112409)	609588.94	4204401.50	33022.42970	(04110909)
609613.94	4204401.50	37040.64840	(04110909)	609638.94	4204401.50	40740.61720	(04110909)
609663.94	4204401.50	43041.95310	(02021209)	609688.94	4204401.50	44885.33590	(04022009)

609713.94	4204401.50	47196.28520	(02120609)	609213.94	4204426.50	18420.86330	(04111609)
609238.94	4204426.50	18612.81640	(04111609)	609263.94	4204426.50	19553.35160	(04110809)
609288.94	4204426.50	20626.94140	(04110809)	609313.94	4204426.50	21680.04490	(04110809)
609338.94	4204426.50	22698.08980	(04110809)	609363.94	4204426.50	23660.08010	(04110809)
609388.94	4204426.50	24551.41410	(05112409)	609413.94	4204426.50	25333.96090	(05112409)
609438.94	4204426.50	25960.12500	(05112409)	609463.94	4204426.50	26381.47270	(05112409)
609488.94	4204426.50	26552.38280	(05112409)	609513.94	4204426.50	26421.13670	(05112409)
609538.94	4204426.50	27138.94140	(04110909)	609563.94	4204426.50	30339.90230	(04110909)
609588.94	4204426.50	33564.15620	(04110909)	609613.94	4204426.50	36328.11720	(04110909)
609638.94	4204426.50	37895.19140	(05110309)	609663.94	4204426.50	38854.60940	(02021209)
609688.94	4204426.50	41078.09380	(04022009)	609713.94	4204426.50	42951.03520	(02120609)
609213.94	4204451.50	18197.92970	(04110809)	609238.94	4204451.50	19155.84960	(04110809)
609263.94	4204451.50	20085.83590	(04110809)	609288.94	4204451.50	20973.47070	(04110809)
609313.94	4204451.50	21800.76560	(04110809)	609338.94	4204451.50	22552.67580	(05112409)
609363.94	4204451.50	23205.61520	(05112409)	609388.94	4204451.50	23717.33980	(05112409)
609413.94	4204451.50	24050.22270	(05112409)	609438.94	4204451.50	24169.43360	(05112409)
609463.94	4204451.50	24032.09770	(05112409)	609488.94	4204451.50	23614.80470	(05112409)
609513.94	4204451.50	25372.86520	(04110909)	609538.94	4204451.50	28111.56640	(04110909)
609563.94	4204451.50	30772.10160	(04110909)	609588.94	4204451.50	32935.03910	(04110909)
609613.94	4204451.50	34126.00000	(05110309)	609638.94	4204451.50	35044.91410	(02021209)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609663.94	4204451.50	35978.46090	(04022009)	609688.94	4204451.50	36969.00780	(04022009)
609713.94	4204451.50	38956.72270	(02120609)	609213.94	4204476.50	18703.66800	(04110809)
609238.94	4204476.50	19491.55860	(04110809)	609263.94	4204476.50	20215.81640	(04110809)
609288.94	4204476.50	20866.66800	(05112409)	609313.94	4204476.50	21427.67770	(05112409)
609338.94	4204476.50	21862.74610	(05112409)	609363.94	4204476.50	22142.49610	(05112409)
609388.94	4204476.50	22239.03910	(05112409)	609413.94	4204476.50	22118.82810	(05112409)
609438.94	4204476.50	21765.76760	(05112409)	609463.94	4204476.50	21435.02150	(04110909)
609488.94	4204476.50	23828.76950	(04110909)	609513.94	4204476.50	26211.01170	(04110909)
609538.94	4204476.50	28462.99610	(04110909)	609563.94	4204476.50	30221.66410	(04110909)
609588.94	4204476.50	31160.44140	(05120709)	609613.94	4204476.50	31920.75780	(02021209)
609638.94	4204476.50	31675.91800	(02021209)	609663.94	4204476.50	33619.10160	(04022009)
609688.94	4204476.50	34145.85160	(02120609)	609713.94	4204476.50	35168.24610	(02120609)
609213.94	4204501.50	18845.04490	(04110809)	609238.94	4204501.50	19420.69140	(05112409)
609263.94	4204501.50	19915.42580	(05112409)	609288.94	4204501.50	20297.16600	(05112409)
609313.94	4204501.50	20542.84380	(05112409)	609338.94	4204501.50	20631.11720	(05112409)
609363.94	4204501.50	20535.68360	(05112409)	609388.94	4204501.50	20245.19920	(05112409)
609413.94	4204501.50	19752.98830	(05112409)	609438.94	4204501.50	20325.66990	(04110909)
609463.94	4204501.50	22476.74220	(04110909)	609488.94	4204501.50	24580.81450	(04110909)
609513.94	4204501.50	26511.13280	(04110909)	609538.94	4204501.50	27985.10940	(04110909)
609563.94	4204501.50	28759.73240	(02112709)	609588.94	4204501.50	29308.95310	(02021209)
609613.94	4204501.50	29458.83980	(02021209)	609638.94	4204501.50	30269.37110	(04022009)
609663.94	4204501.50	30887.20700	(04022009)	609688.94	4204501.50	31988.34770	(02120609)
609713.94	4204501.50	32206.11720	(02122509)	609213.94	4204526.50	18606.89840	(05112409)
609238.94	4204526.50	18951.32420	(05112409)	609263.94	4204526.50	19175.51170	(05112409)
609288.94	4204526.50	19263.33200	(05112409)	609313.94	4204526.50	19194.60160	(05112409)
609338.94	4204526.50	18959.32420	(05112409)	609363.94	4204526.50	18552.12110	(05112409)
609388.94	4204526.50	18086.65230	(02112009)	609413.94	4204526.50	19330.14060	(04110909)
609438.94	4204526.50	21270.70310	(04110909)	609463.94	4204526.50	23154.47660	(04110909)
609488.94	4204526.50	24838.02730	(04110909)	609513.94	4204526.50	26100.68160	(04110909)
609538.94	4204526.50	26756.67970	(02112709)	609563.94	4204526.50	27095.41990	(02021209)
609588.94	4204526.50	27521.35160	(02021209)	609613.94	4204526.50	27033.87500	(04022009)
609638.94	4204526.50	28649.25200	(04022009)	609663.94	4204526.50	28130.62890	(04022009)
609688.94	4204526.50	29779.39260	(02120609)	609713.94	4204526.50	30034.46480	(02122509)
609213.94	4204551.50	17988.77340	(05112409)	609238.94	4204551.50	18080.12890	(05112409)
609263.94	4204551.50	18035.07810	(05112409)	609288.94	4204551.50	17847.72660	(05112409)
609313.94	4204551.50	17512.90620	(05112409)	609338.94	4204551.50	17036.12110	(05112409)

Construction

609363.94	4204551.50	16786.03320	(02112009)	609388.94	4204551.50	18432.79490	(04110909)
609413.94	4204551.50	20201.55860	(04110909)	609438.94	4204551.50	21893.39450	(04110909)
609463.94	4204551.50	23380.16800	(04110909)	609488.94	4204551.50	24485.24610	(04110909)
609513.94	4204551.50	25049.59380	(02112709)	609538.94	4204551.50	25406.63670	(05110309)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , PAREA2 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609563.94	4204551.50	25797.19730	(02021209)	609588.94	4204551.50	25474.09570	(02021209)
609613.94	4204551.50	26264.02340	(04022009)	609638.94	4204551.50	26733.60160	(04022009)
609663.94	4204551.50	26807.45900	(02120609)	609688.94	4204551.50	27615.89060	(02120609)
609713.94	4204551.50	28029.21880	(02122509)	609738.38	4203889.50	67901.31250	(02020409)
609763.38	4203889.50	66291.03910	(02020409)	609788.38	4203889.50	64270.75000	(02020409)
609813.38	4203889.50	64189.04690	(05012509)	609838.38	4203889.50	65588.28130	(05012509)
609863.38	4203889.50	66182.53120	(05012509)	609888.38	4203889.50	65838.06250	(05012509)
609913.38	4203889.50	64643.43750	(05012509)	609938.38	4203889.50	62772.67580	(03122209)
609963.38	4203889.50	63141.96880	(03110609)	609988.38	4203889.50	63097.56250	(05122309)
610013.38	4203889.50	62946.90630	(03111309)	610038.38	4203889.50	62898.10940	(03111309)
610063.38	4203889.50	62126.30470	(03112509)	610088.38	4203889.50	62792.13280	(03112509)
610113.38	4203889.50	62298.46090	(03112509)	610138.38	4203893.50	61298.79690	(03110409)
610163.38	4203893.50	61480.21880	(03110409)	610188.38	4203893.50	62060.64450	(03110409)
610213.38	4203893.50	62852.01560	(03110409)	610238.38	4203893.50	63412.10940	(03110409)
610263.38	4203893.50	62797.14450	(05121209)	610288.38	4203893.50	63501.69530	(05121209)
610313.38	4203893.50	64114.50000	(05121209)	610338.38	4203893.50	64675.10160	(05121209)
610363.38	4203893.50	65046.92190	(05121209)	610388.38	4203893.50	64979.50000	(05121209)
610413.38	4203893.50	63719.75780	(05121209)	609716.12	4204329.00	66289.14060	(05110309)
609718.88	4203892.00	68999.20310	(02020409)	610415.75	4203905.50	75076.27340	(03120409)
610380.25	4203944.50	67979.92190	(04121709)	610236.69	4204012.00	67284.21880	(03120409)
610162.50	4204082.50	61794.24220	(03030609)	610132.13	4204052.50	60859.00000	(03120409)
610098.44	4204082.50	59529.71090	(03120409)	610133.94	4204110.50	59908.95310	(02110409)
610096.69	4204185.50	61204.73050	(05020809)	610109.63	4204339.50	66730.70310	(05013109)
610034.13	4204456.50	67872.48440	(01121309)	609991.31	4204402.50	65588.20310	(01121309)
609919.44	4204407.00	67477.03130	(04022009)	609939.94	4204280.00	62592.36720	(02021209)
609915.88	4204233.50	61953.53120	(04110909)	609840.44	4204230.00	63667.67970	(05112409)
609789.50	4204257.50	63750.16410	(04110909)	609788.75	4204361.00	52078.55470	(05120609)
609849.56	4204412.00	34150.45310	(02021209)	609800.69	4204410.50	49862.60160	(01121309)

*** THE SUMMARY OF MAXIMUM PERIOD (43824 HRS) RESULTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	NETWORK RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	GRID-ID
EXHAUST	1ST HIGHEST VALUE IS	752.98370 AT (610098.44, 4204082.50, 43.97, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	741.90399 AT (610132.13, 4204052.50, 49.78, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	638.28113 AT (610138.38, 4203893.50, 61.19, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	630.68219 AT (610163.38, 4203893.50, 56.10, 0.00)	DC	NA
	5TH HIGHEST VALUE IS	623.42102 AT (610188.38, 4203893.50, 51.53, 0.00)	DC	NA
	6TH HIGHEST VALUE IS	613.68591 AT (610213.38, 4203893.50, 47.82, 0.00)	DC	NA
	7TH HIGHEST VALUE IS	613.67096 AT (610088.38, 4203889.50, 56.41, 0.00)	DC	NA
	8TH HIGHEST VALUE IS	612.84052 AT (610063.38, 4203889.50, 51.10, 0.00)	DC	NA
	9TH HIGHEST VALUE IS	612.62061 AT (610113.38, 4203889.50, 61.66, 0.00)	DC	NA
	10TH HIGHEST VALUE IS	609.84131 AT (610038.38, 4203889.50, 46.12, 0.00)	DC	NA

FUGITIVE 1ST HIGHEST VALUE IS 1324.20801 AT (610098.44, 4204082.50, 43.97, 0.00) DC NA
2ND HIGHEST VALUE IS 1310.91052 AT (610132.13, 4204052.50, 49.78, 0.00) DC NA
3RD HIGHEST VALUE IS 968.16058 AT (610096.69, 4204185.50, 33.00, 0.00) DC NA
4TH HIGHEST VALUE IS 960.90851 AT (610133.94, 4204110.50, 43.40, 0.00) DC NA
5TH HIGHEST VALUE IS 906.35986 AT (610162.50, 4204082.50, 46.42, 0.00) DC NA
6TH HIGHEST VALUE IS 893.12512 AT (609789.50, 4204257.50, 70.15, 0.00) DC NA
7TH HIGHEST VALUE IS 876.49915 AT (610236.69, 4204012.00, 49.57, 0.00) DC NA
8TH HIGHEST VALUE IS 802.35693 AT (610138.38, 4203893.50, 61.19, 0.00) DC NA
9TH HIGHEST VALUE IS 787.89026 AT (610163.38, 4203893.50, 56.10, 0.00) DC NA
10TH HIGHEST VALUE IS 771.31213 AT (610188.38, 4203893.50, 51.53, 0.00) DC NA

ALL 1ST HIGHEST VALUE IS 2077.19580 AT (610098.44, 4204082.50, 43.97, 0.00) DC NA
2ND HIGHEST VALUE IS 2052.81396 AT (610132.13, 4204052.50, 49.78, 0.00) DC NA
3RD HIGHEST VALUE IS 1552.47607 AT (610133.94, 4204110.50, 43.40, 0.00) DC NA
4TH HIGHEST VALUE IS 1536.15173 AT (610096.69, 4204185.50, 33.00, 0.00) DC NA
5TH HIGHEST VALUE IS 1471.47559 AT (610162.50, 4204082.50, 46.42, 0.00) DC NA
6TH HIGHEST VALUE IS 1440.62976 AT (610138.38, 4203893.50, 61.19, 0.00) DC NA
7TH HIGHEST VALUE IS 1424.83911 AT (610236.69, 4204012.00, 49.57, 0.00) DC NA
8TH HIGHEST VALUE IS 1418.57227 AT (610163.38, 4203893.50, 56.10, 0.00) DC NA
9TH HIGHEST VALUE IS 1394.73267 AT (610188.38, 4203893.50, 51.53, 0.00) DC NA
10TH HIGHEST VALUE IS 1366.77222 AT (610213.38, 4203893.50, 47.82, 0.00) DC NA

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

♀ *** ISCST3 - VERSION 02035 *** *** Laurel Road Project *** 03/03/16
*** Construction Impacts - Unit Emissions *** 14:30:06
**MODELOPTs: PAGE 99
CONC URBAN ELEV DFAULT

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF UNITEMIS IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	NETWORK RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	GRID-ID
EXHAUST	HIGH 1ST HIGH VALUE IS	29627.25980	ON 03120409: AT (610415.75, 4203905.50, 33.48, 0.00)	DC	NA
FUGITIVE	HIGH 1ST HIGH VALUE IS	45449.01560	ON 03120409: AT (610415.75, 4203905.50, 33.48, 0.00)	DC	NA
ALL	HIGH 1ST HIGH VALUE IS	75076.27340	ON 03120409: AT (610415.75, 4203905.50, 33.48, 0.00)	DC	NA

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

♀ *** ISCST3 - VERSION 02035 *** *** Laurel Road Project *** 03/03/16
*** Construction Impacts - Unit Emissions *** 14:30:06
**MODELOPTs: PAGE 100
CONC URBAN ELEV DFAULT

*** 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 52 Informational Message(s)

A Total of 52 Calm Hours Identified

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

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

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

Attachment B

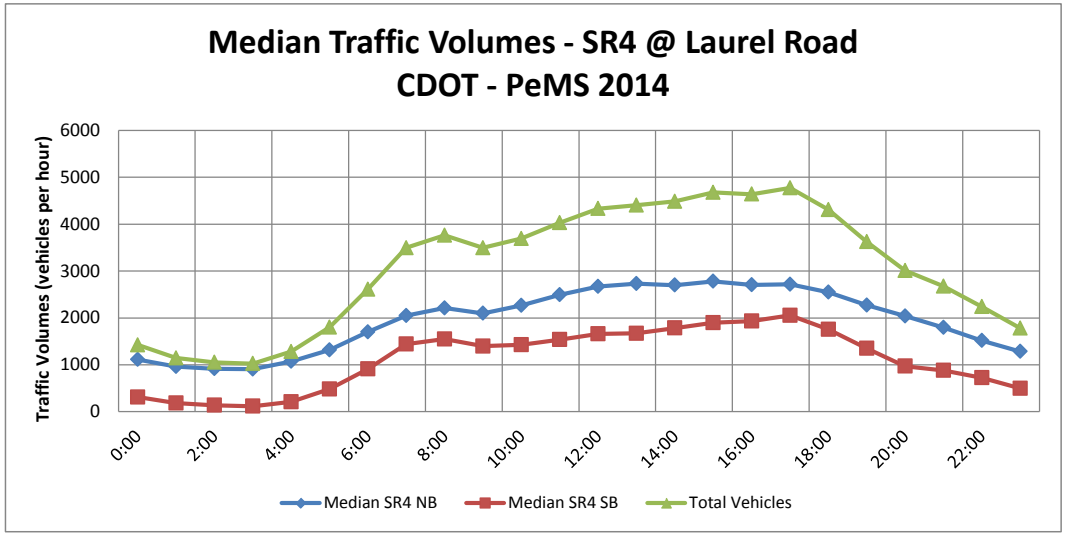
Cumulative Impact Assessment

Laurel Ranch Project

SR4 at Laurel Road

Median Annual Traffic Counts

Time	Median SR4 NB Vehicles	Median SR4 SB Vehicles	Total Vehicles
0:00	1114	310	1424
1:00	962	182	1144
2:00	916	136	1052
3:00	909	118	1027
4:00	1071	209	1280
5:00	1317	483	1800
6:00	1699	911	2610
7:00	2051	1442	3493
8:00	2213	1551	3764
9:00	2099	1396	3495
10:00	2266	1426	3692
11:00	2494	1537	4031
12:00	2670	1661	4331
13:00	2732	1672	4404
14:00	2700	1784	4484
15:00	2782	1896	4678
16:00	2707	1933	4640
17:00	2716	2056	4772
18:00	2549	1757	4306
19:00	2272	1352	3624
20:00	2039	972	3011
21:00	1797	881	2678
22:00	1516	723	2239
23:00	1284	495	1779
Total	46875	26883	73758



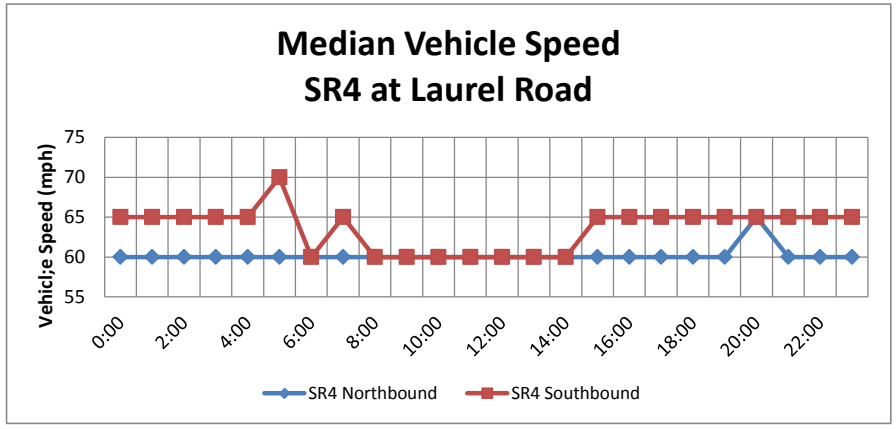
Laurel Ranch Project

SR4 at Laurel Road

Annual Traffic Speeds

Time	Auto Vehicle Speed SR4 Northbound	Auto Vehicle Speed SR4 Southbound	Assumed Vehicle Speed for SR4 NorthboundTrucks	Assumed Vehicle Speed for SR4 SouthboundTrucks
0:00	60	65	50	55
1:00	60	65	50	55
2:00	60	65	50	55
3:00	60	65	50	55
4:00	60	65	50	55
5:00	60	70	50	60
6:00	60	60	50	50
7:00	60	65	50	55
8:00	60	60	50	50
9:00	60	60	50	50
10:00	60	60	50	50
11:00	60	60	50	50
12:00	60	60	50	50
13:00	60	60	50	50
14:00	60	60	50	50
15:00	60	65	50	55
16:00	60	65	50	55
17:00	60	65	50	55
18:00	60	65	50	55
19:00	60	65	50	55
20:00	65	65	55	55
21:00	60	65	50	55
22:00	60	65	50	55
23:00	60	65	50	55

Assumed vehicle speed for trucks is the weignted average speed minus 10 mph

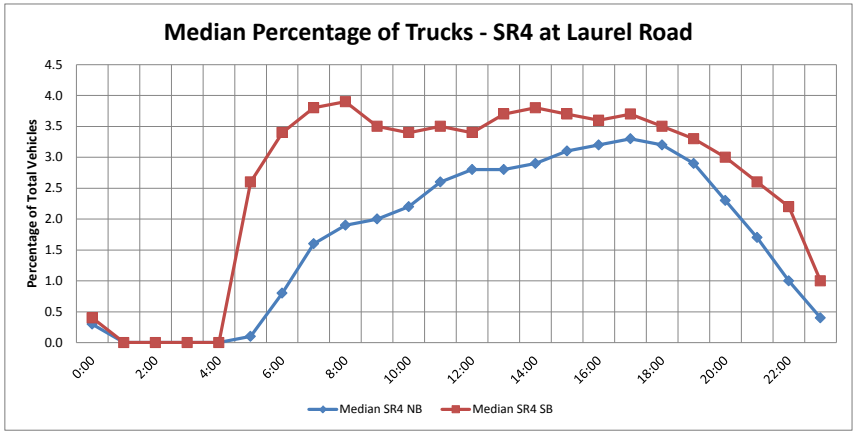


Laurel Ranch Project

SR4 at Laurel Road

Median Annual Truck %

Time	Median Counts SR4 NB	Median SR4 NB Truck %	Median Counts SR4 SB	Median SR4 SB Truck %	Weighted Truck %	Number of Trucks	2 axle	3 axle	4+ Axle	2 Axle DSL	3 axle DSL	4+ Axle DSL	2 Axle GAS	3 Axle Gas	4+ Axle Gas
0:00	1114	0.3	310	0.4	0.3	5	2	1	2	2	1	2	0	0	0
1:00	962	0.0	182	0.0	0.0	0	0	0	0	0	0	0	0	0	0
2:00	916	0.0	136	0.0	0.0	0	0	0	0	0	0	0	0	0	0
3:00	909	0.0	118	0.0	0.0	0	0	0	0	0	0	0	0	0	0
4:00	1071	0.0	209	0.0	0.0	0	0	0	0	0	0	0	0	0	0
5:00	1317	0.1	483	2.6	0.8	14	6	3	6	5	2	5	1	0	0
6:00	1699	0.8	911	3.4	1.7	45	19	8	18	15	7	18	4	1	0
7:00	2051	1.6	1442	3.8	2.5	88	37	16	35	29	14	34	8	2	0
8:00	2213	1.9	1551	3.9	2.7	103	43	19	41	34	16	40	9	3	0
9:00	2099	2.0	1396	3.5	2.6	91	38	17	36	30	14	36	8	2	0
10:00	2266	2.2	1426	3.4	2.7	98	41	18	39	32	16	39	9	3	0
11:00	2494	2.6	1537	3.5	2.9	119	50	22	47	39	19	47	11	3	0
12:00	2670	2.8	1661	3.4	3.0	131	55	24	52	43	21	52	12	3	0
13:00	2732	2.8	1672	3.7	3.1	138	58	25	55	46	22	54	12	4	0
14:00	2700	2.9	1784	3.8	3.3	146	61	27	58	48	23	57	13	4	0
15:00	2782	3.1	1896	3.7	3.3	156	66	29	62	52	25	62	14	4	0
16:00	2707	3.2	1933	3.6	3.4	156	66	29	62	52	25	61	14	4	0
17:00	2716	3.3	2056	3.7	3.5	166	70	30	66	55	26	65	15	4	1
18:00	2549	3.2	1757	3.5	3.3	143	60	26	57	47	23	56	13	4	0
19:00	2272	2.9	1352	3.3	3.0	111	46	20	44	36	17	43	10	3	0
20:00	2039	2.3	972	3.0	2.5	76	32	14	30	25	12	30	7	2	0
21:00	1797	1.7	881	2.6	2.0	53	22	10	21	18	8	21	5	1	0
22:00	1516	1.0	723	2.2	1.4	31	13	6	12	10	5	12	3	1	0
23:00	1284	0.4	495	1.0	0.6	10	4	2	4	3	2	4	1	0	0
Total	46875		26883			1879	789	346	745	621	297	739	168	48	6



Laurel Ranch Project

Contra Costa County Daily VMT Distribution

Daily	Gas	DSL	Total	%DSL	% GAS	%Total
LDA	13,706,383	146,621	13,853,003	1.06%	98.94%	56.7%
LDT1	1,019,900	723	1,020,624	0.07%	99.93%	4.2%
LDT2	4,626,053	8,060	4,634,114	0.17%	99.83%	19.0%
LHDT1	238,027	232,878	470,905	49.45%	50.55%	1.9%
LHDT2	39,564	87,810	127,374	68.94%	31.06%	0.5%
MDV	137,752	52,196	189,948	27.48%	72.52%	0.8%
MCY	3,148,788	0	3,148,788	0.00%	100.00%	12.9%
MH	18,338	5,216	23,555	22.15%	77.85%	0.1%
T6	36,587	225,677	262,264	86.05%	13.95%	1.1%
T7	4,428	560,728	565,156	99.22%	0.78%	2.3%
OBUS	22,915	15,808	38,723	40.82%	59.18%	0.2%
SBUS	3,446	65,073	68,519	94.97%	5.03%	0.3%
UBUS	22,450	24,131	46,581	51.81%	48.19%	0.2%
	23,024,631	1,424,923	24,449,554			1

	% Total	% Group		% Total	% Group
LDA	56.7%	70.3%	LHDT1	1.9%	33.0%
LDT1	4.2%	5.2%	LHDT2	0.5%	8.9%
LDT2	19.0%	23.5%	T6	1.1%	18.4%
MDT	0.8%	1.0%	T7	2.3%	39.6%
	80.6%	100.0%		5.8%	

Laurel Ranch Project

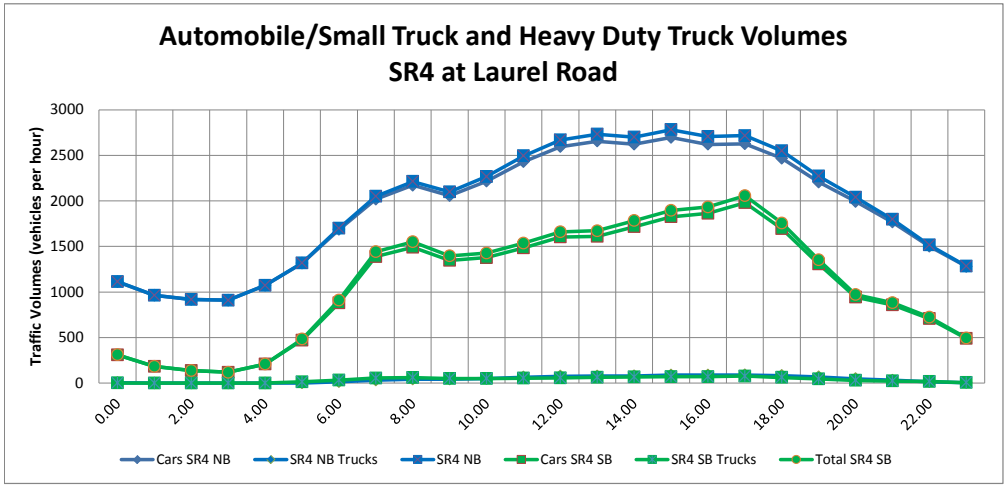
SR4 Northbound at Laurel Road Vehicle Distribution

Time	Total Cars SR4 NB	Passenger Car-GAS	LDT1 GAS	LDT2 GAS	MDV GAS	Passenger Cars-DSL	LDT1 DSL	LDT2 DSL	MDT DSL	Total Passenger Car	LDT1	LDT2	MDT	Total	SR4 NB Trucks	Total All Vehicles SR4 NB
0	1111	773	58	261	8	8	0	0	3	781	58	261	11	1111	3	1114
1	962	669	50	226	7	7	0	0	3	677	50	226	9	962	0	962
2	916	637	47	215	6	7	0	0	2	644	47	215	9	916	0	916
3	909	633	47	213	6	7	0	0	2	639	47	214	9	909	0	909
4	1071	745	55	252	7	8	0	0	3	753	55	252	10	1071	0	1071
5	1316	916	68	309	9	10	0	1	3	925	68	310	13	1316	1	1317
6	1685	1173	87	396	12	13	0	1	4	1185	87	397	16	1685	14	1699
7	2018	1404	104	474	14	15	0	1	5	1419	105	475	19	2018	33	2051
8	2171	1511	112	510	15	16	0	1	6	1527	112	511	21	2171	42	2213
9	2057	1431	107	483	14	15	0	1	5	1447	107	484	20	2057	42	2099
10	2216	1542	115	520	15	16	0	1	6	1559	115	521	21	2216	50	2266
11	2429	1690	126	570	17	18	0	1	6	1708	126	571	23	2429	65	2494
12	2595	1806	134	609	18	19	0	1	7	1825	134	611	25	2595	75	2670
13	2656	1848	137	624	19	20	0	1	7	1868	138	625	26	2656	76	2732
14	2622	1824	136	616	18	20	0	1	7	1844	136	617	25	2622	78	2700
15	2696	1876	140	633	19	20	0	1	7	1896	140	634	26	2696	86	2782
16	2620	1823	136	615	18	20	0	1	7	1843	136	616	25	2620	87	2707
17	2626	1828	136	617	18	20	0	1	7	1847	136	618	25	2626	90	2716
18	2467	1717	128	579	17	18	0	1	7	1735	128	580	24	2467	82	2549
19	2206	1535	114	518	15	16	0	1	6	1552	114	519	21	2206	66	2272
20	1992	1386	103	468	14	15	0	1	5	1401	103	469	19	1992	47	2039
21	1766	1229	91	415	12	13	0	1	5	1242	92	416	17	1766	31	1797
22	1501	1044	78	352	10	11	0	1	4	1056	78	353	14	1501	15	1516
23	1279	890	66	300	9	10	0	1	3	899	66	301	12	1279	5	1284
	45888	31931	2376	10777	321	342	2	19	122	32272	2378	10796	443	45888	987	46875

Laurel Ranch Project

SR4 Southbound at Laurel Road Vehicle Distribution

Time	Total Cars SR4 SB	Passenger Car-GAS	LDT1 GAS	LDT2 GAS	MDV GAS	Passenger Cars-DSL	LDT1 DSL	LDT2 DSL	MDT DSL	Total Passenger Car	LDT1	LDT2	MDT	Total	SR4 SB Trucks	Total SR4 SB
0	309	215	16	73	2	2	0	0	1	217	16	73	3	309	1	310
1	182	127	9	43	1	1	0	0	0	128	9	43	2	182	0	182
2	136	95	7	32	1	1	0	0	0	96	7	32	1	136	0	136
3	118	82	6	28	1	1	0	0	0	83	6	28	1	118	0	118
4	209	145	11	49	1	2	0	0	1	147	11	49	2	209	0	209
5	470	327	24	110	3	4	0	0	1	331	24	111	5	470	13	483
6	880	612	46	207	6	7	0	0	2	619	46	207	8	880	31	911
7	1387	965	72	326	10	10	0	1	4	976	72	326	13	1387	55	1442
8	1491	1037	77	350	10	11	0	1	4	1048	77	351	14	1491	60	1551
9	1347	937	70	316	9	10	0	1	4	947	70	317	13	1347	49	1396
10	1378	959	71	324	10	10	0	1	4	969	71	324	13	1378	48	1426
11	1483	1032	77	348	10	11	0	1	4	1043	77	349	14	1483	54	1537
12	1605	1116	83	377	11	12	0	1	4	1128	83	377	15	1605	56	1661
13	1610	1120	83	378	11	12	0	1	4	1132	83	379	16	1610	62	1672
14	1716	1194	89	403	12	13	0	1	5	1207	89	404	17	1716	68	1784
15	1826	1270	95	429	13	14	0	1	5	1284	95	430	18	1826	70	1896
16	1863	1297	96	438	13	14	0	1	5	1311	97	438	18	1863	70	1933
17	1980	1378	103	465	14	15	0	1	5	1392	103	466	19	1980	76	2056
18	1696	1180	88	398	12	13	0	1	4	1192	88	399	16	1696	61	1757
19	1307	910	68	307	9	10	0	1	3	919	68	308	13	1307	45	1352
20	943	656	49	221	7	7	0	0	2	663	49	222	9	943	29	972
21	858	597	44	202	6	6	0	0	2	603	44	202	8	858	23	881
22	707	492	37	166	5	5	0	0	2	497	37	166	7	707	16	723
23	490	341	25	115	3	4	0	0	1	345	25	115	5	490	5	495
	25991	18085	1346	6104	182	193	1	11	69	274 18279	1347	6115	251	25991	892	26883



Laurel Ranch Project **Estimate of DPM Emissions**

SR4 Northbound at Laurel Rd **Year:** **2019**

Estimation of Emissions **DPM**

Freeway Segment Length 1826 meters or 1.134333 miles

Time	LDA-DSL Vehicles	Average Speed	Emission Factor	Emissions (g/sec)	LDT1-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	LDT2-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	MDT-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)
0	8	60	0.0230	6E-05	0	60	0.1309	1.68E-06	0	60	0.00601	8.61E-07	3	60	0.0082	7.56E-06
1	7	60	0.0230	5.2E-05	0	60	0.1309	1.46E-06	0	60	0.00601	7.45E-07	3	60	0.0082	6.55E-06
2	7	60	0.0230	4.95E-05	0	60	0.1309	1.39E-06	0	60	0.00601	7.1E-07	2	60	0.0082	6.23E-06
3	7	60	0.0230	4.91E-05	0	60	0.1309	1.38E-06	0	60	0.00601	7.04E-07	2	60	0.0082	6.19E-06
4	8	60	0.0230	5.79E-05	0	60	0.1309	1.62E-06	0	60	0.00601	8.3E-07	3	60	0.0082	7.29E-06
5	10	60	0.0230	7.11E-05	0	60	0.1309	1.99E-06	1	60	0.00601	1.02E-06	3	60	0.0082	8.95E-06
6	13	60	0.0230	9.11E-05	0	60	0.1309	2.55E-06	1	60	0.00601	1.31E-06	4	60	0.0082	1.15E-05
7	15	60	0.0230	1.09E-04	0	60	0.1309	3.06E-06	1	60	0.00601	1.56E-06	5	60	0.0082	1.37E-05
8	16	60	0.0230	0.000117	0	60	0.1309	3.29E-06	1	60	0.00601	1.68E-06	6	60	0.0082	1.48E-05
9	15	60	0.0230	0.000111	0	60	0.1309	3.12E-06	1	60	0.00601	1.59E-06	5	60	0.0082	1.4E-05
10	16	60	0.0230	0.00012	0	60	0.1309	3.36E-06	1	60	0.00601	1.72E-06	6	60	0.0082	1.51E-05
11	18	60	0.0230	0.000131	0	60	0.1309	3.68E-06	1	60	0.00601	1.88E-06	6	60	0.0082	1.65E-05
12	19	60	0.0230	0.00014	0	60	0.1309	3.93E-06	1	60	0.00601	2.01E-06	7	60	0.0082	1.77E-05
13	20	60	0.0230	0.000144	0	60	0.1309	4.02E-06	1	60	0.00601	2.06E-06	7	60	0.0082	1.81E-05
14	20	60	0.0230	0.000142	0	60	0.1309	3.97E-06	1	60	0.00601	2.03E-06	7	60	0.0082	1.78E-05
15	20	60	0.0230	0.000146	0	60	0.1309	4.08E-06	1	60	0.00601	2.09E-06	7	60	0.0082	1.83E-05
16	20	60	0.0230	0.000142	0	60	0.1309	3.97E-06	1	60	0.00601	2.03E-06	7	60	0.0082	1.78E-05
17	20	60	0.0230	0.000142	0	60	0.1309	3.98E-06	1	60	0.00601	2.04E-06	7	60	0.0082	1.79E-05
18	18	60	0.0230	0.000133	0	60	0.1309	3.74E-06	1	60	0.00601	1.91E-06	7	60	0.0082	1.68E-05
19	16	60	0.0230	0.000119	0	60	0.1309	3.34E-06	1	60	0.00601	1.71E-06	6	60	0.0082	1.5E-05
20	15	65	0.0243	0.000113	0	65	0.1503	3.46E-06	1	65	0.00639	1.64E-06	5	65	0.0088	1.47E-05
21	13	60	0.0230	9.55E-05	0	60	0.1309	2.68E-06	1	60	0.00601	1.37E-06	5	60	0.0082	1.2E-05
22	11	60	0.0230	8.11E-05	0	60	0.1309	2.27E-06	1	60	0.00601	1.16E-06	4	60	0.0082	1.02E-05
23	10	60	0.0230	6.91E-05	0	60	0.1309	1.94E-06	1	60	0.00601	9.91E-07	3	60	0.0082	8.7E-06

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LHDT1-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	LHDT2-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	MHDT-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	HHDT-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	Total Emissions All Vehicles (g/mi)
1	55	0.0227	4.24E-06	0	55	0.0189	9.54E-07	1	55	0.1457	2.43E-05	1	55	0.0560	2.32E-05	1.23E-04
0	55	0.0227	0.00E+00	0	55	0.0189	0.00E+00	0	55	0.1457	0.00E+00	0	55	0.0560	0.00E+00	6.07E-05
0	55	0.0227	0.00E+00	0	55	0.0189	0.00E+00	0	55	0.1457	0.00E+00	0	55	0.0560	0.00E+00	5.78E-05
0	55	0.0227	0.00E+00	0	55	0.0189	0.00E+00	0	55	0.1457	0.00E+00	0	55	0.0560	0.00E+00	5.74E-05
0	55	0.0227	0.00E+00	0	55	0.0189	0.00E+00	0	55	0.1457	0.00E+00	0	55	0.0560	0.00E+00	6.76E-05
0	60	0.0240	1.76E-06	0	60	0.0199	3.95E-07	0	60	0.1563	1.03E-05	1	60	0.0624	1.02E-05	1.06E-04
2	50	0.0220	1.67E-05	1	50	0.0185	3.79E-06	2	50	0.1280	8.68E-05	5	50	0.0567	9.54E-05	3.09E-04
6	55	0.0227	4.16E-05	2	55	0.0189	9.36E-06	5	55	0.1457	2.38E-04	13	55	0.0560	2.28E-04	6.45E-04
7	50	0.0220	5.17E-05	2	50	0.0185	1.17E-05	7	50	0.1280	2.68E-04	17	50	0.0567	2.95E-04	7.64E-04
7	50	0.0220	5.16E-05	2	50	0.0185	1.17E-05	7	50	0.1280	2.68E-04	17	50	0.0567	2.95E-04	7.56E-04
9	50	0.0220	6.13E-05	2	50	0.0185	1.39E-05	8	50	0.1280	3.18E-04	20	50	0.0567	3.50E-04	8.83E-04
11	50	0.0220	7.97E-05	3	50	0.0185	1.81E-05	10	50	0.1280	4.14E-04	26	50	0.0567	4.55E-04	1.12E-03
13	50	0.0220	9.19E-05	4	50	0.0185	2.08E-05	12	50	0.1280	4.77E-04	29	50	0.0567	5.25E-04	1.28E-03
14	50	0.0220	9.41E-05	4	50	0.0185	2.13E-05	12	50	0.1280	4.88E-04	30	50	0.0567	5.37E-04	1.31E-03
14	50	0.0220	9.63E-05	4	50	0.0185	2.18E-05	12	50	0.1280	5.00E-04	31	50	0.0567	5.50E-04	1.33E-03
15	55	0.0227	1.09E-04	4	55	0.0189	2.46E-05	14	55	0.1457	6.27E-04	34	55	0.0560	5.99E-04	1.53E-03
15	55	0.0227	1.10E-04	4	55	0.0189	2.47E-05	14	55	0.1457	6.29E-04	34	55	0.0560	6.01E-04	1.53E-03
16	55	0.0227	1.14E-04	4	55	0.0189	2.56E-05	14	55	0.1457	6.51E-04	35	55	0.0560	6.22E-04	1.58E-03
14	55	0.0227	1.04E-04	4	55	0.0189	2.33E-05	13	55	0.1457	5.93E-04	32	55	0.0560	5.66E-04	1.44E-03
12	55	0.0227	8.36E-05	3	55	0.0189	1.88E-05	10	55	0.1457	4.79E-04	26	55	0.0560	4.57E-04	1.18E-03
8	55	0.0227	5.95E-05	2	55	0.0189	1.34E-05	7	55	0.1457	3.41E-04	18	55	0.0560	3.26E-04	8.72E-04
5	55	0.0227	3.88E-05	1	55	0.0189	8.72E-06	5	55	0.1457	2.22E-04	12	55	0.0560	2.12E-04	5.93E-04
3	55	0.0227	1.92E-05	1	55	0.0189	4.33E-06	2	55	0.1457	1.10E-04	6	55	0.0560	1.05E-04	3.34E-04
1	55	0.0227	6.52E-06	0	55	0.0189	1.47E-06	1	55	0.1457	3.73E-05	2	55	0.0560	3.57E-05	1.62E-04

Laurel Ranch Project

Emission Summary **2016**

Hour	DSL (g/sec)	Total (g/sec)	% Max hr
0	1.23E-04	1.23E-04	0.0778
1	6.07E-05	6.07E-05	0.0385
2	5.78E-05	5.78E-05	0.0366
3	5.74E-05	5.74E-05	0.0364
4	6.76E-05	6.76E-05	0.0428
5	1.06E-04	1.06E-04	0.0670
6	3.09E-04	3.09E-04	0.1958
7	6.45E-04	6.45E-04	0.4084
8	7.64E-04	7.64E-04	0.4841
9	7.56E-04	7.56E-04	0.4789
10	8.83E-04	8.83E-04	0.5597
11	1.12E-03	1.12E-03	0.7098
12	1.28E-03	1.28E-03	0.8102
13	1.31E-03	1.31E-03	0.8290
14	1.33E-03	1.33E-03	0.8447
15	1.53E-03	1.53E-03	0.9690
16	1.53E-03	1.53E-03	0.9698
17	1.58E-03	1.58E-03	1.0000
18	1.44E-03	1.44E-03	0.9132
19	1.18E-03	1.18E-03	0.7461
20	8.72E-04	8.72E-04	0.5526
21	5.93E-04	5.93E-04	0.3757
22	3.34E-04	3.34E-04	0.2114
23	1.62E-04	1.62E-04	0.1024
Max		1.58E-03	

Laurel Ranch Project **Estimate of DPM Emissions**

SR4 South Bound at Laurel Road **Year:** **2019**

Estimation of Emissions **DPM**

Freeway Segment Length 1829 meters or 1.136197 miles

Time	LDA-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	LDT1-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	LDT2-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)
0	2	65	0.0166	1.20076E-05	0	65	0.1156	4.13758E-07	0	65	0.00486	1.94E-07
1	1	65	0.0166	7.07791E-06	0	65	0.1156	2.43892E-07	0	65	0.00486	1.14E-07
2	1	65	0.0166	5.28899E-06	0	65	0.1156	1.82249E-07	0	65	0.00486	8.53636E-08
3	1	65	0.0166	4.58897E-06	0	65	0.1156	1.58128E-07	0	65	0.00486	7.40655E-08
4	2	65	0.0166	8.12793E-06	0	65	0.1156	2.80073E-07	0	65	0.00486	1.31184E-07
5	4	70	0.0166	1.82953E-05	0	70	0.1156	6.30422E-07	0	70	0.00486	2.95284E-07
6	7	60	0.0147	3.0484E-05	0	60	0.1009	1.02953E-06	0	60	0.00457	5.19878E-07
7	10	65	0.0166	5.39478E-05	0	65	0.1156	1.85894E-06	1	65	0.00486	8.70711E-07
8	11	60	0.0147	5.16311E-05	0	60	0.1009	1.74372E-06	1	60	0.00457	8.81E-07
9	10	60	0.0147	4.66647E-05	0	60	0.1009	1.576E-06	1	60	0.00457	7.95827E-07
10	10	60	0.0147	4.77169E-05	0	60	0.1009	1.61E-06	1	60	0.00457	8.13772E-07
11	11	60	0.0147	5.1378E-05	0	60	0.1009	1.74E-06	1	60	0.00457	8.76208E-07
12	12	60	0.0147	5.55805E-05	0	60	0.1009	1.87711E-06	1	60	0.00457	9.47879E-07
13	12	60	0.0147	5.57749E-05	0	60	0.1009	1.88367E-06	1	60	0.00457	9.51193E-07
14	13	60	0.0147	5.94492E-05	0	60	0.1009	2.00776E-06	1	60	0.00457	1.01386E-06
15	14	65	0.0166	7.10065E-05	0	65	0.1156	2.44675E-06	1	65	0.00486	1.14604E-06
16	14	65	0.0166	7.24674E-05	0	65	0.1156	2.49709E-06	1	65	0.00486	1.16961E-06
17	15	65	0.0166	7.69986E-05	0	65	0.1156	2.65323E-06	1	65	0.00486	1.24275E-06
18	13	65	0.0166	6.59375E-05	0	65	0.1156	2.27209E-06	1	65	0.00486	1.06422E-06
19	10	65	0.0166	5.08437E-05	0	65	0.1156	1.75198E-06	1	65	0.00486	8.2061E-07
20	7	65	0.0166	3.66667E-05	0	65	0.1156	1.26347E-06	0	65	0.00486	5.91796E-07
21	6	65	0.0166	3.33709E-05	0	65	0.1156	1.1499E-06	0	65	0.00486	5.39E-07
22	5	65	0.0166	2.74986E-05	0	65	0.1156	9.47551E-07	0	65	0.00486	4.43824E-07
23	4	65	0.0166	1.90579E-05	0	65	0.1156	6.56698E-07	0	65	0.00486	3.07591E-07
	193				1				11			

MDT-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	LHDT1-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	LHDT2-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	MHDT-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)
1	65	0.0055	1.42E-06	0	55	0.0229	1.58E-06	0	55	0.01624	3.04E-07	0	55	0.0937	5.81E-06
0	65	0.0055	8.4E-07	0	55	0.0229	0.00E+00	0	55	0.01624	0.00E+00	0	55	0.0937	0.00E+00
0	65	0.0055	6.27E-07	0	55	0.0229	0.00E+00	0	55	0.01624	0.00E+00	0	55	0.0937	0.00E+00
0	65	0.0055	5.44E-07	0	55	0.0229	0.00E+00	0	55	0.01624	0.00E+00	0	55	0.0937	0.00E+00
1	65	0.0055	9.64E-07	0	55	0.0229	0.00E+00	0	55	0.01624	0.00E+00	0	55	0.0937	0.00E+00
1	70	0.0055	2.17E-06	2	60	0.0229	1.60E-05	1	60	0.01624	3.08E-06	2	60	0.1003	6.29E-05
2	60	0.0052	3.79E-06	5	50	0.0222	3.84E-05	1	50	0.01602	7.50E-06	5	50	0.0831	1.29E-04
4	65	0.0055	6.4E-06	10	55	0.0229	7.00E-05	3	55	0.01624	1.34E-05	9	55	0.0937	2.57E-04
4	60	0.0052	6.43E-06	11	50	0.0222	7.50E-05	3	50	0.01602	1.46E-05	10	50	0.0831	2.51E-04
4	60	0.0052	5.81E-06	9	50	0.0222	6.06E-05	2	50	0.01602	1.18E-05	8	50	0.0831	2.03E-04
4	60	0.0052	5.94E-06	9	50	0.0222	6.01E-05	2	50	0.01602	1.17E-05	8	50	0.0831	2.01E-04
4	60	0.0052	6.39E-06	10	50	0.0222	6.67E-05	3	50	0.01602	1.30E-05	9	50	0.0831	2.23E-04
4	60	0.0052	6.92E-06	10	50	0.0222	7.00E-05	3	50	0.01602	1.37E-05	9	50	0.0831	2.35E-04
4	60	0.0052	6.94E-06	11	50	0.0222	7.67E-05	3	50	0.01602	1.50E-05	10	50	0.0831	2.57E-04
5	60	0.0052	7.4E-06	12	50	0.0222	8.41E-05	3	50	0.01602	1.64E-05	11	50	0.0831	2.82E-04
5	65	0.0055	8.42E-06	12	55	0.0229	8.96E-05	3	55	0.01624	1.72E-05	11	55	0.0937	3.28E-04
5	65	0.0055	8.6E-06	12	55	0.0229	8.89E-05	3	55	0.01624	1.71E-05	11	55	0.0937	3.26E-04
5	65	0.0055	9.13E-06	13	55	0.0229	9.72E-05	4	55	0.01624	1.87E-05	12	55	0.0937	3.56E-04
4	65	0.0055	7.82E-06	11	55	0.0229	7.86E-05	3	55	0.01624	1.51E-05	10	55	0.0937	2.88E-04
3	65	0.0055	6.03E-06	8	55	0.0229	5.70E-05	2	55	0.01624	1.09E-05	7	55	0.0937	2.09E-04
2	65	0.0055	4.35E-06	5	55	0.0229	3.73E-05	1	55	0.01624	7.16E-06	5	55	0.0937	1.37E-04
2	65	0.0055	3.96E-06	4	55	0.0229	2.93E-05	1	55	0.01624	5.62E-06	4	55	0.0937	1.07E-04
2	65	0.0055	3.26E-06	3	55	0.0229	2.03E-05	1	55	0.01624	3.90E-06	3	55	0.0937	7.45E-05
1	65	0.0055	2.26E-06	1	55	0.0229	6.32E-06	0	55	0.01624	1.21E-06	1	55	0.0937	2.32E-05
69				158				43				141			

HHDT-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	Total Emissions All Vehicles (g/sec)
0	55	0.0219	3.37E-06	2.51E-05
0	55	0.0219	0.00E+00	8.28E-06
0	55	0.0219	0.00E+00	6.18E-06
0	55	0.0219	0.00E+00	5.37E-06
0	55	0.0219	0.00E+00	9.50E-06
5	60	0.0221	3.44E-05	1.38E-04
12	50	0.0217	8.35E-05	2.94E-04
22	55	0.0219	1.49E-04	5.52E-04
24	50	0.0217	1.63E-04	5.65E-04
19	50	0.0217	1.32E-04	4.62E-04
19	50	0.0217	1.31E-04	4.60E-04
21	50	0.0217	1.45E-04	5.09E-04
22	50	0.0217	1.52E-04	5.36E-04
24	50	0.0217	1.67E-04	5.81E-04
27	50	0.0217	1.83E-04	6.35E-04
28	55	0.0219	1.91E-04	7.09E-04
27	55	0.0219	1.89E-04	7.05E-04
30	55	0.0219	2.07E-04	7.69E-04
24	55	0.0219	1.67E-04	6.26E-04
18	55	0.0219	1.21E-04	4.57E-04
11	55	0.0219	7.92E-05	3.03E-04
9	55	0.0219	6.22E-05	2.43E-04
6	55	0.0219	4.32E-05	1.74E-04
2	55	0.0219	1.34E-05	6.64E-05

Laurel Ranch Project

Emission Summary **2019** **SR4 South Bound at Laurel Road**

Hour	DSL (g/sec)	Total (g/sec)	% Max hr	Total (lbs/hr)
0	2.51E-05	2.51E-05	0.0327	0.000199
1	8.28E-06	8.28E-06	0.0108	6.56E-05
2	6.18E-06	6.18E-06	0.0080	4.9E-05
3	5.37E-06	5.37E-06	0.0070	4.25E-05
4	9.50E-06	9.50E-06	0.0124	7.54E-05
5	1.38E-04	1.38E-04	0.1794	0.001093
6	2.94E-04	2.94E-04	0.3824	0.002331
7	5.52E-04	5.52E-04	0.7180	0.004376
8	5.65E-04	5.65E-04	0.7347	0.004478
9	4.62E-04	4.62E-04	0.6010	0.003663
10	4.60E-04	4.60E-04	0.5986	0.003648
11	5.09E-04	5.09E-04	0.6617	0.004033
12	5.36E-04	5.36E-04	0.6972	0.004249
13	5.81E-04	5.81E-04	0.7559	0.004607
14	6.35E-04	6.35E-04	0.8258	0.005033
15	7.09E-04	7.09E-04	0.9222	0.005621
16	7.05E-04	7.05E-04	0.9179	0.005594
17	7.69E-04	7.69E-04	1.0000	0.006095
18	6.26E-04	6.26E-04	0.8140	0.004961
19	4.57E-04	4.57E-04	0.5951	0.003627
20	3.03E-04	3.03E-04	0.3942	0.002403
21	2.43E-04	2.43E-04	0.3166	0.00193
22	1.74E-04	1.74E-04	0.2264	0.00138
23	6.64E-05	6.64E-05	0.0864	0.000527
Max	7.69E-04			0.070081 lbs/hr

Laurel Ranch Project Sample Output

Estimate of Annual Average DPM from State Route 4
With DPM Emissions for 2019

Maximum Hourly DPM Emissions for State Route 4 Northbound: 1.62E-04 g/sec
Maximum Hourly DPM Emissions for State Route 4 Southbound: 6.64E-05 g/sec

X (m)	Y (m)	Annual Average DPM SR4 Northbound with Unit Emissions (ug/m3)	Annual Average DPM SR4 Northbound with Actual Emissions (ug/m3)	Annual Average DPM SR4 Southbound with Unit Emissions (ug/m3)	Annual Average DPM SR4 Southbound with Actual Emissions (ug/m3)	Total Annual Average DPM (ug/m3)
609713.8	4203941	0.15887	2.57E-05	0.1925	1.28E-05	3.85E-05
609738.8	4203941	0.1671	2.70E-05	0.20328	1.35E-05	4.05E-05
609763.8	4203941	0.17611	2.85E-05	0.21512	1.43E-05	4.28E-05
609788.8	4203941	0.186	3.01E-05	0.22816	1.52E-05	4.52E-05
609813.8	4203941	0.19686	3.18E-05	0.24253	1.61E-05	4.79E-05
609838.8	4203941	0.20879	3.38E-05	0.25839	1.72E-05	5.09E-05
609713.8	4203966	0.1638	2.65E-05	0.1988	1.32E-05	3.97E-05
609738.8	4203966	0.17247	2.79E-05	0.21017	1.40E-05	4.19E-05
609763.8	4203966	0.18198	2.94E-05	0.22269	1.48E-05	4.42E-05
609788.8	4203966	0.19242	3.11E-05	0.23649	1.57E-05	4.68E-05
609813.8	4203966	0.20391	3.30E-05	0.25173	1.67E-05	4.97E-05
609838.8	4203966	0.21655	3.50E-05	0.26857	1.78E-05	5.29E-05
609863.8	4203966	0.23048	3.73E-05	0.28724	1.91E-05	5.64E-05
609888.8	4203966	0.24585	3.98E-05	0.30795	2.05E-05	6.02E-05
609713.8	4203991	0.16892	2.73E-05	0.20536	1.36E-05	4.10E-05
609738.8	4203991	0.17806	2.88E-05	0.21736	1.44E-05	4.32E-05
609763.8	4203991	0.18809	3.04E-05	0.2306	1.53E-05	4.57E-05
609788.8	4203991	0.19913	3.22E-05	0.24521	1.63E-05	4.85E-05
609813.8	4203991	0.21129	3.42E-05	0.26137	1.74E-05	5.15E-05
609838.8	4203991	0.22469	3.63E-05	0.27927	1.86E-05	5.49E-05
609863.8	4203991	0.23949	3.87E-05	0.29915	1.99E-05	5.86E-05
609888.8	4203991	0.25584	4.14E-05	0.32127	2.13E-05	6.27E-05
609913.8	4203991	0.27396	4.43E-05	0.34593	2.30E-05	6.73E-05
609938.8	4203991	0.2941	4.76E-05	0.37355	2.48E-05	7.24E-05
609713.8	4204016	0.17425	2.82E-05	0.21219	1.41E-05	4.23E-05

Laurel Ranch Project

Sample Output

30-year Lifetime Cancer Risk from State Route 4 - DPM Emissions | **Max Risk** | **0.30**

Based on Emission Estimates for 2019 and assuming DPM emissions remain constant

	Age Group			
Age	**3rd Trimester**	**0 to 2**	**3 to 16**	**17-30**
DBR (95th%)	361	1090	745	261
ASF	10	10	3	1
TAH	1	1	1	1
Duration	0.25	2	14	14
Frequency	350	350	350	350
Averaging time	25550	25550	25550	25550
CPF	1.1	1.1	1.1	1.1
Unit Risk Factor by Age Group	13.60	328.49	471.49	55.06

Cancer Risk = DPM Concentration x Unit Risk Factor By Age Group

X (m)	Y (m)	3rd Trimester (risk/million)	0 to 2 (risk/million)	3 to 16 (risk/million)	17 to 30 (risk/million)	Total Risk (risk/million)
609713.75	4203940.5	0.00	0.01	0.02	0.00	0.03
609738.75	4203940.5	0.00	0.01	0.02	0.00	0.04
609763.75	4203940.5	0.00	0.01	0.02	0.00	0.04
609788.75	4203940.5	0.00	0.01	0.02	0.00	0.04
609813.75	4203940.5	0.00	0.02	0.02	0.00	0.04
609838.75	4203940.5	0.00	0.02	0.02	0.00	0.04
609713.75	4203965.5	0.00	0.01	0.02	0.00	0.03
609738.75	4203965.5	0.00	0.01	0.02	0.00	0.04
609763.75	4203965.5	0.00	0.01	0.02	0.00	0.04
609788.75	4203965.5	0.00	0.02	0.02	0.00	0.04
609813.75	4203965.5	0.00	0.02	0.02	0.00	0.04
609838.75	4203965.5	0.00	0.02	0.02	0.00	0.05
609863.75	4203965.5	0.00	0.02	0.03	0.00	0.05
609888.75	4203965.5	0.00	0.02	0.03	0.00	0.05
609713.75	4203990.5	0.00	0.01	0.02	0.00	0.04
609738.75	4203990.5	0.00	0.01	0.02	0.00	0.04
609763.75	4203990.5	0.00	0.02	0.02	0.00	0.04
609788.75	4203990.5	0.00	0.02	0.02	0.00	0.04
609813.75	4203990.5	0.00	0.02	0.02	0.00	0.04
609838.75	4203990.5	0.00	0.02	0.03	0.00	0.05
609863.75	4203990.5	0.00	0.02	0.03	0.00	0.05
609888.75	4203990.5	0.00	0.02	0.03	0.00	0.05

Laurel Ranch Project

Sample Output

Max Chronic HI	**0.0001**
Maximum Annual PM2.5	**0.000347 ug/m3**

Etimates of Chronic Hazard Index from State Route 4 DPM Emissions

Chronic Non-Cancer REL for DPM: **5** ug/m3

X (m)	Y (m)	Chronic HI
609713.75	4203940.5	0.0000
609738.75	4203940.5	0.0000
609763.75	4203940.5	0.0000
609788.75	4203940.5	0.0000
609813.75	4203940.5	0.0000
609838.75	4203940.5	0.0000
609713.75	4203965.5	0.0000
609738.75	4203965.5	0.0000
609763.75	4203965.5	0.0000
609788.75	4203965.5	0.0000
609813.75	4203965.5	0.0000
609838.75	4203965.5	0.0000
609863.75	4203965.5	0.0000
609888.75	4203965.5	0.0000
609713.75	4203990.5	0.0000
609738.75	4203990.5	0.0000
609763.75	4203990.5	0.0000
609788.75	4203990.5	0.0000
609813.75	4203990.5	0.0000
609838.75	4203990.5	0.0000
609863.75	4203990.5	0.0000
609888.75	4203990.5	0.0000
609913.75	4203990.5	0.0000
609938.75	4203990.5	0.0000
609713.75	4204015.5	0.0000
609738.75	4204015.5	0.0000

Laurel Ranch Project **Estimate of TOG Emissions from Diesel Vehicles**

SR4 Northbound at Laurel Rd **Year:** **2019**

Estimation of Emissions **TOG_DSL**

Freeway Segment Length 1829 meters or 1.136 miles

Time	LDA-DSL Vehicles	Average Speed	Emission Factor	Emissions (g/sec)	LDT1-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	LDT2-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	MDT-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)
0	8	60	0.0247	6.45E-05	0	60	0.1505	1.94E-06	0	60	0.01036	1.49E-06	3	60	0.0095	8.8E-06
1	7	60	0.0247	5.59E-05	0	60	0.1505	1.68E-06	0	60	0.01036	1.29E-06	3	60	0.0095	7.62E-06
2	7	60	0.0247	5.32E-05	0	60	0.1505	1.6E-06	0	60	0.01036	1.23E-06	2	60	0.0095	7.26E-06
3	7	60	0.0247	5.28E-05	0	60	0.1505	1.59E-06	0	60	0.01036	1.22E-06	2	60	0.0095	7.2E-06
4	8	60	0.0247	6.22E-05	0	60	0.1505	1.87E-06	0	60	0.01036	1.43E-06	3	60	0.0095	8.49E-06
5	10	60	0.0247	7.64E-05	0	60	0.1505	2.29E-06	1	60	0.01036	1.76E-06	3	60	0.0095	1.04E-05
6	13	60	0.0247	9.79E-05	0	60	0.1505	2.94E-06	1	60	0.01036	2.26E-06	4	60	0.0095	1.34E-05
7	15	60	0.0247	1.17E-04	0	60	0.1505	3.52E-06	1	60	0.01036	2.7E-06	5	60	0.0095	1.6E-05
8	16	60	0.0247	0.000126	0	60	0.1505	3.79E-06	1	60	0.01036	2.91E-06	6	60	0.0095	1.72E-05
9	15	60	0.0247	0.000119	0	60	0.1505	3.59E-06	1	60	0.01036	2.75E-06	5	60	0.0095	1.63E-05
10	16	60	0.0247	0.000129	0	60	0.1505	3.87E-06	1	60	0.01036	2.97E-06	6	60	0.0095	1.76E-05
11	18	60	0.0247	0.000141	0	60	0.1505	4.24E-06	1	60	0.01036	3.25E-06	6	60	0.0095	1.92E-05
12	19	60	0.0247	0.000151	0	60	0.1505	4.53E-06	1	60	0.01036	3.47E-06	7	60	0.0095	2.06E-05
13	20	60	0.0247	0.000154	0	60	0.1505	4.63E-06	1	60	0.01036	3.55E-06	7	60	0.0095	2.1E-05
14	20	60	0.0247	0.000152	0	60	0.1505	4.57E-06	1	60	0.01036	3.51E-06	7	60	0.0095	2.08E-05
15	20	60	0.0247	0.000157	0	60	0.1505	4.70E-06	1	60	0.01036	3.61E-06	7	60	0.0095	2.14E-05
16	20	60	0.0247	0.000152	0	60	0.1505	4.57E-06	1	60	0.01036	3.51E-06	7	60	0.0095	2.08E-05
17	20	60	0.0247	0.000152	0	60	0.1505	4.58E-06	1	60	0.01036	3.52E-06	7	60	0.0095	2.08E-05
18	18	60	0.0247	0.000143	0	60	0.1505	4.30E-06	1	60	0.01036	3.3E-06	7	60	0.0095	1.95E-05
19	16	60	0.0247	0.000128	0	60	0.1505	3.85E-06	1	60	0.01036	2.95E-06	6	60	0.0095	1.75E-05
20	15	65	0.0276	0.000129	0	65	0.1721	3.97E-06	1	65	0.01083	2.79E-06	5	65	0.0100	1.67E-05
21	13	60	0.0247	0.000103	0	60	0.1505	3.08E-06	1	60	0.01036	2.36E-06	5	60	0.0095	1.4E-05
22	11	60	0.0247	8.71E-05	0	60	0.1505	2.62E-06	1	60	0.01036	2.01E-06	4	60	0.0095	1.19E-05
23	10	60	0.0247	7.43E-05	0	60	0.1505	2.23E-06	1	60	0.01036	1.71E-06	3	60	0.0095	1.01E-05

LHDT1-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	LHDT2-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	MHDT-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	HHDT-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)
1	55	0.1168	2.18E-05	0	55	0.0757	3.82E-06	1	55	0.1106	1.85E-05	1	55	0.0664	2.76E-05
0	55	0.1168	0.00E+00	0	55	0.0757	0.00E+00	0	55	0.1106	0.00E+00	0	55	0.0664	0.00E+00
0	55	0.1168	0.00E+00	0	55	0.0757	0.00E+00	0	55	0.1106	0.00E+00	0	55	0.0664	0.00E+00
0	55	0.1168	0.00E+00	0	55	0.0757	0.00E+00	0	55	0.1106	0.00E+00	0	55	0.0664	0.00E+00
0	55	0.1168	0.00E+00	0	55	0.0757	0.00E+00	0	55	0.1106	0.00E+00	0	55	0.0664	0.00E+00
0	60	0.1168	8.59E-06	0	60	0.0757	1.51E-06	0	60	0.1103	7.25E-06	1	60	0.0596	9.74E-06
2	50	0.1134	8.61E-05	1	50	0.0750	1.54E-05	2	50	0.1173	7.97E-05	5	50	0.0870	1.47E-04
6	55	0.1168	2.14E-04	2	55	0.0757	3.75E-05	5	55	0.1106	1.81E-04	13	55	0.0664	2.71E-04
7	50	0.1134	2.66E-04	2	50	0.0750	4.77E-05	7	50	0.1173	2.46E-04	17	50	0.0870	4.54E-04
7	50	0.1134	2.66E-04	2	50	0.0750	4.76E-05	7	50	0.1173	2.46E-04	17	50	0.0870	4.53E-04
9	50	0.1134	3.16E-04	2	50	0.0750	5.65E-05	8	50	0.1173	2.92E-04	20	50	0.0870	5.39E-04
11	50	0.1134	4.11E-04	3	50	0.0750	7.35E-05	10	50	0.1173	3.80E-04	26	50	0.0870	7.00E-04
13	50	0.1134	4.74E-04	4	50	0.0750	8.47E-05	12	50	0.1173	4.38E-04	29	50	0.0870	8.08E-04
14	50	0.1134	4.85E-04	4	50	0.0750	8.67E-05	12	50	0.1173	4.48E-04	30	50	0.0870	8.26E-04
14	50	0.1134	4.96E-04	4	50	0.0750	8.87E-05	12	50	0.1173	4.59E-04	31	50	0.0870	8.46E-04
15	55	0.1168	5.63E-04	4	55	0.0757	9.87E-05	14	55	0.1106	4.77E-04	34	55	0.0664	7.11E-04
15	55	0.1168	5.65E-04	4	55	0.0757	9.91E-05	14	55	0.1106	4.79E-04	34	55	0.0664	7.14E-04
16	55	0.1168	5.85E-04	4	55	0.0757	1.03E-04	14	55	0.1106	4.95E-04	35	55	0.0664	7.39E-04
14	55	0.1168	5.32E-04	4	55	0.0757	9.33E-05	13	55	0.1106	4.51E-04	32	55	0.0664	6.73E-04
12	55	0.1168	4.30E-04	3	55	0.0757	7.54E-05	10	55	0.1106	3.64E-04	26	55	0.0664	5.43E-04
8	55	0.1168	3.06E-04	2	55	0.0757	5.36E-05	7	55	0.1106	2.59E-04	18	55	0.0664	3.87E-04
5	55	0.1168	1.99E-04	1	55	0.0757	3.49E-05	5	55	0.1106	1.69E-04	12	55	0.0664	2.52E-04
3	55	0.1168	9.89E-05	1	55	0.0757	1.73E-05	2	55	0.1106	8.38E-05	6	55	0.0664	1.25E-04
1	55	0.1168	3.35E-05	0	55	0.0757	5.88E-06	1	55	0.1106	2.84E-05	2	55	0.0664	4.24E-05

Total Emissions All Vehicles (g/mi)	Total Vehicles
1.48E-04	14
6.64E-05	10
6.33E-05	10
6.28E-05	10
7.40E-05	11
1.18E-04	15
4.44E-04	28
8.43E-04	47
1.16E-03	56
1.16E-03	54
1.36E-03	62
1.73E-03	76
1.98E-03	85
2.03E-03	87
2.07E-03	88
2.04E-03	95
2.04E-03	95
2.10E-03	97
1.92E-03	89
1.57E-03	74
1.16E-03	57
7.77E-04	42
4.29E-04	28
1.98E-04	17
	1250

Laurel Ranch Project

Emission Summary 2019
SR4 Northbound at Laurel Rd

Hour	TOG_DSL (g/sec)	Total (g/sec)	% Max hr
0	1.48E-04	1.48E-04	0.0705
1	6.64E-05	6.64E-05	0.0316
2	6.33E-05	6.33E-05	0.0301
3	6.28E-05	6.28E-05	0.0298
4	7.40E-05	7.40E-05	0.0352
5	1.18E-04	1.18E-04	0.0561
6	4.44E-04	4.44E-04	0.2113
7	8.43E-04	8.43E-04	0.4008
8	1.16E-03	1.16E-03	0.5537
9	1.16E-03	1.16E-03	0.5491
10	1.36E-03	1.36E-03	0.6447
11	1.73E-03	1.73E-03	0.8237
12	1.98E-03	1.98E-03	0.9429
13	2.03E-03	2.03E-03	0.9648
14	2.07E-03	2.07E-03	0.9844
15	2.04E-03	2.04E-03	0.9678
16	2.04E-03	2.04E-03	0.9692
17	2.10E-03	2.10E-03	1.0000
18	1.92E-03	1.92E-03	0.9126
19	1.57E-03	1.57E-03	0.7442
20	1.16E-03	1.16E-03	0.5506
21	7.77E-04	7.77E-04	0.3694
22	4.29E-04	4.29E-04	0.2038
23	1.98E-04	1.98E-04	0.0944
Max		2.10E-03	

Laurel Ranch Project **Estimate of TOG Emissions from Diesel Vehicles**

SR4 South Bound at Laurel Road **Year:** **2019**

Estimation of Emissions **TOG_DPM**

Freeway Segment Length 1828 meters or 1.135576 miles

Time	LDA-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	LDT1-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	LDT2-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	MDT-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)
0	2	65	0.0276	2E-05	0	65	0.1721	6.16E-07	0	65	0.01083	4.32E-07	1	65	0.0100	2.59E-06
1	1	65	0.0276	1.18E-05	0	65	0.1721	3.63E-07	0	65	0.01083	2.54E-07	0	65	0.0100	1.53E-06
2	1	65	0.0276	8.81E-06	0	65	0.1721	2.71E-07	0	65	0.01083	1.9E-07	0	65	0.0100	1.14E-06
3	1	65	0.0276	7.64E-06	0	65	0.1721	2.35E-07	0	65	0.01083	1.65E-07	0	65	0.0100	9.89E-07
4	2	65	0.0276	1.35E-05	0	65	0.1721	4.17E-07	0	65	0.01083	2.92E-07	1	65	0.0100	1.75E-06
5	4	70	0.0276	3.05E-05	0	70	0.1721	9.38E-07	0	70	0.01083	6.58E-07	1	70	0.0100	3.94E-06
6	7	60	0.0247	5.11E-05	0	60	0.1505	1.53E-06	0	60	0.01036	1.18E-06	2	60	0.0095	6.97E-06
7	10	65	0.0276	8.98E-05	0	65	0.1721	2.77E-06	1	65	0.01083	1.94E-06	4	65	0.0100	1.16E-05
8	11	60	0.0247	8.65E-05	0	60	0.1505	2.6E-06	1	60	0.01036	1.99E-06	4	60	0.0095	1.18E-05
9	10	60	0.0247	7.82E-05	0	60	0.1505	2.35E-06	1	60	0.01036	1.8E-06	4	60	0.0095	1.07E-05
10	10	60	0.0247	7.99E-05	0	60	0.1505	2.40E-06	1	60	0.01036	1.84E-06	4	60	0.0095	1.09E-05
11	11	60	0.0247	8.61E-05	0	60	0.1505	2.59E-06	1	60	0.01036	1.98E-06	4	60	0.0095	1.17E-05
12	12	60	0.0247	9.31E-05	0	60	0.1505	2.8E-06	1	60	0.01036	2.15E-06	4	60	0.0095	1.27E-05
13	12	60	0.0247	9.34E-05	0	60	0.1505	2.81E-06	1	60	0.01036	2.15E-06	4	60	0.0095	1.27E-05
14	13	60	0.0247	9.96E-05	0	60	0.1505	2.99E-06	1	60	0.01036	2.3E-06	5	60	0.0095	1.36E-05
15	14	65	0.0276	0.000118	0	65	0.1721	3.64E-06	1	65	0.01083	2.55E-06	5	65	0.0100	1.53E-05
16	14	65	0.0276	0.000121	0	65	0.1721	3.72E-06	1	65	0.01083	2.61E-06	5	65	0.0100	1.56E-05
17	15	65	0.0276	0.000128	0	65	0.1721	3.95E-06	1	65	0.01083	2.77E-06	5	65	0.0100	1.66E-05
18	13	65	0.0276	0.00011	0	65	0.1721	3.38E-06	1	65	0.01083	2.37E-06	4	65	0.0100	1.42E-05
19	10	65	0.0276	8.47E-05	0	65	0.1721	2.61E-06	1	65	0.01083	1.83E-06	3	65	0.0100	1.1E-05
20	7	65	0.0276	6.11E-05	0	65	0.1721	1.88E-06	0	65	0.01083	1.32E-06	2	65	0.0100	7.91E-06
21	6	65	0.0276	5.56E-05	0	65	0.1721	1.71E-06	0	65	0.01083	1.20E-06	2	65	0.0100	7.19E-06
22	5	65	0.0276	4.58E-05	0	65	0.1721	1.41E-06	0	65	0.01083	9.89E-07	2	65	0.0100	5.93E-06
23	4	65	0.0276	3.17E-05	0	65	0.1721	9.77E-07	0	65	0.01083	6.85E-07	1	65	0.0100	4.11E-06
	193				1				11				69			

LHDT1-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	LHDT2-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	MHDT-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	HHDT-DSL Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)
0	55	0.1168	8.09E-06	0	55	0.07569	1.42E-06	0	55	0.1106	6.85E-06	0	55	0.0664	1.02E-05
0	55	0.1168	0.00E+00	0	55	0.07569	0.00E+00	0	55	0.1106	0.00E+00	0	55	0.0664	0.00E+00
0	55	0.1168	0.00E+00	0	55	0.07569	0.00E+00	0	55	0.1106	0.00E+00	0	55	0.0664	0.00E+00
0	55	0.1168	0.00E+00	0	55	0.07569	0.00E+00	0	55	0.1106	0.00E+00	0	55	0.0664	0.00E+00
0	55	0.1168	0.00E+00	0	55	0.07569	0.00E+00	0	55	0.1106	0.00E+00	0	55	0.0664	0.00E+00
2	60	0.1168	8.19E-05	1	60	0.07569	1.44E-05	2	60	0.1103	6.91E-05	5	60	0.0596	9.28E-05
5	50	0.1134	1.96E-04	1	50	0.07498	3.51E-05	5	50	0.1173	1.81E-04	12	50	0.0870	3.34E-04
10	55	0.1168	3.57E-04	3	55	0.07569	6.27E-05	9	55	0.1106	3.03E-04	22	55	0.0664	4.52E-04
11	50	0.1134	3.83E-04	3	50	0.07498	6.85E-05	10	50	0.1173	3.54E-04	24	50	0.0870	6.53E-04
9	50	0.1134	3.09E-04	2	50	0.07498	5.53E-05	8	50	0.1173	2.86E-04	19	50	0.0870	5.28E-04
9	50	0.1134	3.07E-04	2	50	0.07498	5.49E-05	8	50	0.1173	2.84E-04	19	50	0.0870	5.23E-04
10	50	0.1134	3.41E-04	3	50	0.07498	6.09E-05	9	50	0.1173	3.15E-04	21	50	0.0870	5.81E-04
10	50	0.1134	3.58E-04	3	50	0.07498	6.40E-05	9	50	0.1173	3.31E-04	22	50	0.0870	6.10E-04
11	50	0.1134	3.92E-04	3	50	0.07498	7.01E-05	10	50	0.1173	3.62E-04	24	50	0.0870	6.68E-04
12	50	0.1134	4.29E-04	3	50	0.07498	7.68E-05	11	50	0.1173	3.97E-04	27	50	0.0870	7.32E-04
12	55	0.1168	4.58E-04	3	55	0.07569	8.02E-05	11	55	0.1106	3.88E-04	28	55	0.0664	5.78E-04
12	55	0.1168	4.54E-04	3	55	0.07569	7.96E-05	11	55	0.1106	3.84E-04	27	55	0.0664	5.74E-04
13	55	0.1168	4.96E-04	4	55	0.07569	8.70E-05	12	55	0.1106	4.20E-04	30	55	0.0664	6.27E-04
11	55	0.1168	4.01E-04	3	55	0.07569	7.03E-05	10	55	0.1106	3.40E-04	24	55	0.0664	5.07E-04
8	55	0.1168	2.91E-04	2	55	0.07569	5.10E-05	7	55	0.1106	2.46E-04	18	55	0.0664	3.68E-04
5	55	0.1168	1.90E-04	1	55	0.07569	3.33E-05	5	55	0.1106	1.61E-04	11	55	0.0664	2.40E-04
4	55	0.1168	1.49E-04	1	55	0.07569	2.62E-05	4	55	0.1106	1.27E-04	9	55	0.0664	1.89E-04
3	55	0.1168	1.04E-04	1	55	0.07569	1.82E-05	3	55	0.1106	8.79E-05	6	55	0.0664	1.31E-04
1	55	0.1168	3.23E-05	0	55	0.07569	5.66E-06	1	55	0.1106	2.73E-05	2	55	0.0664	4.08E-05
158				43				141				351			967

Total Emissions All Vehicles (g/sec)	Total Vehicles
5.02E-05	4
1.39E-05	2
1.04E-05	1
9.03E-06	1
1.60E-05	2
2.94E-04	15
8.08E-04	33
1.28E-03	57
1.56E-03	63
1.27E-03	52
1.26E-03	52
1.40E-03	57
1.47E-03	61
1.60E-03	65
1.75E-03	71
1.64E-03	74
1.63E-03	74
1.78E-03	80
1.45E-03	66
1.06E-03	48
6.97E-04	33
5.57E-04	27
3.95E-04	20
1.44E-04	9

Laurel Ranch Project

Emission Summary **2019**

SR4 South Bound at Laurel Road

Hour	TOG_DSL (g/sec)	Total (g/sec)	% Max hr	Total (lbs/hr)
0	5.02E-05	5.02E-05	0.0282	0.000398
1	1.39E-05	1.39E-05	0.0078	0.00011
2	1.04E-05	1.04E-05	0.0058	8.25E-05
3	9.03E-06	9.03E-06	0.0051	7.16E-05
4	1.60E-05	1.60E-05	0.0090	0.000127
5	2.94E-04	2.94E-04	0.1651	0.002333
6	8.08E-04	8.08E-04	0.4533	0.006405
7	1.28E-03	1.28E-03	0.7186	0.010155
8	1.56E-03	1.56E-03	0.8764	0.012384
9	1.27E-03	1.27E-03	0.7135	0.010082
10	1.26E-03	1.26E-03	0.7096	0.010027
11	1.40E-03	1.40E-03	0.7855	0.0111
12	1.47E-03	1.47E-03	0.8265	0.011679
13	1.60E-03	1.60E-03	0.8996	0.012713
14	1.75E-03	1.75E-03	0.9840	0.013905
15	1.64E-03	1.64E-03	0.9222	0.013031
16	1.63E-03	1.63E-03	0.9170	0.012958
17	1.78E-03	1.78E-03	1.0000	0.014131
18	1.45E-03	1.45E-03	0.8125	0.011481
19	1.06E-03	1.06E-03	0.5928	0.008376
20	6.97E-04	6.97E-04	0.3912	0.005528
21	5.57E-04	5.57E-04	0.3124	0.004414
22	3.95E-04	3.95E-04	0.2217	0.003133
23	1.44E-04	1.44E-04	0.0806	0.001139
Max	1.78E-03			0.175763 lbs/hr

Laurel Ranch Project

Estimate of Acute Non-Cancer Hazard Index - State Route 4

Diesel Exhaust TOG Profile and Estimate of Acute Non-Cancer Hazard Index
Only those chemicals that have an acute REL are listed

Maximum 1-hour TOG Concentration: 0.02 ug/m3

Toxic Compound	ARB Speciation 818 (%TOG)	Acute REL (ug/m3)	Acute Non-Cancer Hazard Quotient
Acetaldehyde	7.350%	470	0.000
Benzene	2.000%	27	0.000
Formaldehyde	14.710%	55	0.000
Methyl Alcohol	0.030%	28000	0.000
MethlethylKetone	1.480%	13000	0.000
Styrene	0.060%	21000	0.000
Toluene	1.470%	37000	0.000
M-Xylenes	0.610%	22000	0.000
O-Xylene	0.340%	22000	0.000
P-Xylene	0.100%	22000	0.000
1-3 Butadiene	0.190%	660	0.000

Hazard Index from TOG_DSL	**0.00000**

Gasoline Exhaust TOG Profile and Estimate of Acute Non-Cancer Hazard Index
Only those chemicals that have an acute REL are listed

Maximum 1-hour TOG Concentration: 1.28 ug/m3

Toxic Compound	ARB Speciation 2108 (%TOG)	Acute REL	Acute Non-Cancer Hazard Quotient
Acrolein	0.13%	2.5	6.6758E-04
Methyl Alcohol	0.12%	28000	5.5021E-08
MethlethylKetone	0.02%	13000	1.9751E-08
Styrene	0.12%	21000	7.3361E-08
Toluene	5.58%	37000	1.9361E-06
M-Xylene	3.45%	22000	2.0133E-06
O-Xylene	1.20%	22000	7.0026E-07
Acetaldehyde	0.28%	470	7.6482E-06
Formaldehyde	1.53%	55	3.5713E-04
Benzene	2.47%	27	1.1745E-03
1-3 Butadiene	0.53%	660	1.0309E-05
Ethyl Benzene	1.02%	0	0.0000E+00
Naphtlalene	0.05%	0	0.0000E+00
Hexane	1.55%	0	0.0000E+00
Propylene	2.97%	0	0.0000E+00

Acute Non-cancer Hazard index from TOG_GAS	0.00222
Acute Non-cancer Hazard Index from TOG_DSL	0.00000
Acute Non-cancer Hazard Index from DPM	0.00000
Total Acute Non-Cancer Hazard Index	**0.00223**

Diesel Exhaust PM Profile and Estimate of Acute Non-Cancer Hazard Index
Only those chemicals that have an acute REL are listed

Maximum 1-hour DPM Concentration: 0.01 ug/m3

Toxic Compounc	ARB Speciation 425 (%PM2.5)	Acute REL (ug/m3)	Acute Non-Cancer Hazard Quotient
Arsenic	0.000%	0.2	0.000
Copper	0.003%	100	0.000
Chlorine	0.027%	210	0.000
Nickel	0.002%	0.2	0.000
Mercury	0.003%	0.6	0.000
Sulfate	1.740%	120	0.000
Manganese	0.002%	0.17	0.000

Hazard Index from PM2.5	**0.00000**

Laurel Ranch Project

Sample Output

Estimate of Hourly TOG_GAS from State Route 4
With DPM Emissions for 2019

Maximum Hourly TOG_DSL Emissions for State Route 4 Northbound: 1.98E-04 g/sec
Maximum Hourly TOG_DSL Emissions for State Route 4 Southbound: 1.44E-04 g/sec

X (m)	Y (m)	Hourly TOG_DSL SR4 Northbound with Unit Emissions (ug/m3)	Hourly TOG_DSL SR4 Northbound with Actual Emissions (ug/m3)	Hourly TOG_DSL SR4 Southbound with Unit Emissions (ug/m3)	Hourly TOG_DSL SR4 Southbound with Actual Emissions (ug/m3)	Total Hourly Average TOG_DPM (ug/m3)
609713.8	4203941	10.755	0.002	10.629	0.002	0.004
609738.8	4203941	11.023	0.002	10.926	0.002	0.004
609763.8	4203941	11.310	0.002	11.244	0.002	0.004
609788.8	4203941	11.616	0.002	11.586	0.002	0.004
609813.8	4203941	11.945	0.002	12.220	0.002	0.004
609838.8	4203941	12.298	0.002	10.529	0.002	0.004
609713.8	4203966	10.913	0.002	10.817	0.002	0.004
609738.8	4203966	11.191	0.002	11.126	0.002	0.004
609763.8	4203966	11.489	0.002	11.459	0.002	0.004
609788.8	4203966	11.808	0.002	11.818	0.002	0.004
609813.8	4203966	12.151	0.002	12.398	0.002	0.004
609838.8	4203966	12.520	0.002	14.002	0.002	0.004
609863.8	4203966	12.918	0.003	15.496	0.002	0.005
609888.8	4203966	13.517	0.003	10.711	0.002	0.004
609713.8	4203991	11.077	0.002	11.012	0.002	0.004
609738.8	4203991	11.367	0.002	11.335	0.002	0.004
609763.8	4203991	11.677	0.002	11.683	0.002	0.004
609788.8	4203991	12.009	0.002	12.060	0.002	0.004
609813.8	4203991	12.366	0.002	12.584	0.002	0.004
609838.8	4203991	12.752	0.003	14.258	0.002	0.005
609863.8	4203991	13.169	0.003	15.818	0.002	0.005
609888.8	4203991	13.767	0.003	17.254	0.002	0.005
609913.8	4203991	15.180	0.003	18.581	0.003	0.006
609938.8	4203991	16.465	0.003	10.900	0.002	0.005
609713.8	4204016	11.249	0.002	11.214	0.002	0.004
609738.8	4204016	11.550	0.002	11.551	0.002	0.004
609763.8	4204016	11.873	0.002	11.916	0.002	0.004

Laurel Ranch Project

Estimate of Hourly TOG_GAS from State Route 4
With DPM Emissions for 2019

Maximum Hourly TOG_GAS Emissions for State Route 4 Northbound: 1.86E-02 g/sec
Maximum Hourly TOG_GAS Emissions for State Route 4 Southbound: 7.24E-03 g/sec

X (m)	Y (m)	Hourly TOG_GAS SR4 Northbound with Unit Emissions (ug/m3)	Hourly TOG_GAS SR4 Northbound with Actual Emissions (ug/m3)	Hourly TOG_GAS SR4 Southbound with Unit Emissions (ug/m3)	Hourly TOG_GAS SR4 Southbound with Actual Emissions (ug/m3)	Total Hourly Average TOG_GAS (ug/m3)
609713.8	4203941	10.755	0.200	11.718	0.085	0.285
609738.8	4203941	11.023	0.205	12.038	0.087	0.292
609763.8	4203941	11.310	0.210	12.380	0.090	0.300
609788.8	4203941	11.616	0.216	12.749	0.092	0.308
609813.8	4203941	11.945	0.222	13.146	0.095	0.317
609838.8	4203941	12.298	0.229	13.575	0.098	0.327
609713.8	4203966	10.913	0.203	11.903	0.086	0.289
609738.8	4203966	11.191	0.208	12.237	0.089	0.297
609763.8	4203966	11.489	0.214	12.595	0.091	0.305
609788.8	4203966	11.808	0.220	12.980	0.094	0.314
609813.8	4203966	12.151	0.226	13.397	0.097	0.323
609838.8	4203966	12.520	0.233	13.848	0.100	0.333
609863.8	4203966	12.918	0.240	14.338	0.104	0.344
609888.8	4203966	13.350	0.248	15.496	0.112	0.360
609713.8	4203991	11.077	0.206	12.094	0.088	0.294
609738.8	4203991	11.367	0.211	12.442	0.090	0.301
609763.8	4203991	11.677	0.217	12.817	0.093	0.310
609788.8	4203991	12.009	0.223	13.221	0.096	0.319
609813.8	4203991	12.366	0.230	13.658	0.099	0.329
609838.8	4203991	12.752	0.237	14.133	0.102	0.339
609863.8	4203991	13.169	0.245	14.650	0.106	0.351
609888.8	4203991	13.623	0.253	15.818	0.115	0.368
609913.8	4203991	14.876	0.277	17.254	0.125	0.402

Laurel Ranch Project

Sample Output

Etimates of Hourly DPM (as PM2.5) Air Concentrations from State Route 4

Maximum Hourly DPM Emissions for State Route 4 Northbound: 1.62E-04 g/sec
Maximum Hourly DPM Emissions for State Route 4 Southbound: 6.64E-05 g/sec

X (m)	Y (m)	Hourly DPM SR4 Northbound with Unit Emissions (ug/m3)	Hourly DPM SR4 Northbound with Actual Emissions (ug/m3)	Hourly DPM SR4 Southbound with Unit Emissions (ug/m3)	Hourly DPM SR4 Southbound with Actual Emissions (ug/m3)	Total Hourly Average DPM (ug/m3)
609713.750	4203940.500	10.8	0.0017	10.6293	0.0007	0.0024
609738.750	4203940.500	11.0	0.0018	10.9256	0.0007	0.0025
609763.750	4203940.500	11.3	0.0018	11.2436	0.0007	0.0026
609788.750	4203940.500	11.6	0.0019	11.5862	0.0008	0.0026
609813.750	4203940.500	11.9	0.0019	12.2200	0.0008	0.0027
609838.750	4203940.500	12.3	0.0020	10.5291	0.0007	0.0027
609713.750	4203965.500	10.9	0.0018	10.8172	0.0007	0.0025
609738.750	4203965.500	11.2	0.0018	11.1264	0.0007	0.0025
609763.750	4203965.500	11.5	0.0019	11.4590	0.0008	0.0026
609788.750	4203965.500	11.8	0.0019	11.8180	0.0008	0.0027
609813.750	4203965.500	12.2	0.0020	12.3978	0.0008	0.0028
609838.750	4203965.500	12.5	0.0020	14.0020	0.0009	0.0030
609863.750	4203965.500	12.9	0.0021	15.4961	0.0010	0.0031
609888.750	4203965.500	13.5	0.0022	10.7115	0.0007	0.0029
609713.750	4203990.500	11.1	0.0018	11.0119	0.0007	0.0025
609738.750	4203990.500	11.4	0.0018	11.3350	0.0008	0.0026
609763.750	4203990.500	11.7	0.0019	11.6832	0.0008	0.0027
609788.750	4203990.500	12.0	0.0019	12.0599	0.0008	0.0027
609813.750	4203990.500	12.4	0.0020	12.5836	0.0008	0.0028
609838.750	4203990.500	12.8	0.0021	14.2577	0.0009	0.0030
609863.750	4203990.500	13.2	0.0021	15.8178	0.0011	0.0032
609888.750	4203990.500	13.8	0.0022	17.2539	0.0011	0.0034
609913.750	4203990.500	15.2	0.0025	18.5805	0.0012	0.0037
609938.750	4203990.500	16.5	0.0027	10.8999	0.0007	0.0034
609713.750	4204015.500	11.2	0.0018	11.2136	0.0007	0.0026
609738.750	4204015.500	11.5	0.0019	11.5514	0.0008	0.0026
609763.750	4204015.500	11.9	0.0019	11.9162	0.0008	0.0027
609788.750	4204015.500	12.2	0.0020	12.3117	0.0008	0.0028

Laurel Ranch Project **Estimate of TOG Emissions from Gasoline Vehicles**

SR4 Northbound at Laurel Rd **Year:** **2019**

Estimation of Emissions **TOG_GAS**

Freeway Segment Length 1829 meters or 1.14 miles

Time	LDA-GAS Vehicles	Average Speed	Emission Factor	Emissions (g/sec)	LDT1-GAS Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	LDT2-GAS Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	MDT-GAS Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)
0	773	60	0.0373	0.009095	58	60	0.1231	0.002233	261	60	0.05483	0.004514	8	60	0.0939	0.00023
1	669	60	0.0373	0.007878	50	60	0.1231	0.001935	226	60	0.05483	0.00391	7	60	0.0939	0.000199
2	637	60	0.0373	0.007501	47	60	0.1231	0.001842	215	60	0.05483	0.003723	6	60	0.0939	0.00019
3	633	60	0.0373	0.007444	47	60	0.1231	0.001828	213	60	0.05483	0.003694	6	60	0.0939	0.000188
4	745	60	0.0373	0.008771	55	60	0.1231	0.002154	252	60	0.05483	0.004353	7	60	0.0939	0.000222
5	916	60	0.0373	0.010774	68	60	0.1231	0.002646	309	60	0.05483	0.005347	9	60	0.0939	0.000273
6	1173	60	0.0373	0.013802	87	60	0.1231	0.003389	396	60	0.05483	0.00685	12	60	0.0939	0.000349
7	1404	60	0.0373	1.65E-02	104	60	0.1231	0.004058	474	60	0.05483	0.008202	14	60	0.0939	0.000418
8	1511	60	0.0373	0.017779	112	60	0.1231	0.004366	510	60	0.05483	0.008823	15	60	0.0939	0.00045
9	1431	60	0.0373	0.016845	107	60	0.1231	0.004136	483	60	0.05483	0.00836	14	60	0.0939	0.000426
10	1542	60	0.0373	0.018149	115	60	0.1231	0.004456	520	60	0.05483	0.009007	15	60	0.0939	0.000459
11	1690	60	0.0373	0.019893	126	60	0.1231	0.004885	570	60	0.05483	0.009872	17	60	0.0939	0.000504
12	1806	60	0.0373	0.021253	134	60	0.1231	0.005219	609	60	0.05483	0.010547	18	60	0.0939	0.000538
13	1848	60	0.0373	0.021747	137	60	0.1231	0.00534	624	60	0.05483	1.08E-02	19	60	0.0939	0.00055
14	1824	60	0.0373	0.02147	136	60	0.1231	0.005272	616	60	0.05483	1.07E-02	18	60	0.0939	0.000543
15	1876	60	0.0373	0.022076	140	60	0.1231	5.42E-03	633	60	0.05483	0.010956	19	60	0.0939	0.000559
16	1823	60	0.0373	0.021459	136	60	0.1231	5.27E-03	615	60	0.05483	0.01065	18	60	0.0939	0.000543
17	1828	60	0.0373	0.021508	136	60	0.1231	5.28E-03	617	60	0.05483	0.010674	18	60	0.0939	0.000544
18	1717	60	0.0373	0.020206	128	60	0.1231	4.96E-03	579	60	0.05483	0.010028	17	60	0.0939	0.000511
19	1535	60	0.0373	0.018066	114	60	0.1231	4.44E-03	518	60	0.05483	0.008966	15	60	0.0939	0.000457
20	1386	65	0.0379	0.01657	103	65	0.1211	0.003942	468	65	0.05476	0.008086	14	65	0.0962	0.000423
21	1229	60	0.0373	0.014466	91	60	0.1231	0.003552	415	60	0.05483	0.007179	12	60	0.0939	0.000366
22	1044	60	0.0373	0.012291	78	60	0.1231	0.003018	352	60	0.05483	0.0061	10	60	0.0939	0.000311
23	890	60	0.0373	1.05E-02	66	60	0.1231	0.002572	300	60	0.05483	0.005197	9	60	0.0939	0.000265

31931

LHDT1-GAS Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	LHDT2-GAS Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	MHDT-GAS Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	HHDT-GAS Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)
1	55	0.2644	4.27E-05	0	55	0.1407	6.15E-06	0	55	0.2080	5.63E-06	0	55	0.6841	2.24E-06
0	55	0.2644	0.00E+00	0	55	0.1407	0.00E+00	0	55	0.2080	0.00E+00	0	55	0.6841	0.00E+00
0	55	0.2644	0.00E+00	0	55	0.1407	0.00E+00	0	55	0.2080	0.00E+00	0	55	0.6841	0.00E+00
0	55	0.2644	0.00E+00	0	55	0.1407	0.00E+00	0	55	0.2080	0.00E+00	0	55	0.6841	0.00E+00
0	55	0.2644	0.00E+00	0	55	0.1407	0.00E+00	0	55	0.2080	0.00E+00	0	55	0.6841	0.00E+00
0	60	0.2644	1.68E-05	0	60	0.1407	2.42E-06	0	60	0.2091	2.23E-06	0	60	0.7197	9.29E-07
2	50	0.2842	1.87E-04	1	50	0.1518	2.70E-05	0	50	0.2150	2.37E-05	0	50	0.6789	9.05E-06
5	55	0.2644	4.20E-04	1	55	0.1407	6.04E-05	1	55	0.2080	5.53E-05	0	55	0.6841	2.20E-05
6	50	0.2842	5.78E-04	2	50	0.1518	8.35E-05	1	50	0.2150	7.32E-05	0	50	0.6789	2.80E-05
6	50	0.2842	5.77E-04	2	50	0.1518	8.34E-05	1	50	0.2150	7.31E-05	0	50	0.6789	2.79E-05
8	50	0.2842	6.85E-04	2	50	0.1518	9.90E-05	1	50	0.2150	8.68E-05	0	50	0.6789	3.32E-05
10	50	0.2842	8.91E-04	3	50	0.1518	1.29E-04	2	50	0.2150	1.13E-04	0	50	0.6789	4.32E-05
11	50	0.2842	1.03E-03	3	50	0.1518	1.48E-04	2	50	0.2150	1.30E-04	0	50	0.6789	4.98E-05
12	50	0.2842	1.05E-03	3	50	0.1518	1.52E-04	2	50	0.2150	1.33E-04	0	50	0.6789	5.09E-05
12	50	0.2842	1.08E-03	3	50	0.1518	1.56E-04	2	50	0.2150	1.36E-04	0	50	0.6789	5.21E-05
13	55	0.2644	1.10E-03	4	55	0.1407	1.59E-04	2	55	0.2080	1.45E-04	0	55	0.6841	5.78E-05
13	55	0.2644	1.11E-03	4	55	0.1407	1.59E-04	2	55	0.2080	1.46E-04	0	55	0.6841	5.81E-05
14	55	0.2644	1.15E-03	4	55	0.1407	1.65E-04	2	55	0.2080	1.51E-04	0	55	0.6841	6.01E-05
13	55	0.2644	1.04E-03	3	55	0.1407	1.50E-04	2	55	0.2080	1.37E-04	0	55	0.6841	5.47E-05
10	55	0.2644	8.43E-04	3	55	0.1407	1.21E-04	2	55	0.2080	1.11E-04	0	55	0.6841	4.42E-05
7	55	0.2644	6.00E-04	2	55	0.1407	8.63E-05	1	55	0.2080	7.90E-05	0	55	0.6841	3.14E-05
5	55	0.2644	3.91E-04	1	55	0.1407	5.62E-05	1	55	0.2080	5.15E-05	0	55	0.6841	2.05E-05
2	55	0.2644	1.94E-04	1	55	0.1407	2.79E-05	0	55	0.2080	2.55E-05	0	55	0.6841	1.02E-05
1	55	0.2644	6.57E-05	0	55	0.1407	9.45E-06	0	55	0.2080	8.65E-06	0	55	0.6841	3.44E-06

Total Emissions All Vehicles (g/mi)	Total Vehicles
1.61E-02	1100
1.39E-02	952
1.33E-02	906
1.32E-02	899
1.55E-02	1060
1.91E-02	1302
2.46E-02	1671
2.98E-02	2004
3.22E-02	2157
3.05E-02	2045
3.30E-02	2204
3.63E-02	2418
3.89E-02	2585
3.98E-02	2645
3.94E-02	2612
4.05E-02	2687
3.94E-02	2612
3.95E-02	2619
3.71E-02	2460
3.30E-02	2198
2.98E-02	1982
2.61E-02	1755
2.20E-02	1488
1.86E-02	1267
	45625

Laurel Ranch Project

Emission Summary **2019**
SR4 Northbound at Laurel Rd

Hour	TOG_GAS (g/sec)	% Max hr
0	1.61E-02	0.3985
1	1.39E-02	0.3439
2	1.33E-02	0.3275
3	1.32E-02	0.3250
4	1.55E-02	0.3829
5	1.91E-02	0.4709
6	2.46E-02	0.6087
7	2.98E-02	0.7353
8	3.22E-02	0.7950
9	3.05E-02	0.7543
10	3.30E-02	0.8147
11	3.63E-02	0.8976
12	3.89E-02	0.9614
13	3.98E-02	0.9837
14	3.94E-02	0.9724
15	4.05E-02	1.0000
16	3.94E-02	0.9732
17	3.95E-02	0.9766
18	3.71E-02	0.9164
19	3.30E-02	0.8164
20	2.98E-02	0.7367
21	2.61E-02	0.6444
22	2.20E-02	0.5430
23	1.86E-02	0.4594
Max	4.05E-02	

Laurel Ranch Project **Estimate of TOG Emissions from Gasoline Vehicles**

SR4 South Bound at Laurel Road **Year:** **2019**

Estimation of Emissions **TOG_GAS**

Freeway Segment Length 1828 meters or 1.135576 miles

Time	LDA-GAS Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	LDT1-GAS Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	LDT2-GAS Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	MDT-GAS Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)
0	215	65	0.0379	0.002567	16	65	0.1211	0.000611	73	65	0.05476	1.25E-03	2	65	0.0962	6.55E-05
1	127	65	0.0379	0.001513	9	65	0.1211	0.00036	43	65	0.05476	7.38E-04	1	65	0.0962	3.86E-05
2	95	65	0.0379	0.001131	7	65	0.1211	0.000269	32	65	0.05476	0.000552	1	65	0.0962	2.88E-05
3	82	65	0.0379	0.000981	6	65	0.1211	0.000233	28	65	0.05476	0.000479	1	65	0.0962	2.5E-05
4	145	65	0.0379	0.001737	11	65	0.1211	0.000413	49	65	0.05476	0.000848	1	65	0.0962	4.43E-05
5	327	70	0.0379	0.003911	24	70	0.1211	0.00093	110	70	0.05476	0.001909	3	70	0.0962	9.98E-05
6	612	60	0.0373	0.007203	46	60	0.1231	0.001769	207	60	0.05483	0.003575	6	60	0.0939	0.000182
7	965	65	0.0379	0.011532	72	65	0.1211	0.002743	326	65	0.05476	0.005628	10	65	0.0962	0.000294
8	1037	60	0.0373	0.0122	77	60	0.1231	0.002996	350	60	0.05483	6.05E-03	10	60	0.0939	0.000309
9	937	60	0.0373	0.011026	70	60	0.1231	0.002708	316	60	0.05483	0.005472	9	60	0.0939	0.000279
10	959	60	0.0373	0.011275	71	60	0.1231	2.77E-03	324	60	0.05483	0.005595	10	60	0.0939	0.000285
11	1032	60	0.0373	0.01214	77	60	0.1231	2.98E-03	348	60	0.05483	0.006025	10	60	0.0939	0.000307
12	1116	60	0.0373	0.013133	83	60	0.1231	0.003225	377	60	0.05483	0.006517	11	60	0.0939	0.000332
13	1120	60	0.0373	0.013179	83	60	0.1231	0.003236	378	60	0.05483	0.00654	11	60	0.0939	0.000334
14	1194	60	0.0373	0.014047	89	60	0.1231	0.003449	403	60	0.05483	0.006971	12	60	0.0939	0.000356
15	1270	65	0.0379	0.015179	95	65	0.1211	0.003611	429	65	0.05476	0.007408	13	65	0.0962	0.000387
16	1297	65	0.0379	0.015491	96	65	0.1211	0.003685	438	65	0.05476	0.00756	13	65	0.0962	0.000395
17	1378	65	0.0379	0.01646	103	65	0.1211	0.003916	465	65	0.05476	0.008033	14	65	0.0962	4.20E-04
18	1180	65	0.0379	0.014095	88	65	0.1211	0.003353	398	65	0.05476	0.006879	12	65	0.0962	0.00036
19	910	65	0.0379	0.010869	68	65	0.1211	0.002586	307	65	0.05476	0.005304	9	65	0.0962	0.000277
20	656	65	0.0379	0.007838	49	65	0.1211	0.001865	221	65	0.05476	0.003825	7	65	0.0962	2.00E-04
21	597	65	0.0379	0.007134	44	65	0.1211	0.001697	202	65	0.05476	3.48E-03	6	65	0.0962	0.000182
22	492	65	0.0379	0.005878	37	65	0.1211	0.001398	166	65	0.05476	0.002869	5	65	0.0962	0.00015
23	341	65	0.0379	0.004074	25	65	0.1211	0.000969	115	65	0.05476	0.001988	3	65	0.0962	0.000104
	18085				1346				6104				182			

LHDT1-GAS Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	LHDT2-GAS Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	MHDT-GAS Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)	HHDT-GAS Vehicles	Vehicle Speed (mph)	Emission Factor (g/mi)	Emissions (g/sec)
0	55	0.2644	1.59E-05	0	55	0.14066	8.43E-06	0	55	0.2080	2.09E-06	0	55	0.6841	8.31E-07
0	55	0.2644	0.00E+00	0	55	0.14066	0.00E+00	0	55	0.2080	0.00E+00	0	55	0.6841	0.00E+00
0	55	0.2644	0.00E+00	0	55	0.14066	0.00E+00	0	55	0.2080	0.00E+00	0	55	0.6841	0.00E+00
0	55	0.2644	0.00E+00	0	55	0.14066	0.00E+00	0	55	0.2080	0.00E+00	0	55	0.6841	0.00E+00
0	55	0.2644	0.00E+00	0	55	0.14066	0.00E+00	0	55	0.2080	0.00E+00	0	55	0.6841	0.00E+00
2	60	0.2644	1.61E-04	2	60	0.14066	8.54E-05	0	60	0.2091	2.13E-05	0	60	0.7197	8.85E-06
5	50	0.2842	4.26E-04	5	50	0.15181	2.27E-04	1	50	0.2150	5.39E-05	0	50	0.6789	2.06E-05
8	55	0.2644	7.00E-04	8	55	0.14066	3.73E-04	1	55	0.2080	9.23E-05	0	55	0.6841	3.67E-05
9	50	0.2842	8.31E-04	9	50	0.15181	4.44E-04	2	50	0.2150	1.05E-04	0	50	0.6789	4.02E-05
7	50	0.2842	6.71E-04	7	50	0.15181	3.59E-04	1	50	0.2150	8.51E-05	0	50	0.6789	3.25E-05
7	50	0.2842	6.66E-04	7	50	0.15181	3.56E-04	1	50	0.2150	8.44E-05	0	50	0.6789	3.22E-05
8	50	0.2842	7.39E-04	8	50	0.15181	3.95E-04	1	50	0.2150	9.36E-05	0	50	0.6789	3.58E-05
9	50	0.2842	7.76E-04	9	50	0.15181	4.14E-04	1	50	0.2150	9.83E-05	0	50	0.6789	3.76E-05
9	50	0.2842	8.50E-04	9	50	0.15181	4.54E-04	2	50	0.2150	1.08E-04	0	50	0.6789	4.11E-05
10	50	0.2842	9.31E-04	10	50	0.15181	4.98E-04	2	50	0.2150	1.18E-04	0	50	0.6789	4.51E-05
11	55	0.2644	8.97E-04	11	55	0.14066	4.77E-04	2	55	0.2080	1.18E-04	0	55	0.6841	4.70E-05
11	55	0.2644	8.90E-04	11	55	0.14066	4.73E-04	2	55	0.2080	1.17E-04	0	55	0.6841	4.66E-05
12	55	0.2644	9.72E-04	12	55	0.14066	5.17E-04	2	55	0.2080	1.28E-04	0	55	0.6841	5.10E-05
9	55	0.2644	7.86E-04	9	55	0.14066	4.18E-04	2	55	0.2080	1.04E-04	0	55	0.6841	4.12E-05
7	55	0.2644	5.70E-04	7	55	0.14066	3.03E-04	1	55	0.2080	7.51E-05	0	55	0.6841	2.99E-05
4	55	0.2644	3.73E-04	4	55	0.14066	1.98E-04	1	55	0.2080	4.91E-05	0	55	0.6841	1.95E-05
4	55	0.2644	2.93E-04	4	55	0.14066	1.56E-04	1	55	0.2080	3.86E-05	0	55	0.6841	1.54E-05
2	55	0.2644	2.03E-04	2	55	0.14066	1.08E-04	0	55	0.2080	2.68E-05	0	55	0.6841	1.07E-05
1	55	0.2644	6.33E-05	1	55	0.14066	3.37E-05	0	55	0.2080	8.34E-06	0	55	0.6841	3.32E-06
137				137				23				3			

Total Emissions All Vehicles (g/sec)	Total Vehicles
4.52E-03	306
2.65E-03	180
1.98E-03	135
1.72E-03	117
3.04E-03	207
7.13E-03	470
1.35E-02	881
2.14E-02	1391
2.30E-02	1495
2.06E-02	1349
2.11E-02	1379
2.27E-02	1486
2.45E-02	1607
2.47E-02	1614
2.64E-02	1721
2.81E-02	1830
2.87E-02	1867
3.05E-02	1985
2.60E-02	1698
2.00E-02	1309
1.44E-02	943
1.30E-02	857
1.06E-02	705
7.24E-03	487
	26016

Laurel Ranch Project

Emission Summary **2019**
SR4 South Bound at Laurel Road

Hour	TOG_GAS (g/sec)	% Max hr
0	4.52E-03	0.1483
1	2.65E-03	0.0869
2	1.98E-03	0.0649
3	1.72E-03	0.0563
4	3.04E-03	0.0998
5	7.13E-03	0.2337
6	1.35E-02	0.4412
7	2.14E-02	0.7017
8	2.30E-02	0.7535
9	2.06E-02	0.6765
10	2.11E-02	0.6906
11	2.27E-02	0.7449
12	2.45E-02	0.8045
13	2.47E-02	0.8113
14	2.64E-02	0.8661
15	2.81E-02	0.9222
16	2.87E-02	0.9397
17	3.05E-02	1.0000
18	2.60E-02	0.8537
19	2.00E-02	0.6563
20	1.44E-02	0.4711
21	1.30E-02	0.4262
22	1.06E-02	0.3490
23	7.24E-03	0.2375

Max 3.05E-02 lbs/hr

♀ *** ISCST3 - VERSION 02035 *** *** DPM Impacts from SR4 from Cancr Risk, Chronic and Acute NC HI *** 10/17/15
*** DPM Emissions from SR4 NB and SB - 2019 *** 18:36:01
**MODELOPTs: PAGE 1
CONC URBAN ELEV DFAULT

*** MODEL SETUP OPTIONS SUMMARY ***
- -

**Intermediate Terrain Processing 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 Regulatory DEFAULT Options:
1. Final Plume Rise.
2. Stack-tip Downwash.
3. Buoyancy-induced Dispersion.
4. Use Calms Processing Routine.
5. Not Use Missing Data Processing Routine.
6. Default Wind Profile Exponents.
7. Default Vertical Potential Temperature Gradients.
8. "Upper Bound" Values for Supersquat Buildings.
9. No Exponential Decay for URBAN/Non-SO2

**Model Accepts Receptors on ELEV Terrain.

**Model Assumes No FLAGPOLE Receptor Heights.

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates PERIOD Averages

**This Run Includes: 78 Source(s); 3 Source Group(s); and 170 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 PERIOD Averages by Receptor
Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**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 = 1.3 MB of RAM.

**Input Runstream File: DPM_SR4.INP
**Output Print File: DPM_SR4.OUT
**Detailed Error/Message File: DPM_SR4.err
♀ *** ISCST3 - VERSION 02035 *** *** DPM Impacts from SR4 from Cancr Risk, Chronic and Acute NC HI *** 10/17/15
*** DPM Emissions from SR4 NB and SB - 2019 *** 18:36:01
**MODELOPTs: PAGE 2
CONC URBAN ELEV DFAULT

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	EMISSION RATE SCALAR VARY BY
L0000602	0	0.25641E-01	609863.8	4204919.0	22.0	3.66	22.06	0.43	HROFDY
L0000603	0	0.25641E-01	609887.0	4204877.5	22.5	3.66	22.06	0.43	HROFDY
L0000604	0	0.25641E-01	609910.3	4204836.5	22.9	3.66	22.06	0.43	HROFDY
L0000605	0	0.25641E-01	609933.6	4204795.0	23.4	3.66	22.06	0.43	HROFDY
L0000606	0	0.25641E-01	609956.9	4204754.0	23.8	3.66	22.06	0.43	HROFDY
L0000607	0	0.25641E-01	609980.2	4204712.5	24.2	3.66	22.06	0.43	HROFDY
L0000608	0	0.25641E-01	610003.5	4204671.0	24.7	3.66	22.06	0.43	HROFDY
L0000609	0	0.25641E-01	610026.8	4204630.0	25.1	3.66	22.06	0.43	HROFDY
L0000610	0	0.25641E-01	610050.1	4204588.5	25.6	3.66	22.06	0.43	HROFDY
L0000611	0	0.25641E-01	610073.4	4204547.5	26.0	3.66	22.06	0.43	HROFDY
L0000612	0	0.25641E-01	610096.7	4204506.0	26.4	3.66	22.06	0.43	HROFDY
L0000613	0	0.25641E-01	610120.0	4204464.5	26.9	3.66	22.06	0.43	HROFDY
L0000614	0	0.25641E-01	610143.3	4204423.5	27.3	3.66	22.06	0.43	HROFDY
L0000615	0	0.25641E-01	610166.6	4204382.0	27.8	3.66	22.06	0.43	HROFDY
L0000616	0	0.25641E-01	610189.9	4204340.5	28.2	3.66	22.06	0.43	HROFDY
L0000617	0	0.25641E-01	610213.2	4204299.5	28.6	3.66	22.06	0.43	HROFDY
L0000618	0	0.25641E-01	610236.4	4204258.0	29.1	3.66	22.06	0.43	HROFDY
L0000619	0	0.25641E-01	610259.8	4204217.0	29.5	3.66	22.06	0.43	HROFDY
L0000620	0	0.25641E-01	610283.1	4204175.5	30.0	3.66	22.06	0.43	HROFDY
L0000621	0	0.25641E-01	610307.2	4204135.0	30.5	3.66	22.06	0.43	HROFDY
L0000622	0	0.25641E-01	610331.6	4204094.0	31.0	3.66	22.06	0.43	HROFDY
L0000623	0	0.25641E-01	610355.9	4204053.5	31.5	3.66	22.06	0.43	HROFDY
L0000624	0	0.25641E-01	610380.2	4204012.5	32.1	3.66	22.06	0.43	HROFDY
L0000625	0	0.25641E-01	610404.4	4203972.0	32.6	3.66	22.06	0.43	HROFDY
L0000626	0	0.25641E-01	610428.8	4203931.0	33.1	3.66	22.06	0.43	HROFDY
L0000627	0	0.25641E-01	610453.1	4203890.5	33.7	3.66	22.06	0.43	HROFDY
L0000628	0	0.25641E-01	610477.4	4203849.5	34.2	3.66	22.06	0.43	HROFDY
L0000629	0	0.25641E-01	610501.2	4203809.0	34.9	3.66	22.06	0.43	HROFDY
L0000630	0	0.25641E-01	610524.8	4203767.5	35.8	3.66	22.06	0.43	HROFDY
L0000631	0	0.25641E-01	610548.4	4203726.5	36.6	3.66	22.06	0.43	HROFDY
L0000632	0	0.25641E-01	610572.0	4203685.5	37.5	3.66	22.06	0.43	HROFDY
L0000633	0	0.25641E-01	610595.6	4203644.0	38.3	3.66	22.06	0.43	HROFDY
L0000634	0	0.25641E-01	610619.1	4203603.0	39.2	3.66	22.06	0.43	HROFDY
L0000635	0	0.25641E-01	610643.2	4203562.0	37.7	3.66	22.06	0.43	HROFDY
L0000636	0	0.25641E-01	610667.3	4203521.5	36.0	3.66	22.06	0.43	HROFDY
L0000637	0	0.25641E-01	610690.6	4203480.0	34.4	3.66	22.06	0.43	HROFDY
L0000638	0	0.25641E-01	610703.2	4203434.5	34.0	3.66	22.06	0.43	HROFDY
L0000639	0	0.25641E-01	610715.8	4203388.5	33.5	3.66	22.06	0.43	HROFDY
L0000640	0	0.25641E-01	610728.4	4203343.0	33.1	3.66	22.06	0.43	HROFDY
L0000641	0	0.25641E-01	609885.0	4204924.5	22.5	3.66	22.09	0.43	HROFDY

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	EMISSION RATE SCALAR VARY BY
L0000642	0	0.25641E-01	609909.6	4204884.0	22.7	3.66	22.09	0.43	HROFDY
L0000643	0	0.25641E-01	609934.1	4204843.0	22.9	3.66	22.09	0.43	HROFDY
L0000644	0	0.25641E-01	609958.6	4204802.5	23.1	3.66	22.09	0.43	HROFDY
L0000645	0	0.25641E-01	609983.1	4204761.5	23.3	3.66	22.09	0.43	HROFDY
L0000646	0	0.25641E-01	610007.6	4204721.0	23.5	3.66	22.09	0.43	HROFDY
L0000647	0	0.25641E-01	610032.1	4204680.5	23.7	3.66	22.09	0.43	HROFDY
L0000648	0	0.25641E-01	610056.6	4204639.5	23.9	3.66	22.09	0.43	HROFDY
L0000649	0	0.25641E-01	610081.2	4204599.0	24.1	3.66	22.09	0.43	HROFDY

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L0000650	0	0.25641E-01	610105.7	4204558.5	24.3	3.66	22.09	0.43	HROFDY
L0000651	0	0.25641E-01	610130.2	4204517.5	24.5	3.66	22.09	0.43	HROFDY
L0000652	0	0.25641E-01	610154.8	4204477.0	24.7	3.66	22.09	0.43	HROFDY
L0000653	0	0.25641E-01	610179.2	4204436.5	24.9	3.66	22.09	0.43	HROFDY
L0000654	0	0.25641E-01	610203.8	4204395.5	25.1	3.66	22.09	0.43	HROFDY
L0000655	0	0.25641E-01	610228.2	4204355.0	25.3	3.66	22.09	0.43	HROFDY
L0000656	0	0.25641E-01	610252.8	4204314.5	25.5	3.66	22.09	0.43	HROFDY
L0000657	0	0.25641E-01	610277.3	4204273.5	25.7	3.66	22.09	0.43	HROFDY
L0000658	0	0.25641E-01	610301.8	4204233.0	25.9	3.66	22.09	0.43	HROFDY
L0000659	0	0.25641E-01	610326.3	4204192.5	26.3	3.66	22.09	0.43	HROFDY
L0000660	0	0.25641E-01	610350.8	4204151.5	27.0	3.66	22.09	0.43	HROFDY
L0000661	0	0.25641E-01	610375.2	4204111.0	27.7	3.66	22.09	0.43	HROFDY
L0000662	0	0.25641E-01	610399.6	4204070.0	28.4	3.66	22.09	0.43	HROFDY
L0000663	0	0.25641E-01	610424.1	4204029.5	29.1	3.66	22.09	0.43	HROFDY
L0000664	0	0.25641E-01	610448.5	4203989.0	29.8	3.66	22.09	0.43	HROFDY
L0000665	0	0.25641E-01	610472.9	4203948.0	30.4	3.66	22.09	0.43	HROFDY
L0000666	0	0.25641E-01	610497.3	4203907.5	31.1	3.66	22.09	0.43	HROFDY
L0000667	0	0.25641E-01	610521.8	4203866.5	31.8	3.66	22.09	0.43	HROFDY
L0000668	0	0.25641E-01	610545.6	4203825.5	32.3	3.66	22.09	0.43	HROFDY
L0000669	0	0.25641E-01	610569.3	4203784.5	32.8	3.66	22.09	0.43	HROFDY
L0000670	0	0.25641E-01	610592.9	4203743.0	33.3	3.66	22.09	0.43	HROFDY
L0000671	0	0.25641E-01	610616.4	4203702.0	33.8	3.66	22.09	0.43	HROFDY
L0000672	0	0.25641E-01	610640.1	4203661.0	34.2	3.66	22.09	0.43	HROFDY
L0000673	0	0.25641E-01	610663.7	4203619.5	34.7	3.66	22.09	0.43	HROFDY
L0000674	0	0.25641E-01	610684.9	4203577.0	33.8	3.66	22.09	0.43	HROFDY
L0000675	0	0.25641E-01	610706.1	4203534.5	32.9	3.66	22.09	0.43	HROFDY
L0000676	0	0.25641E-01	610725.5	4203491.5	32.1	3.66	22.09	0.43	HROFDY
L0000677	0	0.25641E-01	610740.2	4203446.0	31.8	3.66	22.09	0.43	HROFDY
L0000678	0	0.25641E-01	610755.1	4203401.0	31.4	3.66	22.09	0.43	HROFDY
L0000679	0	0.25641E-01	610769.9	4203356.0	31.0	3.66	22.09	0.43	HROFDY

CONC URBAN ELEV DFAULT

*** SOURCE IDs DEFINING SOURCE GROUPS ***

GROUP ID SOURCE IDs

SR4NB(1) L0000641, L0000642, L0000643, L0000644, L0000645, L0000646, L0000647, L0000648, L0000649, L0000650, L0000651, L0000652,

L0000653, L0000654, L0000655, L0000656, L0000657, L0000658, L0000659, L0000660, L0000661, L0000662, L0000663, L0000664,

L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, L0000671, L0000672, L0000673, L0000674, L0000675, L0000676,

L0000677, L0000678, L0000679,

SR4SB(1) L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613,

L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625,

L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, L0000632, L0000633, L0000634, L0000635, L0000636, L0000637,

L0000638, L0000639, L0000640,

ALL L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613,

L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625,

L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, L0000632, L0000633, L0000634, L0000635, L0000636, L0000637,

L0000638, L0000639, L0000640, L0000641, L0000642, L0000643, L0000644, L0000645, L0000646, L0000647, L0000648, L0000649,

L0000650, L0000651, L0000652, L0000653, L0000654, L0000655, L0000656, L0000657, L0000658, L0000659, L0000660, L0000661,

L0000662, L0000663, L0000664, L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, L0000671, L0000672, L0000673,

L0000674, L0000675, L0000676, L0000677, L0000678, L0000679,

♀ *** ISCST3 - VERSION 02035 *** *** DPM Impacts from SR4 from Cancr Risk, Chronic and Acute NC HI *** 10/17/15
*** DPM Emissions from SR4 NB and SB - 2019 *** 18:36:01

**MODELOPTs: PAGE 5
CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000602 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000603 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000604 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000605 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000606 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

♀ *** ISCST3 - VERSION 02035 *** *** DPM Impacts from SR4 from Cancr Risk, Chronic and Acute NC HI *** 10/17/15
*** DPM Emissions from SR4 NB and SB - 2019 *** 18:36:01

**MODELOPTs: PAGE 6
CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000607 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000608 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000609 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000610 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000611 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000612 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000613 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000614 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000615 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000616 ; SOURCE TYPE = VOLUME :

DPM_SR4

1 .10000E-01 2 .10000E-01 3 .10000E-01 4 .10000E-01 5 .18000E+00 6 .38000E+00
7 .72000E+00 8 .60000E+00 9 .60000E+00 10 .66000E+00 11 .70000E+00 12 .76000E+00
13 .83000E+00 14 .92000E+00 15 .92000E+00 16 .92000E+00 17 .10000E+01 18 .81000E+00
19 .60000E+00 20 .39000E+00 21 .32000E+00 22 .23000E+00 23 .90000E-01 24 .30000E-01

♀ *** ISCST3 - VERSION 02035 *** *** DPM Impacts from SR4 from Cancr Risk, Chronic and Acute NC HI *** 10/17/15
*** DPM Emissions from SR4 NB and SB - 2019 *** 18:36:01
**MODELOPTs: PAGE 8
CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR

SOURCE ID = L0000617 ; SOURCE TYPE = VOLUME :
1 .10000E-01 2 .10000E-01 3 .10000E-01 4 .10000E-01 5 .18000E+00 6 .38000E+00
7 .72000E+00 8 .60000E+00 9 .60000E+00 10 .66000E+00 11 .70000E+00 12 .76000E+00
13 .83000E+00 14 .92000E+00 15 .92000E+00 16 .92000E+00 17 .10000E+01 18 .81000E+00
19 .60000E+00 20 .39000E+00 21 .32000E+00 22 .23000E+00 23 .90000E-01 24 .30000E-01

SOURCE ID = L0000618 ; SOURCE TYPE = VOLUME :
1 .10000E-01 2 .10000E-01 3 .10000E-01 4 .10000E-01 5 .18000E+00 6 .38000E+00
7 .72000E+00 8 .60000E+00 9 .60000E+00 10 .66000E+00 11 .70000E+00 12 .76000E+00
13 .83000E+00 14 .92000E+00 15 .92000E+00 16 .92000E+00 17 .10000E+01 18 .81000E+00
19 .60000E+00 20 .39000E+00 21 .32000E+00 22 .23000E+00 23 .90000E-01 24 .30000E-01

SOURCE ID = L0000619 ; SOURCE TYPE = VOLUME :
1 .10000E-01 2 .10000E-01 3 .10000E-01 4 .10000E-01 5 .18000E+00 6 .38000E+00
7 .72000E+00 8 .60000E+00 9 .60000E+00 10 .66000E+00 11 .70000E+00 12 .76000E+00
13 .83000E+00 14 .92000E+00 15 .92000E+00 16 .92000E+00 17 .10000E+01 18 .81000E+00
19 .60000E+00 20 .39000E+00 21 .32000E+00 22 .23000E+00 23 .90000E-01 24 .30000E-01

SOURCE ID = L0000620 ; SOURCE TYPE = VOLUME :
1 .10000E-01 2 .10000E-01 3 .10000E-01 4 .10000E-01 5 .18000E+00 6 .38000E+00
7 .72000E+00 8 .60000E+00 9 .60000E+00 10 .66000E+00 11 .70000E+00 12 .76000E+00
13 .83000E+00 14 .92000E+00 15 .92000E+00 16 .92000E+00 17 .10000E+01 18 .81000E+00
19 .60000E+00 20 .39000E+00 21 .32000E+00 22 .23000E+00 23 .90000E-01 24 .30000E-01

SOURCE ID = L0000621 ; SOURCE TYPE = VOLUME :
1 .10000E-01 2 .10000E-01 3 .10000E-01 4 .10000E-01 5 .18000E+00 6 .38000E+00
7 .72000E+00 8 .60000E+00 9 .60000E+00 10 .66000E+00 11 .70000E+00 12 .76000E+00
13 .83000E+00 14 .92000E+00 15 .92000E+00 16 .92000E+00 17 .10000E+01 18 .81000E+00
19 .60000E+00 20 .39000E+00 21 .32000E+00 22 .23000E+00 23 .90000E-01 24 .30000E-01

♀ *** ISCST3 - VERSION 02035 *** *** DPM Impacts from SR4 from Cancr Risk, Chronic and Acute NC HI *** 10/17/15
*** DPM Emissions from SR4 NB and SB - 2019 *** 18:36:01
**MODELOPTs: PAGE 9
CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR

SOURCE ID = L0000622 ; SOURCE TYPE = VOLUME :
1 .10000E-01 2 .10000E-01 3 .10000E-01 4 .10000E-01 5 .18000E+00 6 .38000E+00
7 .72000E+00 8 .60000E+00 9 .60000E+00 10 .66000E+00 11 .70000E+00 12 .76000E+00
13 .83000E+00 14 .92000E+00 15 .92000E+00 16 .92000E+00 17 .10000E+01 18 .81000E+00
19 .60000E+00 20 .39000E+00 21 .32000E+00 22 .23000E+00 23 .90000E-01 24 .30000E-01

SOURCE ID = L0000623 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000624 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000625 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000626 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000627 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000628 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000629 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000630 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00
13	.83000E+00	14	.92000E+00	15	.92000E+00	16	.92000E+00	17	.10000E+01	18	.81000E+00
19	.60000E+00	20	.39000E+00	21	.32000E+00	22	.23000E+00	23	.90000E-01	24	.30000E-01

SOURCE ID = L0000631 ; SOURCE TYPE = VOLUME :

1	.10000E-01	2	.10000E-01	3	.10000E-01	4	.10000E-01	5	.18000E+00	6	.38000E+00
7	.72000E+00	8	.60000E+00	9	.60000E+00	10	.66000E+00	11	.70000E+00	12	.76000E+00

13 .83000E+00 14 .92000E+00 15 .92000E+00 16 .92000E+00 17 .10000E+01 18 .81000E+00
19 .60000E+00 20 .39000E+00 21 .32000E+00 22 .23000E+00 23 .90000E-01 24 .30000E-01

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR

SOURCE ID = L0000632 ; SOURCE TYPE = VOLUME :
1 .10000E-01 2 .10000E-01 3 .10000E-01 4 .10000E-01 5 .18000E+00 6 .38000E+00
7 .72000E+00 8 .60000E+00 9 .60000E+00 10 .66000E+00 11 .70000E+00 12 .76000E+00
13 .83000E+00 14 .92000E+00 15 .92000E+00 16 .92000E+00 17 .10000E+01 18 .81000E+00
19 .60000E+00 20 .39000E+00 21 .32000E+00 22 .23000E+00 23 .90000E-01 24 .30000E-01

SOURCE ID = L0000633 ; SOURCE TYPE = VOLUME :
1 .10000E-01 2 .10000E-01 3 .10000E-01 4 .10000E-01 5 .18000E+00 6 .38000E+00
7 .72000E+00 8 .60000E+00 9 .60000E+00 10 .66000E+00 11 .70000E+00 12 .76000E+00
13 .83000E+00 14 .92000E+00 15 .92000E+00 16 .92000E+00 17 .10000E+01 18 .81000E+00
19 .60000E+00 20 .39000E+00 21 .32000E+00 22 .23000E+00 23 .90000E-01 24 .30000E-01

SOURCE ID = L0000634 ; SOURCE TYPE = VOLUME :
1 .10000E-01 2 .10000E-01 3 .10000E-01 4 .10000E-01 5 .18000E+00 6 .38000E+00
7 .72000E+00 8 .60000E+00 9 .60000E+00 10 .66000E+00 11 .70000E+00 12 .76000E+00
13 .83000E+00 14 .92000E+00 15 .92000E+00 16 .92000E+00 17 .10000E+01 18 .81000E+00
19 .60000E+00 20 .39000E+00 21 .32000E+00 22 .23000E+00 23 .90000E-01 24 .30000E-01

SOURCE ID = L0000635 ; SOURCE TYPE = VOLUME :
1 .10000E-01 2 .10000E-01 3 .10000E-01 4 .10000E-01 5 .18000E+00 6 .38000E+00
7 .72000E+00 8 .60000E+00 9 .60000E+00 10 .66000E+00 11 .70000E+00 12 .76000E+00
13 .83000E+00 14 .92000E+00 15 .92000E+00 16 .92000E+00 17 .10000E+01 18 .81000E+00
19 .60000E+00 20 .39000E+00 21 .32000E+00 22 .23000E+00 23 .90000E-01 24 .30000E-01

SOURCE ID = L0000636 ; SOURCE TYPE = VOLUME :
1 .10000E-01 2 .10000E-01 3 .10000E-01 4 .10000E-01 5 .18000E+00 6 .38000E+00
7 .72000E+00 8 .60000E+00 9 .60000E+00 10 .66000E+00 11 .70000E+00 12 .76000E+00
13 .83000E+00 14 .92000E+00 15 .92000E+00 16 .92000E+00 17 .10000E+01 18 .81000E+00
19 .60000E+00 20 .39000E+00 21 .32000E+00 22 .23000E+00 23 .90000E-01 24 .30000E-01

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR

SOURCE ID = L0000637 ; SOURCE TYPE = VOLUME :
1 .10000E-01 2 .10000E-01 3 .10000E-01 4 .10000E-01 5 .18000E+00 6 .38000E+00
7 .72000E+00 8 .60000E+00 9 .60000E+00 10 .66000E+00 11 .70000E+00 12 .76000E+00
13 .83000E+00 14 .92000E+00 15 .92000E+00 16 .92000E+00 17 .10000E+01 18 .81000E+00
19 .60000E+00 20 .39000E+00 21 .32000E+00 22 .23000E+00 23 .90000E-01 24 .30000E-01

SOURCE ID = L0000638 ; SOURCE TYPE = VOLUME :
1 .10000E-01 2 .10000E-01 3 .10000E-01 4 .10000E-01 5 .18000E+00 6 .38000E+00

7 .72000E+00 8 .60000E+00 9 .60000E+00 10 .66000E+00 11 .70000E+00 12 .76000E+00
13 .83000E+00 14 .92000E+00 15 .92000E+00 16 .92000E+00 17 .10000E+01 18 .81000E+00
19 .60000E+00 20 .39000E+00 21 .32000E+00 22 .23000E+00 23 .90000E-01 24 .30000E-01

SOURCE ID = L0000639 ; SOURCE TYPE = VOLUME :
1 .10000E-01 2 .10000E-01 3 .10000E-01 4 .10000E-01 5 .18000E+00 6 .38000E+00
7 .72000E+00 8 .60000E+00 9 .60000E+00 10 .66000E+00 11 .70000E+00 12 .76000E+00
13 .83000E+00 14 .92000E+00 15 .92000E+00 16 .92000E+00 17 .10000E+01 18 .81000E+00
19 .60000E+00 20 .39000E+00 21 .32000E+00 22 .23000E+00 23 .90000E-01 24 .30000E-01

SOURCE ID = L0000640 ; SOURCE TYPE = VOLUME :
1 .10000E-01 2 .10000E-01 3 .10000E-01 4 .10000E-01 5 .18000E+00 6 .38000E+00
7 .72000E+00 8 .60000E+00 9 .60000E+00 10 .66000E+00 11 .70000E+00 12 .76000E+00
13 .83000E+00 14 .92000E+00 15 .92000E+00 16 .92000E+00 17 .10000E+01 18 .81000E+00
19 .60000E+00 20 .39000E+00 21 .32000E+00 22 .23000E+00 23 .90000E-01 24 .30000E-01

SOURCE ID = L0000641 ; SOURCE TYPE = VOLUME :
1 .40000E-01 2 .40000E-01 3 .40000E-01 4 .50000E-01 5 .70000E-01 6 .20000E+00
7 .41000E+00 8 .48000E+00 9 .48000E+00 10 .56000E+00 11 .71000E+00 12 .80000E+00
13 .82000E+00 14 .84000E+00 15 .97000E+00 16 .97000E+00 17 .10000E+01 18 .92000E+00
19 .75000E+00 20 .56000E+00 21 .38000E+00 22 .22000E+00 23 .11000E+00 24 .80000E-01

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR

SOURCE ID = L0000642 ; SOURCE TYPE = VOLUME :
1 .40000E-01 2 .40000E-01 3 .40000E-01 4 .50000E-01 5 .70000E-01 6 .20000E+00
7 .41000E+00 8 .48000E+00 9 .48000E+00 10 .56000E+00 11 .71000E+00 12 .80000E+00
13 .82000E+00 14 .84000E+00 15 .97000E+00 16 .97000E+00 17 .10000E+01 18 .92000E+00
19 .75000E+00 20 .56000E+00 21 .38000E+00 22 .22000E+00 23 .11000E+00 24 .80000E-01

SOURCE ID = L0000643 ; SOURCE TYPE = VOLUME :
1 .40000E-01 2 .40000E-01 3 .40000E-01 4 .50000E-01 5 .70000E-01 6 .20000E+00
7 .41000E+00 8 .48000E+00 9 .48000E+00 10 .56000E+00 11 .71000E+00 12 .80000E+00
13 .82000E+00 14 .84000E+00 15 .97000E+00 16 .97000E+00 17 .10000E+01 18 .92000E+00
19 .75000E+00 20 .56000E+00 21 .38000E+00 22 .22000E+00 23 .11000E+00 24 .80000E-01

SOURCE ID = L0000644 ; SOURCE TYPE = VOLUME :
1 .40000E-01 2 .40000E-01 3 .40000E-01 4 .50000E-01 5 .70000E-01 6 .20000E+00
7 .41000E+00 8 .48000E+00 9 .48000E+00 10 .56000E+00 11 .71000E+00 12 .80000E+00
13 .82000E+00 14 .84000E+00 15 .97000E+00 16 .97000E+00 17 .10000E+01 18 .92000E+00
19 .75000E+00 20 .56000E+00 21 .38000E+00 22 .22000E+00 23 .11000E+00 24 .80000E-01

SOURCE ID = L0000645 ; SOURCE TYPE = VOLUME :
1 .40000E-01 2 .40000E-01 3 .40000E-01 4 .50000E-01 5 .70000E-01 6 .20000E+00
7 .41000E+00 8 .48000E+00 9 .48000E+00 10 .56000E+00 11 .71000E+00 12 .80000E+00
13 .82000E+00 14 .84000E+00 15 .97000E+00 16 .97000E+00 17 .10000E+01 18 .92000E+00
19 .75000E+00 20 .56000E+00 21 .38000E+00 22 .22000E+00 23 .11000E+00 24 .80000E-01

SOURCE ID = L0000646 ; SOURCE TYPE = VOLUME :
1 .40000E-01 2 .40000E-01 3 .40000E-01 4 .50000E-01 5 .70000E-01 6 .20000E+00
7 .41000E+00 8 .48000E+00 9 .48000E+00 10 .56000E+00 11 .71000E+00 12 .80000E+00
13 .82000E+00 14 .84000E+00 15 .97000E+00 16 .97000E+00 17 .10000E+01 18 .92000E+00
19 .75000E+00 20 .56000E+00 21 .38000E+00 22 .22000E+00 23 .11000E+00 24 .80000E-01

♀ *** ISCST3 - VERSION 02035 *** *** DPM Impacts from SR4 from Cancr Risk, Chronic and Acute NC HI *** 10/17/15
*** DPM Emissions from SR4 NB and SB - 2019 *** 18:36:01
**MODELOPTs: PAGE 14
CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000647 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000648 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000649 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000650 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000651 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

♀ *** ISCST3 - VERSION 02035 *** *** DPM Impacts from SR4 from Cancr Risk, Chronic and Acute NC HI *** 10/17/15
*** DPM Emissions from SR4 NB and SB - 2019 *** 18:36:01
**MODELOPTs: PAGE 15
CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000652 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000653 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00

19 .75000E+00 20 .56000E+00 21 .38000E+00 22 .22000E+00 23 .11000E+00 24 .80000E-01

SOURCE ID = L0000654 ; SOURCE TYPE = VOLUME :

1 .40000E-01 2 .40000E-01 3 .40000E-01 4 .50000E-01 5 .70000E-01 6 .20000E+00
7 .41000E+00 8 .48000E+00 9 .48000E+00 10 .56000E+00 11 .71000E+00 12 .80000E+00
13 .82000E+00 14 .84000E+00 15 .97000E+00 16 .97000E+00 17 .10000E+01 18 .92000E+00
19 .75000E+00 20 .56000E+00 21 .38000E+00 22 .22000E+00 23 .11000E+00 24 .80000E-01

SOURCE ID = L0000655 ; SOURCE TYPE = VOLUME :

1 .40000E-01 2 .40000E-01 3 .40000E-01 4 .50000E-01 5 .70000E-01 6 .20000E+00
7 .41000E+00 8 .48000E+00 9 .48000E+00 10 .56000E+00 11 .71000E+00 12 .80000E+00
13 .82000E+00 14 .84000E+00 15 .97000E+00 16 .97000E+00 17 .10000E+01 18 .92000E+00
19 .75000E+00 20 .56000E+00 21 .38000E+00 22 .22000E+00 23 .11000E+00 24 .80000E-01

SOURCE ID = L0000656 ; SOURCE TYPE = VOLUME :

1 .40000E-01 2 .40000E-01 3 .40000E-01 4 .50000E-01 5 .70000E-01 6 .20000E+00
7 .41000E+00 8 .48000E+00 9 .48000E+00 10 .56000E+00 11 .71000E+00 12 .80000E+00
13 .82000E+00 14 .84000E+00 15 .97000E+00 16 .97000E+00 17 .10000E+01 18 .92000E+00
19 .75000E+00 20 .56000E+00 21 .38000E+00 22 .22000E+00 23 .11000E+00 24 .80000E-01

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR

SOURCE ID = L0000657 ; SOURCE TYPE = VOLUME :

1 .40000E-01 2 .40000E-01 3 .40000E-01 4 .50000E-01 5 .70000E-01 6 .20000E+00
7 .41000E+00 8 .48000E+00 9 .48000E+00 10 .56000E+00 11 .71000E+00 12 .80000E+00
13 .82000E+00 14 .84000E+00 15 .97000E+00 16 .97000E+00 17 .10000E+01 18 .92000E+00
19 .75000E+00 20 .56000E+00 21 .38000E+00 22 .22000E+00 23 .11000E+00 24 .80000E-01

SOURCE ID = L0000658 ; SOURCE TYPE = VOLUME :

1 .40000E-01 2 .40000E-01 3 .40000E-01 4 .50000E-01 5 .70000E-01 6 .20000E+00
7 .41000E+00 8 .48000E+00 9 .48000E+00 10 .56000E+00 11 .71000E+00 12 .80000E+00
13 .82000E+00 14 .84000E+00 15 .97000E+00 16 .97000E+00 17 .10000E+01 18 .92000E+00
19 .75000E+00 20 .56000E+00 21 .38000E+00 22 .22000E+00 23 .11000E+00 24 .80000E-01

SOURCE ID = L0000659 ; SOURCE TYPE = VOLUME :

1 .40000E-01 2 .40000E-01 3 .40000E-01 4 .50000E-01 5 .70000E-01 6 .20000E+00
7 .41000E+00 8 .48000E+00 9 .48000E+00 10 .56000E+00 11 .71000E+00 12 .80000E+00
13 .82000E+00 14 .84000E+00 15 .97000E+00 16 .97000E+00 17 .10000E+01 18 .92000E+00
19 .75000E+00 20 .56000E+00 21 .38000E+00 22 .22000E+00 23 .11000E+00 24 .80000E-01

SOURCE ID = L0000660 ; SOURCE TYPE = VOLUME :

1 .40000E-01 2 .40000E-01 3 .40000E-01 4 .50000E-01 5 .70000E-01 6 .20000E+00
7 .41000E+00 8 .48000E+00 9 .48000E+00 10 .56000E+00 11 .71000E+00 12 .80000E+00
13 .82000E+00 14 .84000E+00 15 .97000E+00 16 .97000E+00 17 .10000E+01 18 .92000E+00
19 .75000E+00 20 .56000E+00 21 .38000E+00 22 .22000E+00 23 .11000E+00 24 .80000E-01

SOURCE ID = L0000661 ; SOURCE TYPE = VOLUME :

1 .40000E-01 2 .40000E-01 3 .40000E-01 4 .50000E-01 5 .70000E-01 6 .20000E+00
7 .41000E+00 8 .48000E+00 9 .48000E+00 10 .56000E+00 11 .71000E+00 12 .80000E+00
13 .82000E+00 14 .84000E+00 15 .97000E+00 16 .97000E+00 17 .10000E+01 18 .92000E+00
19 .75000E+00 20 .56000E+00 21 .38000E+00 22 .22000E+00 23 .11000E+00 24 .80000E-01

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000662 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000663 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000664 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000665 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000666 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000667 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000668 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000669 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000670 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000671 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

♀ *** ISCST3 - VERSION 02035 *** *** DPM Impacts from SR4 from Cancr Risk, Chronic and Acute NC HI *** 10/17/15
*** DPM Emissions from SR4 NB and SB - 2019 *** 18:36:01
**MODELOPTs: PAGE 19
CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000672 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000673 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000674 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000675 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000676 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

♀ *** ISCST3 - VERSION 02035 *** *** DPM Impacts from SR4 from Cancr Risk, Chronic and Acute NC HI *** 10/17/15
*** DPM Emissions from SR4 NB and SB - 2019 *** 18:36:01
**MODELOPTs: PAGE 20

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000677 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000678 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

SOURCE ID = L0000679 ; SOURCE TYPE = VOLUME :

1	.40000E-01	2	.40000E-01	3	.40000E-01	4	.50000E-01	5	.70000E-01	6	.20000E+00
7	.41000E+00	8	.48000E+00	9	.48000E+00	10	.56000E+00	11	.71000E+00	12	.80000E+00
13	.82000E+00	14	.84000E+00	15	.97000E+00	16	.97000E+00	17	.10000E+01	18	.92000E+00
19	.75000E+00	20	.56000E+00	21	.38000E+00	22	.22000E+00	23	.11000E+00	24	.80000E-01

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(609713.8,	4203940.5,	43.1,	0.0);	(609738.8,	4203940.5,	43.2,	0.0);
(609763.8,	4203940.5,	44.8,	0.0);	(609788.8,	4203940.5,	46.6,	0.0);
(609813.8,	4203940.5,	49.2,	0.0);	(609838.8,	4203940.5,	50.0,	0.0);
(609713.8,	4203965.5,	42.2,	0.0);	(609738.8,	4203965.5,	41.6,	0.0);
(609763.8,	4203965.5,	43.4,	0.0);	(609788.8,	4203965.5,	45.4,	0.0);
(609813.8,	4203965.5,	46.5,	0.0);	(609838.8,	4203965.5,	47.2,	0.0);
(609863.8,	4203965.5,	45.5,	0.0);	(609888.8,	4203965.5,	43.8,	0.0);
(609713.8,	4203990.5,	41.5,	0.0);	(609738.8,	4203990.5,	41.0,	0.0);
(609763.8,	4203990.5,	41.8,	0.0);	(609788.8,	4203990.5,	42.2,	0.0);
(609813.8,	4203990.5,	42.0,	0.0);	(609838.8,	4203990.5,	42.8,	0.0);
(609863.8,	4203990.5,	42.2,	0.0);	(609888.8,	4203990.5,	40.9,	0.0);
(609913.8,	4203990.5,	39.3,	0.0);	(609938.8,	4203990.5,	37.9,	0.0);
(609713.8,	4204015.5,	41.3,	0.0);	(609738.8,	4204015.5,	41.0,	0.0);
(609763.8,	4204015.5,	41.2,	0.0);	(609788.8,	4204015.5,	41.4,	0.0);
(609813.8,	4204015.5,	41.4,	0.0);	(609838.8,	4204015.5,	41.4,	0.0);
(609863.8,	4204015.5,	41.2,	0.0);	(609888.8,	4204015.5,	40.2,	0.0);
(609913.8,	4204015.5,	38.8,	0.0);	(609938.8,	4204015.5,	37.7,	0.0);
(609963.8,	4204015.5,	37.7,	0.0);	(609988.8,	4204015.5,	38.6,	0.0);
(609713.8,	4204040.5,	41.1,	0.0);	(609738.8,	4204040.5,	41.0,	0.0);
(609763.8,	4204040.5,	40.2,	0.0);	(609788.8,	4204040.5,	39.0,	0.0);
(609813.8,	4204040.5,	37.2,	0.0);	(609838.8,	4204040.5,	37.1,	0.0);
(609863.8,	4204040.5,	37.1,	0.0);	(609888.8,	4204040.5,	37.2,	0.0);
(609913.8,	4204040.5,	37.0,	0.0);	(609938.8,	4204040.5,	36.6,	0.0);
(609963.8,	4204040.5,	36.2,	0.0);	(609988.8,	4204040.5,	36.4,	0.0);
(610013.8,	4204040.5,	41.2,	0.0);	(609713.8,	4204065.5,	44.0,	0.0);
(609738.8,	4204065.5,	42.1,	0.0);	(609763.8,	4204065.5,	40.5,	0.0);
(609788.8,	4204065.5,	39.0,	0.0);	(609813.8,	4204065.5,	37.7,	0.0);
(609838.8,	4204065.5,	36.0,	0.0);	(609863.8,	4204065.5,	36.0,	0.0);
(609888.8,	4204065.5,	36.0,	0.0);	(609913.8,	4204065.5,	36.0,	0.0);
(609938.8,	4204065.5,	35.7,	0.0);	(609963.8,	4204065.5,	35.1,	0.0);
(609988.8,	4204065.5,	35.0,	0.0);	(610013.8,	4204065.5,	38.0,	0.0);

(610038.8, 4204065.5, 43.0, 0.0); (609713.8, 4204090.5, 48.9, 0.0);
(609738.8, 4204090.5, 43.5, 0.0); (609763.8, 4204090.5, 42.0, 0.0);
(609788.8, 4204090.5, 41.3, 0.0); (609813.8, 4204090.5, 40.7, 0.0);
(609838.8, 4204090.5, 39.9, 0.0); (609863.8, 4204090.5, 39.9, 0.0);
(609888.8, 4204090.5, 38.8, 0.0); (609913.8, 4204090.5, 37.4, 0.0);
(609938.8, 4204090.5, 36.5, 0.0); (609963.8, 4204090.5, 35.8, 0.0);
(609988.8, 4204090.5, 35.0, 0.0); (610013.8, 4204090.5, 35.1, 0.0);
(610038.8, 4204090.5, 37.3, 0.0); (610063.8, 4204090.5, 40.5, 0.0);
(609713.8, 4204115.5, 53.5, 0.0); (609738.8, 4204115.5, 48.0, 0.0);
(609763.8, 4204115.5, 45.9, 0.0); (609788.8, 4204115.5, 45.0, 0.0);
(609813.8, 4204115.5, 44.7, 0.0); (609838.8, 4204115.5, 45.2, 0.0);
(609863.8, 4204115.5, 44.4, 0.0); (609888.8, 4204115.5, 42.6, 0.0);
(609913.8, 4204115.5, 40.8, 0.0); (609938.8, 4204115.5, 39.5, 0.0);
(609963.8, 4204115.5, 38.1, 0.0); (609988.8, 4204115.5, 36.0, 0.0);

CONC URBAN ELEV DFAULT

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(610013.8, 4204115.5, 35.1, 0.0); (610038.8, 4204115.5, 36.0, 0.0);
(610063.8, 4204115.5, 37.1, 0.0); (609713.8, 4204140.5, 56.0, 0.0);
(609738.8, 4204140.5, 50.5, 0.0); (609763.8, 4204140.5, 49.0, 0.0);
(609788.8, 4204140.5, 49.7, 0.0); (609813.8, 4204140.5, 51.7, 0.0);
(609838.8, 4204140.5, 51.9, 0.0); (609863.8, 4204140.5, 51.2, 0.0);
(609888.8, 4204140.5, 49.4, 0.0); (609913.8, 4204140.5, 47.2, 0.0);
(609938.8, 4204140.5, 44.4, 0.0); (609963.8, 4204140.5, 40.5, 0.0);
(609988.8, 4204140.5, 37.5, 0.0); (610013.8, 4204140.5, 35.2, 0.0);
(610038.8, 4204140.5, 34.8, 0.0); (610063.8, 4204140.5, 34.8, 0.0);
(609713.8, 4204165.5, 56.8, 0.0); (609738.8, 4204165.5, 51.3, 0.0);
(609763.8, 4204165.5, 49.8, 0.0); (609938.8, 4204165.5, 45.5, 0.0);
(609963.8, 4204165.5, 41.2, 0.0); (609988.8, 4204165.5, 38.0, 0.0);
(610013.8, 4204165.5, 35.3, 0.0); (610038.8, 4204165.5, 34.3, 0.0);
(610063.8, 4204165.5, 34.4, 0.0); (609713.8, 4204190.5, 60.0, 0.0);
(609738.8, 4204190.5, 54.8, 0.0); (609963.8, 4204190.5, 48.1, 0.0);
(609988.8, 4204190.5, 42.8, 0.0); (610013.8, 4204190.5, 37.2, 0.0);
(610038.8, 4204190.5, 34.3, 0.0); (610063.8, 4204190.5, 32.3, 0.0);
(609713.8, 4204215.5, 64.0, 0.0); (609963.8, 4204215.5, 51.8, 0.0);
(609988.8, 4204215.5, 46.0, 0.0); (610013.8, 4204215.5, 40.0, 0.0);
(610038.8, 4204215.5, 35.3, 0.0); (610063.8, 4204215.5, 31.6, 0.0);
(609963.8, 4204240.5, 51.0, 0.0); (609988.8, 4204240.5, 46.9, 0.0);
(610013.8, 4204240.5, 41.0, 0.0); (610038.8, 4204240.5, 36.3, 0.0);
(610063.8, 4204240.5, 32.8, 0.0); (609938.8, 4204265.5, 51.8, 0.0);
(609963.8, 4204265.5, 48.0, 0.0); (609988.8, 4204265.5, 45.1, 0.0);
(610013.8, 4204265.5, 40.2, 0.0); (610038.8, 4204265.5, 36.3, 0.0);
(610063.8, 4204265.5, 33.0, 0.0); (609938.8, 4204290.5, 47.4, 0.0);
(609963.8, 4204290.5, 43.9, 0.0); (609988.8, 4204290.5, 42.2, 0.0);
(610013.8, 4204290.5, 38.7, 0.0); (610038.8, 4204290.5, 35.5, 0.0);
(610063.8, 4204290.5, 32.2, 0.0); (609938.8, 4204315.5, 47.1, 0.0);
(609963.8, 4204315.5, 43.8, 0.0); (609988.8, 4204315.5, 41.2, 0.0);
(610013.8, 4204315.5, 38.2, 0.0); (610038.8, 4204315.5, 35.3, 0.0);
(610063.8, 4204315.5, 32.3, 0.0); (609938.8, 4204340.5, 44.4, 0.0);
(609963.8, 4204340.5, 41.5, 0.0); (609988.8, 4204340.5, 40.0, 0.0);
(610013.8, 4204340.5, 37.1, 0.0); (610038.8, 4204340.5, 34.3, 0.0);
(610063.8, 4204340.5, 31.3, 0.0); (609938.8, 4204365.5, 44.5, 0.0);
(609963.8, 4204365.5, 42.4, 0.0); (609988.8, 4204365.5, 39.0, 0.0);
(610013.8, 4204365.5, 35.0, 0.0); (610038.8, 4204365.5, 32.3, 0.0);
(610063.8, 4204365.5, 29.9, 0.0); (609938.8, 4204390.5, 44.9, 0.0);
(609963.8, 4204390.5, 43.3, 0.0); (609988.8, 4204390.5, 40.9, 0.0);
(610013.8, 4204390.5, 36.0, 0.0); (610038.8, 4204390.5, 31.5, 0.0);

CONC URBAN ELEV DFAULT

DPM_SR4

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1

DPM_SR4

01 01 01 06	180.5	1.56	273.9	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 07	261.1	1.74	274.4	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 08	348.3	1.52	274.4	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 09	72.0	1.16	274.0	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 10	85.1	1.74	274.5	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 11	219.1	1.79	277.1	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 12	278.9	1.92	278.9	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 13	257.4	2.10	279.5	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 14	293.4	1.92	280.0	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 15	349.5	1.97	282.0	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 16	11.6	1.65	284.2	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 17	335.0	1.34	283.7	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 18	257.2	1.48	280.9	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 19	287.7	1.74	278.8	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 20	317.7	1.52	275.5	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 21	340.6	1.48	273.3	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 22	337.7	1.00	273.4	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 23	257.9	1.00	272.7	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
01 01 01 24	307.1	1.00	272.4	6	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.

CONC URBAN ELEV DFAULT

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4NB(1) ***
INCLUDING SOURCE(S): L0000641, L0000642, L0000643, L0000644, L0000645, L0000646, L0000647, L0000648, L0000649, L0000650, L0000651, L0000652, L0000653, L0000654, L0000655, L0000656, L0000657, L0000658, L0000659, L0000660, L0000661, L0000662, L0000663, L0000664, L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609713.75	4203940.50	0.15887	609738.75	4203940.50	0.16710
609763.75	4203940.50	0.17611	609788.75	4203940.50	0.18600
609813.75	4203940.50	0.19686	609838.75	4203940.50	0.20879
609713.75	4203965.50	0.16380	609738.75	4203965.50	0.17247
609763.75	4203965.50	0.18198	609788.75	4203965.50	0.19242
609813.75	4203965.50	0.20391	609838.75	4203965.50	0.21655
609863.75	4203965.50	0.23048	609888.75	4203965.50	0.24585
609713.75	4203990.50	0.16892	609738.75	4203990.50	0.17806
609763.75	4203990.50	0.18809	609788.75	4203990.50	0.19913
609813.75	4203990.50	0.21129	609838.75	4203990.50	0.22469
609863.75	4203990.50	0.23949	609888.75	4203990.50	0.25584
609913.75	4203990.50	0.27396	609938.75	4203990.50	0.29410
609713.75	4204015.50	0.17425	609738.75	4204015.50	0.18389
609763.75	4204015.50	0.19448	609788.75	4204015.50	0.20615
609813.75	4204015.50	0.21902	609838.75	4204015.50	0.23323
609863.75	4204015.50	0.24896	609888.75	4204015.50	0.26638
609913.75	4204015.50	0.28571	609938.75	4204015.50	0.30725
609963.75	4204015.50	0.33133	609988.75	4204015.50	0.35839
609713.75	4204040.50	0.17980	609738.75	4204040.50	0.18996
609763.75	4204040.50	0.20115	609788.75	4204040.50	0.21349
609813.75	4204040.50	0.22712	609838.75	4204040.50	0.24221
609863.75	4204040.50	0.25893	609888.75	4204040.50	0.27748
609913.75	4204040.50	0.29814	609938.75	4204040.50	0.32119
609963.75	4204040.50	0.34705	609988.75	4204040.50	0.37620
610013.75	4204040.50	0.40925	609713.75	4204065.50	0.18559
609738.75	4204065.50	0.19630	609763.75	4204065.50	0.20812
609788.75	4204065.50	0.22117	609813.75	4204065.50	0.23562
609838.75	4204065.50	0.25164	609863.75	4204065.50	0.26942
609888.75	4204065.50	0.28921	609913.75	4204065.50	0.31129
609938.75	4204065.50	0.33600	609963.75	4204065.50	0.36378

DPM_SR4

609988.75	4204065.50	0.39522	610013.75	4204065.50	0.43106
610038.75	4204065.50	0.47210	609713.75	4204090.50	0.19161
609738.75	4204090.50	0.20292	609763.75	4204090.50	0.21540
609788.75	4204090.50	0.22922	609813.75	4204090.50	0.24455
609838.75	4204090.50	0.26157	609863.75	4204090.50	0.28051
609888.75	4204090.50	0.30164	609913.75	4204090.50	0.32527
609938.75	4204090.50	0.35179	609963.75	4204090.50	0.38172
609988.75	4204090.50	0.41567	610013.75	4204090.50	0.45451
610038.75	4204090.50	0.49931	610063.75	4204090.50	0.55131
609713.75	4204115.50	0.19788	609738.75	4204115.50	0.20982

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4NB(1) ***
INCLUDING SOURCE(S): L0000641, L0000642, L0000643, L0000644, L0000645, L0000646, L0000647, L0000648, L0000649, L0000650, L0000651, L0000652, L0000653, L0000654, L0000655, L0000656, L0000657, L0000658, L0000659, L0000660, L0000661, L0000662, L0000663, L0000664, L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609763.75	4204115.50	0.22302	609788.75	4204115.50	0.23766
609813.75	4204115.50	0.25392	609838.75	4204115.50	0.27201
609863.75	4204115.50	0.29220	609888.75	4204115.50	0.31478
609913.75	4204115.50	0.34010	609938.75	4204115.50	0.36862
609963.75	4204115.50	0.40092	609988.75	4204115.50	0.43770
610013.75	4204115.50	0.47993	610038.75	4204115.50	0.52890
610063.75	4204115.50	0.58615	609713.75	4204140.50	0.20442
609738.75	4204140.50	0.21703	609763.75	4204140.50	0.23099
609788.75	4204140.50	0.24650	609813.75	4204140.50	0.26376
609838.75	4204140.50	0.28302	609863.75	4204140.50	0.30456
609888.75	4204140.50	0.32871	609913.75	4204140.50	0.35588
609938.75	4204140.50	0.38659	609963.75	4204140.50	0.42150
609988.75	4204140.50	0.46146	610013.75	4204140.50	0.50752
610038.75	4204140.50	0.56120	610063.75	4204140.50	0.62442
609713.75	4204165.50	0.21124	609738.75	4204165.50	0.22456
609763.75	4204165.50	0.23933	609938.75	4204165.50	0.40583
609963.75	4204165.50	0.44365	609988.75	4204165.50	0.48713
610013.75	4204165.50	0.53758	610038.75	4204165.50	0.59666
610063.75	4204165.50	0.66683	609713.75	4204190.50	0.21835
609738.75	4204190.50	0.23242	609963.75	4204190.50	0.46756
609988.75	4204190.50	0.51504	610013.75	4204190.50	0.57049
610038.75	4204190.50	0.63580	610063.75	4204190.50	0.71378
609713.75	4204215.50	0.22576	609963.75	4204215.50	0.49346
609988.75	4204215.50	0.54547	610013.75	4204215.50	0.60660
610038.75	4204215.50	0.67932	610063.75	4204215.50	0.76656
609963.75	4204240.50	0.52162	609988.75	4204240.50	0.57880
610013.75	4204240.50	0.64653	610038.75	4204240.50	0.72781
610063.75	4204240.50	0.82679	609938.75	4204265.50	0.49879
609963.75	4204265.50	0.55236	609988.75	4204265.50	0.61550
610013.75	4204265.50	0.69092	610038.75	4204265.50	0.78230
610063.75	4204265.50	0.89495	609938.75	4204290.50	0.52713
609963.75	4204290.50	0.58610	609988.75	4204290.50	0.65615
610013.75	4204290.50	0.74056	610038.75	4204290.50	0.84406
610063.75	4204290.50	0.97340	609938.75	4204315.50	0.55812
609963.75	4204315.50	0.62331	609988.75	4204315.50	0.70144
610013.75	4204315.50	0.79659	610038.75	4204315.50	0.91464
610063.75	4204315.50	1.06466	609938.75	4204340.50	0.59213
609963.75	4204340.50	0.66458	609988.75	4204340.50	0.75220
610013.75	4204340.50	0.86016	610038.75	4204340.50	0.99622
610063.75	4204340.50	1.17239	609938.75	4204365.50	0.62972

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4NB(1) ***
INCLUDING SOURCE(S): L0000641, L0000642, L0000643, L0000644, L0000645, L0000646, L0000647, L0000648, L0000649, L0000650, L0000651, L0000652, L0000653, L0000654, L0000655, L0000656, L0000657, L0000658, L0000659, L0000660, L0000661, L0000662, L0000663, L0000664, L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609963.75	4204365.50	0.71062	609988.75	4204365.50	0.80965
610013.75	4204365.50	0.93332	610038.75	4204365.50	1.09146
610063.75	4204365.50	1.30068	609938.75	4204390.50	0.67148
609963.75	4204390.50	0.76245	609988.75	4204390.50	0.87511
610013.75	4204390.50	1.01804	610038.75	4204390.50	1.20452

CONC URBAN ELEV DFAULT

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4SB(1) ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609713.75	4203940.50	0.19250	609738.75	4203940.50	0.20328
609763.75	4203940.50	0.21512	609788.75	4203940.50	0.22816
609813.75	4203940.50	0.24253	609838.75	4203940.50	0.25839
609713.75	4203965.50	0.19880	609738.75	4203965.50	0.21017
609763.75	4203965.50	0.22269	609788.75	4203965.50	0.23649
609813.75	4203965.50	0.25173	609838.75	4203965.50	0.26857
609863.75	4203965.50	0.28724	609888.75	4203965.50	0.30795
609713.75	4203990.50	0.20536	609738.75	4203990.50	0.21736
609763.75	4203990.50	0.23060	609788.75	4203990.50	0.24521
609813.75	4203990.50	0.26137	609838.75	4203990.50	0.27927
609863.75	4203990.50	0.29915	609888.75	4203990.50	0.32127
609913.75	4203990.50	0.34593	609938.75	4203990.50	0.37355
609713.75	4204015.50	0.21219	609738.75	4204015.50	0.22486
609763.75	4204015.50	0.23885	609788.75	4204015.50	0.25433
609813.75	4204015.50	0.27149	609838.75	4204015.50	0.29053
609863.75	4204015.50	0.31171	609888.75	4204015.50	0.33533
609913.75	4204015.50	0.36174	609938.75	4204015.50	0.39142
609963.75	4204015.50	0.42504	609988.75	4204015.50	0.46339
609713.75	4204040.50	0.21930	609738.75	4204040.50	0.23268
609763.75	4204040.50	0.24748	609788.75	4204040.50	0.26387
609813.75	4204040.50	0.28200	609838.75	4204040.50	0.30225
609863.75	4204040.50	0.32483	609888.75	4204040.50	0.35008
609913.75	4204040.50	0.37841	609938.75	4204040.50	0.41034
609963.75	4204040.50	0.44655	609988.75	4204040.50	0.48803
610013.75	4204040.50	0.53616	609713.75	4204065.50	0.22672
609738.75	4204065.50	0.24086	609763.75	4204065.50	0.25652
609788.75	4204065.50	0.27389	609813.75	4204065.50	0.29320
609838.75	4204065.50	0.31462	609863.75	4204065.50	0.33871
609888.75	4204065.50	0.36572	609913.75	4204065.50	0.39614
609938.75	4204065.50	0.43049	609963.75	4204065.50	0.46955
609988.75	4204065.50	0.51451	610013.75	4204065.50	0.56718
610038.75	4204065.50	0.62825	609713.75	4204090.50	0.23445
609738.75	4204090.50	0.24939	609763.75	4204090.50	0.26598
609788.75	4204090.50	0.28442	609813.75	4204090.50	0.30499
609838.75	4204090.50	0.32797	609863.75	4204090.50	0.35372
609888.75	4204090.50	0.38264	609913.75	4204090.50	0.41527
609938.75	4204090.50	0.45231	609963.75	4204090.50	0.49469

609988.75	4204090.50	0.54343	610013.75	4204090.50	0.60043
610038.75	4204090.50	0.66803	610063.75	4204090.50	0.74827
609713.75	4204115.50	0.24251	609738.75	4204115.50	0.25831

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4SB(1) ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609763.75	4204115.50	0.27588	609788.75	4204115.50	0.29545
609813.75	4204115.50	0.31732	609838.75	4204115.50	0.34183
609863.75	4204115.50	0.36937	609888.75	4204115.50	0.40042
609913.75	4204115.50	0.43561	609938.75	4204115.50	0.47573
609963.75	4204115.50	0.52179	609988.75	4204115.50	0.57498
610013.75	4204115.50	0.63733	610038.75	4204115.50	0.71176
610063.75	4204115.50	0.80116	609713.75	4204140.50	0.25091
609738.75	4204140.50	0.26762	609763.75	4204140.50	0.28623
609788.75	4204140.50	0.30701	609813.75	4204140.50	0.33029
609838.75	4204140.50	0.35645	609863.75	4204140.50	0.38591
609888.75	4204140.50	0.41925	609913.75	4204140.50	0.45720
609938.75	4204140.50	0.50066	609963.75	4204140.50	0.55083
609988.75	4204140.50	0.60917	610013.75	4204140.50	0.67772
610038.75	4204140.50	0.75990	610063.75	4204140.50	0.85989
609713.75	4204165.50	0.25967	609738.75	4204165.50	0.27735
609763.75	4204165.50	0.29707	609938.75	4204165.50	0.52743
609963.75	4204165.50	0.58216	609988.75	4204165.50	0.64627
610013.75	4204165.50	0.72211	610038.75	4204165.50	0.81365
610063.75	4204165.50	0.92644	609713.75	4204190.50	0.26881
609738.75	4204190.50	0.28751	609963.75	4204190.50	0.61618
609988.75	4204190.50	0.68693	610013.75	4204190.50	0.77145
610038.75	4204190.50	0.87388	610063.75	4204190.50	0.99995
609713.75	4204215.50	0.27833	609963.75	4204215.50	0.65330
609988.75	4204215.50	0.73154	610013.75	4204215.50	0.82611
610038.75	4204215.50	0.94207	610063.75	4204215.50	1.08470
609963.75	4204240.50	0.69395	609988.75	4204240.50	0.78085
610013.75	4204240.50	0.88700	610038.75	4204240.50	1.01920
610063.75	4204240.50	1.18715	609938.75	4204265.50	0.65860
609963.75	4204265.50	0.73869	609988.75	4204265.50	0.83578
610013.75	4204265.50	0.95574	610038.75	4204265.50	1.10722
610063.75	4204265.50	1.30369	609938.75	4204290.50	0.69922
609963.75	4204290.50	0.78825	609988.75	4204290.50	0.89730
610013.75	4204290.50	1.03370	610038.75	4204290.50	1.20907
610063.75	4204290.50	1.44080	609938.75	4204315.50	0.74400
609963.75	4204315.50	0.84349	609988.75	4204315.50	0.96683
610013.75	4204315.50	1.12352	610038.75	4204315.50	1.32847
610063.75	4204315.50	1.60681	609938.75	4204340.50	0.79367
609963.75	4204340.50	0.90552	609988.75	4204340.50	1.04605
610013.75	4204340.50	1.22747	610038.75	4204340.50	1.47037
610063.75	4204340.50	1.80886	609938.75	4204365.50	0.84901

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4SB(1) ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609963.75	4204365.50	0.97576	609988.75	4204365.50	1.13739
610013.75	4204365.50	1.34998	610038.75	4204365.50	1.64091
610063.75	4204365.50	2.05097	609938.75	4204390.50	0.91148
609963.75	4204390.50	1.05603	609988.75	4204390.50	1.24359
610013.75	4204390.50	1.49642	610038.75	4204390.50	1.85228

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609713.75	4203940.50	0.35132	609738.75	4203940.50	0.37033
609763.75	4203940.50	0.39119	609788.75	4203940.50	0.41410
609813.75	4203940.50	0.43932	609838.75	4203940.50	0.46710
609713.75	4203965.50	0.36256	609738.75	4203965.50	0.38260
609763.75	4203965.50	0.40461	609788.75	4203965.50	0.42884
609813.75	4203965.50	0.45556	609838.75	4203965.50	0.48504
609863.75	4203965.50	0.51762	609888.75	4203965.50	0.55370
609713.75	4203990.50	0.37424	609738.75	4203990.50	0.39537
609763.75	4203990.50	0.41862	609788.75	4203990.50	0.44426
609813.75	4203990.50	0.47258	609838.75	4203990.50	0.50388
609863.75	4203990.50	0.53855	609888.75	4203990.50	0.57701
609913.75	4203990.50	0.61978	609938.75	4203990.50	0.66753
609713.75	4204015.50	0.38638	609738.75	4204015.50	0.40868
609763.75	4204015.50	0.43326	609788.75	4204015.50	0.46040
609813.75	4204015.50	0.49041	609838.75	4204015.50	0.52368
609863.75	4204015.50	0.56056	609888.75	4204015.50	0.60159
609913.75	4204015.50	0.64734	609938.75	4204015.50	0.69855
609963.75	4204015.50	0.75626	609988.75	4204015.50	0.82162
609713.75	4204040.50	0.39905	609738.75	4204040.50	0.42258
609763.75	4204040.50	0.44856	609788.75	4204040.50	0.47727
609813.75	4204040.50	0.50902	609838.75	4204040.50	0.54437
609863.75	4204040.50	0.58366	609888.75	4204040.50	0.62746
609913.75	4204040.50	0.67644	609938.75	4204040.50	0.73141
609963.75	4204040.50	0.79347	609988.75	4204040.50	0.86404
610013.75	4204040.50	0.94520	609713.75	4204065.50	0.41224
609738.75	4204065.50	0.43709	609763.75	4204065.50	0.46456
609788.75	4204065.50	0.49498	609813.75	4204065.50	0.52873
609838.75	4204065.50	0.56616	609863.75	4204065.50	0.60802
609888.75	4204065.50	0.65482	609913.75	4204065.50	0.70731
609938.75	4204065.50	0.76636	609963.75	4204065.50	0.83318
609988.75	4204065.50	0.90952	610013.75	4204065.50	0.99804
610038.75	4204065.50	1.10013	609713.75	4204090.50	0.42599
609738.75	4204090.50	0.45224	609763.75	4204090.50	0.48129
609788.75	4204090.50	0.51356	609813.75	4204090.50	0.54944
609838.75	4204090.50	0.58943	609863.75	4204090.50	0.63412
609888.75	4204090.50	0.68418	609913.75	4204090.50	0.74041
609938.75	4204090.50	0.80396	609963.75	4204090.50	0.87623
609988.75	4204090.50	0.95889	610013.75	4204090.50	1.05471
610038.75	4204090.50	1.16710	610063.75	4204090.50	1.29932
609713.75	4204115.50	0.44031	609738.75	4204115.50	0.46805

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609763.75	4204115.50	0.49882	609788.75	4204115.50	0.53302
609813.75	4204115.50	0.57114	609838.75	4204115.50	0.61374
609863.75	4204115.50	0.66146	609888.75	4204115.50	0.71508
609913.75	4204115.50	0.77560	609938.75	4204115.50	0.84419
609963.75	4204115.50	0.92253	609988.75	4204115.50	1.01248
610013.75	4204115.50	1.11703	610038.75	4204115.50	1.24039
610063.75	4204115.50	1.38705	609713.75	4204140.50	0.45525
609738.75	4204140.50	0.48457	609763.75	4204140.50	0.51714
609788.75	4204140.50	0.55342	609813.75	4204140.50	0.59395
609838.75	4204140.50	0.63936	609863.75	4204140.50	0.69035
609888.75	4204140.50	0.74784	609913.75	4204140.50	0.81293
609938.75	4204140.50	0.88706	609963.75	4204140.50	0.97213
609988.75	4204140.50	1.07042	610013.75	4204140.50	1.18499
610038.75	4204140.50	1.32085	610063.75	4204140.50	1.48405
609713.75	4204165.50	0.47083	609738.75	4204165.50	0.50182
609763.75	4204165.50	0.53632	609938.75	4204165.50	0.93306
609963.75	4204165.50	1.02559	609988.75	4204165.50	1.13315
610013.75	4204165.50	1.25943	610038.75	4204165.50	1.41006
610063.75	4204165.50	1.59296	609713.75	4204190.50	0.48707
609738.75	4204190.50	0.51985	609963.75	4204190.50	1.08353
609988.75	4204190.50	1.20171	610013.75	4204190.50	1.34167
610038.75	4204190.50	1.50941	610063.75	4204190.50	1.71332
609713.75	4204215.50	0.50400	609963.75	4204215.50	1.14651
609988.75	4204215.50	1.27673	610013.75	4204215.50	1.43244
610038.75	4204215.50	1.62108	610063.75	4204215.50	1.85084
609963.75	4204240.50	1.21531	609988.75	4204240.50	1.35942
610013.75	4204240.50	1.53323	610038.75	4204240.50	1.74657
610063.75	4204240.50	2.01348	609938.75	4204265.50	1.15715
609963.75	4204265.50	1.29080	609988.75	4204265.50	1.45104
610013.75	4204265.50	1.64634	610038.75	4204265.50	1.88910
610063.75	4204265.50	2.19814	609938.75	4204290.50	1.22609
609963.75	4204290.50	1.37410	609988.75	4204290.50	1.55315
610013.75	4204290.50	1.77383	610038.75	4204290.50	2.05267
610063.75	4204290.50	2.41364	609938.75	4204315.50	1.30186
609963.75	4204315.50	1.46653	609988.75	4204315.50	1.66792
610013.75	4204315.50	1.91965	610038.75	4204315.50	2.24258
610063.75	4204315.50	2.67089	609938.75	4204340.50	1.38558
609963.75	4204340.50	1.56984	609988.75	4204340.50	1.79785
610013.75	4204340.50	2.08717	610038.75	4204340.50	2.46601
610063.75	4204340.50	2.98067	609938.75	4204365.50	1.47848

CONC URBAN ELEV DFAULT

*** THE PERIOD (43824 HRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
609963.75	4204365.50	1.68599	609988.75	4204365.50	1.94660
610013.75	4204365.50	2.28282	610038.75	4204365.50	2.73181

610063.75	4204365.50	3.35080	609938.75	4204390.50	1.58270
609963.75	4204390.50	1.81809	609988.75	4204390.50	2.11825
610013.75	4204390.50	2.51396	610038.75	4204390.50	3.05615

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4NB(1) ***
INCLUDING SOURCE(S): L0000641, L0000642, L0000643, L0000644, L0000645, L0000646, L0000647, L0000648, L0000649, L0000650, L0000651, L0000652, L0000653, L0000654, L0000655, L0000656, L0000657, L0000658, L0000659, L0000660, L0000661, L0000662, L0000663, L0000664, L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609713.75	4203940.50	10.75458	(02010318)	609738.75	4203940.50	11.02322	(02010318)
609763.75	4203940.50	11.30978	(02010318)	609788.75	4203940.50	11.61618	(02010318)
609813.75	4203940.50	11.94462	(02010318)	609838.75	4203940.50	12.29762	(02010318)
609713.75	4203965.50	10.91251	(02010318)	609738.75	4203965.50	11.19141	(02010318)
609763.75	4203965.50	11.48934	(02010318)	609788.75	4203965.50	11.80840	(02010318)
609813.75	4203965.50	12.15099	(02010318)	609838.75	4203965.50	12.51987	(02010318)
609863.75	4203965.50	12.91829	(02010318)	609888.75	4203965.50	13.51663	(03112017)
609713.75	4203990.50	11.07687	(02010318)	609738.75	4203990.50	11.36659	(02010318)
609763.75	4203990.50	11.67650	(02010318)	609788.75	4203990.50	12.00889	(02010318)
609813.75	4203990.50	12.36638	(02010318)	609838.75	4203990.50	12.75203	(02010318)
609863.75	4203990.50	13.16939	(02010318)	609888.75	4203990.50	13.76678	(03112017)
609913.75	4203990.50	15.17954	(03112017)	609938.75	4203990.50	16.46480	(03112017)
609713.75	4204015.50	11.24862	(02010318)	609738.75	4204015.50	11.54990	(02010318)
609763.75	4204015.50	11.87263	(02010318)	609788.75	4204015.50	12.21926	(02010318)
609813.75	4204015.50	12.59268	(02010318)	609838.75	4204015.50	12.99622	(02010318)
609863.75	4204015.50	13.43382	(02010318)	609888.75	4204015.50	14.03027	(03112017)
609913.75	4204015.50	15.50653	(03112017)	609938.75	4204015.50	16.84997	(03112017)
609963.75	4204015.50	18.07826	(03112017)	609988.75	4204015.50	19.22723	(03112017)
609713.75	4204040.50	11.42838	(02010318)	609738.75	4204040.50	11.74217	(02010318)
609763.75	4204040.50	12.07877	(02010318)	609788.75	4204040.50	12.44084	(02010318)
609813.75	4204040.50	12.83152	(02010318)	609838.75	4204040.50	13.25446	(02010318)
609863.75	4204040.50	13.71400	(02010318)	609888.75	4204040.50	14.30822	(03112017)
609913.75	4204040.50	15.85281	(03112017)	609938.75	4204040.50	17.25898	(03112017)
609963.75	4204040.50	18.54638	(03112017)	609988.75	4204040.50	19.75456	(03112017)
610013.75	4204040.50	20.93457	(03112017)	609713.75	4204065.50	11.61637	(02010318)
609738.75	4204065.50	11.94372	(02010318)	609763.75	4204065.50	12.29543	(02010318)
609788.75	4204065.50	12.67439	(02010318)	609813.75	4204065.50	13.08399	(02010318)
609838.75	4204065.50	13.52825	(02010318)	609863.75	4204065.50	14.01191	(02010318)
609888.75	4204065.50	14.60192	(03112017)	609913.75	4204065.50	16.22018	(03112017)
609938.75	4204065.50	17.69417	(03112017)	609963.75	4204065.50	19.04579	(03112017)
609988.75	4204065.50	20.31884	(03112017)	610013.75	4204065.50	21.56969	(03112017)
610038.75	4204065.50	22.85969	(03112017)	609713.75	4204090.50	11.81252	(02010318)
609738.75	4204090.50	12.15450	(02010318)	609763.75	4204090.50	12.52259	(02010318)
609788.75	4204090.50	12.91996	(02010318)	609813.75	4204090.50	13.35033	(02010318)
609838.75	4204090.50	13.81813	(02010318)	609863.75	4204090.50	14.32855	(02010318)
609888.75	4204090.50	14.91278	(03112017)	609913.75	4204090.50	16.61067	(03112017)
609938.75	4204090.50	18.15816	(03112017)	609963.75	4204090.50	19.57976	(03112017)
609988.75	4204090.50	20.92418	(03112017)	610013.75	4204090.50	22.25388	(03112017)
610038.75	4204090.50	23.63683	(03112017)	610063.75	4204090.50	25.14254	(03112017)
609713.75	4204115.50	12.01683	(02010318)	609738.75	4204115.50	12.37441	(02010318)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4NB(1) ***
INCLUDING SOURCE(S): L0000641, L0000642, L0000643, L0000644, L0000645, L0000646, L0000647, L0000648, L0000649, L0000650, L0000651, L0000652, L0000653, L0000654, L0000655, L0000656, L0000657, L0000658, L0000659, L0000660, L0000661, L0000662, L0000663, L0000664, L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609763.75	4204115.50	12.76004	(02010318)	609788.75	4204115.50	13.17726	(02010318)
609813.75	4204115.50	13.63020	(02010318)	609838.75	4204115.50	14.12375	(02010318)
609863.75	4204115.50	14.66374	(02010318)	609888.75	4204115.50	15.25717	(02010318)
609913.75	4204115.50	17.02658	(03112017)	609938.75	4204115.50	18.65394	(03112017)
609963.75	4204115.50	20.15209	(03112017)	609988.75	4204115.50	21.57535	(03112017)
610013.75	4204115.50	22.99321	(03112017)	610038.75	4204115.50	24.48140	(03112017)
610063.75	4204115.50	26.11795	(03112017)	609713.75	4204140.50	12.22971	(02010318)
609738.75	4204140.50	12.60381	(02010318)	609763.75	4204140.50	13.00806	(02010318)
609788.75	4204140.50	13.44640	(02010318)	609813.75	4204140.50	13.92345	(02010318)
609838.75	4204140.50	14.44472	(02010318)	609863.75	4204140.50	15.01679	(02010318)
609888.75	4204140.50	15.64758	(02010318)	609913.75	4204140.50	17.47053	(03112017)
609938.75	4204140.50	19.18493	(03112017)	609963.75	4204140.50	20.76710	(03112017)
609988.75	4204140.50	22.27786	(03112017)	610013.75	4204140.50	23.79485	(03112017)
610038.75	4204140.50	25.40287	(03112017)	610063.75	4204140.50	27.19028	(03112017)
609713.75	4204165.50	12.45208	(02010318)	609738.75	4204165.50	12.84374	(02010318)
609763.75	4204165.50	13.26780	(02010318)	609938.75	4204165.50	19.75509	(03112017)
609963.75	4204165.50	21.42985	(03112017)	609988.75	4204165.50	23.03820	(03112017)
610013.75	4204165.50	24.66726	(03112017)	610038.75	4204165.50	26.41261	(03112017)
610063.75	4204165.50	28.37528	(03112017)	609713.75	4204190.50	12.68501	(02010318)
609738.75	4204190.50	13.09562	(02010318)	609963.75	4204190.50	22.14619	(03112017)
609988.75	4204190.50	23.86397	(03112017)	610013.75	4204190.50	25.62057	(03112017)
610038.75	4204190.50	27.52445	(03112017)	610063.75	4204190.50	29.69215	(03112017)
609713.75	4204215.50	12.92933	(02010318)	609963.75	4204215.50	22.92299	(03112017)
609988.75	4204215.50	24.76421	(03112017)	610013.75	4204215.50	26.66692	(03112017)
610038.75	4204215.50	28.75517	(03112017)	610063.75	4204215.50	31.16530	(03112017)
609963.75	4204240.50	23.76837	(03112017)	609988.75	4204240.50	25.74972	(03112017)
610013.75	4204240.50	27.82111	(03112017)	610038.75	4204240.50	30.12558	(03112017)
610063.75	4204240.50	32.82355	(03112017)	609938.75	4204265.50	22.53023	(03112017)
609963.75	4204265.50	24.69197	(03112017)	609988.75	4204265.50	26.83349	(03112017)
610013.75	4204265.50	29.10111	(03112017)	610038.75	4204265.50	31.66192	(03112017)
610063.75	4204265.50	34.70972	(03112017)	609938.75	4204290.50	23.38168	(03112017)
609963.75	4204290.50	25.70534	(03112017)	609988.75	4204290.50	28.03139	(03112017)
610013.75	4204290.50	30.52980	(03112017)	610038.75	4204290.50	33.39648	(03112017)
610063.75	4204290.50	36.87153	(03112017)	609938.75	4204315.50	24.31441	(03112017)
609963.75	4204315.50	26.82249	(03112017)	609988.75	4204315.50	29.36284	(03112017)
610013.75	4204315.50	32.13508	(03112017)	610038.75	4204315.50	35.37404	(03112017)
610063.75	4204315.50	39.37304	(03112017)	609938.75	4204340.50	25.34077	(03112017)
609963.75	4204340.50	28.06051	(03112017)	609988.75	4204340.50	30.85232	(03112017)
610013.75	4204340.50	33.95270	(03112017)	610038.75	4204340.50	37.63957	(03112017)
610063.75	4204340.50	42.31923	(03112017)	609938.75	4204365.50	26.47577	(03112017)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4NB(1) ***
INCLUDING SOURCE(S): L0000641, L0000642, L0000643, L0000644, L0000645, L0000646, L0000647, L0000648, L0000649, L0000650, L0000651, L0000652, L0000653, L0000654, L0000655, L0000656, L0000657, L0000658, L0000659, L0000660, L0000661, L0000662, L0000663, L0000664, L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609963.75	4204365.50	29.44049	(03112017)	609988.75	4204365.50	32.52938	(03112017)
610013.75	4204365.50	36.03046	(03112017)	610038.75	4204365.50	40.29439	(03112017)
610063.75	4204365.50	45.76826	(03112017)	609938.75	4204390.50	27.73769	(03112017)
609963.75	4204390.50	30.98895	(03112017)	609988.75	4204390.50	34.43604	(03112017)
610013.75	4204390.50	38.42366	(03112017)	610038.75	4204390.50	43.42085	(03112017)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4SB(1) ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609713.75	4203940.50	10.35255	(03011117)	609738.75	4203940.50	10.62934	(03011117)
609763.75	4203940.50	10.92558	(03011117)	609788.75	4203940.50	11.24362	(03011117)
609813.75	4203940.50	11.58616	(03011117)	609838.75	4203940.50	12.21998	(03112017)
609713.75	4203965.50	10.52909	(03011117)	609738.75	4203965.50	10.81722	(03011117)
609763.75	4203965.50	11.12640	(03011117)	609788.75	4203965.50	11.45898	(03011117)
609813.75	4203965.50	11.81798	(03011117)	609838.75	4203965.50	12.39782	(03112017)
609863.75	4203965.50	14.00200	(03112017)	609888.75	4203965.50	15.49607	(03112017)
609713.75	4203990.50	10.71145	(03011117)	609738.75	4203990.50	11.01192	(03011117)
609763.75	4203990.50	11.33501	(03011117)	609788.75	4203990.50	11.68322	(03011117)
609813.75	4203990.50	12.05987	(03011117)	609838.75	4203990.50	12.58357	(03112017)
609863.75	4203990.50	14.25765	(03112017)	609888.75	4203990.50	15.81779	(03112017)
609913.75	4203990.50	17.25385	(03112017)	609938.75	4203990.50	18.58054	(03112017)
609713.75	4204015.50	10.89990	(03011117)	609738.75	4204015.50	11.21358	(03011117)
609763.75	4204015.50	11.55138	(03011117)	609788.75	4204015.50	11.91623	(03011117)
609813.75	4204015.50	12.31168	(03011117)	609838.75	4204015.50	12.77779	(03112017)
609863.75	4204015.50	14.52683	(03112017)	609888.75	4204015.50	16.15798	(03112017)
609913.75	4204015.50	17.66028	(03112017)	609938.75	4204015.50	19.05016	(03112017)
609963.75	4204015.50	20.36561	(03112017)	609988.75	4204015.50	21.65861	(03112017)
609713.75	4204040.50	11.09441	(03011117)	609738.75	4204040.50	11.42208	(03011117)
609763.75	4204040.50	11.77546	(03011117)	609788.75	4204040.50	12.15764	(03011117)
609813.75	4204040.50	12.57088	(03011117)	609838.75	4204040.50	13.02408	(03011117)
609863.75	4204040.50	14.81069	(03112017)	609888.75	4204040.50	16.51829	(03112017)
609913.75	4204040.50	18.09212	(03112017)	609938.75	4204040.50	19.55054	(03112017)
609963.75	4204040.50	20.93570	(03112017)	609988.75	4204040.50	22.30511	(03112017)
610013.75	4204040.50	23.72427	(03112017)	609713.75	4204065.50	11.29511	(03011117)
609738.75	4204065.50	11.63760	(03011117)	609763.75	4204065.50	12.00770	(03011117)
609788.75	4204065.50	12.40892	(03011117)	609813.75	4204065.50	12.84530	(03011117)
609838.75	4204065.50	13.31840	(03011117)	609863.75	4204065.50	15.11053	(03112017)
609888.75	4204065.50	16.90062	(03112017)	609913.75	4204065.50	18.55184	(03112017)
609938.75	4204065.50	20.08483	(03112017)	609963.75	4204065.50	21.54651	(03112017)
609988.75	4204065.50	23.00074	(03112017)	610013.75	4204065.50	24.52042	(03112017)
610038.75	4204065.50	26.18337	(03112017)	609713.75	4204090.50	11.50211	(03011117)
609738.75	4204090.50	11.86041	(03011117)	609763.75	4204090.50	12.24841	(03011117)
609788.75	4204090.50	12.67013	(03011117)	609813.75	4204090.50	13.13035	(03011117)
609838.75	4204090.50	13.63479	(03011117)	609863.75	4204090.50	15.42778	(03112017)
609888.75	4204090.50	17.30709	(03112017)	609913.75	4204090.50	19.04228	(03112017)
609938.75	4204090.50	20.65667	(03112017)	609963.75	4204090.50	22.20267	(03112017)
609988.75	4204090.50	23.75147	(03112017)	610013.75	4204090.50	25.38464	(03112017)
610038.75	4204090.50	27.19010	(03112017)	610063.75	4204090.50	29.26457	(03112017)
609713.75	4204115.50	11.71564	(03011117)	609738.75	4204115.50	12.09084	(03011117)

♀ *** ISCST3 - VERSION 02035 *** *** DPM Impacts from SR4 from Cancr Risk, Chronic and Acute NC HI *** 10/17/15
*** DPM Emissions from SR4 NB and SB - 2019 *** 18:36:01

**MODELOPTs: PAGE 38
CONC URBAN ELEV DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4SB(1) ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609763.75	4204115.50	12.49805	(03011117)	609788.75	4204115.50	12.94171	(03011117)
609813.75	4204115.50	13.42715	(03011117)	609838.75	4204115.50	13.96080	(03011117)

DPM_SR4

609863.75	4204115.50	15.76407	(03112017)	609888.75	4204115.50	17.74012	(03112017)
609913.75	4204115.50	19.56666	(03112017)	609938.75	4204115.50	21.27022	(03112017)
609963.75	4204115.50	22.90954	(03112017)	609988.75	4204115.50	24.56434	(03112017)
610013.75	4204115.50	26.32635	(03112017)	610038.75	4204115.50	28.29575	(03112017)
610063.75	4204115.50	30.58503	(03112017)	609713.75	4204140.50	11.93560	(03011117)
609738.75	4204140.50	12.32889	(03011117)	609763.75	4204140.50	12.75671	(03011117)
609788.75	4204140.50	13.22402	(03011117)	609813.75	4204140.50	13.73676	(03011117)
609838.75	4204140.50	14.30218	(03011117)	609863.75	4204140.50	16.12124	(03112017)
609888.75	4204140.50	18.20245	(03112017)	609913.75	4204140.50	20.12868	(03112017)
609938.75	4204140.50	21.93026	(03112017)	609963.75	4204140.50	23.67338	(03112017)
609988.75	4204140.50	25.44765	(03112017)	610013.75	4204140.50	27.35686	(03112017)
610038.75	4204140.50	29.51616	(03112017)	610063.75	4204140.50	32.05761	(03112017)
609713.75	4204165.50	12.16147	(03011117)	609738.75	4204165.50	12.57395	(03011117)
609763.75	4204165.50	13.02373	(03011117)	609938.75	4204165.50	22.64237	(03112017)
609963.75	4204165.50	24.50150	(03112017)	609988.75	4204165.50	26.41126	(03112017)
610013.75	4204165.50	28.48974	(03112017)	610038.75	4204165.50	30.87087	(03112017)
610063.75	4204165.50	33.71291	(03112017)	609713.75	4204190.50	12.39229	(03011117)
609738.75	4204190.50	12.82496	(03011117)	609963.75	4204190.50	25.40257	(03112017)
609988.75	4204190.50	27.46701	(03112017)	610013.75	4204190.50	29.74178	(03112017)
610038.75	4204190.50	32.38378	(03112017)	610063.75	4204190.50	35.58649	(03112017)
609713.75	4204215.50	12.62725	(03011117)	609963.75	4204215.50	26.38688	(03112017)
609988.75	4204215.50	28.62919	(03112017)	610013.75	4204215.50	31.13338	(03112017)
610038.75	4204215.50	34.08619	(03112017)	610063.75	4204215.50	37.72486	(03112017)
609963.75	4204240.50	27.46671	(03112017)	609988.75	4204240.50	29.91531	(03112017)
610013.75	4204240.50	32.69010	(03112017)	610038.75	4204240.50	36.01342	(03112017)
610063.75	4204240.50	40.19577	(03112017)	609938.75	4204265.50	26.16011	(03112017)
609963.75	4204265.50	28.65718	(03112017)	609988.75	4204265.50	31.34661	(03112017)
610013.75	4204265.50	34.44464	(03112017)	610038.75	4204265.50	38.22518	(03112017)
610063.75	4204265.50	43.06062	(03112017)	609938.75	4204290.50	27.25719	(03112017)
609963.75	4204290.50	29.97645	(03112017)	609988.75	4204290.50	32.95081	(03112017)
610013.75	4204290.50	36.43679	(03112017)	610038.75	4204290.50	40.78174	(03112017)
610063.75	4204290.50	46.49278	(03112017)	609938.75	4204315.50	28.46909	(03112017)
609963.75	4204315.50	31.44709	(03112017)	609988.75	4204315.50	34.75820	(03112017)
610013.75	4204315.50	38.72531	(03112017)	610038.75	4204315.50	43.76584	(03112017)
610063.75	4204315.50	50.40173	(03112017)	609938.75	4204340.50	29.81480	(03112017)
609963.75	4204340.50	33.09788	(03112017)	609988.75	4204340.50	36.82154	(03112017)
610013.75	4204340.50	41.35988	(03112017)	610038.75	4204340.50	47.33567	(03112017)
610063.75	4204340.50	55.60360	(03112017)	609938.75	4204365.50	31.31919	(03112017)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4SB(1) ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609963.75	4204365.50	34.96317	(03112017)	609988.75	4204365.50	39.19115	(03112017)
610013.75	4204365.50	44.49162	(03112017)	610038.75	4204365.50	51.51656	(03112017)
610063.75	4204365.50	62.01903	(03112017)	609938.75	4204390.50	33.01173	(03112017)
609963.75	4204390.50	37.09422	(03112017)	609988.75	4204390.50	41.93574	(03112017)
610013.75	4204390.50	48.03049	(03112017)	610038.75	4204390.50	56.94914	(03112017)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609713.75	4203940.50	20.74567	(02010318)	609738.75	4203940.50	21.28693	(02010318)
609763.75	4203940.50	21.86565	(02010318)	609788.75	4203940.50	22.48606	(02010318)
609813.75	4203940.50	23.15298	(02010318)	609838.75	4203940.50	23.87206	(02010318)
609713.75	4203965.50	21.06152	(02010318)	609738.75	4203965.50	21.62486	(02010318)
609763.75	4203965.50	22.22810	(02010318)	609788.75	4203965.50	22.87581	(02010318)
609813.75	4203965.50	23.57327	(02010318)	609838.75	4203965.50	24.32669	(02010318)
609863.75	4203965.50	26.04840	(03112017)	609888.75	4203965.50	29.01269	(03112017)
609713.75	4203990.50	21.38849	(02010318)	609738.75	4203990.50	21.97533	(02010318)
609763.75	4203990.50	22.60471	(02010318)	609788.75	4203990.50	23.28160	(02010318)
609813.75	4203990.50	24.01180	(02010318)	609838.75	4203990.50	24.80210	(02010318)
609863.75	4203990.50	26.49046	(03112017)	609888.75	4203990.50	29.58458	(03112017)
609913.75	4203990.50	32.43339	(03112017)	609938.75	4203990.50	35.04534	(03112017)
609713.75	4204015.50	21.72712	(02010318)	609738.75	4204015.50	22.33901	(02010318)
609763.75	4204015.50	22.99633	(02010318)	609788.75	4204015.50	23.70452	(02010318)
609813.75	4204015.50	24.46994	(02010318)	609838.75	4204015.50	25.30006	(02010318)
609863.75	4204015.50	26.95479	(03112017)	609888.75	4204015.50	30.18824	(03112017)
609913.75	4204015.50	33.16681	(03112017)	609938.75	4204015.50	35.90013	(03112017)
609963.75	4204015.50	38.44388	(03112017)	609988.75	4204015.50	40.88585	(03112017)
609713.75	4204040.50	22.07793	(02010318)	609738.75	4204040.50	22.71647	(02010318)
609763.75	4204040.50	23.40363	(02010318)	609788.75	4204040.50	24.14538	(02010318)
609813.75	4204040.50	24.94870	(02010318)	609838.75	4204040.50	25.82186	(02010318)
609863.75	4204040.50	27.44319	(03112017)	609888.75	4204040.50	30.82652	(03112017)
609913.75	4204040.50	33.94492	(03112017)	609938.75	4204040.50	36.80952	(03112017)
609963.75	4204040.50	39.48209	(03112017)	609988.75	4204040.50	42.05967	(03112017)
610013.75	4204040.50	44.65885	(03112017)	609713.75	4204065.50	22.44153	(02010318)
609738.75	4204065.50	23.10835	(02010318)	609763.75	4204065.50	23.82730	(02010318)
609788.75	4204065.50	24.60493	(02010318)	609813.75	4204065.50	25.44897	(02010318)
609838.75	4204065.50	26.36856	(02010318)	609863.75	4204065.50	27.95770	(03112017)
609888.75	4204065.50	31.50254	(03112017)	609913.75	4204065.50	34.77203	(03112017)
609938.75	4204065.50	37.77901	(03112017)	609963.75	4204065.50	40.59230	(03112017)
609988.75	4204065.50	43.31957	(03112017)	610013.75	4204065.50	46.09012	(03112017)
610038.75	4204065.50	49.04306	(03112017)	609713.75	4204090.50	22.81892	(02010318)
609738.75	4204090.50	23.51566	(02010318)	609763.75	4204090.50	24.26838	(02010318)
609788.75	4204090.50	25.08428	(02010318)	609813.75	4204090.50	25.97194	(02010318)
609838.75	4204090.50	26.94150	(02010318)	609863.75	4204090.50	28.50058	(03112017)
609888.75	4204090.50	32.21988	(03112017)	609913.75	4204090.50	35.65295	(03112017)
609938.75	4204090.50	38.81483	(03112017)	609963.75	4204090.50	41.78244	(03112017)
609988.75	4204090.50	44.67565	(03112017)	610013.75	4204090.50	47.63852	(03112017)
610038.75	4204090.50	50.82692	(03112017)	610063.75	4204090.50	54.40710	(03112017)
609713.75	4204115.50	23.21164	(02010318)	609738.75	4204115.50	23.94006	(02010318)

♀ *** ISCST3 - VERSION 02035 *** *** DPM Impacts from SR4 from Cancr Risk, Chronic and Acute NC HI *** 10/17/15
*** DPM Emissions from SR4 NB and SB - 2019 *** 18:36:01
**MODELOPTs: PAGE 41
CONC URBAN ELEV DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609763.75	4204115.50	24.72859	(02010318)	609788.75	4204115.50	25.58525	(02010318)
609813.75	4204115.50	26.51954	(02010318)	609838.75	4204115.50	27.54279	(02010318)
609863.75	4204115.50	29.07435	(03112017)	609888.75	4204115.50	32.98253	(03112017)
609913.75	4204115.50	36.59324	(03112017)	609938.75	4204115.50	39.92415	(03112017)
609963.75	4204115.50	43.06163	(03112017)	609988.75	4204115.50	46.13969	(03112017)
610013.75	4204115.50	49.31956	(03112017)	610038.75	4204115.50	52.77715	(03112017)
610063.75	4204115.50	56.70298	(03112017)	609713.75	4204140.50	23.62168	(02010318)
609738.75	4204140.50	24.38380	(02010318)	609763.75	4204140.50	25.21049	(02010318)
609788.75	4204140.50	26.11064	(02010318)	609813.75	4204140.50	27.09480	(02010318)

609838.75	4204140.50	28.17570	(02010318)	609863.75	4204140.50	29.68188	(03112017)
609888.75	4204140.50	33.79507	(03112017)	609913.75	4204140.50	37.59921	(03112017)
609938.75	4204140.50	41.11518	(03112017)	609963.75	4204140.50	44.44048	(03112017)
609988.75	4204140.50	47.72551	(03112017)	610013.75	4204140.50	51.15171	(03112017)
610038.75	4204140.50	54.91904	(03112017)	610063.75	4204140.50	59.24789	(03112017)
609713.75	4204165.50	24.05117	(02010318)	609738.75	4204165.50	24.84945	(02010318)
609763.75	4204165.50	25.71716	(02010318)	609938.75	4204165.50	42.39745	(03112017)
609963.75	4204165.50	45.93134	(03112017)	609988.75	4204165.50	49.44946	(03112017)
610013.75	4204165.50	53.15701	(03112017)	610038.75	4204165.50	57.28349	(03112017)
610063.75	4204165.50	62.08819	(03112017)	609713.75	4204190.50	24.50187	(02010318)
609738.75	4204190.50	25.33926	(02010318)	609963.75	4204190.50	47.54875	(03112017)
609988.75	4204190.50	51.33099	(03112017)	610013.75	4204190.50	55.36235	(03112017)
610038.75	4204190.50	59.90823	(03112017)	610063.75	4204190.50	65.27864	(03112017)
609713.75	4204215.50	24.97509	(02010318)	609963.75	4204215.50	49.30987	(03112017)
609988.75	4204215.50	53.39340	(03112017)	610013.75	4204215.50	57.80031	(03112017)
610038.75	4204215.50	62.84137	(03112017)	610063.75	4204215.50	68.89017	(03112017)
609963.75	4204240.50	51.23508	(03112017)	609988.75	4204240.50	55.66502	(03112017)
610013.75	4204240.50	60.51122	(03112017)	610038.75	4204240.50	66.13901	(03112017)
610063.75	4204240.50	73.01933	(03112017)	609938.75	4204265.50	48.69034	(03112017)
609963.75	4204265.50	53.34916	(03112017)	609988.75	4204265.50	58.18010	(03112017)
610013.75	4204265.50	63.54575	(03112017)	610038.75	4204265.50	69.88711	(03112017)
610063.75	4204265.50	77.77032	(03112017)	609938.75	4204290.50	50.63888	(03112017)
609963.75	4204290.50	55.68179	(03112017)	609988.75	4204290.50	60.98220	(03112017)
610013.75	4204290.50	66.96658	(03112017)	610038.75	4204290.50	74.17822	(03112017)
610063.75	4204290.50	83.36431	(03112017)	609938.75	4204315.50	52.78350	(03112017)
609963.75	4204315.50	58.26958	(03112017)	609988.75	4204315.50	64.12104	(03112017)
610013.75	4204315.50	70.86040	(03112017)	610038.75	4204315.50	79.13988	(03112017)
610063.75	4204315.50	89.77477	(03112017)	609938.75	4204340.50	55.15558	(03112017)
609963.75	4204340.50	61.15839	(03112017)	609988.75	4204340.50	67.67386	(03112017)
610013.75	4204340.50	75.31258	(03112017)	610038.75	4204340.50	84.97523	(03112017)
610063.75	4204340.50	97.92283	(03112017)	609938.75	4204365.50	57.79496	(03112017)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

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

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609963.75	4204365.50	64.40366	(03112017)	609988.75	4204365.50	71.72055	(03112017)
610013.75	4204365.50	80.52209	(03112017)	610038.75	4204365.50	91.81096	(03112017)
610063.75	4204365.50	107.78729	(03112017)	609938.75	4204390.50	60.74941	(03112017)
609963.75	4204390.50	68.08317	(03112017)	609988.75	4204390.50	76.37179	(03112017)
610013.75	4204390.50	86.45415	(03112017)	610038.75	4204390.50	100.36999	(03112017)

*** THE SUMMARY OF MAXIMUM PERIOD (43824 HRS) RESULTS ***

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

GROUP ID	AVERAGE CONC	NETWORK RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	GRID-ID
SR4NB(1)	1ST HIGHEST VALUE IS	1.30068 AT (610063.75, 4204365.50, 29.89, 0.00)	DC	NA
	2ND HIGHEST VALUE IS	1.20452 AT (610038.75, 4204390.50, 31.48, 0.00)	DC	NA
	3RD HIGHEST VALUE IS	1.17239 AT (610063.75, 4204340.50, 31.30, 0.00)	DC	NA
	4TH HIGHEST VALUE IS	1.09146 AT (610038.75, 4204365.50, 32.29, 0.00)	DC	NA

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      5TH HIGHEST VALUE IS      1.06466 AT (  610063.75,  4204315.50,     32.29,      0.00)  DC      NA
      6TH HIGHEST VALUE IS      1.01804 AT (  610013.75,  4204390.50,     36.01,      0.00)  DC      NA
      7TH HIGHEST VALUE IS      0.99622 AT (  610038.75,  4204340.50,     34.27,      0.00)  DC      NA
      8TH HIGHEST VALUE IS      0.97340 AT (  610063.75,  4204290.50,     32.23,      0.00)  DC      NA
      9TH HIGHEST VALUE IS      0.93332 AT (  610013.75,  4204365.50,     35.05,      0.00)  DC      NA
     10TH HIGHEST VALUE IS      0.91464 AT (  610038.75,  4204315.50,     35.34,      0.00)  DC      NA

SR4SB(1) 1ST HIGHEST VALUE IS      2.05097 AT (  610063.75,  4204365.50,     29.89,      0.00)  DC      NA
      2ND HIGHEST VALUE IS      1.85228 AT (  610038.75,  4204390.50,     31.48,      0.00)  DC      NA
      3RD HIGHEST VALUE IS      1.80886 AT (  610063.75,  4204340.50,     31.30,      0.00)  DC      NA
      4TH HIGHEST VALUE IS      1.64091 AT (  610038.75,  4204365.50,     32.29,      0.00)  DC      NA
      5TH HIGHEST VALUE IS      1.60681 AT (  610063.75,  4204315.50,     32.29,      0.00)  DC      NA
      6TH HIGHEST VALUE IS      1.49642 AT (  610013.75,  4204390.50,     36.01,      0.00)  DC      NA
      7TH HIGHEST VALUE IS      1.47037 AT (  610038.75,  4204340.50,     34.27,      0.00)  DC      NA
      8TH HIGHEST VALUE IS      1.44080 AT (  610063.75,  4204290.50,     32.23,      0.00)  DC      NA
      9TH HIGHEST VALUE IS      1.34998 AT (  610013.75,  4204365.50,     35.05,      0.00)  DC      NA
     10TH HIGHEST VALUE IS      1.32847 AT (  610038.75,  4204315.50,     35.34,      0.00)  DC      NA

ALL   1ST HIGHEST VALUE IS      3.35080 AT (  610063.75,  4204365.50,     29.89,      0.00)  DC      NA
      2ND HIGHEST VALUE IS      3.05615 AT (  610038.75,  4204390.50,     31.48,      0.00)  DC      NA
      3RD HIGHEST VALUE IS      2.98067 AT (  610063.75,  4204340.50,     31.30,      0.00)  DC      NA
      4TH HIGHEST VALUE IS      2.73181 AT (  610038.75,  4204365.50,     32.29,      0.00)  DC      NA
      5TH HIGHEST VALUE IS      2.67089 AT (  610063.75,  4204315.50,     32.29,      0.00)  DC      NA
      6TH HIGHEST VALUE IS      2.51396 AT (  610013.75,  4204390.50,     36.01,      0.00)  DC      NA
      7TH HIGHEST VALUE IS      2.46601 AT (  610038.75,  4204340.50,     34.27,      0.00)  DC      NA
      8TH HIGHEST VALUE IS      2.41364 AT (  610063.75,  4204290.50,     32.23,      0.00)  DC      NA
      9TH HIGHEST VALUE IS      2.28282 AT (  610013.75,  4204365.50,     35.05,      0.00)  DC      NA
     10TH HIGHEST VALUE IS      2.24258 AT (  610038.75,  4204315.50,     35.34,      0.00)  DC      NA


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
                      BD = BOUNDARY
♀ *** ISCST3 - VERSION 02035 ***    *** DPM Impacts from SR4 from Cancr Risk, Chronic and Acute NC HI       ***       10/17/15
                          *** DPM Emissions from SR4 NB and SB - 2019                          ***       18:36:01
**MODELOPTs:                                                                                    PAGE  44
CONC                 URBAN ELEV        DFAULT

                                *** THE SUMMARY OF HIGHEST  1-HR RESULTS ***


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

                                      DATE                                        NETWORK
GROUP ID                    AVERAGE CONC     (YYMMDDHH)          RECEPTOR  (XR, YR, ZELEV, ZFLAG)     OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

SR4NB(1) HIGH  1ST HIGH VALUE IS      45.76826  ON 03112017: AT (  610063.75,  4204365.50,     29.89,      0.00)  DC      NA

SR4SB(1) HIGH  1ST HIGH VALUE IS      62.01903  ON 03112017: AT (  610063.75,  4204365.50,     29.89,      0.00)  DC      NA

ALL   HIGH  1ST HIGH VALUE IS     107.78729  ON 03112017: AT (  610063.75,  4204365.50,     29.89,      0.00)  DC      NA


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
                      BD = BOUNDARY
♀ *** ISCST3 - VERSION 02035 ***    *** DPM Impacts from SR4 from Cancr Risk, Chronic and Acute NC HI       ***       10/17/15
                          *** DPM Emissions from SR4 NB and SB - 2019                          ***       18:36:01
**MODELOPTs:                                                                                    PAGE  45
CONC                 URBAN ELEV        DFAULT


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

 --------- Summary of Total Messages --------
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A Total of 0 Fatal Error Message(s)
A Total of 1 Warning Message(s)
A Total of 52 Informational Message(s)

A Total of 52 Calm Hours Identified

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

******** WARNING MESSAGES ********
RE W282 750 CHK_EL:RecElev < SrcBase; See non-DFAULT HE>ZI option in MCB#9

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

♀ *** ISCST3 - VERSION 02035 *** *** DPM Impacts from SR4 for Acute Non-Cancer HI *** 10/17/15
*** TOG_GAS Emissions from SR4 NB and SB - 2019 *** 21:26:20
**MODELOPTs: PAGE 1
CONC URBAN ELEV DFAULT

*** MODEL SETUP OPTIONS SUMMARY ***
- -

**Intermediate Terrain Processing 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 Regulatory DEFAULT Options:
1. Final Plume Rise.
2. Stack-tip Downwash.
3. Buoyancy-induced Dispersion.
4. Use Calms Processing Routine.
5. Not Use Missing Data Processing Routine.
6. Default Wind Profile Exponents.
7. Default Vertical Potential Temperature Gradients.
8. "Upper Bound" Values for Supersquat Buildings.
9. No Exponential Decay for URBAN/Non-SO2

**Model Accepts Receptors on ELEV Terrain.

**Model Assumes No FLAGPOLE Receptor Heights.

**Model Calculates 1 Short Term Average(s) of: 1-HR

**This Run Includes: 78 Source(s); 3 Source Group(s); and 170 Receptor(s)

**The Model Assumes A Pollutant Type of: TOGGAS

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

**Output Options Selected:
Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**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 = 1.3 MB of RAM.

**Input Runstream File: TOG_SR4.INP
**Output Print File: TOG_SR4.OUT
**Detailed Error/Message File: TOG_SR4.err
♀ *** ISCST3 - VERSION 02035 *** *** DPM Impacts from SR4 for Acute Non-Cancer HI *** 10/17/15
*** TOG_GAS Emissions from SR4 NB and SB - 2019 *** 21:26:20
**MODELOPTs: PAGE 2
CONC URBAN ELEV DFAULT

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	EMISSION RATE SCALAR VARY BY
L0000602	0	0.25641E-01	609863.8	4204919.0	22.0	3.66	22.06	0.43	HROFDY
L0000603	0	0.25641E-01	609887.0	4204877.5	22.8	3.66	22.06	0.43	HROFDY
L0000604	0	0.25641E-01	609910.3	4204836.5	23.0	3.66	22.06	0.43	HROFDY
L0000605	0	0.25641E-01	609933.6	4204795.0	23.0	3.66	22.06	0.43	HROFDY
L0000606	0	0.25641E-01	609956.9	4204754.0	23.0	3.66	22.06	0.43	HROFDY
L0000607	0	0.25641E-01	609980.2	4204712.5	23.3	3.66	22.06	0.43	HROFDY
L0000608	0	0.25641E-01	610003.5	4204671.0	24.0	3.66	22.06	0.43	HROFDY
L0000609	0	0.25641E-01	610026.8	4204630.0	24.0	3.66	22.06	0.43	HROFDY
L0000610	0	0.25641E-01	610050.1	4204588.5	24.0	3.66	22.06	0.43	HROFDY
L0000611	0	0.25641E-01	610073.4	4204547.5	24.0	3.66	22.06	0.43	HROFDY
L0000612	0	0.25641E-01	610096.7	4204506.0	24.0	3.66	22.06	0.43	HROFDY
L0000613	0	0.25641E-01	610120.0	4204464.5	24.1	3.66	22.06	0.43	HROFDY
L0000614	0	0.25641E-01	610143.3	4204423.5	25.0	3.66	22.06	0.43	HROFDY
L0000615	0	0.25641E-01	610166.6	4204382.0	25.0	3.66	22.06	0.43	HROFDY
L0000616	0	0.25641E-01	610189.9	4204340.5	26.0	3.66	22.06	0.43	HROFDY
L0000617	0	0.25641E-01	610213.2	4204299.5	26.1	3.66	22.06	0.43	HROFDY
L0000618	0	0.25641E-01	610236.4	4204258.0	28.6	3.66	22.06	0.43	HROFDY
L0000619	0	0.25641E-01	610259.8	4204217.0	30.0	3.66	22.06	0.43	HROFDY
L0000620	0	0.25641E-01	610283.1	4204175.5	30.1	3.66	22.06	0.43	HROFDY
L0000621	0	0.25641E-01	610307.2	4204135.0	29.2	3.66	22.06	0.43	HROFDY
L0000622	0	0.25641E-01	610331.6	4204094.0	30.0	3.66	22.06	0.43	HROFDY
L0000623	0	0.25641E-01	610355.9	4204053.5	31.6	3.66	22.06	0.43	HROFDY
L0000624	0	0.25641E-01	610380.2	4204012.5	36.5	3.66	22.06	0.43	HROFDY
L0000625	0	0.25641E-01	610404.4	4203972.0	34.0	3.66	22.06	0.43	HROFDY
L0000626	0	0.25641E-01	610428.8	4203931.0	31.7	3.66	22.06	0.43	HROFDY
L0000627	0	0.25641E-01	610453.1	4203890.5	33.3	3.66	22.06	0.43	HROFDY
L0000628	0	0.25641E-01	610477.4	4203849.5	33.7	3.66	22.06	0.43	HROFDY
L0000629	0	0.25641E-01	610501.2	4203809.0	34.5	3.66	22.06	0.43	HROFDY
L0000630	0	0.25641E-01	610524.8	4203767.5	34.0	3.66	22.06	0.43	HROFDY
L0000631	0	0.25641E-01	610548.4	4203726.5	32.3	3.66	22.06	0.43	HROFDY
L0000632	0	0.25641E-01	610572.0	4203685.5	34.4	3.66	22.06	0.43	HROFDY
L0000633	0	0.25641E-01	610595.6	4203644.0	35.9	3.66	22.06	0.43	HROFDY
L0000634	0	0.25641E-01	610619.1	4203603.0	38.3	3.66	22.06	0.43	HROFDY
L0000635	0	0.25641E-01	610643.2	4203562.0	38.1	3.66	22.06	0.43	HROFDY
L0000636	0	0.25641E-01	610667.3	4203521.5	36.0	3.66	22.06	0.43	HROFDY
L0000637	0	0.25641E-01	610690.6	4203480.0	34.4	3.66	22.06	0.43	HROFDY
L0000638	0	0.25641E-01	610703.2	4203434.5	37.0	3.66	22.06	0.43	HROFDY
L0000639	0	0.25641E-01	610715.8	4203388.5	35.0	3.66	22.06	0.43	HROFDY
L0000640	0	0.25641E-01	610728.4	4203343.0	33.0	3.66	22.06	0.43	HROFDY
L0000641	0	0.25641E-01	609885.0	4204924.5	22.8	3.66	22.09	0.43	HROFDY

CONC URBAN ELEV DFAULT

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	EMISSION RATE SCALAR VARY BY
L0000642	0	0.25641E-01	609909.6	4204884.0	23.0	3.66	22.09	0.43	HROFDY
L0000643	0	0.25641E-01	609934.1	4204843.0	23.0	3.66	22.09	0.43	HROFDY
L0000644	0	0.25641E-01	609958.6	4204802.5	23.0	3.66	22.09	0.43	HROFDY
L0000645	0	0.25641E-01	609983.1	4204761.5	23.0	3.66	22.09	0.43	HROFDY
L0000646	0	0.25641E-01	610007.6	4204721.0	23.9	3.66	22.09	0.43	HROFDY
L0000647	0	0.25641E-01	610032.1	4204680.5	24.0	3.66	22.09	0.43	HROFDY
L0000648	0	0.25641E-01	610056.6	4204639.5	24.0	3.66	22.09	0.43	HROFDY
L0000649	0	0.25641E-01	610081.2	4204599.0	24.0	3.66	22.09	0.43	HROFDY
L0000650	0	0.25641E-01	610105.7	4204558.5	24.0	3.66	22.09	0.43	HROFDY
L0000651	0	0.25641E-01	610130.2	4204517.5	24.0	3.66	22.09	0.43	HROFDY

L0000652	0	0.25641E-01	610154.8	4204477.0	24.0	3.66	22.09	0.43	HROFDY
L0000653	0	0.25641E-01	610179.2	4204436.5	25.0	3.66	22.09	0.43	HROFDY
L0000654	0	0.25641E-01	610203.8	4204395.5	25.0	3.66	22.09	0.43	HROFDY
L0000655	0	0.25641E-01	610228.2	4204355.0	25.0	3.66	22.09	0.43	HROFDY
L0000656	0	0.25641E-01	610252.8	4204314.5	25.9	3.66	22.09	0.43	HROFDY
L0000657	0	0.25641E-01	610277.3	4204273.5	26.0	3.66	22.09	0.43	HROFDY
L0000658	0	0.25641E-01	610301.8	4204233.0	25.6	3.66	22.09	0.43	HROFDY
L0000659	0	0.25641E-01	610326.3	4204192.5	26.6	3.66	22.09	0.43	HROFDY
L0000660	0	0.25641E-01	610350.8	4204151.5	26.0	3.66	22.09	0.43	HROFDY
L0000661	0	0.25641E-01	610375.2	4204111.0	26.6	3.66	22.09	0.43	HROFDY
L0000662	0	0.25641E-01	610399.6	4204070.0	29.2	3.66	22.09	0.43	HROFDY
L0000663	0	0.25641E-01	610424.1	4204029.5	31.1	3.66	22.09	0.43	HROFDY
L0000664	0	0.25641E-01	610448.5	4203989.0	30.4	3.66	22.09	0.43	HROFDY
L0000665	0	0.25641E-01	610472.9	4203948.0	29.9	3.66	22.09	0.43	HROFDY
L0000666	0	0.25641E-01	610497.3	4203907.5	30.1	3.66	22.09	0.43	HROFDY
L0000667	0	0.25641E-01	610521.8	4203866.5	32.3	3.66	22.09	0.43	HROFDY
L0000668	0	0.25641E-01	610545.6	4203825.5	32.1	3.66	22.09	0.43	HROFDY
L0000669	0	0.25641E-01	610569.3	4203784.5	30.4	3.66	22.09	0.43	HROFDY
L0000670	0	0.25641E-01	610592.9	4203743.0	29.8	3.66	22.09	0.43	HROFDY
L0000671	0	0.25641E-01	610616.4	4203702.0	30.0	3.66	22.09	0.43	HROFDY
L0000672	0	0.25641E-01	610640.1	4203661.0	31.1	3.66	22.09	0.43	HROFDY
L0000673	0	0.25641E-01	610663.7	4203619.5	34.7	3.66	22.09	0.43	HROFDY
L0000674	0	0.25641E-01	610684.9	4203577.0	35.2	3.66	22.09	0.43	HROFDY
L0000675	0	0.25641E-01	610706.1	4203534.5	33.9	3.66	22.09	0.43	HROFDY
L0000676	0	0.25641E-01	610725.5	4203491.5	31.6	3.66	22.09	0.43	HROFDY
L0000677	0	0.25641E-01	610740.2	4203446.0	33.2	3.66	22.09	0.43	HROFDY
L0000678	0	0.25641E-01	610755.1	4203401.0	32.4	3.66	22.09	0.43	HROFDY
L0000679	0	0.25641E-01	610769.9	4203356.0	31.2	3.66	22.09	0.43	HROFDY

CONC URBAN ELEV DFAULT

*** SOURCE IDs DEFINING SOURCE GROUPS ***

GROUP ID SOURCE IDs

SR4NB(1) L0000641, L0000642, L0000643, L0000644, L0000645, L0000646, L0000647, L0000648, L0000649, L0000650, L0000651, L0000652,

L0000653, L0000654, L0000655, L0000656, L0000657, L0000658, L0000659, L0000660, L0000661, L0000662, L0000663, L0000664,

L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, L0000671, L0000672, L0000673, L0000674, L0000675, L0000676,

L0000677, L0000678, L0000679,

SR4SB(1) L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613,

L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625,

L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, L0000632, L0000633, L0000634, L0000635, L0000636, L0000637,

L0000638, L0000639, L0000640,

ALL L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613,

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L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, L0000632, L0000633, L0000634, L0000635, L0000636, L0000637,

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L0000662, L0000663, L0000664, L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, L0000671, L0000672, L0000673,

L0000674, L0000675, L0000676, L0000677, L0000678, L0000679,

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000602 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000603 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000604 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000605 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000606 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000607 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000608 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000609 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000610 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000611 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000612 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000613 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000614 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000615 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000616 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00

13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

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SOURCE ID = L0000617 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000618 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000619 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000620 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000621 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR

SOURCE ID = L0000622 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000623 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00

7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000624 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000625 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000626 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000627 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000628 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000629 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000630 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000631 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000632 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000633 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000634 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000635 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000636 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000637 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000638 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00

19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000639 ; SOURCE TYPE = VOLUME :

1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000640 ; SOURCE TYPE = VOLUME :

1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000641 ; SOURCE TYPE = VOLUME :

1 .34000E+00 2 .33000E+00 3 .33000E+00 4 .39000E+00 5 .47000E+00 6 .61000E+00
7 .74000E+00 8 .80000E+00 9 .75000E+00 10 .81000E+00 11 .90000E+00 12 .96000E+00
13 .98000E+00 14 .97000E+00 15 .10000E+01 16 .97000E+00 17 .98000E+00 18 .92000E+00
19 .82000E+00 20 .74000E+00 21 .64000E+00 22 .54000E+00 23 .46000E+00 24 .40000E+00

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* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

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SOURCE ID = L0000642 ; SOURCE TYPE = VOLUME :

1 .34000E+00 2 .33000E+00 3 .33000E+00 4 .39000E+00 5 .47000E+00 6 .61000E+00
7 .74000E+00 8 .80000E+00 9 .75000E+00 10 .81000E+00 11 .90000E+00 12 .96000E+00
13 .98000E+00 14 .97000E+00 15 .10000E+01 16 .97000E+00 17 .98000E+00 18 .92000E+00
19 .82000E+00 20 .74000E+00 21 .64000E+00 22 .54000E+00 23 .46000E+00 24 .40000E+00

SOURCE ID = L0000643 ; SOURCE TYPE = VOLUME :

1 .34000E+00 2 .33000E+00 3 .33000E+00 4 .39000E+00 5 .47000E+00 6 .61000E+00
7 .74000E+00 8 .80000E+00 9 .75000E+00 10 .81000E+00 11 .90000E+00 12 .96000E+00
13 .98000E+00 14 .97000E+00 15 .10000E+01 16 .97000E+00 17 .98000E+00 18 .92000E+00
19 .82000E+00 20 .74000E+00 21 .64000E+00 22 .54000E+00 23 .46000E+00 24 .40000E+00

SOURCE ID = L0000644 ; SOURCE TYPE = VOLUME :

1 .34000E+00 2 .33000E+00 3 .33000E+00 4 .39000E+00 5 .47000E+00 6 .61000E+00
7 .74000E+00 8 .80000E+00 9 .75000E+00 10 .81000E+00 11 .90000E+00 12 .96000E+00
13 .98000E+00 14 .97000E+00 15 .10000E+01 16 .97000E+00 17 .98000E+00 18 .92000E+00
19 .82000E+00 20 .74000E+00 21 .64000E+00 22 .54000E+00 23 .46000E+00 24 .40000E+00

SOURCE ID = L0000645 ; SOURCE TYPE = VOLUME :

1 .34000E+00 2 .33000E+00 3 .33000E+00 4 .39000E+00 5 .47000E+00 6 .61000E+00
7 .74000E+00 8 .80000E+00 9 .75000E+00 10 .81000E+00 11 .90000E+00 12 .96000E+00
13 .98000E+00 14 .97000E+00 15 .10000E+01 16 .97000E+00 17 .98000E+00 18 .92000E+00
19 .82000E+00 20 .74000E+00 21 .64000E+00 22 .54000E+00 23 .46000E+00 24 .40000E+00

SOURCE ID = L0000646 ; SOURCE TYPE = VOLUME :

1 .34000E+00 2 .33000E+00 3 .33000E+00 4 .39000E+00 5 .47000E+00 6 .61000E+00
7 .74000E+00 8 .80000E+00 9 .75000E+00 10 .81000E+00 11 .90000E+00 12 .96000E+00
13 .98000E+00 14 .97000E+00 15 .10000E+01 16 .97000E+00 17 .98000E+00 18 .92000E+00
19 .82000E+00 20 .74000E+00 21 .64000E+00 22 .54000E+00 23 .46000E+00 24 .40000E+00

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000647 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000648 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000649 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000650 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000651 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000652 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000653 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000654 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000655 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000656 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000657 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000658 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000659 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000660 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000661 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000662 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000663 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000664 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000665 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000666 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000667 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000668 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000669 ; SOURCE TYPE = VOLUME :

TOG_SR4

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000670 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000671 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000672 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000673 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000674 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000675 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000676 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000677 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000678 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000679 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

CONC URBAN ELEV DFAULT

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(609713.8,	4203940.5,	43.1,	0.0);	(609738.8,	4203940.5,	43.2,	0.0);
(609763.8,	4203940.5,	44.8,	0.0);	(609788.8,	4203940.5,	46.6,	0.0);
(609813.8,	4203940.5,	49.2,	0.0);	(609838.8,	4203940.5,	50.0,	0.0);
(609713.8,	4203965.5,	42.2,	0.0);	(609738.8,	4203965.5,	41.6,	0.0);
(609763.8,	4203965.5,	43.4,	0.0);	(609788.8,	4203965.5,	45.4,	0.0);
(609813.8,	4203965.5,	46.5,	0.0);	(609838.8,	4203965.5,	47.2,	0.0);
(609863.8,	4203965.5,	45.5,	0.0);	(609888.8,	4203965.5,	43.8,	0.0);
(609713.8,	4203990.5,	41.5,	0.0);	(609738.8,	4203990.5,	41.0,	0.0);
(609763.8,	4203990.5,	41.8,	0.0);	(609788.8,	4203990.5,	42.2,	0.0);
(609813.8,	4203990.5,	42.0,	0.0);	(609838.8,	4203990.5,	42.8,	0.0);
(609863.8,	4203990.5,	42.2,	0.0);	(609888.8,	4203990.5,	40.9,	0.0);
(609913.8,	4203990.5,	39.3,	0.0);	(609938.8,	4203990.5,	37.9,	0.0);
(609713.8,	4204015.5,	41.3,	0.0);	(609738.8,	4204015.5,	41.0,	0.0);
(609763.8,	4204015.5,	41.2,	0.0);	(609788.8,	4204015.5,	41.4,	0.0);
(609813.8,	4204015.5,	41.4,	0.0);	(609838.8,	4204015.5,	41.4,	0.0);
(609863.8,	4204015.5,	41.2,	0.0);	(609888.8,	4204015.5,	40.2,	0.0);
(609913.8,	4204015.5,	38.8,	0.0);	(609938.8,	4204015.5,	37.7,	0.0);
(609963.8,	4204015.5,	37.7,	0.0);	(609988.8,	4204015.5,	38.6,	0.0);
(609713.8,	4204040.5,	41.1,	0.0);	(609738.8,	4204040.5,	41.0,	0.0);
(609763.8,	4204040.5,	40.2,	0.0);	(609788.8,	4204040.5,	39.0,	0.0);
(609813.8,	4204040.5,	37.2,	0.0);	(609838.8,	4204040.5,	37.1,	0.0);
(609863.8,	4204040.5,	37.1,	0.0);	(609888.8,	4204040.5,	37.2,	0.0);
(609913.8,	4204040.5,	37.0,	0.0);	(609938.8,	4204040.5,	36.6,	0.0);
(609963.8,	4204040.5,	36.2,	0.0);	(609988.8,	4204040.5,	36.4,	0.0);
(610013.8,	4204040.5,	41.2,	0.0);	(609713.8,	4204065.5,	44.0,	0.0);
(609738.8,	4204065.5,	42.1,	0.0);	(609763.8,	4204065.5,	40.5,	0.0);
(609788.8,	4204065.5,	39.0,	0.0);	(609813.8,	4204065.5,	37.7,	0.0);
(609838.8,	4204065.5,	36.0,	0.0);	(609863.8,	4204065.5,	36.0,	0.0);
(609888.8,	4204065.5,	36.0,	0.0);	(609913.8,	4204065.5,	36.0,	0.0);
(609938.8,	4204065.5,	35.7,	0.0);	(609963.8,	4204065.5,	35.1,	0.0);
(609988.8,	4204065.5,	35.0,	0.0);	(610013.8,	4204065.5,	38.0,	0.0);
(610038.8,	4204065.5,	43.0,	0.0);	(609713.8,	4204090.5,	48.9,	0.0);
(609738.8,	4204090.5,	43.5,	0.0);	(609763.8,	4204090.5,	42.0,	0.0);

(609788.8, 4204090.5, 41.3, 0.0); (609813.8, 4204090.5, 40.7, 0.0);
(609838.8, 4204090.5, 39.9, 0.0); (609863.8, 4204090.5, 39.9, 0.0);
(609888.8, 4204090.5, 38.8, 0.0); (609913.8, 4204090.5, 37.4, 0.0);
(609938.8, 4204090.5, 36.5, 0.0); (609963.8, 4204090.5, 35.8, 0.0);
(609988.8, 4204090.5, 35.0, 0.0); (610013.8, 4204090.5, 35.1, 0.0);
(610038.8, 4204090.5, 37.3, 0.0); (610063.8, 4204090.5, 40.5, 0.0);
(609713.8, 4204115.5, 53.5, 0.0); (609738.8, 4204115.5, 48.0, 0.0);
(609763.8, 4204115.5, 45.9, 0.0); (609788.8, 4204115.5, 45.0, 0.0);
(609813.8, 4204115.5, 44.7, 0.0); (609838.8, 4204115.5, 45.2, 0.0);
(609863.8, 4204115.5, 44.4, 0.0); (609888.8, 4204115.5, 42.6, 0.0);
(609913.8, 4204115.5, 40.8, 0.0); (609938.8, 4204115.5, 39.5, 0.0);
(609963.8, 4204115.5, 38.1, 0.0); (609988.8, 4204115.5, 36.0, 0.0);

CONC URBAN ELEV DFAULT

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(610013.8, 4204115.5, 35.1, 0.0); (610038.8, 4204115.5, 36.0, 0.0);
(610063.8, 4204115.5, 37.1, 0.0); (609713.8, 4204140.5, 56.0, 0.0);
(609738.8, 4204140.5, 50.5, 0.0); (609763.8, 4204140.5, 49.0, 0.0);
(609788.8, 4204140.5, 49.7, 0.0); (609813.8, 4204140.5, 51.7, 0.0);
(609838.8, 4204140.5, 51.9, 0.0); (609863.8, 4204140.5, 51.2, 0.0);
(609888.8, 4204140.5, 49.4, 0.0); (609913.8, 4204140.5, 47.2, 0.0);
(609938.8, 4204140.5, 44.4, 0.0); (609963.8, 4204140.5, 40.5, 0.0);
(609988.8, 4204140.5, 37.5, 0.0); (610013.8, 4204140.5, 35.2, 0.0);
(610038.8, 4204140.5, 34.8, 0.0); (610063.8, 4204140.5, 34.8, 0.0);
(609713.8, 4204165.5, 56.8, 0.0); (609738.8, 4204165.5, 51.3, 0.0);
(609763.8, 4204165.5, 49.8, 0.0); (609938.8, 4204165.5, 45.5, 0.0);
(609963.8, 4204165.5, 41.2, 0.0); (609988.8, 4204165.5, 38.0, 0.0);
(610013.8, 4204165.5, 35.3, 0.0); (610038.8, 4204165.5, 34.3, 0.0);
(610063.8, 4204165.5, 34.4, 0.0); (609713.8, 4204190.5, 60.0, 0.0);
(609738.8, 4204190.5, 54.8, 0.0); (609963.8, 4204190.5, 48.1, 0.0);
(609988.8, 4204190.5, 42.8, 0.0); (610013.8, 4204190.5, 37.2, 0.0);
(610038.8, 4204190.5, 34.3, 0.0); (610063.8, 4204190.5, 32.3, 0.0);
(609713.8, 4204215.5, 64.0, 0.0); (609963.8, 4204215.5, 51.8, 0.0);
(609988.8, 4204215.5, 46.0, 0.0); (610013.8, 4204215.5, 40.0, 0.0);
(610038.8, 4204215.5, 35.3, 0.0); (610063.8, 4204215.5, 31.6, 0.0);
(609963.8, 4204240.5, 51.0, 0.0); (609988.8, 4204240.5, 46.9, 0.0);
(610013.8, 4204240.5, 41.0, 0.0); (610038.8, 4204240.5, 36.3, 0.0);
(610063.8, 4204240.5, 32.8, 0.0); (609938.8, 4204265.5, 51.8, 0.0);
(609963.8, 4204265.5, 48.0, 0.0); (609988.8, 4204265.5, 45.1, 0.0);
(610013.8, 4204265.5, 40.2, 0.0); (610038.8, 4204265.5, 36.3, 0.0);
(610063.8, 4204265.5, 33.0, 0.0); (609938.8, 4204290.5, 47.4, 0.0);
(609963.8, 4204290.5, 43.9, 0.0); (609988.8, 4204290.5, 42.2, 0.0);
(610013.8, 4204290.5, 38.7, 0.0); (610038.8, 4204290.5, 35.5, 0.0);
(610063.8, 4204290.5, 32.2, 0.0); (609938.8, 4204315.5, 47.1, 0.0);
(609963.8, 4204315.5, 43.8, 0.0); (609988.8, 4204315.5, 41.2, 0.0);
(610013.8, 4204315.5, 38.2, 0.0); (610038.8, 4204315.5, 35.3, 0.0);
(610063.8, 4204315.5, 32.3, 0.0); (609938.8, 4204340.5, 44.4, 0.0);
(609963.8, 4204340.5, 41.5, 0.0); (609988.8, 4204340.5, 40.0, 0.0);
(610013.8, 4204340.5, 37.1, 0.0); (610038.8, 4204340.5, 34.3, 0.0);
(610063.8, 4204340.5, 31.3, 0.0); (609938.8, 4204365.5, 44.5, 0.0);
(609963.8, 4204365.5, 42.4, 0.0); (609988.8, 4204365.5, 39.0, 0.0);
(610013.8, 4204365.5, 35.0, 0.0); (610038.8, 4204365.5, 32.3, 0.0);
(610063.8, 4204365.5, 29.9, 0.0); (609938.8, 4204390.5, 44.9, 0.0);
(609963.8, 4204390.5, 43.3, 0.0); (609988.8, 4204390.5, 40.9, 0.0);
(610013.8, 4204390.5, 36.0, 0.0); (610038.8, 4204390.5, 31.5, 0.0);

CONC URBAN ELEV DFAULT

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1

TOG_SR4

01	01	01	08	348.3	1.52	274.4	6	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	09	72.0	1.16	274.0	5	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	10	85.1	1.74	274.5	4	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	11	219.1	1.79	277.1	3	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	12	278.9	1.92	278.9	3	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	13	257.4	2.10	279.5	2	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	14	293.4	1.92	280.0	2	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	15	349.5	1.97	282.0	2	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	16	11.6	1.65	284.2	3	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	17	335.0	1.34	283.7	4	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	18	257.2	1.48	280.9	4	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	19	287.7	1.74	278.8	5	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	20	317.7	1.52	275.5	4	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	21	340.6	1.48	273.3	4	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	22	337.7	1.00	273.4	4	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	23	257.9	1.00	272.7	5	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	24	307.1	1.00	272.4	6	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.

CONC URBAN ELEV DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4NB(1) ***
INCLUDING SOURCE(S): L0000641, L0000642, L0000643, L0000644, L0000645, L0000646, L0000647, L0000648, L0000649, L0000650, L0000651, L0000652, L0000653, L0000654, L0000655, L0000656, L0000657, L0000658, L0000659, L0000660, L0000661, L0000662, L0000663, L0000664, L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609713.75	4203940.50	10.75458	(02010318)	609738.75	4203940.50	11.02322	(02010318)
609763.75	4203940.50	11.30978	(02010318)	609788.75	4203940.50	11.61618	(02010318)
609813.75	4203940.50	11.94462	(02010318)	609838.75	4203940.50	12.29762	(02010318)
609713.75	4203965.50	10.91251	(02010318)	609738.75	4203965.50	11.19141	(02010318)
609763.75	4203965.50	11.48934	(02010318)	609788.75	4203965.50	11.80840	(02010318)
609813.75	4203965.50	12.15099	(02010318)	609838.75	4203965.50	12.51987	(02010318)
609863.75	4203965.50	12.91829	(02010318)	609888.75	4203965.50	13.35004	(02010318)
609713.75	4203990.50	11.07687	(02010318)	609738.75	4203990.50	11.36659	(02010318)
609763.75	4203990.50	11.67650	(02010318)	609788.75	4203990.50	12.00889	(02010318)
609813.75	4203990.50	12.36638	(02010318)	609838.75	4203990.50	12.75203	(02010318)
609863.75	4203990.50	13.16939	(02010318)	609888.75	4203990.50	13.62266	(02010318)
609913.75	4203990.50	14.87595	(03112017)	609938.75	4203990.50	16.13550	(03112017)
609713.75	4204015.50	11.24862	(02010318)	609738.75	4204015.50	11.54990	(02010318)
609763.75	4204015.50	11.87263	(02010318)	609788.75	4204015.50	12.21926	(02010318)
609813.75	4204015.50	12.59268	(02010318)	609838.75	4204015.50	12.99622	(02010318)
609863.75	4204015.50	13.43382	(02010318)	609888.75	4204015.50	13.91012	(02010318)
609913.75	4204015.50	15.19640	(03112017)	609938.75	4204015.50	16.51297	(03112017)
609963.75	4204015.50	17.71669	(03112017)	609988.75	4204015.50	18.84269	(03112017)
609713.75	4204040.50	11.42838	(02010318)	609738.75	4204040.50	11.74217	(02010318)
609763.75	4204040.50	12.07877	(02010318)	609788.75	4204040.50	12.44084	(02010318)
609813.75	4204040.50	12.83152	(02010318)	609838.75	4204040.50	13.25446	(02010318)
609863.75	4204040.50	13.71400	(02010318)	609888.75	4204040.50	14.21527	(02010318)
609913.75	4204040.50	15.53575	(03112017)	609938.75	4204040.50	16.91380	(03112017)
609963.75	4204040.50	18.17546	(03112017)	609988.75	4204040.50	19.35947	(03112017)
610013.75	4204040.50	20.51588	(03112017)	609713.75	4204065.50	11.61637	(02010318)
609738.75	4204065.50	11.94372	(02010318)	609763.75	4204065.50	12.29543	(02010318)
609788.75	4204065.50	12.67439	(02010318)	609813.75	4204065.50	13.08399	(02010318)
609838.75	4204065.50	13.52825	(02010318)	609863.75	4204065.50	14.01191	(02010318)
609888.75	4204065.50	14.54065	(02010318)	609913.75	4204065.50	15.89578	(03112017)
609938.75	4204065.50	17.34029	(03112017)	609963.75	4204065.50	18.66488	(03112017)
609988.75	4204065.50	19.91246	(03112017)	610013.75	4204065.50	21.13830	(03112017)
610038.75	4204065.50	22.40250	(03112017)	609713.75	4204090.50	11.81252	(02010318)

609738.75	4204090.50	12.15450	(02010318)	609763.75	4204090.50	12.52259	(02010318)
609788.75	4204090.50	12.91996	(02010318)	609813.75	4204090.50	13.35033	(02010318)
609838.75	4204090.50	13.81813	(02010318)	609863.75	4204090.50	14.32855	(02010318)
609888.75	4204090.50	14.88789	(02010318)	609913.75	4204090.50	16.27846	(03112017)
609938.75	4204090.50	17.79499	(03112017)	609963.75	4204090.50	19.18817	(03112017)
609988.75	4204090.50	20.50570	(03112017)	610013.75	4204090.50	21.80880	(03112017)
610038.75	4204090.50	23.16409	(03112017)	610063.75	4204090.50	24.63969	(03112017)
609713.75	4204115.50	12.01683	(02010318)	609738.75	4204115.50	12.37441	(02010318)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4NB(1) ***
INCLUDING SOURCE(S): L0000641, L0000642, L0000643, L0000644, L0000645, L0000646, L0000647, L0000648, L0000649, L0000650, L0000651, L0000652, L0000653, L0000654, L0000655, L0000656, L0000657, L0000658, L0000659, L0000660, L0000661, L0000662, L0000663, L0000664, L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609763.75	4204115.50	12.76004	(02010318)	609788.75	4204115.50	13.17726	(02010318)
609813.75	4204115.50	13.63020	(02010318)	609838.75	4204115.50	14.12375	(02010318)
609863.75	4204115.50	14.66374	(02010318)	609888.75	4204115.50	15.25717	(02010318)
609913.75	4204115.50	16.68605	(03112017)	609938.75	4204115.50	18.28086	(03112017)
609963.75	4204115.50	19.74904	(03112017)	609988.75	4204115.50	21.14384	(03112017)
610013.75	4204115.50	22.53335	(03112017)	610038.75	4204115.50	23.99177	(03112017)
610063.75	4204115.50	25.59559	(03112017)	609713.75	4204140.50	12.22971	(02010318)
609738.75	4204140.50	12.60381	(02010318)	609763.75	4204140.50	13.00806	(02010318)
609788.75	4204140.50	13.44640	(02010318)	609813.75	4204140.50	13.92345	(02010318)
609838.75	4204140.50	14.44472	(02010318)	609863.75	4204140.50	15.01679	(02010318)
609888.75	4204140.50	15.64758	(02010318)	609913.75	4204140.50	17.12111	(03112017)
609938.75	4204140.50	18.80123	(03112017)	609963.75	4204140.50	20.35176	(03112017)
609988.75	4204140.50	21.83230	(03112017)	610013.75	4204140.50	23.31895	(03112017)
610038.75	4204140.50	24.89482	(03112017)	610063.75	4204140.50	26.64648	(03112017)
609713.75	4204165.50	12.45208	(02010318)	609738.75	4204165.50	12.84374	(02010318)
609763.75	4204165.50	13.26780	(02010318)	609938.75	4204165.50	19.35999	(03112017)
609963.75	4204165.50	21.00125	(03112017)	609988.75	4204165.50	22.57744	(03112017)
610013.75	4204165.50	24.17393	(03112017)	610038.75	4204165.50	25.88436	(03112017)
610063.75	4204165.50	27.80777	(03112017)	609713.75	4204190.50	12.68501	(02010318)
609738.75	4204190.50	13.09562	(02010318)	609963.75	4204190.50	21.70326	(03112017)
609988.75	4204190.50	23.38669	(03112017)	610013.75	4204190.50	25.10816	(03112017)
610038.75	4204190.50	26.97396	(03112017)	610063.75	4204190.50	29.09831	(03112017)
609713.75	4204215.50	12.92933	(02010318)	609963.75	4204215.50	22.46453	(03112017)
609988.75	4204215.50	24.26893	(03112017)	610013.75	4204215.50	26.13358	(03112017)
610038.75	4204215.50	28.18007	(03112017)	610063.75	4204215.50	30.54200	(03112017)
609963.75	4204240.50	23.29300	(03112017)	609988.75	4204240.50	25.23472	(03112017)
610013.75	4204240.50	27.26469	(03112017)	610038.75	4204240.50	29.52307	(03112017)
610063.75	4204240.50	32.16708	(03112017)	609938.75	4204265.50	22.07962	(03112017)
609963.75	4204265.50	24.19813	(03112017)	609988.75	4204265.50	26.29682	(03112017)
610013.75	4204265.50	28.51909	(03112017)	610038.75	4204265.50	31.02868	(03112017)
610063.75	4204265.50	34.01553	(03112017)	609938.75	4204290.50	22.91404	(03112017)
609963.75	4204290.50	25.19123	(03112017)	609988.75	4204290.50	27.47076	(03112017)
610013.75	4204290.50	29.91920	(03112017)	610038.75	4204290.50	32.72855	(03112017)
610063.75	4204290.50	36.13410	(03112017)	609938.75	4204315.50	23.82812	(03112017)
609963.75	4204315.50	26.28605	(03112017)	609988.75	4204315.50	28.77558	(03112017)
610013.75	4204315.50	31.49238	(03112017)	610038.75	4204315.50	34.66656	(03112017)
610063.75	4204315.50	38.58558	(03112017)	609938.75	4204340.50	24.83396	(03112017)
609963.75	4204340.50	27.49930	(03112017)	609988.75	4204340.50	30.23528	(03112017)
610013.75	4204340.50	33.27365	(03112017)	610038.75	4204340.50	36.88678	(03112017)
610063.75	4204340.50	41.47285	(03112017)	609938.75	4204365.50	25.94626	(03112017)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4NB(1) ***

TOG_SR4
INCLUDING SOURCE(S): L0000641, L0000642, L0000643, L0000644, L0000645, L0000646, L0000647, L0000648, L0000649, L0000650, L0000651, L0000652, L0000653, L0000654, L0000655, L0000656, L0000657, L0000658, L0000659, L0000660, L0000661, L0000662, L0000663, L0000664, L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609963.75	4204365.50	28.85168	(03112017)	609988.75	4204365.50	31.87880	(03112017)
610013.75	4204365.50	35.30986	(03112017)	610038.75	4204365.50	39.48851	(03112017)
610063.75	4204365.50	44.85289	(03112017)	609938.75	4204390.50	27.18293	(03112017)
609963.75	4204390.50	30.36917	(03112017)	609988.75	4204390.50	33.74733	(03112017)
610013.75	4204390.50	37.65519	(03112017)	610038.75	4204390.50	42.55243	(03112017)

CONC URBAN ELEV DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4SB(1) ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609713.75	4203940.50	11.71795	(02010318)	609738.75	4203940.50	12.03768	(02010318)
609763.75	4203940.50	12.38035	(02010318)	609788.75	4203940.50	12.74862	(02010318)
609813.75	4203940.50	13.14561	(02010318)	609838.75	4203940.50	13.57495	(02010318)
609713.75	4203965.50	11.90316	(02010318)	609738.75	4203965.50	12.23676	(02010318)
609763.75	4203965.50	12.59484	(02010318)	609788.75	4203965.50	12.98029	(02010318)
609813.75	4203965.50	13.39652	(02010318)	609838.75	4203965.50	13.84751	(02010318)
609863.75	4203965.50	14.33799	(02010318)	609888.75	4203965.50	15.49607	(03112017)
609713.75	4203990.50	12.09386	(02010318)	609738.75	4203990.50	12.44235	(02010318)
609763.75	4203990.50	12.81703	(02010318)	609788.75	4203990.50	13.22107	(02010318)
609813.75	4203990.50	13.65821	(02010318)	609838.75	4203990.50	14.13281	(02010318)
609863.75	4203990.50	14.65009	(02010318)	609888.75	4203990.50	15.81779	(03112017)
609913.75	4203990.50	17.25385	(03112017)	609938.75	4203990.50	18.58054	(03112017)
609713.75	4204015.50	12.28960	(02010318)	609738.75	4204015.50	12.65389	(02010318)
609763.75	4204015.50	13.04632	(02010318)	609788.75	4204015.50	13.47036	(02010318)
609813.75	4204015.50	13.93013	(02010318)	609838.75	4204015.50	14.43044	(02010318)
609863.75	4204015.50	14.97707	(02010318)	609888.75	4204015.50	16.15798	(03112017)
609913.75	4204015.50	17.66028	(03112017)	609938.75	4204015.50	19.05016	(03112017)
609963.75	4204015.50	20.36561	(03112017)	609988.75	4204015.50	21.65861	(03112017)
609713.75	4204040.50	12.49022	(02010318)	609738.75	4204040.50	12.87110	(02010318)
609763.75	4204040.50	13.28225	(02010318)	609788.75	4204040.50	13.72727	(02010318)
609813.75	4204040.50	14.20938	(02010318)	609838.75	4204040.50	14.73699	(02010318)
609863.75	4204040.50	15.31507	(02010318)	609888.75	4204040.50	16.51829	(03112017)
609913.75	4204040.50	18.09212	(03112017)	609938.75	4204040.50	19.55054	(03112017)
609963.75	4204040.50	20.93570	(03112017)	609988.75	4204040.50	22.30511	(03112017)
610013.75	4204040.50	23.72427	(03112017)	609713.75	4204065.50	12.69618	(02010318)
609738.75	4204065.50	13.09431	(02010318)	609763.75	4204065.50	13.52503	(02010318)
609788.75	4204065.50	13.99249	(02010318)	609813.75	4204065.50	14.50145	(02010318)
609838.75	4204065.50	15.05722	(02010318)	609863.75	4204065.50	15.66952	(02010318)
609888.75	4204065.50	16.90062	(03112017)	609913.75	4204065.50	18.55184	(03112017)
609938.75	4204065.50	20.08483	(03112017)	609963.75	4204065.50	21.54651	(03112017)
609988.75	4204065.50	23.00074	(03112017)	610013.75	4204065.50	24.52042	(03112017)
610038.75	4204065.50	26.18337	(03112017)	609713.75	4204090.50	12.90874	(02010318)
609738.75	4204090.50	13.32482	(02010318)	609763.75	4204090.50	13.77593	(02010318)
609788.75	4204090.50	14.26681	(02010318)	609813.75	4204090.50	14.80311	(02010318)
609838.75	4204090.50	15.39161	(02010318)	609863.75	4204090.50	16.04047	(02010318)
609888.75	4204090.50	17.30709	(03112017)	609913.75	4204090.50	19.04228	(03112017)
609938.75	4204090.50	20.65667	(03112017)	609963.75	4204090.50	22.20267	(03112017)
609988.75	4204090.50	23.75147	(03112017)	610013.75	4204090.50	25.38464	(03112017)
610038.75	4204090.50	27.19010	(03112017)	610063.75	4204090.50	29.26457	(03112017)

609713.75	4204115.50	13.12971	(02010318)	609738.75	4204115.50	13.56465	(02010318)

CONC URBAN ELEV DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4SB(1) ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609763.75	4204115.50	14.03719	(02010318)	609788.75	4204115.50	14.55259	(02010318)
609813.75	4204115.50	15.11713	(02010318)	609838.75	4204115.50	15.73838	(02010318)
609863.75	4204115.50	16.42555	(02010318)	609888.75	4204115.50	17.74012	(03112017)
609913.75	4204115.50	19.56666	(03112017)	609938.75	4204115.50	21.27022	(03112017)
609963.75	4204115.50	22.90954	(03112017)	609988.75	4204115.50	24.56434	(03112017)
610013.75	4204115.50	26.32635	(03112017)	610038.75	4204115.50	28.29575	(03112017)
610063.75	4204115.50	30.58503	(03112017)	609713.75	4204140.50	13.36095	(02010318)
609738.75	4204140.50	13.81604	(02010318)	609763.75	4204140.50	14.31150	(02010318)
609788.75	4204140.50	14.85312	(02010318)	609813.75	4204140.50	15.44788	(02010318)
609838.75	4204140.50	16.10423	(02010318)	609863.75	4204140.50	16.83256	(02010318)
609888.75	4204140.50	18.20245	(03112017)	609913.75	4204140.50	20.12868	(03112017)
609938.75	4204140.50	21.93026	(03112017)	609963.75	4204140.50	23.67338	(03112017)
609988.75	4204140.50	25.44765	(03112017)	610013.75	4204140.50	27.35686	(03112017)
610038.75	4204140.50	29.51616	(03112017)	610063.75	4204140.50	32.05761	(03112017)
609713.75	4204165.50	13.60388	(02010318)	609738.75	4204165.50	14.08077	(02010318)
609763.75	4204165.50	14.60110	(02010318)	609938.75	4204165.50	22.64237	(03112017)
609963.75	4204165.50	24.50150	(03112017)	609988.75	4204165.50	26.41126	(03112017)
610013.75	4204165.50	28.48974	(03112017)	610038.75	4204165.50	30.87087	(03112017)
610063.75	4204165.50	33.71291	(03112017)	609713.75	4204190.50	13.85929	(02010318)
609738.75	4204190.50	14.35983	(02010318)	609963.75	4204190.50	25.40257	(03112017)
609988.75	4204190.50	27.46701	(03112017)	610013.75	4204190.50	29.74178	(03112017)
610038.75	4204190.50	32.38378	(03112017)	610063.75	4204190.50	35.58649	(03112017)
609713.75	4204215.50	14.12774	(02010318)	609963.75	4204215.50	26.38688	(03112017)
609988.75	4204215.50	28.62919	(03112017)	610013.75	4204215.50	31.13338	(03112017)
610038.75	4204215.50	34.08619	(03112017)	610063.75	4204215.50	37.72491	(03112017)
609963.75	4204240.50	27.46671	(03112017)	609988.75	4204240.50	29.91531	(03112017)
610013.75	4204240.50	32.69010	(03112017)	610038.75	4204240.50	36.01342	(03112017)
610063.75	4204240.50	40.19577	(03112017)	609938.75	4204265.50	26.16011	(03112017)
609963.75	4204265.50	28.65718	(03112017)	609988.75	4204265.50	31.34661	(03112017)
610013.75	4204265.50	34.44464	(03112017)	610038.75	4204265.50	38.22518	(03112017)
610063.75	4204265.50	43.06062	(03112017)	609938.75	4204290.50	27.25719	(03112017)
609963.75	4204290.50	29.97645	(03112017)	609988.75	4204290.50	32.95081	(03112017)
610013.75	4204290.50	36.43679	(03112017)	610038.75	4204290.50	40.78174	(03112017)
610063.75	4204290.50	46.49278	(03112017)	609938.75	4204315.50	28.46909	(03112017)
609963.75	4204315.50	31.44709	(03112017)	609988.75	4204315.50	34.75820	(03112017)
610013.75	4204315.50	38.72531	(03112017)	610038.75	4204315.50	43.76584	(03112017)
610063.75	4204315.50	50.40173	(03112017)	609938.75	4204340.50	29.81480	(03112017)
609963.75	4204340.50	33.09788	(03112017)	609988.75	4204340.50	36.82154	(03112017)
610013.75	4204340.50	41.35988	(03112017)	610038.75	4204340.50	47.33567	(03112017)
610063.75	4204340.50	55.60360	(03112017)	609938.75	4204365.50	31.31919	(03112017)

CONC URBAN ELEV DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4SB(1) ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609963.75	4204365.50	34.96317	(03112017)	609988.75	4204365.50	39.19115	(03112017)
610013.75	4204365.50	44.49162	(03112017)	610038.75	4204365.50	51.51656	(03112017)
610063.75	4204365.50	62.09452	(03112017)	609938.75	4204390.50	33.01173	(03112017)
609963.75	4204390.50	37.09422	(03112017)	609988.75	4204390.50	41.93574	(03112017)
610013.75	4204390.50	48.03049	(03112017)	610038.75	4204390.50	56.94914	(03112017)

CONC URBAN ELEV DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609713.75	4203940.50	22.47252	(02010318)	609738.75	4203940.50	23.06090	(02010318)
609763.75	4203940.50	23.69012	(02010318)	609788.75	4203940.50	24.36480	(02010318)
609813.75	4203940.50	25.09023	(02010318)	609838.75	4203940.50	25.87257	(02010318)
609713.75	4203965.50	22.81567	(02010318)	609738.75	4203965.50	23.42818	(02010318)
609763.75	4203965.50	24.08418	(02010318)	609788.75	4203965.50	24.78869	(02010318)
609813.75	4203965.50	25.54750	(02010318)	609838.75	4203965.50	26.36737	(02010318)
609863.75	4203965.50	27.25628	(02010318)	609888.75	4203965.50	28.74236	(03112017)
609713.75	4203990.50	23.17074	(02010318)	609738.75	4203990.50	23.80894	(02010318)
609763.75	4203990.50	24.49353	(02010318)	609788.75	4203990.50	25.22997	(02010318)
609813.75	4203990.50	26.02459	(02010318)	609838.75	4203990.50	26.88484	(02010318)
609863.75	4203990.50	27.81948	(02010318)	609888.75	4203990.50	29.30924	(03112017)
609913.75	4203990.50	32.12980	(03112017)	609938.75	4203990.50	34.71604	(03112017)
609713.75	4204015.50	23.53822	(02010318)	609738.75	4204015.50	24.20380	(02010318)
609763.75	4204015.50	24.91894	(02010318)	609788.75	4204015.50	25.68962	(02010318)
609813.75	4204015.50	26.52280	(02010318)	609838.75	4204015.50	27.42665	(02010318)
609863.75	4204015.50	28.41088	(02010318)	609888.75	4204015.50	29.90764	(03112017)
609913.75	4204015.50	32.85668	(03112017)	609938.75	4204015.50	35.56313	(03112017)
609963.75	4204015.50	38.08231	(03112017)	609988.75	4204015.50	40.50130	(03112017)
609713.75	4204040.50	23.91859	(02010318)	609738.75	4204040.50	24.61327	(02010318)
609763.75	4204040.50	25.36102	(02010318)	609788.75	4204040.50	26.16811	(02010318)
609813.75	4204040.50	27.04090	(02010318)	609838.75	4204040.50	27.99145	(02010318)
609863.75	4204040.50	29.02906	(02010318)	609888.75	4204040.50	30.54035	(03112017)
609913.75	4204040.50	33.62787	(03112017)	609938.75	4204040.50	36.46434	(03112017)
609963.75	4204040.50	39.11116	(03112017)	609988.75	4204040.50	41.66458	(03112017)
610013.75	4204040.50	44.24016	(03112017)	609713.75	4204065.50	24.31254	(02010318)
609738.75	4204065.50	25.03804	(02010318)	609763.75	4204065.50	25.82046	(02010318)
609788.75	4204065.50	26.66688	(02010318)	609813.75	4204065.50	27.58544	(02010318)
609838.75	4204065.50	28.58547	(02010318)	609863.75	4204065.50	29.68143	(02010318)
609888.75	4204065.50	31.21050	(03112017)	609913.75	4204065.50	34.44762	(03112017)
609938.75	4204065.50	37.42512	(03112017)	609963.75	4204065.50	40.21138	(03112017)
609988.75	4204065.50	42.91320	(03112017)	610013.75	4204065.50	45.65873	(03112017)
610038.75	4204065.50	48.58587	(03112017)	609713.75	4204090.50	24.72126	(02010318)
609738.75	4204090.50	25.47932	(02010318)	609763.75	4204090.50	26.29851	(02010318)
609788.75	4204090.50	27.18675	(02010318)	609813.75	4204090.50	28.15345	(02010318)
609838.75	4204090.50	29.20973	(02010318)	609863.75	4204090.50	30.36902	(02010318)
609888.75	4204090.50	31.92162	(03112017)	609913.75	4204090.50	35.32074	(03112017)
609938.75	4204090.50	38.45166	(03112017)	609963.75	4204090.50	41.39084	(03112017)
609988.75	4204090.50	44.25716	(03112017)	610013.75	4204090.50	47.19344	(03112017)
610038.75	4204090.50	50.35419	(03112017)	610063.75	4204090.50	53.90426	(03112017)
609713.75	4204115.50	25.14655	(02010318)	609738.75	4204115.50	25.93906	(02010318)

CONC URBAN ELEV DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***

TOG_SR4

INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609763.75	4204115.50	26.79723	(02010318)	609788.75	4204115.50	27.72985	(02010318)
609813.75	4204115.50	28.74733	(02010318)	609838.75	4204115.50	29.86212	(02010318)
609863.75	4204115.50	31.08930	(02010318)	609888.75	4204115.50	32.67768	(03112017)
609913.75	4204115.50	36.25270	(03112017)	609938.75	4204115.50	39.55107	(03112017)
609963.75	4204115.50	42.65860	(03112017)	609988.75	4204115.50	45.70818	(03112017)
610013.75	4204115.50	48.85970	(03112017)	610038.75	4204115.50	52.28752	(03112017)
610063.75	4204115.50	56.18062	(03112017)	609713.75	4204140.50	25.59067	(02010318)
609738.75	4204140.50	26.41985	(02010318)	609763.75	4204140.50	27.31956	(02010318)
609788.75	4204140.50	28.29951	(02010318)	609813.75	4204140.50	29.37132	(02010318)
609838.75	4204140.50	30.54895	(02010318)	609863.75	4204140.50	31.84935	(02010318)
609888.75	4204140.50	33.48323	(03112017)	609913.75	4204140.50	37.24980	(03112017)
609938.75	4204140.50	40.73150	(03112017)	609963.75	4204140.50	44.02514	(03112017)
609988.75	4204140.50	47.27995	(03112017)	610013.75	4204140.50	50.67582	(03112017)
610038.75	4204140.50	54.41098	(03112017)	610063.75	4204140.50	58.70408	(03112017)
609713.75	4204165.50	26.05596	(02010318)	609738.75	4204165.50	26.92451	(02010318)
609763.75	4204165.50	27.86890	(02010318)	609938.75	4204165.50	42.00235	(03112017)
609963.75	4204165.50	45.50275	(03112017)	609988.75	4204165.50	48.98870	(03112017)
610013.75	4204165.50	52.66366	(03112017)	610038.75	4204165.50	56.75523	(03112017)
610063.75	4204165.50	61.52068	(03112017)	609713.75	4204190.50	26.54429	(02010318)
609738.75	4204190.50	27.45544	(02010318)	609963.75	4204190.50	47.10583	(03112017)
609988.75	4204190.50	50.85370	(03112017)	610013.75	4204190.50	54.84994	(03112017)
610038.75	4204190.50	59.35775	(03112017)	610063.75	4204190.50	64.68480	(03112017)
609713.75	4204215.50	27.05707	(02010318)	609963.75	4204215.50	48.85142	(03112017)
609988.75	4204215.50	52.89812	(03112017)	610013.75	4204215.50	57.26697	(03112017)
610038.75	4204215.50	62.26626	(03112017)	610063.75	4204215.50	68.26691	(03112017)
609963.75	4204240.50	50.75971	(03112017)	609988.75	4204240.50	55.15003	(03112017)
610013.75	4204240.50	59.95479	(03112017)	610038.75	4204240.50	65.53649	(03112017)
610063.75	4204240.50	72.36285	(03112017)	609938.75	4204265.50	48.23973	(03112017)
609963.75	4204265.50	52.85532	(03112017)	609988.75	4204265.50	57.64344	(03112017)
610013.75	4204265.50	62.96373	(03112017)	610038.75	4204265.50	69.25386	(03112017)
610063.75	4204265.50	77.07614	(03112017)	609938.75	4204290.50	50.17124	(03112017)
609963.75	4204290.50	55.16768	(03112017)	609988.75	4204290.50	60.42157	(03112017)
610013.75	4204290.50	66.35599	(03112017)	610038.75	4204290.50	73.51028	(03112017)
610063.75	4204290.50	82.62687	(03112017)	609938.75	4204315.50	52.29721	(03112017)
609963.75	4204315.50	57.73314	(03112017)	609988.75	4204315.50	63.53379	(03112017)
610013.75	4204315.50	70.21769	(03112017)	610038.75	4204315.50	78.43242	(03112017)
610063.75	4204315.50	88.98731	(03112017)	609938.75	4204340.50	54.64877	(03112017)
609963.75	4204340.50	60.59719	(03112017)	609988.75	4204340.50	67.05681	(03112017)
610013.75	4204340.50	74.63354	(03112017)	610038.75	4204340.50	84.22244	(03112017)
610063.75	4204340.50	97.07645	(03112017)	609938.75	4204365.50	57.26544	(03112017)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***

INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609963.75	4204365.50	63.81485	(03112017)	609988.75	4204365.50	71.06995	(03112017)
610013.75	4204365.50	79.80148	(03112017)	610038.75	4204365.50	91.00507	(03112017)
610063.75	4204365.50	106.94743	(03112017)	609938.75	4204390.50	60.19467	(03112017)
609963.75	4204390.50	67.46339	(03112017)	609988.75	4204390.50	75.68306	(03112017)

610013.75 4204390.50 85.68567 (03112017) 610038.75 4204390.50 99.50157 (03112017)
♀ *** ISCST3 - VERSION 02035 *** *** DPM Impacts from SR4 for Acute Non-Cancer HI *** 10/17/15
*** TOG_GAS Emissions from SR4 NB and SB - 2019 *** 21:26:20
**MODELOPTs: PAGE 34
CONC URBAN ELEV DFAULT

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	NETWORK RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	GRID-ID
SR4NB(1)	HIGH 1ST HIGH VALUE IS	44.85289	ON 03112017: AT (610063.75, 4204365.50, 29.89, 0.00)	DC	NA
SR4SB(1)	HIGH 1ST HIGH VALUE IS	62.09452	ON 03112017: AT (610063.75, 4204365.50, 29.89, 0.00)	DC	NA
ALL	HIGH 1ST HIGH VALUE IS	106.94743	ON 03112017: AT (610063.75, 4204365.50, 29.89, 0.00)	DC	NA

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY
♀ *** ISCST3 - VERSION 02035 *** *** DPM Impacts from SR4 for Acute Non-Cancer HI *** 10/17/15
*** TOG_GAS Emissions from SR4 NB and SB - 2019 *** 21:26:20
**MODELOPTs: PAGE 35
CONC URBAN ELEV DFAULT

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

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

A Total of 0 Fatal Error Message(s)
A Total of 1 Warning Message(s)
A Total of 52 Informational Message(s)

A Total of 52 Calm Hours Identified

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

******** WARNING MESSAGES ********
RE W282 750 CHK_EL:RecElev < SrcBase; See non-DFAULT HE>ZI option in MCB#9

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

♀ *** ISCST3 - VERSION 02035 *** *** DPM/TOG Impacts for Acute Non-Cancer HI *** 03/09/16
*** Emissions from SR4 NB and SB - 2019 *** 12:59:03
**MODELOPTs: PAGE 1
CONC URBAN ELEV DFAULT

*** MODEL SETUP OPTIONS SUMMARY ***
- -

**Intermediate Terrain Processing 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 Regulatory DEFAULT Options:
1. Final Plume Rise.
2. Stack-tip Downwash.
3. Buoyancy-induced Dispersion.
4. Use Calms Processing Routine.
5. Not Use Missing Data Processing Routine.
6. Default Wind Profile Exponents.
7. Default Vertical Potential Temperature Gradients.
8. "Upper Bound" Values for Supersquat Buildings.
9. No Exponential Decay for URBAN/Non-SO2

**Model Accepts Receptors on ELEV Terrain.

**Model Assumes No FLAGPOLE Receptor Heights.

**Model Calculates 1 Short Term Average(s) of: 1-HR

**This Run Includes: 78 Source(s); 3 Source Group(s); and 170 Receptor(s)

**The Model Assumes A Pollutant Type of: TOGGAS

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

**Output Options Selected:
Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**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 = 1.3 MB of RAM.

**Input Runstream File: TOG_SR4.INP
**Output Print File: TOG_SR4.OUT
**Detailed Error/Message File: TOG_SR4.err
♀ *** ISCST3 - VERSION 02035 *** *** DPM/TOG Impacts for Acute Non-Cancer HI *** 03/09/16
*** Emissions from SR4 NB and SB - 2019 *** 12:59:03
**MODELOPTs: PAGE 2
CONC URBAN ELEV DFAULT

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	EMISSION RATE SCALAR VARY BY
L0000602	0	0.25641E-01	609863.8	4204919.0	22.0	3.66	22.06	0.43	HROFDY
L0000603	0	0.25641E-01	609887.0	4204877.5	22.8	3.66	22.06	0.43	HROFDY
L0000604	0	0.25641E-01	609910.3	4204836.5	23.0	3.66	22.06	0.43	HROFDY
L0000605	0	0.25641E-01	609933.6	4204795.0	23.0	3.66	22.06	0.43	HROFDY
L0000606	0	0.25641E-01	609956.9	4204754.0	23.0	3.66	22.06	0.43	HROFDY
L0000607	0	0.25641E-01	609980.2	4204712.5	23.3	3.66	22.06	0.43	HROFDY
L0000608	0	0.25641E-01	610003.5	4204671.0	24.0	3.66	22.06	0.43	HROFDY
L0000609	0	0.25641E-01	610026.8	4204630.0	24.0	3.66	22.06	0.43	HROFDY
L0000610	0	0.25641E-01	610050.1	4204588.5	24.0	3.66	22.06	0.43	HROFDY
L0000611	0	0.25641E-01	610073.4	4204547.5	24.0	3.66	22.06	0.43	HROFDY
L0000612	0	0.25641E-01	610096.7	4204506.0	24.0	3.66	22.06	0.43	HROFDY
L0000613	0	0.25641E-01	610120.0	4204464.5	24.1	3.66	22.06	0.43	HROFDY
L0000614	0	0.25641E-01	610143.3	4204423.5	25.0	3.66	22.06	0.43	HROFDY
L0000615	0	0.25641E-01	610166.6	4204382.0	25.0	3.66	22.06	0.43	HROFDY
L0000616	0	0.25641E-01	610189.9	4204340.5	26.0	3.66	22.06	0.43	HROFDY
L0000617	0	0.25641E-01	610213.2	4204299.5	26.1	3.66	22.06	0.43	HROFDY
L0000618	0	0.25641E-01	610236.4	4204258.0	28.6	3.66	22.06	0.43	HROFDY
L0000619	0	0.25641E-01	610259.8	4204217.0	30.0	3.66	22.06	0.43	HROFDY
L0000620	0	0.25641E-01	610283.1	4204175.5	30.1	3.66	22.06	0.43	HROFDY
L0000621	0	0.25641E-01	610307.2	4204135.0	29.2	3.66	22.06	0.43	HROFDY
L0000622	0	0.25641E-01	610331.6	4204094.0	30.0	3.66	22.06	0.43	HROFDY
L0000623	0	0.25641E-01	610355.9	4204053.5	31.6	3.66	22.06	0.43	HROFDY
L0000624	0	0.25641E-01	610380.2	4204012.5	36.5	3.66	22.06	0.43	HROFDY
L0000625	0	0.25641E-01	610404.4	4203972.0	34.0	3.66	22.06	0.43	HROFDY
L0000626	0	0.25641E-01	610428.8	4203931.0	31.7	3.66	22.06	0.43	HROFDY
L0000627	0	0.25641E-01	610453.1	4203890.5	33.3	3.66	22.06	0.43	HROFDY
L0000628	0	0.25641E-01	610477.4	4203849.5	33.7	3.66	22.06	0.43	HROFDY
L0000629	0	0.25641E-01	610501.2	4203809.0	34.5	3.66	22.06	0.43	HROFDY
L0000630	0	0.25641E-01	610524.8	4203767.5	34.0	3.66	22.06	0.43	HROFDY
L0000631	0	0.25641E-01	610548.4	4203726.5	32.3	3.66	22.06	0.43	HROFDY
L0000632	0	0.25641E-01	610572.0	4203685.5	34.4	3.66	22.06	0.43	HROFDY
L0000633	0	0.25641E-01	610595.6	4203644.0	35.9	3.66	22.06	0.43	HROFDY
L0000634	0	0.25641E-01	610619.1	4203603.0	38.3	3.66	22.06	0.43	HROFDY
L0000635	0	0.25641E-01	610643.2	4203562.0	38.1	3.66	22.06	0.43	HROFDY
L0000636	0	0.25641E-01	610667.3	4203521.5	36.0	3.66	22.06	0.43	HROFDY
L0000637	0	0.25641E-01	610690.6	4203480.0	34.4	3.66	22.06	0.43	HROFDY
L0000638	0	0.25641E-01	610703.2	4203434.5	37.0	3.66	22.06	0.43	HROFDY
L0000639	0	0.25641E-01	610715.8	4203388.5	35.0	3.66	22.06	0.43	HROFDY
L0000640	0	0.25641E-01	610728.4	4203343.0	33.0	3.66	22.06	0.43	HROFDY
L0000641	0	0.25641E-01	609885.0	4204924.5	22.8	3.66	22.09	0.43	HROFDY

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	EMISSION RATE SCALAR VARY BY
L0000642	0	0.25641E-01	609909.6	4204884.0	23.0	3.66	22.09	0.43	HROFDY
L0000643	0	0.25641E-01	609934.1	4204843.0	23.0	3.66	22.09	0.43	HROFDY
L0000644	0	0.25641E-01	609958.6	4204802.5	23.0	3.66	22.09	0.43	HROFDY
L0000645	0	0.25641E-01	609983.1	4204761.5	23.0	3.66	22.09	0.43	HROFDY
L0000646	0	0.25641E-01	610007.6	4204721.0	23.9	3.66	22.09	0.43	HROFDY
L0000647	0	0.25641E-01	610032.1	4204680.5	24.0	3.66	22.09	0.43	HROFDY
L0000648	0	0.25641E-01	610056.6	4204639.5	24.0	3.66	22.09	0.43	HROFDY
L0000649	0	0.25641E-01	610081.2	4204599.0	24.0	3.66	22.09	0.43	HROFDY
L0000650	0	0.25641E-01	610105.7	4204558.5	24.0	3.66	22.09	0.43	HROFDY
L0000651	0	0.25641E-01	610130.2	4204517.5	24.0	3.66	22.09	0.43	HROFDY

L0000652	0	0.25641E-01	610154.8	4204477.0	24.0	3.66	22.09	0.43	HROFDY
L0000653	0	0.25641E-01	610179.2	4204436.5	25.0	3.66	22.09	0.43	HROFDY
L0000654	0	0.25641E-01	610203.8	4204395.5	25.0	3.66	22.09	0.43	HROFDY
L0000655	0	0.25641E-01	610228.2	4204355.0	25.0	3.66	22.09	0.43	HROFDY
L0000656	0	0.25641E-01	610252.8	4204314.5	25.9	3.66	22.09	0.43	HROFDY
L0000657	0	0.25641E-01	610277.3	4204273.5	26.0	3.66	22.09	0.43	HROFDY
L0000658	0	0.25641E-01	610301.8	4204233.0	25.6	3.66	22.09	0.43	HROFDY
L0000659	0	0.25641E-01	610326.3	4204192.5	26.6	3.66	22.09	0.43	HROFDY
L0000660	0	0.25641E-01	610350.8	4204151.5	26.0	3.66	22.09	0.43	HROFDY
L0000661	0	0.25641E-01	610375.2	4204111.0	26.6	3.66	22.09	0.43	HROFDY
L0000662	0	0.25641E-01	610399.6	4204070.0	29.2	3.66	22.09	0.43	HROFDY
L0000663	0	0.25641E-01	610424.1	4204029.5	31.1	3.66	22.09	0.43	HROFDY
L0000664	0	0.25641E-01	610448.5	4203989.0	30.4	3.66	22.09	0.43	HROFDY
L0000665	0	0.25641E-01	610472.9	4203948.0	29.9	3.66	22.09	0.43	HROFDY
L0000666	0	0.25641E-01	610497.3	4203907.5	30.1	3.66	22.09	0.43	HROFDY
L0000667	0	0.25641E-01	610521.8	4203866.5	32.3	3.66	22.09	0.43	HROFDY
L0000668	0	0.25641E-01	610545.6	4203825.5	32.1	3.66	22.09	0.43	HROFDY
L0000669	0	0.25641E-01	610569.3	4203784.5	30.4	3.66	22.09	0.43	HROFDY
L0000670	0	0.25641E-01	610592.9	4203743.0	29.8	3.66	22.09	0.43	HROFDY
L0000671	0	0.25641E-01	610616.4	4203702.0	30.0	3.66	22.09	0.43	HROFDY
L0000672	0	0.25641E-01	610640.1	4203661.0	31.1	3.66	22.09	0.43	HROFDY
L0000673	0	0.25641E-01	610663.7	4203619.5	34.7	3.66	22.09	0.43	HROFDY
L0000674	0	0.25641E-01	610684.9	4203577.0	35.2	3.66	22.09	0.43	HROFDY
L0000675	0	0.25641E-01	610706.1	4203534.5	33.9	3.66	22.09	0.43	HROFDY
L0000676	0	0.25641E-01	610725.5	4203491.5	31.6	3.66	22.09	0.43	HROFDY
L0000677	0	0.25641E-01	610740.2	4203446.0	33.2	3.66	22.09	0.43	HROFDY
L0000678	0	0.25641E-01	610755.1	4203401.0	32.4	3.66	22.09	0.43	HROFDY
L0000679	0	0.25641E-01	610769.9	4203356.0	31.2	3.66	22.09	0.43	HROFDY

CONC URBAN ELEV DFAULT

*** SOURCE IDs DEFINING SOURCE GROUPS ***

GROUP ID SOURCE IDs

SR4NB(1) L0000641, L0000642, L0000643, L0000644, L0000645, L0000646, L0000647, L0000648, L0000649, L0000650, L0000651, L0000652,

L0000653, L0000654, L0000655, L0000656, L0000657, L0000658, L0000659, L0000660, L0000661, L0000662, L0000663, L0000664,

L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, L0000671, L0000672, L0000673, L0000674, L0000675, L0000676,

L0000677, L0000678, L0000679,

SR4SB(1) L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613,

L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625,

L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, L0000632, L0000633, L0000634, L0000635, L0000636, L0000637,

L0000638, L0000639, L0000640,

ALL L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613,

L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625,

L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, L0000632, L0000633, L0000634, L0000635, L0000636, L0000637,

L0000638, L0000639, L0000640, L0000641, L0000642, L0000643, L0000644, L0000645, L0000646, L0000647, L0000648, L0000649,

L0000650, L0000651, L0000652, L0000653, L0000654, L0000655, L0000656, L0000657, L0000658, L0000659, L0000660, L0000661,

L0000662, L0000663, L0000664, L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, L0000671, L0000672, L0000673,

L0000674, L0000675, L0000676, L0000677, L0000678, L0000679,

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000602 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000603 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000604 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000605 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000606 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000607 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000608 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000609 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000610 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000611 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000612 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000613 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000614 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000615 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000616 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00

13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

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SOURCE ID = L0000617 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000618 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000619 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000620 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000621 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

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SOURCE ID = L0000622 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000623 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00

7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000624 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000625 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000626 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

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SOURCE ID = L0000627 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000628 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000629 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000630 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000631 ; SOURCE TYPE = VOLUME :
1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000632 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000633 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000634 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000635 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000636 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000637 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00
19	.66000E+00	20	.47000E+00	21	.43000E+00	22	.35000E+00	23	.24000E+00	24	.15000E+00

SOURCE ID = L0000638 ; SOURCE TYPE = VOLUME :

1	.90000E-01	2	.70000E-01	3	.60000E-01	4	.10000E+00	5	.23000E+00	6	.44000E+00
7	.70000E+00	8	.75000E+00	9	.68000E+00	10	.70000E+00	11	.74000E+00	12	.80000E+00
13	.81000E+00	14	.87000E+00	15	.92000E+00	16	.94000E+00	17	.10000E+01	18	.95000E+00

19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000639 ; SOURCE TYPE = VOLUME :

1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000640 ; SOURCE TYPE = VOLUME :

1 .90000E-01 2 .70000E-01 3 .60000E-01 4 .10000E+00 5 .23000E+00 6 .44000E+00
7 .70000E+00 8 .75000E+00 9 .68000E+00 10 .70000E+00 11 .74000E+00 12 .80000E+00
13 .81000E+00 14 .87000E+00 15 .92000E+00 16 .94000E+00 17 .10000E+01 18 .95000E+00
19 .66000E+00 20 .47000E+00 21 .43000E+00 22 .35000E+00 23 .24000E+00 24 .15000E+00

SOURCE ID = L0000641 ; SOURCE TYPE = VOLUME :

1 .34000E+00 2 .33000E+00 3 .33000E+00 4 .39000E+00 5 .47000E+00 6 .61000E+00
7 .74000E+00 8 .80000E+00 9 .75000E+00 10 .81000E+00 11 .90000E+00 12 .96000E+00
13 .98000E+00 14 .97000E+00 15 .10000E+01 16 .97000E+00 17 .98000E+00 18 .92000E+00
19 .82000E+00 20 .74000E+00 21 .64000E+00 22 .54000E+00 23 .46000E+00 24 .40000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR HOUR SCALAR

SOURCE ID = L0000642 ; SOURCE TYPE = VOLUME :

1 .34000E+00 2 .33000E+00 3 .33000E+00 4 .39000E+00 5 .47000E+00 6 .61000E+00
7 .74000E+00 8 .80000E+00 9 .75000E+00 10 .81000E+00 11 .90000E+00 12 .96000E+00
13 .98000E+00 14 .97000E+00 15 .10000E+01 16 .97000E+00 17 .98000E+00 18 .92000E+00
19 .82000E+00 20 .74000E+00 21 .64000E+00 22 .54000E+00 23 .46000E+00 24 .40000E+00

SOURCE ID = L0000643 ; SOURCE TYPE = VOLUME :

1 .34000E+00 2 .33000E+00 3 .33000E+00 4 .39000E+00 5 .47000E+00 6 .61000E+00
7 .74000E+00 8 .80000E+00 9 .75000E+00 10 .81000E+00 11 .90000E+00 12 .96000E+00
13 .98000E+00 14 .97000E+00 15 .10000E+01 16 .97000E+00 17 .98000E+00 18 .92000E+00
19 .82000E+00 20 .74000E+00 21 .64000E+00 22 .54000E+00 23 .46000E+00 24 .40000E+00

SOURCE ID = L0000644 ; SOURCE TYPE = VOLUME :

1 .34000E+00 2 .33000E+00 3 .33000E+00 4 .39000E+00 5 .47000E+00 6 .61000E+00
7 .74000E+00 8 .80000E+00 9 .75000E+00 10 .81000E+00 11 .90000E+00 12 .96000E+00
13 .98000E+00 14 .97000E+00 15 .10000E+01 16 .97000E+00 17 .98000E+00 18 .92000E+00
19 .82000E+00 20 .74000E+00 21 .64000E+00 22 .54000E+00 23 .46000E+00 24 .40000E+00

SOURCE ID = L0000645 ; SOURCE TYPE = VOLUME :

1 .34000E+00 2 .33000E+00 3 .33000E+00 4 .39000E+00 5 .47000E+00 6 .61000E+00
7 .74000E+00 8 .80000E+00 9 .75000E+00 10 .81000E+00 11 .90000E+00 12 .96000E+00
13 .98000E+00 14 .97000E+00 15 .10000E+01 16 .97000E+00 17 .98000E+00 18 .92000E+00
19 .82000E+00 20 .74000E+00 21 .64000E+00 22 .54000E+00 23 .46000E+00 24 .40000E+00

SOURCE ID = L0000646 ; SOURCE TYPE = VOLUME :

1 .34000E+00 2 .33000E+00 3 .33000E+00 4 .39000E+00 5 .47000E+00 6 .61000E+00
7 .74000E+00 8 .80000E+00 9 .75000E+00 10 .81000E+00 11 .90000E+00 12 .96000E+00
13 .98000E+00 14 .97000E+00 15 .10000E+01 16 .97000E+00 17 .98000E+00 18 .92000E+00
19 .82000E+00 20 .74000E+00 21 .64000E+00 22 .54000E+00 23 .46000E+00 24 .40000E+00

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000647 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000648 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000649 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000650 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000651 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000652 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000653 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000654 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000655 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000656 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000657 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000658 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000659 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000660 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000661 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000662 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000663 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000664 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000665 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000666 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000667 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000668 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000669 ; SOURCE TYPE = VOLUME :

TOG_SR4

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000670 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000671 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000672 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000673 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000674 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000675 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000676 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

CONC URBAN ELEV DFAULT

* SOURCE EMISSION RATE SCALARS WHICH VARY FOR EACH HOUR OF THE DAY *

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR

SOURCE ID = L0000677 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000678 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

SOURCE ID = L0000679 ; SOURCE TYPE = VOLUME :

1	.34000E+00	2	.33000E+00	3	.33000E+00	4	.39000E+00	5	.47000E+00	6	.61000E+00
7	.74000E+00	8	.80000E+00	9	.75000E+00	10	.81000E+00	11	.90000E+00	12	.96000E+00
13	.98000E+00	14	.97000E+00	15	.10000E+01	16	.97000E+00	17	.98000E+00	18	.92000E+00
19	.82000E+00	20	.74000E+00	21	.64000E+00	22	.54000E+00	23	.46000E+00	24	.40000E+00

CONC URBAN ELEV DFAULT

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(609713.8,	4203940.5,	43.1,	0.0);	(609738.8,	4203940.5,	43.2,	0.0);
(609763.8,	4203940.5,	44.8,	0.0);	(609788.8,	4203940.5,	46.6,	0.0);
(609813.8,	4203940.5,	49.2,	0.0);	(609838.8,	4203940.5,	50.0,	0.0);
(609713.8,	4203965.5,	42.2,	0.0);	(609738.8,	4203965.5,	41.6,	0.0);
(609763.8,	4203965.5,	43.4,	0.0);	(609788.8,	4203965.5,	45.4,	0.0);
(609813.8,	4203965.5,	46.5,	0.0);	(609838.8,	4203965.5,	47.2,	0.0);
(609863.8,	4203965.5,	45.5,	0.0);	(609888.8,	4203965.5,	43.8,	0.0);
(609713.8,	4203990.5,	41.5,	0.0);	(609738.8,	4203990.5,	41.0,	0.0);
(609763.8,	4203990.5,	41.8,	0.0);	(609788.8,	4203990.5,	42.2,	0.0);
(609813.8,	4203990.5,	42.0,	0.0);	(609838.8,	4203990.5,	42.8,	0.0);
(609863.8,	4203990.5,	42.2,	0.0);	(609888.8,	4203990.5,	40.9,	0.0);
(609913.8,	4203990.5,	39.3,	0.0);	(609938.8,	4203990.5,	37.9,	0.0);
(609713.8,	4204015.5,	41.3,	0.0);	(609738.8,	4204015.5,	41.0,	0.0);
(609763.8,	4204015.5,	41.2,	0.0);	(609788.8,	4204015.5,	41.4,	0.0);
(609813.8,	4204015.5,	41.4,	0.0);	(609838.8,	4204015.5,	41.4,	0.0);
(609863.8,	4204015.5,	41.2,	0.0);	(609888.8,	4204015.5,	40.2,	0.0);
(609913.8,	4204015.5,	38.8,	0.0);	(609938.8,	4204015.5,	37.7,	0.0);
(609963.8,	4204015.5,	37.7,	0.0);	(609988.8,	4204015.5,	38.6,	0.0);
(609713.8,	4204040.5,	41.1,	0.0);	(609738.8,	4204040.5,	41.0,	0.0);
(609763.8,	4204040.5,	40.2,	0.0);	(609788.8,	4204040.5,	39.0,	0.0);
(609813.8,	4204040.5,	37.2,	0.0);	(609838.8,	4204040.5,	37.1,	0.0);
(609863.8,	4204040.5,	37.1,	0.0);	(609888.8,	4204040.5,	37.2,	0.0);
(609913.8,	4204040.5,	37.0,	0.0);	(609938.8,	4204040.5,	36.6,	0.0);
(609963.8,	4204040.5,	36.2,	0.0);	(609988.8,	4204040.5,	36.4,	0.0);
(610013.8,	4204040.5,	41.2,	0.0);	(609713.8,	4204065.5,	44.0,	0.0);
(609738.8,	4204065.5,	42.1,	0.0);	(609763.8,	4204065.5,	40.5,	0.0);
(609788.8,	4204065.5,	39.0,	0.0);	(609813.8,	4204065.5,	37.7,	0.0);
(609838.8,	4204065.5,	36.0,	0.0);	(609863.8,	4204065.5,	36.0,	0.0);
(609888.8,	4204065.5,	36.0,	0.0);	(609913.8,	4204065.5,	36.0,	0.0);
(609938.8,	4204065.5,	35.7,	0.0);	(609963.8,	4204065.5,	35.1,	0.0);
(609988.8,	4204065.5,	35.0,	0.0);	(610013.8,	4204065.5,	38.0,	0.0);
(610038.8,	4204065.5,	43.0,	0.0);	(609713.8,	4204090.5,	48.9,	0.0);
(609738.8,	4204090.5,	43.5,	0.0);	(609763.8,	4204090.5,	42.0,	0.0);

(609788.8, 4204090.5, 41.3, 0.0); (609813.8, 4204090.5, 40.7, 0.0);
(609838.8, 4204090.5, 39.9, 0.0); (609863.8, 4204090.5, 39.9, 0.0);
(609888.8, 4204090.5, 38.8, 0.0); (609913.8, 4204090.5, 37.4, 0.0);
(609938.8, 4204090.5, 36.5, 0.0); (609963.8, 4204090.5, 35.8, 0.0);
(609988.8, 4204090.5, 35.0, 0.0); (610013.8, 4204090.5, 35.1, 0.0);
(610038.8, 4204090.5, 37.3, 0.0); (610063.8, 4204090.5, 40.5, 0.0);
(609713.8, 4204115.5, 53.5, 0.0); (609738.8, 4204115.5, 48.0, 0.0);
(609763.8, 4204115.5, 45.9, 0.0); (609788.8, 4204115.5, 45.0, 0.0);
(609813.8, 4204115.5, 44.7, 0.0); (609838.8, 4204115.5, 45.2, 0.0);
(609863.8, 4204115.5, 44.4, 0.0); (609888.8, 4204115.5, 42.6, 0.0);
(609913.8, 4204115.5, 40.8, 0.0); (609938.8, 4204115.5, 39.5, 0.0);
(609963.8, 4204115.5, 38.1, 0.0); (609988.8, 4204115.5, 36.0, 0.0);

CONC URBAN ELEV DFAULT

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(610013.8, 4204115.5, 35.1, 0.0); (610038.8, 4204115.5, 36.0, 0.0);
(610063.8, 4204115.5, 37.1, 0.0); (609713.8, 4204140.5, 56.0, 0.0);
(609738.8, 4204140.5, 50.5, 0.0); (609763.8, 4204140.5, 49.0, 0.0);
(609788.8, 4204140.5, 49.7, 0.0); (609813.8, 4204140.5, 51.7, 0.0);
(609838.8, 4204140.5, 51.9, 0.0); (609863.8, 4204140.5, 51.2, 0.0);
(609888.8, 4204140.5, 49.4, 0.0); (609913.8, 4204140.5, 47.2, 0.0);
(609938.8, 4204140.5, 44.4, 0.0); (609963.8, 4204140.5, 40.5, 0.0);
(609988.8, 4204140.5, 37.5, 0.0); (610013.8, 4204140.5, 35.2, 0.0);
(610038.8, 4204140.5, 34.8, 0.0); (610063.8, 4204140.5, 34.8, 0.0);
(609713.8, 4204165.5, 56.8, 0.0); (609738.8, 4204165.5, 51.3, 0.0);
(609763.8, 4204165.5, 49.8, 0.0); (609938.8, 4204165.5, 45.5, 0.0);
(609963.8, 4204165.5, 41.2, 0.0); (609988.8, 4204165.5, 38.0, 0.0);
(610013.8, 4204165.5, 35.3, 0.0); (610038.8, 4204165.5, 34.3, 0.0);
(610063.8, 4204165.5, 34.4, 0.0); (609713.8, 4204190.5, 60.0, 0.0);
(609738.8, 4204190.5, 54.8, 0.0); (609963.8, 4204190.5, 48.1, 0.0);
(609988.8, 4204190.5, 42.8, 0.0); (610013.8, 4204190.5, 37.2, 0.0);
(610038.8, 4204190.5, 34.3, 0.0); (610063.8, 4204190.5, 32.3, 0.0);
(609713.8, 4204215.5, 64.0, 0.0); (609963.8, 4204215.5, 51.8, 0.0);
(609988.8, 4204215.5, 46.0, 0.0); (610013.8, 4204215.5, 40.0, 0.0);
(610038.8, 4204215.5, 35.3, 0.0); (610063.8, 4204215.5, 31.6, 0.0);
(609963.8, 4204240.5, 51.0, 0.0); (609988.8, 4204240.5, 46.9, 0.0);
(610013.8, 4204240.5, 41.0, 0.0); (610038.8, 4204240.5, 36.3, 0.0);
(610063.8, 4204240.5, 32.8, 0.0); (609938.8, 4204265.5, 51.8, 0.0);
(609963.8, 4204265.5, 48.0, 0.0); (609988.8, 4204265.5, 45.1, 0.0);
(610013.8, 4204265.5, 40.2, 0.0); (610038.8, 4204265.5, 36.3, 0.0);
(610063.8, 4204265.5, 33.0, 0.0); (609938.8, 4204290.5, 47.4, 0.0);
(609963.8, 4204290.5, 43.9, 0.0); (609988.8, 4204290.5, 42.2, 0.0);
(610013.8, 4204290.5, 38.7, 0.0); (610038.8, 4204290.5, 35.5, 0.0);
(610063.8, 4204290.5, 32.2, 0.0); (609938.8, 4204315.5, 47.1, 0.0);
(609963.8, 4204315.5, 43.8, 0.0); (609988.8, 4204315.5, 41.2, 0.0);
(610013.8, 4204315.5, 38.2, 0.0); (610038.8, 4204315.5, 35.3, 0.0);
(610063.8, 4204315.5, 32.3, 0.0); (609938.8, 4204340.5, 44.4, 0.0);
(609963.8, 4204340.5, 41.5, 0.0); (609988.8, 4204340.5, 40.0, 0.0);
(610013.8, 4204340.5, 37.1, 0.0); (610038.8, 4204340.5, 34.3, 0.0);
(610063.8, 4204340.5, 31.3, 0.0); (609938.8, 4204365.5, 44.5, 0.0);
(609963.8, 4204365.5, 42.4, 0.0); (609988.8, 4204365.5, 39.0, 0.0);
(610013.8, 4204365.5, 35.0, 0.0); (610038.8, 4204365.5, 32.3, 0.0);
(610063.8, 4204365.5, 29.9, 0.0); (609938.8, 4204390.5, 44.9, 0.0);
(609963.8, 4204390.5, 43.3, 0.0); (609988.8, 4204390.5, 40.9, 0.0);
(610013.8, 4204390.5, 36.0, 0.0); (610038.8, 4204390.5, 31.5, 0.0);

CONC URBAN ELEV DFAULT

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1

TOG_SR4

01	01	01	08	348.3	1.52	274.4	6	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	09	72.0	1.16	274.0	5	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	10	85.1	1.74	274.5	4	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	11	219.1	1.79	277.1	3	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	12	278.9	1.92	278.9	3	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	13	257.4	2.10	279.5	2	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	14	293.4	1.92	280.0	2	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	15	349.5	1.97	282.0	2	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	16	11.6	1.65	284.2	3	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	17	335.0	1.34	283.7	4	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	18	257.2	1.48	280.9	4	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	19	287.7	1.74	278.8	5	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	20	317.7	1.52	275.5	4	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	21	340.6	1.48	273.3	4	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	22	337.7	1.00	273.4	4	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	23	257.9	1.00	272.7	5	300.0	300.0	0.0000	0.0 0.0000 0 0.00
01	01	01	24	307.1	1.00	272.4	6	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.

CONC URBAN ELEV DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4NB(1) ***
INCLUDING SOURCE(S): L0000641, L0000642, L0000643, L0000644, L0000645, L0000646, L0000647, L0000648, L0000649, L0000650, L0000651, L0000652, L0000653, L0000654, L0000655, L0000656, L0000657, L0000658, L0000659, L0000660, L0000661, L0000662, L0000663, L0000664, L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609713.75	4203940.50	10.75458	(02010318)	609738.75	4203940.50	11.02322	(02010318)
609763.75	4203940.50	11.30978	(02010318)	609788.75	4203940.50	11.61618	(02010318)
609813.75	4203940.50	11.94462	(02010318)	609838.75	4203940.50	12.29762	(02010318)
609713.75	4203965.50	10.91251	(02010318)	609738.75	4203965.50	11.19141	(02010318)
609763.75	4203965.50	11.48934	(02010318)	609788.75	4203965.50	11.80840	(02010318)
609813.75	4203965.50	12.15099	(02010318)	609838.75	4203965.50	12.51987	(02010318)
609863.75	4203965.50	12.91829	(02010318)	609888.75	4203965.50	13.35004	(02010318)
609713.75	4203990.50	11.07687	(02010318)	609738.75	4203990.50	11.36659	(02010318)
609763.75	4203990.50	11.67650	(02010318)	609788.75	4203990.50	12.00889	(02010318)
609813.75	4203990.50	12.36638	(02010318)	609838.75	4203990.50	12.75203	(02010318)
609863.75	4203990.50	13.16939	(02010318)	609888.75	4203990.50	13.62266	(02010318)
609913.75	4203990.50	14.87595	(03112017)	609938.75	4203990.50	16.13550	(03112017)
609713.75	4204015.50	11.24862	(02010318)	609738.75	4204015.50	11.54990	(02010318)
609763.75	4204015.50	11.87263	(02010318)	609788.75	4204015.50	12.21926	(02010318)
609813.75	4204015.50	12.59268	(02010318)	609838.75	4204015.50	12.99622	(02010318)
609863.75	4204015.50	13.43382	(02010318)	609888.75	4204015.50	13.91012	(02010318)
609913.75	4204015.50	15.19640	(03112017)	609938.75	4204015.50	16.51297	(03112017)
609963.75	4204015.50	17.71669	(03112017)	609988.75	4204015.50	18.84269	(03112017)
609713.75	4204040.50	11.42838	(02010318)	609738.75	4204040.50	11.74217	(02010318)
609763.75	4204040.50	12.07877	(02010318)	609788.75	4204040.50	12.44084	(02010318)
609813.75	4204040.50	12.83152	(02010318)	609838.75	4204040.50	13.25446	(02010318)
609863.75	4204040.50	13.71400	(02010318)	609888.75	4204040.50	14.21527	(02010318)
609913.75	4204040.50	15.53575	(03112017)	609938.75	4204040.50	16.91380	(03112017)
609963.75	4204040.50	18.17546	(03112017)	609988.75	4204040.50	19.35947	(03112017)
610013.75	4204040.50	20.51588	(03112017)	609713.75	4204065.50	11.61637	(02010318)
609738.75	4204065.50	11.94372	(02010318)	609763.75	4204065.50	12.29543	(02010318)
609788.75	4204065.50	12.67439	(02010318)	609813.75	4204065.50	13.08399	(02010318)
609838.75	4204065.50	13.52825	(02010318)	609863.75	4204065.50	14.01191	(02010318)
609888.75	4204065.50	14.54065	(02010318)	609913.75	4204065.50	15.89578	(03112017)
609938.75	4204065.50	17.34029	(03112017)	609963.75	4204065.50	18.66488	(03112017)
609988.75	4204065.50	19.91246	(03112017)	610013.75	4204065.50	21.13830	(03112017)
610038.75	4204065.50	22.40250	(03112017)	609713.75	4204090.50	11.81252	(02010318)

609738.75	4204090.50	12.15450	(02010318)	609763.75	4204090.50	12.52259	(02010318)
609788.75	4204090.50	12.91996	(02010318)	609813.75	4204090.50	13.35033	(02010318)
609838.75	4204090.50	13.81813	(02010318)	609863.75	4204090.50	14.32855	(02010318)
609888.75	4204090.50	14.88789	(02010318)	609913.75	4204090.50	16.27846	(03112017)
609938.75	4204090.50	17.79499	(03112017)	609963.75	4204090.50	19.18817	(03112017)
609988.75	4204090.50	20.50570	(03112017)	610013.75	4204090.50	21.80880	(03112017)
610038.75	4204090.50	23.16409	(03112017)	610063.75	4204090.50	24.63969	(03112017)
609713.75	4204115.50	12.01683	(02010318)	609738.75	4204115.50	12.37441	(02010318)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4NB(1) ***
INCLUDING SOURCE(S): L0000641, L0000642, L0000643, L0000644, L0000645, L0000646, L0000647, L0000648, L0000649, L0000650, L0000651, L0000652, L0000653, L0000654, L0000655, L0000656, L0000657, L0000658, L0000659, L0000660, L0000661, L0000662, L0000663, L0000664, L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609763.75	4204115.50	12.76004	(02010318)	609788.75	4204115.50	13.17726	(02010318)
609813.75	4204115.50	13.63020	(02010318)	609838.75	4204115.50	14.12375	(02010318)
609863.75	4204115.50	14.66374	(02010318)	609888.75	4204115.50	15.25717	(02010318)
609913.75	4204115.50	16.68605	(03112017)	609938.75	4204115.50	18.28086	(03112017)
609963.75	4204115.50	19.74904	(03112017)	609988.75	4204115.50	21.14384	(03112017)
610013.75	4204115.50	22.53335	(03112017)	610038.75	4204115.50	23.99177	(03112017)
610063.75	4204115.50	25.59559	(03112017)	609713.75	4204140.50	12.22971	(02010318)
609738.75	4204140.50	12.60381	(02010318)	609763.75	4204140.50	13.00806	(02010318)
609788.75	4204140.50	13.44640	(02010318)	609813.75	4204140.50	13.92345	(02010318)
609838.75	4204140.50	14.44472	(02010318)	609863.75	4204140.50	15.01679	(02010318)
609888.75	4204140.50	15.64758	(02010318)	609913.75	4204140.50	17.12111	(03112017)
609938.75	4204140.50	18.80123	(03112017)	609963.75	4204140.50	20.35176	(03112017)
609988.75	4204140.50	21.83230	(03112017)	610013.75	4204140.50	23.31895	(03112017)
610038.75	4204140.50	24.89482	(03112017)	610063.75	4204140.50	26.64648	(03112017)
609713.75	4204165.50	12.45208	(02010318)	609738.75	4204165.50	12.84374	(02010318)
609763.75	4204165.50	13.26780	(02010318)	609938.75	4204165.50	19.35999	(03112017)
609963.75	4204165.50	21.00125	(03112017)	609988.75	4204165.50	22.57744	(03112017)
610013.75	4204165.50	24.17393	(03112017)	610038.75	4204165.50	25.88436	(03112017)
610063.75	4204165.50	27.80777	(03112017)	609713.75	4204190.50	12.68501	(02010318)
609738.75	4204190.50	13.09562	(02010318)	609963.75	4204190.50	21.70326	(03112017)
609988.75	4204190.50	23.38669	(03112017)	610013.75	4204190.50	25.10816	(03112017)
610038.75	4204190.50	26.97396	(03112017)	610063.75	4204190.50	29.09831	(03112017)
609713.75	4204215.50	12.92933	(02010318)	609963.75	4204215.50	22.46453	(03112017)
609988.75	4204215.50	24.26893	(03112017)	610013.75	4204215.50	26.13358	(03112017)
610038.75	4204215.50	28.18007	(03112017)	610063.75	4204215.50	30.54200	(03112017)
609963.75	4204240.50	23.29300	(03112017)	609988.75	4204240.50	25.23472	(03112017)
610013.75	4204240.50	27.26469	(03112017)	610038.75	4204240.50	29.52307	(03112017)
610063.75	4204240.50	32.16708	(03112017)	609938.75	4204265.50	22.07962	(03112017)
609963.75	4204265.50	24.19813	(03112017)	609988.75	4204265.50	26.29682	(03112017)
610013.75	4204265.50	28.51909	(03112017)	610038.75	4204265.50	31.02868	(03112017)
610063.75	4204265.50	34.01553	(03112017)	609938.75	4204290.50	22.91404	(03112017)
609963.75	4204290.50	25.19123	(03112017)	609988.75	4204290.50	27.47076	(03112017)
610013.75	4204290.50	29.91920	(03112017)	610038.75	4204290.50	32.72855	(03112017)
610063.75	4204290.50	36.13410	(03112017)	609938.75	4204315.50	23.82812	(03112017)
609963.75	4204315.50	26.28605	(03112017)	609988.75	4204315.50	28.77558	(03112017)
610013.75	4204315.50	31.49238	(03112017)	610038.75	4204315.50	34.66656	(03112017)
610063.75	4204315.50	38.58558	(03112017)	609938.75	4204340.50	24.83396	(03112017)
609963.75	4204340.50	27.49930	(03112017)	609988.75	4204340.50	30.23528	(03112017)
610013.75	4204340.50	33.27365	(03112017)	610038.75	4204340.50	36.88678	(03112017)
610063.75	4204340.50	41.47285	(03112017)	609938.75	4204365.50	25.94626	(03112017)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4NB(1) ***

TOG_SR4

INCLUDING SOURCE(S): L0000641, L0000642, L0000643, L0000644, L0000645, L0000646, L0000647, L0000648, L0000649, L0000650, L0000651, L0000652, L0000653, L0000654, L0000655, L0000656, L0000657, L0000658, L0000659, L0000660, L0000661, L0000662, L0000663, L0000664, L0000665, L0000666, L0000667, L0000668, L0000669, L0000670, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609963.75	4204365.50	28.85168	(03112017)	609988.75	4204365.50	31.87880	(03112017)
610013.75	4204365.50	35.30986	(03112017)	610038.75	4204365.50	39.48851	(03112017)
610063.75	4204365.50	44.85289	(03112017)	609938.75	4204390.50	27.18293	(03112017)
609963.75	4204390.50	30.36917	(03112017)	609988.75	4204390.50	33.74733	(03112017)
610013.75	4204390.50	37.65519	(03112017)	610038.75	4204390.50	42.55243	(03112017)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4SB(1) ***

INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609713.75	4203940.50	11.71795	(02010318)	609738.75	4203940.50	12.03768	(02010318)
609763.75	4203940.50	12.38035	(02010318)	609788.75	4203940.50	12.74862	(02010318)
609813.75	4203940.50	13.14561	(02010318)	609838.75	4203940.50	13.57495	(02010318)
609713.75	4203965.50	11.90316	(02010318)	609738.75	4203965.50	12.23676	(02010318)
609763.75	4203965.50	12.59484	(02010318)	609788.75	4203965.50	12.98029	(02010318)
609813.75	4203965.50	13.39652	(02010318)	609838.75	4203965.50	13.84751	(02010318)
609863.75	4203965.50	14.33799	(02010318)	609888.75	4203965.50	15.49607	(03112017)
609713.75	4203990.50	12.09386	(02010318)	609738.75	4203990.50	12.44235	(02010318)
609763.75	4203990.50	12.81703	(02010318)	609788.75	4203990.50	13.22107	(02010318)
609813.75	4203990.50	13.65821	(02010318)	609838.75	4203990.50	14.13281	(02010318)
609863.75	4203990.50	14.65009	(02010318)	609888.75	4203990.50	15.81779	(03112017)
609913.75	4203990.50	17.25385	(03112017)	609938.75	4203990.50	18.58054	(03112017)
609713.75	4204015.50	12.28960	(02010318)	609738.75	4204015.50	12.65389	(02010318)
609763.75	4204015.50	13.04632	(02010318)	609788.75	4204015.50	13.47036	(02010318)
609813.75	4204015.50	13.93013	(02010318)	609838.75	4204015.50	14.43044	(02010318)
609863.75	4204015.50	14.97707	(02010318)	609888.75	4204015.50	16.15798	(03112017)
609913.75	4204015.50	17.66028	(03112017)	609938.75	4204015.50	19.05016	(03112017)
609963.75	4204015.50	20.36561	(03112017)	609988.75	4204015.50	21.65861	(03112017)
609713.75	4204040.50	12.49022	(02010318)	609738.75	4204040.50	12.87110	(02010318)
609763.75	4204040.50	13.28225	(02010318)	609788.75	4204040.50	13.72727	(02010318)
609813.75	4204040.50	14.20938	(02010318)	609838.75	4204040.50	14.73699	(02010318)
609863.75	4204040.50	15.31507	(02010318)	609888.75	4204040.50	16.51829	(03112017)
609913.75	4204040.50	18.09212	(03112017)	609938.75	4204040.50	19.55054	(03112017)
609963.75	4204040.50	20.93570	(03112017)	609988.75	4204040.50	22.30511	(03112017)
610013.75	4204040.50	23.72427	(03112017)	609713.75	4204065.50	12.69618	(02010318)
609738.75	4204065.50	13.09431	(02010318)	609763.75	4204065.50	13.52503	(02010318)
609788.75	4204065.50	13.99249	(02010318)	609813.75	4204065.50	14.50145	(02010318)
609838.75	4204065.50	15.05722	(02010318)	609863.75	4204065.50	15.66952	(02010318)
609888.75	4204065.50	16.90062	(03112017)	609913.75	4204065.50	18.55184	(03112017)
609938.75	4204065.50	20.08483	(03112017)	609963.75	4204065.50	21.54651	(03112017)
609988.75	4204065.50	23.00074	(03112017)	610013.75	4204065.50	24.52042	(03112017)
610038.75	4204065.50	26.18337	(03112017)	609713.75	4204090.50	12.90874	(02010318)
609738.75	4204090.50	13.32482	(02010318)	609763.75	4204090.50	13.77593	(02010318)
609788.75	4204090.50	14.26681	(02010318)	609813.75	4204090.50	14.80311	(02010318)
609838.75	4204090.50	15.39161	(02010318)	609863.75	4204090.50	16.04047	(02010318)
609888.75	4204090.50	17.30709	(03112017)	609913.75	4204090.50	19.04228	(03112017)
609938.75	4204090.50	20.65667	(03112017)	609963.75	4204090.50	22.20267	(03112017)
609988.75	4204090.50	23.75147	(03112017)	610013.75	4204090.50	25.38464	(03112017)
610038.75	4204090.50	27.19010	(03112017)	610063.75	4204090.50	29.26457	(03112017)

609713.75 4204115.50 13.12971 (02010318) 609738.75 4204115.50 13.56465 (02010318)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4SB(1) ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609763.75	4204115.50	14.03719	(02010318)	609788.75	4204115.50	14.55259	(02010318)
609813.75	4204115.50	15.11713	(02010318)	609838.75	4204115.50	15.73838	(02010318)
609863.75	4204115.50	16.42555	(02010318)	609888.75	4204115.50	17.74012	(03112017)
609913.75	4204115.50	19.56666	(03112017)	609938.75	4204115.50	21.27022	(03112017)
609963.75	4204115.50	22.90954	(03112017)	609988.75	4204115.50	24.56434	(03112017)
610013.75	4204115.50	26.32635	(03112017)	610038.75	4204115.50	28.29575	(03112017)
610063.75	4204115.50	30.58503	(03112017)	609713.75	4204140.50	13.36095	(02010318)
609738.75	4204140.50	13.81604	(02010318)	609763.75	4204140.50	14.31150	(02010318)
609788.75	4204140.50	14.85312	(02010318)	609813.75	4204140.50	15.44788	(02010318)
609838.75	4204140.50	16.10423	(02010318)	609863.75	4204140.50	16.83256	(02010318)
609888.75	4204140.50	18.20245	(03112017)	609913.75	4204140.50	20.12868	(03112017)
609938.75	4204140.50	21.93026	(03112017)	609963.75	4204140.50	23.67338	(03112017)
609988.75	4204140.50	25.44765	(03112017)	610013.75	4204140.50	27.35686	(03112017)
610038.75	4204140.50	29.51616	(03112017)	610063.75	4204140.50	32.05761	(03112017)
609713.75	4204165.50	13.60388	(02010318)	609738.75	4204165.50	14.08077	(02010318)
609763.75	4204165.50	14.60110	(02010318)	609938.75	4204165.50	22.64237	(03112017)
609963.75	4204165.50	24.50150	(03112017)	609988.75	4204165.50	26.41126	(03112017)
610013.75	4204165.50	28.48974	(03112017)	610038.75	4204165.50	30.87087	(03112017)
610063.75	4204165.50	33.71291	(03112017)	609713.75	4204190.50	13.85929	(02010318)
609738.75	4204190.50	14.35983	(02010318)	609963.75	4204190.50	25.40257	(03112017)
609988.75	4204190.50	27.46701	(03112017)	610013.75	4204190.50	29.74178	(03112017)
610038.75	4204190.50	32.38378	(03112017)	610063.75	4204190.50	35.58649	(03112017)
609713.75	4204215.50	14.12774	(02010318)	609963.75	4204215.50	26.38688	(03112017)
609988.75	4204215.50	28.62919	(03112017)	610013.75	4204215.50	31.13338	(03112017)
610038.75	4204215.50	34.08619	(03112017)	610063.75	4204215.50	37.72491	(03112017)
609963.75	4204240.50	27.46671	(03112017)	609988.75	4204240.50	29.91531	(03112017)
610013.75	4204240.50	32.69010	(03112017)	610038.75	4204240.50	36.01342	(03112017)
610063.75	4204240.50	40.19577	(03112017)	609938.75	4204265.50	26.16011	(03112017)
609963.75	4204265.50	28.65718	(03112017)	609988.75	4204265.50	31.34661	(03112017)
610013.75	4204265.50	34.44464	(03112017)	610038.75	4204265.50	38.22518	(03112017)
610063.75	4204265.50	43.06062	(03112017)	609938.75	4204290.50	27.25719	(03112017)
609963.75	4204290.50	29.97645	(03112017)	609988.75	4204290.50	32.95081	(03112017)
610013.75	4204290.50	36.43679	(03112017)	610038.75	4204290.50	40.78174	(03112017)
610063.75	4204290.50	46.49278	(03112017)	609938.75	4204315.50	28.46909	(03112017)
609963.75	4204315.50	31.44709	(03112017)	609988.75	4204315.50	34.75820	(03112017)
610013.75	4204315.50	38.72531	(03112017)	610038.75	4204315.50	43.76584	(03112017)
610063.75	4204315.50	50.40173	(03112017)	609938.75	4204340.50	29.81480	(03112017)
609963.75	4204340.50	33.09788	(03112017)	609988.75	4204340.50	36.82154	(03112017)
610013.75	4204340.50	41.35988	(03112017)	610038.75	4204340.50	47.33567	(03112017)
610063.75	4204340.50	55.60360	(03112017)	609938.75	4204365.50	31.31919	(03112017)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: SR4SB(1) ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609963.75	4204365.50	34.96317	(03112017)	609988.75	4204365.50	39.19115	(03112017)
610013.75	4204365.50	44.49162	(03112017)	610038.75	4204365.50	51.51656	(03112017)
610063.75	4204365.50	62.09452	(03112017)	609938.75	4204390.50	33.01173	(03112017)
609963.75	4204390.50	37.09422	(03112017)	609988.75	4204390.50	41.93574	(03112017)
610013.75	4204390.50	48.03049	(03112017)	610038.75	4204390.50	56.94914	(03112017)

CONC URBAN ELEV DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609713.75	4203940.50	22.47252	(02010318)	609738.75	4203940.50	23.06090	(02010318)
609763.75	4203940.50	23.69012	(02010318)	609788.75	4203940.50	24.36480	(02010318)
609813.75	4203940.50	25.09023	(02010318)	609838.75	4203940.50	25.87257	(02010318)
609713.75	4203965.50	22.81567	(02010318)	609738.75	4203965.50	23.42818	(02010318)
609763.75	4203965.50	24.08418	(02010318)	609788.75	4203965.50	24.78869	(02010318)
609813.75	4203965.50	25.54750	(02010318)	609838.75	4203965.50	26.36737	(02010318)
609863.75	4203965.50	27.25628	(02010318)	609888.75	4203965.50	28.74236	(03112017)
609713.75	4203990.50	23.17074	(02010318)	609738.75	4203990.50	23.80894	(02010318)
609763.75	4203990.50	24.49353	(02010318)	609788.75	4203990.50	25.22997	(02010318)
609813.75	4203990.50	26.02459	(02010318)	609838.75	4203990.50	26.88484	(02010318)
609863.75	4203990.50	27.81948	(02010318)	609888.75	4203990.50	29.30924	(03112017)
609913.75	4203990.50	32.12980	(03112017)	609938.75	4203990.50	34.71604	(03112017)
609713.75	4204015.50	23.53822	(02010318)	609738.75	4204015.50	24.20380	(02010318)
609763.75	4204015.50	24.91894	(02010318)	609788.75	4204015.50	25.68962	(02010318)
609813.75	4204015.50	26.52280	(02010318)	609838.75	4204015.50	27.42665	(02010318)
609863.75	4204015.50	28.41088	(02010318)	609888.75	4204015.50	29.90764	(03112017)
609913.75	4204015.50	32.85668	(03112017)	609938.75	4204015.50	35.56313	(03112017)
609963.75	4204015.50	38.08231	(03112017)	609988.75	4204015.50	40.50130	(03112017)
609713.75	4204040.50	23.91859	(02010318)	609738.75	4204040.50	24.61327	(02010318)
609763.75	4204040.50	25.36102	(02010318)	609788.75	4204040.50	26.16811	(02010318)
609813.75	4204040.50	27.04090	(02010318)	609838.75	4204040.50	27.99145	(02010318)
609863.75	4204040.50	29.02906	(02010318)	609888.75	4204040.50	30.54035	(03112017)
609913.75	4204040.50	33.62787	(03112017)	609938.75	4204040.50	36.46434	(03112017)
609963.75	4204040.50	39.11116	(03112017)	609988.75	4204040.50	41.66458	(03112017)
610013.75	4204040.50	44.24016	(03112017)	609713.75	4204065.50	24.31254	(02010318)
609738.75	4204065.50	25.03804	(02010318)	609763.75	4204065.50	25.82046	(02010318)
609788.75	4204065.50	26.66688	(02010318)	609813.75	4204065.50	27.58544	(02010318)
609838.75	4204065.50	28.58547	(02010318)	609863.75	4204065.50	29.68143	(02010318)
609888.75	4204065.50	31.21050	(03112017)	609913.75	4204065.50	34.44762	(03112017)
609938.75	4204065.50	37.42512	(03112017)	609963.75	4204065.50	40.21138	(03112017)
609988.75	4204065.50	42.91320	(03112017)	610013.75	4204065.50	45.65873	(03112017)
610038.75	4204065.50	48.58587	(03112017)	609713.75	4204090.50	24.72126	(02010318)
609738.75	4204090.50	25.47932	(02010318)	609763.75	4204090.50	26.29851	(02010318)
609788.75	4204090.50	27.18675	(02010318)	609813.75	4204090.50	28.15345	(02010318)
609838.75	4204090.50	29.20973	(02010318)	609863.75	4204090.50	30.36902	(02010318)
609888.75	4204090.50	31.92162	(03112017)	609913.75	4204090.50	35.32074	(03112017)
609938.75	4204090.50	38.45166	(03112017)	609963.75	4204090.50	41.39084	(03112017)
609988.75	4204090.50	44.25716	(03112017)	610013.75	4204090.50	47.19344	(03112017)
610038.75	4204090.50	50.35419	(03112017)	610063.75	4204090.50	53.90426	(03112017)
609713.75	4204115.50	25.14655	(02010318)	609738.75	4204115.50	25.93906	(02010318)

CONC URBAN ELEV DFAULT

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***

TOG_SR4

INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609763.75	4204115.50	26.79723	(02010318)	609788.75	4204115.50	27.72985	(02010318)
609813.75	4204115.50	28.74733	(02010318)	609838.75	4204115.50	29.86212	(02010318)
609863.75	4204115.50	31.08930	(02010318)	609888.75	4204115.50	32.67768	(03112017)
609913.75	4204115.50	36.25270	(03112017)	609938.75	4204115.50	39.55107	(03112017)
609963.75	4204115.50	42.65860	(03112017)	609988.75	4204115.50	45.70818	(03112017)
610013.75	4204115.50	48.85970	(03112017)	610038.75	4204115.50	52.28752	(03112017)
610063.75	4204115.50	56.18062	(03112017)	609713.75	4204140.50	25.59067	(02010318)
609738.75	4204140.50	26.41985	(02010318)	609763.75	4204140.50	27.31956	(02010318)
609788.75	4204140.50	28.29951	(02010318)	609813.75	4204140.50	29.37132	(02010318)
609838.75	4204140.50	30.54895	(02010318)	609863.75	4204140.50	31.84935	(02010318)
609888.75	4204140.50	33.48323	(03112017)	609913.75	4204140.50	37.24980	(03112017)
609938.75	4204140.50	40.73150	(03112017)	609963.75	4204140.50	44.02514	(03112017)
609988.75	4204140.50	47.27995	(03112017)	610013.75	4204140.50	50.67582	(03112017)
610038.75	4204140.50	54.41098	(03112017)	610063.75	4204140.50	58.70408	(03112017)
609713.75	4204165.50	26.05596	(02010318)	609738.75	4204165.50	26.92451	(02010318)
609763.75	4204165.50	27.86890	(02010318)	609938.75	4204165.50	42.00235	(03112017)
609963.75	4204165.50	45.50275	(03112017)	609988.75	4204165.50	48.98870	(03112017)
610013.75	4204165.50	52.66366	(03112017)	610038.75	4204165.50	56.75523	(03112017)
610063.75	4204165.50	61.52068	(03112017)	609713.75	4204190.50	26.54429	(02010318)
609738.75	4204190.50	27.45544	(02010318)	609963.75	4204190.50	47.10583	(03112017)
609988.75	4204190.50	50.85370	(03112017)	610013.75	4204190.50	54.84994	(03112017)
610038.75	4204190.50	59.35775	(03112017)	610063.75	4204190.50	64.68480	(03112017)
609713.75	4204215.50	27.05707	(02010318)	609963.75	4204215.50	48.85142	(03112017)
609988.75	4204215.50	52.89812	(03112017)	610013.75	4204215.50	57.26697	(03112017)
610038.75	4204215.50	62.26626	(03112017)	610063.75	4204215.50	68.26691	(03112017)
609963.75	4204240.50	50.75971	(03112017)	609988.75	4204240.50	55.15003	(03112017)
610013.75	4204240.50	59.95479	(03112017)	610038.75	4204240.50	65.53649	(03112017)
610063.75	4204240.50	72.36285	(03112017)	609938.75	4204265.50	48.23973	(03112017)
609963.75	4204265.50	52.85532	(03112017)	609988.75	4204265.50	57.64344	(03112017)
610013.75	4204265.50	62.96373	(03112017)	610038.75	4204265.50	69.25386	(03112017)
610063.75	4204265.50	77.07614	(03112017)	609938.75	4204290.50	50.17124	(03112017)
609963.75	4204290.50	55.16768	(03112017)	609988.75	4204290.50	60.42157	(03112017)
610013.75	4204290.50	66.35599	(03112017)	610038.75	4204290.50	73.51028	(03112017)
610063.75	4204290.50	82.62687	(03112017)	609938.75	4204315.50	52.29721	(03112017)
609963.75	4204315.50	57.73314	(03112017)	609988.75	4204315.50	63.53379	(03112017)
610013.75	4204315.50	70.21769	(03112017)	610038.75	4204315.50	78.43242	(03112017)
610063.75	4204315.50	88.98731	(03112017)	609938.75	4204340.50	54.64877	(03112017)
609963.75	4204340.50	60.59719	(03112017)	609988.75	4204340.50	67.05681	(03112017)
610013.75	4204340.50	74.63354	(03112017)	610038.75	4204340.50	84.22244	(03112017)
610063.75	4204340.50	97.07645	(03112017)	609938.75	4204365.50	57.26544	(03112017)

*** THE 1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***

INCLUDING SOURCE(S): L0000602, L0000603, L0000604, L0000605, L0000606, L0000607, L0000608, L0000609, L0000610, L0000611, L0000612, L0000613, L0000614, L0000615, L0000616, L0000617, L0000618, L0000619, L0000620, L0000621, L0000622, L0000623, L0000624, L0000625, L0000626, L0000627, L0000628, L0000629, L0000630, L0000631, . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
609963.75	4204365.50	63.81485	(03112017)	609988.75	4204365.50	71.06995	(03112017)
610013.75	4204365.50	79.80148	(03112017)	610038.75	4204365.50	91.00507	(03112017)
610063.75	4204365.50	106.94743	(03112017)	609938.75	4204390.50	60.19467	(03112017)
609963.75	4204390.50	67.46339	(03112017)	609988.75	4204390.50	75.68306	(03112017)

610013.75 4204390.50 85.68567 (03112017) 610038.75 4204390.50 99.50157 (03112017)
♀ *** ISCST3 - VERSION 02035 *** *** DPM/TOG Impacts for Acute Non-Cancer HI *** 03/09/16
*** Emissions from SR4 NB and SB - 2019 *** 12:59:03
**MODELOPTs: PAGE 34
CONC URBAN ELEV DFAULT

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF TOGGAS IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	NETWORK RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	GRID-ID
SR4NB(1)	HIGH 1ST HIGH VALUE IS	44.85289	ON 03112017: AT (610063.75, 4204365.50, 29.89, 0.00)	DC	NA
SR4SB(1)	HIGH 1ST HIGH VALUE IS	62.09452	ON 03112017: AT (610063.75, 4204365.50, 29.89, 0.00)	DC	NA
ALL	HIGH 1ST HIGH VALUE IS	106.94743	ON 03112017: AT (610063.75, 4204365.50, 29.89, 0.00)	DC	NA

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY
♀ *** ISCST3 - VERSION 02035 *** *** DPM/TOG Impacts for Acute Non-Cancer HI *** 03/09/16
*** Emissions from SR4 NB and SB - 2019 *** 12:59:03
**MODELOPTs: PAGE 35
CONC URBAN ELEV DFAULT

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

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

A Total of 0 Fatal Error Message(s)
A Total of 1 Warning Message(s)
A Total of 52 Informational Message(s)

A Total of 52 Calm Hours Identified

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

******** WARNING MESSAGES ********
RE W282 750 CHK_EL:RecElev < SrcBase; See non-DFAULT HE>ZI option in MCB#9

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



Health Risks from Verizon BAAQMD Facility Number 18888

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Appendix B: Biological Resources

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B.1 - Biological Resources Assessment

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BIOLOGICAL RESOURCE ANALYSIS
LAUREL RANCH
CITY OF ANTIOCH, CALIFORNIA

November 23, 2015

Prepared for

Richland Communities, Inc.
1508 Eureka Road, Suite 140
Roseville, California 95661
Attention: Mr. Aaron Ross-Swain

Prepared by

Monk & Associates, Inc.
1136 Saranap Avenue, Suite Q
Walnut Creek, California 94595
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Attachment A. Historic Aerial Photographs of the Laurel Ranch Project Site.

Attachment B. Laurel Ranch Final Development Plan, prepared by DK Consulting, June 2015.

Attachment C. Jurisdictional Delineation Map, prepared by Olberding Environmental, Inc.

Attachment D. RWQCB Letter, dated September 17, 2015.

1. INTRODUCTION

Monk & Associates, Inc. (M&A) has prepared this biological resource analysis for the proposed Laurel Ranch Subdivision (herein referred to as the project) located in Antioch, California (**Figures 1 and 2**)(hereinafter the project site). The purpose of our analysis is to provide a description of existing biological resources on the project site and to identify potentially significant impacts that could occur to sensitive biological resources from the construction of a proposed residential development.

Biological resources include common plant and animal species, and special-status plants and animals as designated by the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NMFS), and other resource organizations including the California Native Plant Society (CNPS). Biological resources also include waters of the United States and State, as regulated by the U.S. Army Corps of Engineers (Corps), California Regional Water Quality Control Board (RWQCB), and CDFW.

This biological resources analysis also provides mitigation measures for "potentially significant" and "significant" impacts that could occur to biological resources. Whenever possible, upon implementation, the prescribed mitigation measures, potentially significant and significant impacts would be reduced to levels regarded as less than significant pursuant to the California Environmental Quality Act (CEQA) (Public Resources Code §§ 21000 et seq.; 14 Cal. Code Regs §§ 15000 et seq). Accordingly, this report is suitable for incorporation into the environmental document that will be completed by the City of Antioch for the proposed project pursuant to the CEQA.

2. PROJECT SITE REGULATORY HISTORY

In 2005, the 54 acre site received approval for a Vesting Tentative Map consisting of 205 homes and an EIR Addendum to the 1996 EIR was certified. A Final Map never was recorded and construction never commenced for the approved project, there for the project approvals expired.

3. PROPERTY LOCATION AND SETTING

The Laurel Ranch project site has been subjected to fairly intense disturbance over many years, as is clearly evident on the current aerial photograph of the project site (**Figure 3**). The site is bisected by numerous motorcycle trails, and there are piles of debris and fill material deposited throughout the site. The high level of disturbance over the years is also illustrated by the historic aerial photographic record provided in **Attachment A**. According to the *Biological Resources Assessment* report prepared by Michael Brandman Associates for the Laurel Ranch Subdivision (Michael Brandman Associates 2003), the project site has a history of cattle grazing, and more recently (2005) the site was used for a temporary stockpile location for excess dirt generated from the Highway 4 Bypass construction project.

The 54-acre project site wraps around an enclosed reservoir ("water tank") facility owned by the Diablo Water District along the northern project site boundary (**Figure 3**). The Contra Costa County Water District pumping facility and high-density housing occur further to the north of the reservoir site. Several recently constructed housing developments occur to the west of the project

site. An undeveloped parcel borders the southern project site boundary, and this undeveloped parcel has an approved Vesting Tentative Map consisting of 525 single family homes, roads, parks, and open space; further to the south it is developed with high-density housing and commercial areas. The State Highway 4 Bypass and the Laurel Avenue off ramp occur immediately east of the project site. Further to the east there is more high-density housing and commercial developments. The project site is virtually surrounded within a densely urbanized area. **Figures 2 and 3** illustrate the land use surrounding the project site.

Residential development immediately west of the project site commenced construction in 2002 and continues through today on a mostly leveled plateau that gently slopes up from Hillcrest Avenue in the City of Antioch to the western edge of the project site. This leveled plateau drops off precipitously onto the project site. It was intended that this leveled plateau continue eastward on the project site connecting with infrastructure and street levels constructed on the east side of the project site when the Highway 4 Bypass was constructed. However, development of the project site stalled during the recession of 2008. The eastward extension of relatively recently developed high-density housing stops at what is now the western edge of the current project site. The proposed project would complete the development contemplated in the specific plan area (*Future Urbanization Area #2 Specific Plan, Antioch, California* 1995) that includes development across the project site to Laurel Avenue on the eastern edge of the project site.

4. PROPOSED PROJECT

Land use for Laurel Ranch is guided by the East Lone Tree Specific Plan (ELTA), which was adopted by the City of Antioch in May 1996, along with a certified EIR. The project site's land use designation in the ELTA is a combination of Residential High, Residential Low, and Open Space. Consistent with the land uses and the prescribed densities in the ELTA, Richland Communities is proposing approximately 187 dwelling units within two distinct single-family detached residential neighborhoods, Conventional and Private Lane, as shown on Laurel Ranch Final Development Plan, prepared by DK Consulting, June 2015 (**Attachment B**). Below is a description of each neighborhood. Any future revisions to the land use plan will reduce the development footprint, and will therefore not have significant implications for the biological analysis.

4.1 Conventional Neighborhood

This neighborhood has 93 homes and proposed to have a minimum lot size of 4,000 square feet, with minimum dimensions of 50-feet (width) and 80-feet (depth). There will be a mix of single and two story homes that are expected to range from approximately 1,750 to 3,000 square feet. Density for this neighborhood is approximately 5.8 dwelling units per acre.

4.2 Private Lane Neighborhood

This neighborhood has 94 homes, which are typically arranged in six-unit groupings. Each lot opens onto a short private lane that takes access to the lots off of the public streets. A minimum lot size of 2,580 square feet is proposed, providing each home with an individual driveway, and private side and rear yards for personal use. The two-story homes are expected to range in size from 1,800 to 2,200 square feet. Density for this neighborhood is approximately 10 dwelling units per acre.

The community will include a 10,000 square foot park containing an all-abilities play structure, a lawn area, and traditional park furniture. Another 5,200 square foot sitting park will provide residents with a small lawn area and park furniture for an informal gathering area. From this small "pocket" park, there will be a trail that will connect to a section of the East Lone Tree Specific Plan's trail system that will parallel the project's western property boundary and will be constructed as a part of Laurel Ranch improvements. The regional trail is a component of the ELTA and will provide a link between Laurel Road and the Delta De Anza trail, which is a part of the East Bay Regional Park District trail system.

Laurel Ranch will have a Homeowners Association (HOA) that will be responsible for maintenance of the common areas (e.g., parks, landscaped medians, and internal streets), storm water (C3) facilities, and the enforcement of the Covenants, Conditions & Restrictions (CC&R's). A professional and reputable HOA management company will be selected to manage the HOA and will be helpful in maintaining a high-quality community. The HOA will be funded by Laurel Ranch residents only.

5. ANALYSIS METHODS

5.1 Background Research

Prior to preparing this biological resource analysis report, M&A researched the most recent version of CDFW's Natural Diversity Database, RareFind 3.1 application (CNDDB 2015) for historic and recent records of special-status plant and wildlife species (that is, threatened, endangered, rare) known to occur within five miles of the project site. M&A searched the 2015 California Native Plant Society's (CNPS) 2001 electronic update of the *Inventory of Rare and Endangered Vascular Plants of California* (Fifth Edition) for records of special-status plants known in the region of the project site. All special-status species records were compiled in tables. M&A examined all known record locations for special-status species to determine if special-status species could occur on the project site or within an area of affect.

M&A also reviewed the following documents regarding the project site:

> *Future Urbanization Area #2 Specific Plan, Antioch, California*: Environmental Impact Report, Project Impacts and Mitigation Measures, prepared by Mundie & Associates and City of Antioch, August 25, 1995 (State Clearinghouse #93-111069) (Mundie 1995).
>
> *Biological Resources Assessment*, prepared by Michael Brandman Associates for the Laurel Ranch Subdivision (Michael Brandman Associates 2003).
>
> *Addendum to Project Level Environmental Impact Report on the Laurel Ranch Subdivision*, prepared by Michael Brandman Associates (February 2004).
>
> *CDFW Streambed Alteration Agreement Application*, prepared by Olberding Environmental, Inc. (April 2015).
>
> *Laurel Road Property– Tree Survey Report*, prepared by Olberding Environmental, Inc. (June 8, 2015).

5.1 Field Reconnaissance

M&A biologists Mr. Geoff Monk and Ms. Hope Kingma conducted a general reconnaissance survey of the project site on November 18, 2013 and Mr. Monk and Ms. Caitlyn Bishop conducted an additional site survey of the project site on July 30, 2015. During these surveys M&A recorded the biological resources on the site and assessed the likelihood of resource agency-regulated areas on the project site. The surveys involved searching all habitats on the site and recording all plant and wildlife species observed. M&A cross-referenced the habitats found on the project site against the habitat requirements of local or regionally known special-status species to determine if the proposed project could directly or indirectly impact such species.

5.2 Wetland Delineation

In February 2014, a draft wetland delineation report was prepared by Olberding Environmental, Inc. and submitted to the Corps for confirmation. The Corps conducted a site verification visit on May 5, 2015. The Corps' confirmed Jurisdictional Delineation Map is provided as **Attachment C**.

5.1 Special-Status Plant Surveys

Special-status plant surveys of the project site were conducted by M&A biologists Ms. Christy Owens and Ms. Sadie McGarvey on August 29, 2013, and Ms. Owens and Ms. Caitlyn Bishop on July 31, 2015. Additional plant surveys will be conducted in April and May of 2016.

The M&A surveys followed USFWS (1996a and 2002), CDFW (2009), and CNPS (2001) published survey guidelines. These guidelines state that special-status plant surveys should be conducted at the proper time of year when special-status and locally significant plants are both evident and identifiable. The guidelines also state that the surveys be floristic in nature with every plant observed identified to species, subspecies, or variety as necessary to determine their rarity status. Finally, these surveys must be conducted in a manner that is consistent with conservation ethics and accepted plant collection and documentation techniques. Following these guidelines, surveys were conducted during the months when special-status plant species from the region are known to be evident and flowering well in advance of any ground-disturbing activities where suitable habitat is present. This may entail repeated floristic surveys to observe all the potential target species during the appropriate floristic period(s).

All areas within the proposed project development footprint were examined by systematic walking transects through potential habitat, and by closely examining any existing microhabitats that could potentially support special-status plants. All plant species found on the project site will be identified to species or to a level needed to determine whether they qualify as special-status plants. A list of all vascular plant taxa encountered on the project site was recorded in the field. Plants that needed further evaluation were collected and keyed in the lab. Final determinations for collected plants were made by keying specimens using standard references such as *The Jepson Manual* (Baldwin 2012).

5.2 California Red-Legged Frog Surveys

M&A biologists Mr. Geoff Monk, Mr. Farley Connelly, and Ms. Bishop conducted two diurnal (day-time) and two nocturnal (night-time) surveys for the California red-legged frog (*Rana draytonii*) on the proposed project site on July 14, 2015 and July 30, 2015. Diurnal surveys were completed in the mid-morning hours, followed by nocturnal surveys completed between 9 p.m. and midnight. Mr. Geoff Monk, M&A's principal biologist, is a federally permitted 10(A)(1)(a) California red-legged frog biologist with extensive experience with this frog. Mr. Monk has direct experience capturing and handling both larvae and adult California red-legged frogs, and has worked to establish and preserve well over 1,000 acres of occupied California red-legged frog habitats since this species was first listed under the Federal Endangered Species Act in 1996 (USFWS 1996b). Mr. Monk was present on all surveys for the California red-legged frog.

During diurnal surveys the man-made drainage was visually scanned using high-powered (10 x 42) binoculars. A nocturnal survey of the drainage was also completed using high-powered binoculars and medium-powered spotlights. During the diurnal and nocturnal surveys, the water column was searched for California red-legged frog eggs and larvae. In addition, all edges of the vegetation and open water pools were systematically surveyed for adult California red-legged frogs. This level of survey meets the standards of care required by the CEQA to address potential impacts to California red-legged frogs. The results of our literature research and field surveys are provided in the sections below.

6. RESULTS OF RESEARCH AND PROJECT SITE ANALYSES

6.1 Topography

The project site is characterized by an incised valley between two small ridges comprised of rolling hills. The Diablo Water District facility, which includes two above-ground reservoirs (aka water tanks), is situated on the top of a large hill to the north. From the facility a relatively steep hillside slopes south down to the floor of the project site. The site also supports steep slopes on the western side of project site that are primarily man-made sloping down from the recently constructed residential developments to the west and southwest steeply down to the project site. The leveled plain where homes have been under construction immediately west of the project site is approximately 40 feet higher in elevation than the existing low elevations of the project site. Finally there are rolling hills that extend from the center of the project site to the south, as illustrated by the topographic lines shown in Sheet 1: Laurel Ranch Final Development Plan, prepared by DK Consulting, June 2015 (**Attachment B**).

6.2 Hydrology

The project site consists of dry hillsides, most that have no evidence of drainage patterns in the valleys between hillsides. However, there is a manmade drainage that now bisects a portion of the project site. This drainage flows from west to east across the project site terminating in a man-made depressional area. This drainage is directly attributable to the residential development immediately west of the project site (Tract 8288) that commenced construction in 2002 and continues through today on a mostly leveled plateau that slopes up from Hillcrest Avenue in the City of Antioch to the western edge of the project site. This now developed leveled plateau drops off precipitously onto the project site. A major (4-foot diameter reinforced concrete pipe)

stormwater pipe that extends eastward from this development terminates on the east end of the plateau on the steep slope on the western edge of the project site. Grading on Laurel Ranch project site never commenced and thus the storm drain pipe coming from Tract 8288 was never tied into the City's storm drain system. The proposed project will tie this pipe into Laurel Ranch's storm drain system which will tie into the City's storm drain network on the east side of the Laurel Ranch.

Currently there is excessive erosion and head cutting below the stormwater pipe on the steep slopes at the western edge of the project site where erosion below the pipe has created a vertical face that is approximately 15 feet tall. There are resultant large erosional sediment deposits in the onsite drainage/retention area. As the drainage receives constant urban water it retains shallow (a few inches deep) pools in locations where trespassing four-wheel drive vehicles drive across the drainage creating deep tire ruts through the mud.

This isolated feature, which first appeared in 2007, is a result of storm water and nuisance water runoff from the residential development to the west of Laurel Ranch that began construction in 2002. In a formal jurisdictional determination completed on May 5, 2015 by the U.S. Army Corps of Engineers (Corps) identified the drainage feature as an isolated feature that is not within the Corps' Clean Water Act jurisdiction (see **Attachment C**).

The drainage/retention area is now a cattail-dominated feature that appears to have formed over a period of just a few years as a result of stormwater and nuisance water run-off generated from the relatively recently constructed residential developments located immediately to the west and southwest of the project site. The historic aerial photographic record provided in **Attachment A** indicates that this feature did not exist on the project site in 2005; it began to form in 2006, and by 2007 aquatic vegetation and riparian vegetation started to colonize the drainage/retention area.

On the northeast end of the project site, there is also a narrow ditch running mostly parallel with the Highway 4 Bypass. Examination of aerial photographs shows that this ditch was created at the same time that the Highway 4 Bypass was created. Flows from the Bypass area enter this ditch and flow north to a CalTrans detention basin constructed under an overpass that crosses over the Contra Costa Canal. The Corps also determined that this was an isolated feature outside of the Corps' Clean Water Act jurisdiction.

6.3 Plant Communities and Associated Wildlife Habitats

A complete list of plant species observed on the project site is presented in **Table 1**. Nomenclature used for plant names follows *The Jepson Manual* Second Edition (Baldwin 2012) and changes made to this manual as published on the Jepson Interchange Project website (http://ucjeps.berkeley.edu/interchange/index.html). **Table 2** is a list of wildlife species observed on the project site. Nomenclature for wildlife follows CDFW's *Complete list of amphibian, reptile, bird, and mammal species in California* (2014) and any changes made to species nomenclature as published in scientific journals since the publication of CDFW's list.

The plant communities found onsite are all anthropogenic communities, that is, communities that are a result of human influence and disturbance to the natural environment. Below we discuss the plant communities found on the project site.

6.3.1 RUDERAL HERBACEOUS HABITAT

The project site is excessively disturbed by four-wheel drive vehicles, and an endless stream of trespassers that drive and dump all over the project site. Landowners have been unable to stem the flow of trespassers on this property. K-rails and fencing installed to keep trespassers out are simply pushed aside allowing access to the site. Trespassers appear to routinely start large bon fires on the project site and accordingly, the landowners disk fire breaks and most accessible areas of the project site to prevent wildfires.

The project site is dominated by ruderal herbaceous habitat. Ruderal (weedy) communities are assemblages of plants that thrive in waste areas, roadsides and other sites that have been disturbed by human activity. Typically hardpacked soils of roadsides, parking lots, industrial areas and construction sites support communities of ruderal species. Ruderal vegetation is adapted to high levels of disturbance, and persists almost indefinitely in areas with continuous disturbance.

Dominant non-native grass species observed on the project site include slender oats (*Avena barbata*), ripgut brome (*Bromus diandrus*), red brome (*Bromus madritensis* ssp. *rubens*), soft chess (*Bromus hordeaceus*) and Italian ryegrass (*Festuca perennis*). Dominant non-native forb species observed on the project site include annual yellow sweetclover (*Melilotus indicus*), prickly lettuce (*Lactuca serriola*), Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*), common vetch (*Vicia sativa*), mustard (*Hirschfeldia incana* and *Brassica nigra*) and star thistle (*Centaurea solstitialis* and *C. calcitrapa*), among others. Due to past disturbance, very few native, herbaceous taxa remain on the project site. The few native plant species found in the ruderal herbaceous community includes narrow-leaved milkweed (*Asclepias fascicularis*), horseweed (*Erigeron canadensis*), Great Valley gumplant (*Grindelia camporum*), telegraph weed (*Heterotheca grandiflora*), virgate tarweed (*Holocarpha virgata* ssp. *virgata*), Spanish clover (*Acmispon americanus* var. *americanus*), California poppy (*Eschscholzia californica*) and small fescue (*Festuca microstachys*).

Animals observed in ruderal habitats on the project site are species adapted to human disturbance and include the American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), rock pigeon (*Columba livia*), turkey vulture (*Cathartes aura*), black-tailed hare (*Lepus californicus*), Botta's pocket gopher (*Thomomys bottae*), and California ground squirrel (*Spermophilus beecheyi*).

6.3.2 DRAINAGE

There is a drainage that enters the project site on the southwestern project site boundary and drains onto the site from the development immediately to the west of the project site (see Hydrology section above). This man-made drainage is dominated by narrow-leaved and broad-leaved cattail (*Typha angustifolia* and *T. latifolia*), with dense thickets of riparian vegetation dominated by willows (*Salix lasiolepis*, *Salix laevigata* and *Salix gooddingii*), and an understory

dominated by hydrophytic (wetland) vegetation. Wetland vegetation growing in the ditch includes the following native species: seacoast bulrush (*Bolboschoenus robustus*), tall flatsedge (*Cyperus eragrostis*), hairy willow herb (*Epilobium ciliatum*), knotgrass (*Paspalum distichum*), lesser duckweed (*Lemna minor*). Non-native hydrophytic (wetland) vegetation observed in the ditch includes brass-buttons (*Cotula coronopifolia*), rabbit's-foot grass (*Polypogon monspeliensis*), hyssop loosestrife (*Lythrum hyssopifolia*), Dallis grass (*Paspalum dilatatum*), water speedwell (*Veronica anagallis-aquatica*) and spear oracle (*Atriplex patula*), among others.

The drainage is so full of silt that it provides poor conditions for most aquatic wildlife species. It does, however, provide a drinking source for wildlife. Birds, mammals, amphibians, and reptiles will all take advantage of the water in this ditch. Raccoons (*Procyon lotor*) and coyote (*Canis latrans*) likely drink from the onsite ditch. Common amphibian species such as Sierran tree frog (*Pseudacris regilla)* breed and lay eggs in the ditch, but the overly silty conditions reduces breeding success as egg masses are covered in silt deposits. The vegetation and sap of young red willows typically attract numerous insects to their branches. These insects, in turn, attract common insectivorous bird species such western kingbird (*Tyrannus verticalis*) and loggerhead shrike (*Lanius ludovicianus*).

6.4 Wildlife Corridors

Wildlife corridors are linear and/or regional habitats that provide connectivity to other natural vegetation communities within a landscape fractured by urbanization and other development. Wildlife corridors have several functions: 1) they provide avenues along which wide-ranging animals can travel, migrate, and breed, allowing genetic interchange to occur; 2) populations can move in response to environmental changes and natural disasters; and 3) individuals can recolonize habitats from which populations have been locally extirpated (Beier and Loe 1992). All three of these functions can be met if both regional and local wildlife corridors are accessible to wildlife. Regional wildlife corridors provide foraging, breeding, and retreat areas for migrating, dispersing, immigrating, and emigrating wildlife populations. Local wildlife corridors also provide access routes to food, cover, and water resources within restricted habitats.

The proposed project will not interfere significantly with the movement of native wildlife, on a regional or a local level. The project site is surrounded by residential developments, precluding the movement of wildlife through this area from distant locations. The presence of the Highway 4 Bypass, a very heavily traveled four to six lane road to the east of the project site creates a significant wildlife movement barrier. The undeveloped land to the south of the project site is approved for the development of 525 homes, and further to the south of this area is another high density housing development. The project site is surrounded by a sea of residential and commercial developments (**Figure 2**). Consequently, the project site has no regional significance as a wildlife corridor.

It is likely that common wildlife species adapted to urbanized conditions use the project site as local wildlife habitat. Such animals would travel to/from the project site to surrounding developed areas where they scavenge garbage, pet food, and obtain drinking water. While no significant local wildlife corridor is apparent on the project site, normal daily movements of common wildlife species that incorporate the project site in their day-to-day movements through

the surrounding urban areas would be regarded as local movement area. However, project related impacts to local movement areas by common species are not regarded as a significant biological impact.

7. SPECIAL-STATUS SPECIES DEFINITION

7.1 Definitions

For purposes of this analysis, special-status species are plants and animals that are legally protected under the California and Federal Endangered Species Acts (CESA and FESA, respectively) or other regulations, and species that are considered rare by the scientific community (for example, the CNPS). Special-status species are defined as:

- Plants and animals that are listed or proposed for listing as threatened or endangered under the CESA (Cal. Fish and Game Code §2050 *et seq.*; 14 CCR §670.1 *et seq.*) or the FESA (50 CFR 17.12 for plants; 50 CFR 17.11 for animals; various notices in the Federal Register [FR] for proposed species).

- Plants and animals that are candidates for possible future listing as threatened or endangered under the FESA (50 CFR 17; FR Vol. 64, No. 205, pages 57533-57547, October 25, 1999); and under the CESA (Cal. Fish and Game Code §2068).

- Plants and animals that meet the definition of endangered, rare, or threatened under the CEQA Guidelines §15380 that may include species not found on either State or Federal Endangered Species lists.

- Plants occurring on Ranks 1A, 1B, 2A, 2B, 3, and 4 of CNPS' electronic *Inventory* (CNPS 2001). The California Department of Fish and Wildlife (CDFW) recognizes that Ranks 1A, 1B, 2A and 2B of the CNPS inventory contain plants that, in the majority of cases, would qualify for State listing, and CDFW requests their inclusion in EIRs. Plants occurring on CNPS Ranks 3 and 4 are "plants about which more information is necessary," and "plants of limited distribution," respectively (CNPS 2001). Such plants may be included as special-status species on a case-by-case basis due to local significance or recent biological information (more on CNPS Rank species below).

- Migratory nongame birds of management concern listed by U.S. Fish and Wildlife Service (Migratory Nongame Birds of Management Concern in the United States: The list 1995; Office of Migratory Bird Management; Washington D.C.; Sept. 1995).

- Animals that are designated as "species of special concern" by CDFW (2014).

- Animal species that are "fully protected" in California (Cal. Fish and Game Code §§ 3511, 4700, 5050, and 5515).

- Bat Species that are designated on the Western Bat Working Group's (WBWG) Regional Bat Species Priority Matrix as: "RED OR HIGH." This priority is justified by the

> WBWG as follows: "Based on available information on distribution, status, ecology, and known threats, this designation should result in these bat species being considered the highest priority for funding, planning, and conservation actions. Information about status and threats to most species could result in effective conservation actions being implemented should a commitment to management exist. These species are imperiled or are at high risk of imperilment."

In the paragraphs below we provide further definitions of legal status as they pertain to the special-status species discussed in this report or in the attached tables.

Federal Endangered or Threatened Species. A species listed as Endangered or Threatened under the FESA is protected from unauthorized "take" (that is, harass, harm, pursue, hunt, shoot, trap) of that species. If it is necessary to take a Federal listed Endangered or Threatened species as part of an otherwise lawful activity, it would be necessary to receive permission from the USFWS prior to initiating the take.

State Threatened Species. A species listed as Threatened under the state Endangered Species Act (§2050 of California Fish and Game Code) is protected from unauthorized "take" (that is, harass, pursue, hunt, shoot, trap) of that species. If it is necessary to "take" a state listed Threatened species as part of an otherwise lawful activity, it would be necessary to receive permission from CDFW prior to initiating the "take."

California Species of Special Concern. These are species in which their California breeding populations are seriously declining and extirpation from all or a portion of their range is possible. This designation affords no legally mandated protection; however, pursuant to the CEQA Guidelines (14 CCR §15380), some species of special concern could be considered "rare." Pursuant to its rarity status, any unmitigated impacts to rare species could be considered a "significant effect on the environment" (§15382). Thus, species of special concern must be considered in any project that will, or is currently, undergoing CEQA review, and/or that must obtain an environmental permit(s) from a public agency.

CNPS Rank Species. The CNPS maintains an "Inventory" of special status plant species. This inventory has four lists of plants with varying rarity. These lists are: Rank 1, Rank 2, Rank 3, and Rank 4. Although plants on these lists have no formal legal protection (unless they are also state or federal listed species), CDFW requests the inclusion of Rank 1 species in environmental documents. In addition, other state and local agencies may request the inclusion of species on other lists as well. The Rank 1 and 2 species are defined below:

- Rank 1A: Presumed extinct in California;
- Rank 1B: Rare, threatened, or endangered in California and elsewhere;
- Rank 2A: Plants presumed extirpated in California, but more common elsewhere;
- Rank 2B: Rare, threatened, or endangered in California, but more common elsewhere.

All of the plants constituting Rank 1B meet the definitions of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the Fish and Game Code, and are eligible for state listing (CNPS 2001). Rank 2 species are rare in

California, but more common elsewhere. Ranks 3 and 4 contain species about which there is some concern, and are reviewed by CDFW and maintained on "watch lists."

Additionally, in 2006 CNPS updated their lists to include "threat code extensions" for each list. For example, Rank 1B species would now be categorized as Rank 1B.1, Rank 1B.2, or Rank 1B.3. These threat codes are defined as follows:

- .1 is considered "seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat)";
- .2 is "fairly endangered in California (20-80% of occurrences threatened)";
- .3 is "not very endangered in California (less than 20% of occurrences threatened or no current threats known)."

Under the CEQA review process only CNPS Rank 1 and 2 species are considered since these are the only CNPS species that meet CEQA's definition of "rare" or "endangered." Impacts to Rank 3 and 4 species are not regarded as significant pursuant to CEQA.

Fully Protected Birds. Fully protected birds, such as the white-tailed kite and golden eagle, are protected under California Fish and Game Code (§3511). Fully protected birds may not be "taken" or possessed (i.e., kept in captivity) at any time.

7.2 Potential Special-Status Plant Species on the Project Site

Figure 4 provides a graphical illustration of the closest known records for special-status plants within two miles of the project site and helps readers visually understand the number of sensitive plants that occur in the vicinity of the project site. No special-status plants have been mapped on or adjacent the project site. However, according to the CNPS *Inventory* and CDFW's CNDDB, a total of 31 special-status plant species are known to occur in the region of the project site (Table 3). Most of these plants occur in specialized habitats such as chaparral, coastal scrub, intertidal mudflats, vernal pools, marsh or swamp habitat or on specific soils such as serpentine, sandstone or alkaline soils. However, owing to the excessively disturbed and unnatural conditions found at the project site, special-status plants would not likely occur.

In order to substantiate this premise, M&A conducted special-status plant surveys of the project site in order to document plant communities, note site conditions, and survey for late-blooming special-status plants. M&A biologists conducted surveys on August 29, 2013 and on July 31, 2015, thereby dismissing the presence of several late-season blooming special-status plants that are known to occur in grassland habitats in the region of the project site. Additional surveys will be conducted in April and May of 2016 to address the potential presence of special-status plants that could not be ascertained from the late season surveys. In the absence of focused surveys conducted for early blooming special status plants known from the region in similar habitats, impacts to these plants *are regarded as potentially significant pursuant to the CEQA.* Mitigation could be implemented to reduce these impacts to levels regarded as less than significant pursuant to the CEQA. These plant species are discussed below.

7.2.1 SHINING NAVARRETIA

Shining navarretia (*Navarretia nigelliformis* ssp. *radians*) is a CNPS Rank 1B.2 species. It has no state or federal status. This small annual herb in the phlox family (Polemoniaceae) has yellow flowers with purple or brown spots, and blooms from May through July. Shining navarretia occurs in clay depressions in woodlands and grasslands as well as in vernal pools. The project site provides marginally suitable ruderal/grassland habitat for this species.

The closest record for this species is located four miles southwest of the project site (Occurrence No. 63). The ruderal/grassland habitat that comprises the majority of the project site provides marginal habitat for this species; therefore, the presence of this plant cannot be dismissed without conducting formal surveys. *Pursuant to CEQA, impacts to this plant are considered potentially significant*.

7.2.2 DIAMOND-PETALED CALIFORNIA POPPY

Diamond-petaled California poppy (*Eschscholzia rhombipetala*) is a CNPS Rank 1B.1 species. This plant has no state or federal status. This orange-blooming annual member of the poppy family (*Papaveraceae*) is found in grassland habitats with alkaline or clay soils, at elevations as high as 975 meters. It flowers between March and April.

The project site provides marginally suitable ruderal/grassland habitat for this species. The closest record for this species is located 3.2 miles northwest of the project site (Occurrence No. 3). The ruderal/grassland habitat that comprises the majority of the project site provides marginal habitat for this species; therefore, the presence of this plant cannot be dismissed without conducting formal surveys. *Pursuant to CEQA, impacts to this plant are considered potentially significant*.

7.2.3 LARGE-LEAF STORKSBILL

Large-leaf storksbill (*California macrophylla*) is a CNPS Rank 1B.1 species. It has no state or federal status. Large-leaf storksbill is an annual member of the geranium family (Geraniaceae) that is found in grassland and open woodland habitats with friable clay soils from 49 to 3,937 feet in elevation. It flowers between March and May.

The project site provides marginally suitable ruderal/grassland habitat for this species. The closest record for this species is located 1.6 miles south of the project site (Occurrence No. 48). The ruderal/grassland habitat that comprises the majority of the project site provides marginal habitat for this species; therefore, the presence of this plant cannot be dismissed without conducting formal surveys. *Pursuant to CEQA, impacts to this plant are considered potentially significant*.

7.3 Potential Special-Status Wildlife Species on the Project Site

Figure 4 provides a graphical illustration of the records for special-status species within two miles of the project site and helps readers visually understand the number of sensitive species that occur in the vicinity of the project site. No special-status animal records have ever been mapped on the project site. However, a total of 22 special-status wildlife species are known to occur within five miles of the project site (**Table 4**). Because of the sensitivity of nine special-

status wildlife species known to occur within five miles of the project site, we further discuss these species below. These include California red-legged frog, California tiger salamander (*Ambystoma californiense*), Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), loggerhead shrike, Modesto song sparrow (*Melospiza melodia mailliardi*), western burrowing owl (*Athene cunicularia hypugaea*), western red bat (*Lasiurus blossevillii*), and San Joaquin kit fox (*Vulpes macrotis mutica*).

7.3.1 CALIFORNIA RED-LEGGED FROG

The California red-legged frog was federally listed as threatened on May 23, 1996 (Federal Register 61: 25813-25833) and as such is protected pursuant to the Federal Endangered Species Act. On March 16, 2010 the USFWS issued the final revised designation for California red-legged frog Critical Habitat (USFWS 2010). The project site is located outside USFWS designated critical habitat. The California red-legged frog is also a state "species of special concern."

The California red-legged frog is typically found in ponds, slow-flowing portions of ephemeral, perennial, and in intermittent streams that maintain water in the summer months. This frog is also found in hillside seeps that maintain pool environments or saturated soils throughout the summer months. Populations probably cannot be maintained if all surface water disappears (i.e., no available surface water for egg laying and larval development habitat). Larval California red-legged frogs require 11 to 20 weeks of permanent water to reach metamorphosis (i.e., to change from a tadpole into a frog) (op. cit.), in water depths of 10 to 20 inches (USFWS 2002). Riparian vegetation such as willows and emergent vegetation such as cattails are preferred red-legged frog habitats, though not necessary for this species to be present. Populations of California red-legged frog will be reduced in size or eliminated from ponds supporting non-native species such as bullfrog, Centrarchid fish species (such as sunfish, bluegill, or large-mouth bass), and signal crayfish and red swamp crayfish (*Pacifastacus leniusculus* and *Procambarus clarkii*, respectively), all of which are known California red-legged frog predators. However, the presence of these non-native species does not necessarily preclude the presence of the California red-legged frog.

California red-legged frogs also use upland habitats for migration and dispersal. The USFWS *Recovery Plan for the California Red-Legged Frog* states that frog overland excursions via uplands can vary between 0.25 miles up to three miles during the course of a wet season, and that frogs "have been observed to make long-distance movements that are straight-line, point to point migrations rather than using corridors for moving in between habitats" (USFWS 2002). The USFWS *Recovery Plan for the California Red-Legged Frog* states that populations are "most likely to persist where multiple breeding areas are embedded within a matrix of habitats used for dispersal." "The primary constituent elements for California red-legged frogs are aquatic and upland areas where suitable breeding and non-breeding habitat is interspersed throughout the landscape and is interconnected by unfragmented dispersal habitat" (USFWS 2002).

The closest recorded occurrence of California red-legged frog to the project site is 2.7 miles to the southwest (CNDDB Occurrence No. 933). Six adult California red-legged frogs were observed in Sand Creek at this location in 2005. There is a densely urbanized landscape between this California red-legged frog record and the project site, which constitutes an effective

geographic barrier to California red-legged frog movements to/from the project to extant California red-legged frog populations. There is no hydrologic connectivity over any undeveloped migration route between the known records for this species and the project site. In fact, the project site has no connectivity with any open space, and the drainage feature onsite is isolated without connectivity to any natural drainage.

No California red-legged frogs were seen during diurnal and nocturnal surveys that were conducted on July 14 and July 30, 2015. Sierran treefrogs (*Pseudacris sierra*) were both heard and observed within the drainage channel during the two nocturnal surveys conducted on July 14, 2015 and July 30, 2015. M&A California red-legged frog biologist Mr. Monk believes that the onsite drainage is too heavily silted in to be used by any large frog species successfully. High erosion from the stormwater pipe discharging on the project site is depositing excessive quantities of silt and sediment in the drainage. A dip net could be plunged into the silt layer over two feet deep in August 2015. It visibly had covered tree frog eggs, smothering these eggs, which were apparently not viable. In August, only two inches of water remained above a deep, two-foot plus, silt layer thus removing possible "plunge pool" habitats required by larger frogs such as the California red-legged frog. Unlike Sierran tree frogs, which climb out of pools on vegetation or that float at the surface, the larger Ranid frogs have a most difficult time in deep silty pools. They require plunge pools to escape predators, and once buried in silt have a high likelihood of perishing. Nonnative bullfrogs (*Rana catesbeiana*), will perish quite rapidly in such environments, while native Ranid frogs such as the California red-legged frog can persist longer under such conditions, but ultimately still require plunge pools to escape predators. Based on all the available information, M&A concludes that the drainage on the project site does not provide habitat for the California red-legged frog.

Given the drainage on the project site is of recent origin, has no connectivity with any natural drainage, and is removed from possible overland migration routes of the California red-legged frog, this frog is not expected to occur on the project site. Surveys by a federally permitted California red-legged biologist confirmed the absence of this frog on the project site. *Therefore, the proposed project will not impact the California red-legged frog.*

7.3.2 CALIFORNIA TIGER SALAMANDER

The project site falls into the range of the Central California Distinct Population Segment (DPS) of the California tiger salamander (*Ambystoma californiense*). The Central California DPS of California tiger salamander was federally listed as threatened on August 4, 2004 (USFWS 2004). The U.S. Fish and Wildlife Service (USFWS) designated critical habitat for the Central California DPS in the 2005. The project site is located *outside* of the closest mapped critical habitat for the Central California DPS. On March 4, 2010, California tiger salamander was also state listed as a threatened species under the California Endangered Species Act (CESA).

California tiger salamander occurs in grasslands and open oak woodlands that provide suitable upland over-summering and/or breeding habitats. California tiger salamanders spend the majority of their lives underground. They typically only emerge from their subterranean refugia for a few nights each year during the rainy season to migrate to breeding ponds. Unobstructed migration corridors are important component of California tiger salamander habitat. While adult California tiger salamander have been observed up to 1.3 miles from a breeding site (Sweet, S.

1998 as cited in: USFWS Final Listing Rule, 69 FR 47212.47216), it appears that the vast majority remain within 0.7 mile of a breeding pond (Final Listing Rule, 69 FR 47212; Final Rule Designating Critical Habitat for the California Tiger Salamander, Central Population, 70 FR 39379)(USFWS 2005).

California tiger salamanders emerge during the first heavy, warm rains of the year, typically in late November and early December. In most instances, larger movements of California tiger salamander do not occur unless it has been raining hard and continuously for several hours. Typically, for larger movements of California tiger salamander to occur nighttime temperatures also must be above 48° F. Other factors that encourage larger movements of California tiger salamander to their breeding ponds include flooding of refugia. California tiger salamanders are able to move over, through, or around almost all obstacles. Significant obstructions that block California tiger salamander movements include freeways and other major (heavy traffic) roads, rivers, and deep, vertical sided, concrete irrigation/flood control ditches.

During the spring, summer, and fall months, most known populations of the California tiger salamander predominately use California ground squirrel burrows as over-summering habitat (G. Monk personal observation). Other secondary subterranean refugia, or primary refugia where California ground squirrels are absent, likely include Botta's pocket gopher (*Thomomys bottae*) burrows, deep fissures in desiccated clay soils, and debris piles (e.g. downed wood, rock piles). Stock ponds, seasonal wetlands, and deep vernal pools typically provide most of the breeding habitat used by California tiger salamander. In such locations, California tiger salamander attach their eggs to rooted, emergent vegetation, and other stable filamentous objects in the water column. Eggs are gelatinous and are laid singly or occasionally in small clusters. Eggs range in size from about ¾ the diameter of a dime to the full diameter of a dime. Occasionally California tiger salamander is found breeding in slow moving streams or ditches. Ditches and/or streams that are subject to rapid flows, even if only on occasion, typically will not support or sustain California tiger salamander egg attachments through hatching, and thus, are not usually successfully used by California tiger salamander for breeding. Similarly, streams and/or ditches that support predators of California tiger salamander or their eggs and larvae such as fish, bullfrogs, red swamp crayfish, or signal crayfish, almost never constitute suitable breeding habitat.

In most of the northern range of the California tiger salamander, seasonal wetlands that are used for breeding typically must hold water into the month of May to allow enough time for larvae to fully metamorphose. In dry years, seasonal wetlands may dry too early to allow enough time for California tiger salamander larvae to successfully metamorphose. Under such circumstances, desiccated California tiger salamander larvae can be found in dried pools. In addition, as pools dry down to very small areas of inundation, California tiger salamander larvae become concentrated and are very susceptible to predation. In the past, G. Monk has observed predation in drying pools by red-sided garter snakes (*Thamnophis sirtalis infernalis*), ducks (various spp.), wild pigs (*Sus scrofa*), and raccoons (*Procyon lotor*). However, in years exhibiting wet springs, these same pools can remain inundated long enough through continual rewetting to allow California tiger salamander larvae ample time to successfully metamorphose.

Mr. Geoff Monk is a 10(a)(1)(A) federally permitted and a California Department of Fish and Wildlife permitted California tiger salamander biologist. He has worked with many populations of this salamander in eastern Contra Costa County, and throughout this salamander's range in California for over 25 years. Mr. Monk assessed the potential of the project site to support the California tiger salamander. Mr. Monk concluded that the man-made drainage that receives urban nuisance water year-round on the project site is shallow, excessively silty, and does not otherwise support breeding habitat for California tiger salamanders. There are no other seasonal wetlands on the project site or adjacent to the project site. Thus, there is no suitable breeding habitat for the California tiger salamander on or adjacent to the project site. The project site is surrounded by dense urban development (**Figure 2**). In addition, Highway 4, a major geographical barrier to terrestrial wildlife movements, borders the project site to the east.

The closest known record for California tiger salamander is located 2.1 miles southwest of the project site (CNDDB Occurrence No. 479). That 1998 record location is now under high-density development within a highly urbanized area within the City of Antioch, and therefore this record location is considered extirpated. Regardless, there is extensive dense residential housing, commercial developments, and major roads located between this CNDDB record location and the project site.

The project site is approximately three miles from the closest extant (occupied) California tiger salamander records (CNDDB Occurrence Nos 100, 101, 482, 854, and 856). The densely urbanized landscape between California tiger salamander records and the project site constitutes an effective geographic barrier to California tiger salamander movements to/from the project and extant California tiger salamander populations or other potential breeding habitats within several miles of the project site. Since the project site is completely surrounded by development and the Highway 4 Bypass, it is isolated from any possible overland migration from the closest extant records of this salamander (see **Figure 2**). In light of the facts that the drainage on the project site is of recent origin, has no connectivity with any natural drainage, receives perennial urban run-off, is very shallow, and is removed from any possible overland migration routes of the California tiger salamander, M&A concludes that this salamander does not occur on the project site. *Therefore, the proposed project will not impact the California tiger salamander.*

7.3.3 WHITE-TAILED KITE

The white-tailed kite is a "Fully Protected" species under the California Fish and Game Code (§3511). Fully protected birds may not be "taken" or possessed (i.e., kept in captivity) at any time. It is also protected under the Federal Migratory Bird Treaty Act (16 U.S.C. §§ 703-712). The white-tailed kite is typically found foraging in grassland, marsh, or cultivated fields where there are dense-topped trees or shrubs for nesting and perching. They nest in a wide variety of trees of moderate height and sometimes in tall bushes, such as coyote bush (*Baccharis pilularis*). Native trees used are live and deciduous oaks (*Quercus* spp.), willows (*Salix* spp.), cottonwoods (*Populus* spp.), sycamores (*Platanus* spp.), maples (*Acer* spp.), toyon (*Heteromeles arbutifolia*), and Monterey cypress (*Cupressus macrocarpa*). Although the surrounding terrain may be semi-arid, kites often reside near water sources, where prey is more abundant. The particular characteristics of the nesting site do not appear to be as important as its proximity to a suitable food source (Shuford 1993). Kites primarily hunt small mammals, with California meadow voles (*Microtus californicus*) accounting from between 50-100% of their diet (Shuford 1993).

The nearest CNDDB record for this species is located immediately south of the project site in a nest in a pine tree on the edge of an old orchard (Occurrence No. 87). In 2005 two adults and three juveniles were observed at that location. Ruderal habitat on the project site provides suitable hunting grounds for white-tailed kites, and the willow trees on the project site provide suitable nesting habitat. *Accordingly, impacts to white-tailed kite are regarded as potentially significant pursuant to the CEQA.* Mitigation could be implemented to reduce these impacts to levels regarded as less than significant pursuant to the CEQA. The Impacts and Mitigation Measures that follow in the sections below address these impacts.

7.3.4 WESTERN BURROWING OWL

The western burrowing owl is a California "species of special concern." Its nest, eggs, and young are also protected under California Fish and Game Code (§3503, §3503.5, and §3800). The burrowing owl is also protected from direct take under the Migratory Bird Treaty Act. Finally, based upon this species' rarity status, any unmitigated impacts to rare species would be considered a "significant effect on the environment" pursuant to Section 21068 of CEQA and Section 15382 of the CEQA Guidelines. Thus, this owl species must be considered in any project that will, or is currently, undergoing CEQA review, and/or that must obtain an environmental permit(s) from a public agency. When these owls occur on project sites, typically, mitigation requirements are mandated in the conditions of project approval from the CEQA lead agency.

Burrowing owl habitat is usually found in annual and perennial grasslands, characterized by low-growing vegetation. Often, the burrowing owl utilizes rodent burrows, typically California ground squirrel (*Spermophilus beecheyi*) burrows, for nesting and cover. They may also on occasion dig their own burrows, or use man-made objects such as concrete culverts or rip-rap piles for cover. They exhibit high site fidelity, reusing burrows year after year. Occupancy of suitable burrowing owl habitat can be verified at a site by observation of these owls during the spring and summer months or, alternatively, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement (white wash) at or near a burrow. Burrowing owls typically are not observed in grasslands with tall vegetation or wooded areas because the vegetation obscures their ability to detect avian and terrestrial predators. Since burrowing owls spend the majority of their time sitting at the entrances of their burrows, grazed grasslands seem to be their preferred habitat because it allows them to view the world at 360 degrees without obstructions.

The closest CNDDB records for western burrowing owls is located immediately south of the project site (CNDDB Occurrence No. 981). Two pairs of owls were observed at this location in 2007, and one pair of owls was observed in 2008. There are 19 additional records for this species within two miles of the project site (see Figure 5). There are California ground squirrel burrows scattered throughout the site providing suitable burrows for this species. While M&A did not observe western burrowing owls or any indirect evidence that burrowing owls are using or residing on the project site during site surveys, western burrowing owl is a highly mobile species and could move onto the project site. *Accordingly, impacts to western burrowing owl are regarded as potentially significant pursuant to the CEQA.* Mitigation could be implemented to reduce these impacts to levels regarded as less than significant pursuant to the CEQA. The Impacts and Mitigation Measures that follow in the sections below address these impacts.

7.3.5 SWAINSON'S HAWK

The Swainson's hawk is a state listed threatened species afforded protection pursuant to the CESA. While it has no special federal status, it is protected from direct take under the Federal Migratory Bird Treaty Act. Swainson's hawks, their nests, eggs, and young are also protected under California Fish and Game Code (§3503, §3503.5, §3513, and §3800). Finally, pursuant to CEQA, this hawk would be considered "rare" and impacts to its nest sites would be regarded as significant. Impacts to foraging habitat can be regarded as significant pursuant to the CEQA based upon guidelines provided by the Department of Fish and Wildlife for this raptor species.

The Swainson's hawk is generally a summer visitor to California. In the fall months, most Swainson's hawks migrate to South America before returning to the United States to breed once again in the late spring. There is a small population of Swainson's hawks that remain residents in California year-round. The nesting population of Swainson's hawks in California was reduced considerably over historical nesting populations when the species was afforded protections pursuant to the California Endangered Species Act in 1984. Since that time, the nesting population of Swainson's hawk has significantly recovered in California, as have other raptor species that were previously protected both as State and Federal listed species. Both the peregrine falcon (*Falco peregrinus ssp. anatum*) and the bald eagle (*Haliaeetus leucocephalus*) were similarly listed species under both the State and Federal Endangered Species Acts, but have both been delisted owing to population recovery. The Swainson's hawk nesting population also likely has greatly recovered, but owing to the absence of a thorough population census in California since the species was listed by CDFW, it remains protected pursuant to the CESA.

The Swainson's hawk inhabits open to semi-open areas at low to middle elevations in valleys, dry meadows, foothills, and level uplands (Kochert 1986). It nests almost exclusively in trees and will nest in almost any tree species that is at least 10 feet tall (Schmutz et. al. 1984). Nests are constructed in isolated trees that are dead or alive along drainages and in wetlands, or in windbreaks in fields and around farmsteads (Palmer 1988). Swainson's hawks occasionally nest in shrubs, on telephone poles, and on the ground. In the Central Valley of California, the majority of Swainson's hawk nests and territories are associated with riparian systems and nests are commonly found in cottonwoods and oaks (Schlorff et. al. 1984). They have also been documented nesting in eucalyptus (*Eucalyptus* spp.), black walnut (*Juglans hindsii*), black locust (*Robinia pseudoacacia*), almond (*Prunus dulcis*), Osage orange (*Maclura pomifera*), Arizona cypress (*Cupressus arizonica*) and pine (*Pinus* spp.)(CNDDB records).

Foraging habitats include alfalfa fields, fallow fields, beet, tomato, and other low-growing row or field crops, dry-land and irrigated pasture, and rice land when not flooded (CDFG 1994). The Swainson's hawk generally forages in open habitats with short vegetation containing small mammals, reptiles, birds, and insects. Its primary prey in the Central Valley is California meadow vole (*Microtus californicus*). Agricultural areas are often preferred over more natural grassland habitats due to larger prey populations. In addition, agricultural practices (planting, maintenance, harvesting, disking) allow for access to prey, and very likely increases foraging success of Swainson's hawks when farm equipment flushes prey during harvesting (observed many times by G. Monk). During the nesting season, Swainson's hawks usually forage within two miles of their nests. Swainson's hawk does not require habitats that contain many perches

because it most often searches for prey aerially; therefore it can occupy habitats with few or no perches except the nest tree (James 1992).

The closest CNDDB nesting record for Swainson's hawks is 1.6 miles northwest of the project site (CNDDB Occurrence No. 1804). Nesting was observed at this location in 2008, 2011, 2012 and 2013. No Swainson's hawks have been detected nesting on or adjacent to the project site during site surveys. No suitable nesting trees occur on the project site; however, the trees around the water tanks north of the project site provide suitable nesting habitat. In 2013, M&A biologist Mr. Geoff Monk observed red-tailed hawks nesting on the north side of the water tanks furthest from the project site. Red-tailed hawks are traditional nesters and likely nest at this location every year. As such, Swainson's hawks would not be expected to nest in these trees. The recent colonization of willows along the central ditch does not provide suitable nesting habitat for Swainson's hawk. Regardless, prior to construction, nesting surveys will be conducted that confirm or negate this species' presence as a nesting bird on the project site or within the "area of influence" (generally considered to be approximately 1,000 feet) of the proposed development project to ensure that construction-related activities do not result in impacts to nesting Swainson's hawks. *Accordingly, impacts to Swainson's hawk are regarded as potentially significant pursuant to the CEQA.* Mitigation shall be implemented to reduce these impacts to levels regarded as less than significant pursuant to the CEQA. The Impacts and Mitigation Measures that follow in the sections below address these impacts.

7.3.6 LOGGERHEAD SHRIKE

The loggerhead shrike is a California "species of special concern." It is also protected under the federal Migratory Bird Treaty Act and California Fish and Game Code (§3503 and 3800) that protects birds, their nests, eggs, and young. This small, predaceous bird of open and often arid habitats prefers areas with scattered shrubs, trees, posts, fences, utility lines, and other acceptable perching locations. This shrike preys mostly upon large insects, but also takes small birds, mammals, amphibians, reptiles, fish, carrion, and various invertebrates. It typically constructs a stick nest on a stable branch in a densely foliated tree or shrub. Blackberry (*Rubus* spp.), rose (*Rosa* spp.) and willows (*Salix* spp.) provide nest sites. Site selection is apparently based on the degree of protective cover rather than on a particular plant species (Shuford 1993). Although nest height varies from 1.5 to 30 feet above ground, it is rarely less than three feet (Shuford 1993). There has been a national decline in this species (Burridge 1995). The conversion of rural areas into subdivisions or commercial areas steadily reduces the available habitat for this small, predaceous bird.

The nearest CNDDB record for this species is located 3.1 miles northeast of the project site (Occurrence No. 3). The nest identified in 2003 was located in an ornamental tree near an abandoned house. Ruderal habitat on the project site provides suitable hunting grounds for loggerhead shrikes, and the trees on the project site provide suitable nesting habitat. *Accordingly, impacts to loggerhead shrike are regarded as potentially significant pursuant to the CEQA.* Mitigation could be implemented to reduce these impacts to levels regarded as less than significant pursuant to the CEQA. The Impacts and Mitigation Measures that follow in the sections below address these impacts.

7.3.7 SONG SPARROW "MODESTO" POPULATION

The song sparrow "Modesto" population is a California "species of special concern. This species is endemic to California, residing only in the north-central portion of the Central Valley. The song sparrow inhabits emergent freshwater marshes and vegetated irrigation canals and levees dominated by tules, cattails, and blackberry. This species nests from mid-March to early August in riparian willows and valley oak.

The nearest CNDDB record for this species is located 4.4 miles northwest of the project site (Occurrence No. 91). This record dates from 1901. The project site is likely too far to the west and outside the influence of the central valley to be regarded as likely habitat for the Modesto population of the song sparrow. While suitable nesting and foraging habitat occurs on the project site for song sparrows, it is expected that if a song sparrow occurs on the project site it would be the common song sparrow (*Melospiza melodia*). *Accordingly, impacts to the song sparrow "Modesto" population are regarded as less than significant pursuant to the CEQA.* The Impacts and Mitigation Measures that follow in the sections below that address potential impacts to nesting birds would ensure that even common song sparrow is not impacted by the proposed project.

7.3.8 WESTERN RED BAT

The western red bat is a California "species of special concern." The "species of special concern" status designation does not provide any special legally mandated protection for this bat species. However, this status designation likely meets the definition of "rare." (14 CCR §15380(2)(A)). As such, potential impacts to this bat species should be considered during any CEQA review. Any unmitigated impacts to this species would likely be regarded by CDFW as a significant adverse impact pursuant to CEQA section 21068.

This bat roosts primarily in trees, 2 to 40 feet above the ground, from sea level up through mixed conifer forests. It prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.

The closest CNDDB record for the species is 3.2 miles northwest of the project site (CNDDB Occurrence No. 66). This record dates from 1998. The trees on the project site are small and provide limited cover, and as such provide marginal roosting habitat for the western red bat. They are unlikely to roost on the project site. Regardless, preconstruction surveys will be conducted prior to removing any trees from the project site to ensure that there are no impacts to this special-status bat species. *Accordingly, impacts to western red bat are regarded as potentially significant pursuant to the CEQA.* Mitigation could be implemented to reduce these impacts to levels regarded as less than significant pursuant to the CEQA. The Impacts and Mitigation Measures that follow in the sections below address these impacts.

7.3.9 SAN JOAQUIN KIT FOX

The San Joaquin kit fox is a federally-listed endangered species and is listed by the State of California as threatened. It is the smallest fox species in North America typically weighing between four and six pounds. The San Joaquin kit fox (kit fox) has large ears, long legs, and is generally a buffy tan color with a black-tipped tail. Kit fox live primarily in the lowlands of the San Joaquin Valley of California, but are also known to occur in several counties in the coast mountain

ranges including Santa Barbara, San Luis Obispo, Monterey, San Benito, Santa Clara, Contra Costa and Alameda Counties. This fox species is usually found in open grassland and shrubland communities, but has also been observed in orchards that border grassland or shrubland plant communities.

Kit fox are carnivorous, usually feeding on small rodents such as San Joaquin pocket mice (*Perognathus inornatus*), deer mice (*Peromyscus maniculatus*), western harvest mice (*Reithrodontomys megalotis*), kangaroo rats (*Dipodomys* spp.) and larger rodents such as California ground squirrel. Kit fox also prey upon lagomorphs such as black-tailed hare (*Lepus californicus*) and desert cottontail (*Sylvilagus auduboni*).

This fox species relies on subterranean dens for breeding and escape cover from potential predators. Natal and pupping dens occur in areas with solitary or multiple den openings. Both adults care for pups until they are about four to five months old at which time family bonds begin to dissolve. Dens are excavated in loose-textured soils, generally in areas with low to moderate relief. Kit fox will also utilize existing burrows excavated by rabbits, ground squirrels, badgers (*Taxidea taxus*), and on occasion will use human-made structures for denning such as well casings, culverts, and abandoned pipelines. Typically, dens are small enough to discourage easy predation by coyotes (*Canis latrans*) and red fox (*Vulpes vulpes*).

The closest occurrence of San Joaquin kit fox was recorded in 1995, approximately four miles west of the project site (CNDDB Occurrence No. 21). An urban sea of development occurs between this record location and the project site. In fact the project site has no connectivity with any other open space area that could support a population of San Joaquin kit fox. The likelihood of a San Joaquin kit fox migrating to/through the project site is zero as this fox would not traverse the high-density urban development areas and Highway 4 that surround the project site and otherwise provide an effective migration barrier.

Independently conducted surveys cited in *Relative Abundance of Endangered San Joaquin Kit Fox (Vulpes macrotis mutica) Based on Scat-Detection Dog Surveys* (Smith et. al. 2006) were unable to document presence of San Joaquin kit fox in Contra Costa County. This report suggests that it is likely that San Joaquin kit fox is extirpated from Contra Costa County. Regardless, the densely urbanized landscape surrounding the project site and Highway 4 constitutes an effective geographic barrier to San Joaquin kit fox movements to/from the project. Based on all the available information, it can be concluded that the project site does not provide suitable habitat for the San Joaquin kit fox, and this species is not expected to occur on the project site. *Therefore the proposed project will not impact the San Joaquin kit fox.*

8. REGULATORY FRAMEWORK FOR NATIVE WILDLIFE, FISH, AND PLANTS

This section provides a discussion of those laws and regulations that are in place to protect native wildlife, fish, and plants. Under each law we discuss their pertinence to the proposed development.

8.1 Federal Endangered Species Act

The Federal Endangered Species Act (FESA) forms the basis for the federal protection of threatened or endangered plants, insects, fish and wildlife. FESA contains four main elements; they are as follows:

Section 4 (16 USCA §1533): Species listing, Critical Habitat Designation, and Recovery Planning: outlines the procedure for listing endangered plants and wildlife.

Section 7 (§1536): Federal Consultation Requirement: imposes limits on the actions of federal agencies that might impact listed species.

Section 9 (§1538): Prohibition on Take: prohibits the "taking" of a listed species by anyone, including private individuals, and State and local agencies.

Section 10: Exceptions to the Take Prohibition: non-federal agencies can obtain an incidental take permit through approval of a Habitat Conservation Plan.

In the case of salt water fish and other marine organisms, the requirements of FESA are enforced by the National Marine Fisheries Service (NMFS). The USFWS enforces all other cases. Below, Sections 9, 7, and 10 of FESA are discussed since they are the sections most relevant to the proposed project.

Section 9 of FESA as amended, prohibits the "take" of any fish or wildlife species listed under FESA as endangered. Under Federal regulation, "take" of fish or wildlife species listed as threatened is also prohibited unless otherwise specifically authorized by regulation. "Take," as defined by FESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harm" includes not only the direct taking of a species itself, but the destruction or modification of the species' habitat resulting in the potential injury of the species. As such, "harm" is further defined to mean "an act which actually kills or injures wildlife; such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR 17.3). A December 2001 decision by the 9th Circuit Court of Appeals (*Arizona Cattle Growers' Association, Jeff Menges, vs. the U.S. Fish and Wildlife Service and Bureau of Land Management, and the Southwest Center for Biological Diversity*) ruled that the USFWS must show that a threatened or endangered species is present on a project site and that it would be taken by the project activities. According to this ruling, the USFWS can no longer require mitigation based on the probability that the species could use the site. Rather they must show that it is actually present.

Section 9 applies to any person, corporation, federal agency, or any local or state agency. If "take" of a listed species is necessary to complete an otherwise lawful activity, this triggers the need to obtain a incidental take permit either through a Section 7 Consultation as discussed further below (for federal actions or private actions that are permitted or funded by a federal agency), or requires preparation of a Habitat Conservation Plan (HCP) pursuant to Section 10 of FESA (for state and local agencies, or individuals, and projects without a federal "nexus").

Section 7(a)(2) of the Act requires that each federal agency consult with the USFWS to ensure that any action authorized, funded or carried out by such agency is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of critical habitat for listed species. Critical habitat designations mean: (1) specific areas within a geographic region currently occupied by a listed species, on which are found those physical or biological features that are essential to the conservation of a listed species and that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a listed species that are determined essential for the conservation of the species.

The Section 7 consultation process only applies to actions taken by federal agencies that are considering authorizing discretionary projects. Section 7 is by and between the NMFS and/or the USFWS and the federal agency contemplating a discretionary approval (that is, the "federal nexus agency," for example, the Corps or the Federal Highway Administration). Private parties, cities, counties, etc. (i.e., applicants) may participate in the Section 7 consultation *at the discretion of the federal agencies conducting the Section 7 consultation*. The Section 7 consultation process is triggered by a determination of the "action agency" – that is, the federal agency that is carrying out, funding, or approving a project - that the project "may affect" a listed species or critical habitat. If an action is likely to adversely affect a listed species or designated critical habitat, formal consultation between the nexus agency and the USFWS/NMFS is required. As part of the formal consultation, the USFWS/NMFS may resolve any issues informally with the nexus agency or may prepare a formal Biological Opinion assessing whether the proposed action would be likely to result in "jeopardy" to a listed species or if it could adversely modify designated critical habitat. If the USFWS/NMFS prepares a Biological Opinion it will contain either a "jeopardy" or "non-jeopardy" decision. If the USFWS/NMFS concludes that a proposed project would result in adverse modification of critical habitat or would jeopardize the continued existence of a federal listed species (that is, it will issue a jeopardy decision), the nexus federal agency would be most unlikely to authorize its discretionary permit. If the USFWS/NMFS prepares a "non-jeopardy" Biological Opinion, the nexus federal agency may authorize the discretionary permit making all conditions of the Biological Opinion conditions of its discretionary permit. A non-jeopardy Biological Opinion constitutes an "incidental take" permit that allows applicants to "take" federally listed species while otherwise carrying out legally sanctioned projects.

For non-federal entities, for example private parties, cities, counties that are considering a discretionary permit, Section 10 provides the mechanism for obtaining take authorization. Under Section 10 of FESA, the applicant for an "incidental take permit" is required to submit a "conservation plan" to the USFWS or NMFS that specifies, among other things, the impacts that are likely to result from the taking, and the measures the permit applicant will undertake to minimize and mitigate such impacts, and the funding that will be available to implement those steps. Conservation plans under FESA have come to be known as "habitat conservation plans" or "HCPs" for short. The terms incidental take permit, Section 10 permit, and Section 10(a)(1)(B) permit are used interchangeably by the USFWS. Section 10(a)(2)(B) of FESA provides statutory criteria that must be satisfied before an incidental take permit can be issued.

8.1.1 RESPONSIBLE AGENCY

FESA gives regulatory authority to the USFWS for federally listed terrestrial species and non-anadromous fish. The NMFS has regulatory authority over federally listed marine mammals and anadromous fish.

8.1.2 APPLICABILITY TO THE PROPOSED PROJECT

Several federally listed species are known to occur in the region of the project site, such as the California tiger salamander, California red-legged frog, and the San Joaquin kit fox; however none are expected to occur on the project site and none will be affected by the proposed project. No suitable pools occur on or adjacent to the project site that would support the California red-legged frog or that could provide breeding habitat for the California tiger salamander. The project site is surrounded by high-density development, commercial areas, and has no connectivity with any open space or naturalized landscape. Accordingly, the project site does not support federally listed species (see **Tables 3 and 4**). Thus, the proposed project will have no effects on federally listed species or their mapped critical habitats.

8.2 Federal Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989) makes it unlawful to "take" (kill, harm, harass, shoot, etc.) any migratory bird listed in Title 50 of the Code of Federal Regulations, Section 10.13, including their nests, eggs, or young. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, wading birds, seabirds, and passerine birds (such as warblers, flycatchers, swallows, etc.).

Executive Order 13186 for conservation of migratory birds (January 11, 2001) requires that any project with federal involvement address impacts of federal actions on migratory birds. The order is designed to assist federal agencies in their efforts to comply with the MBTA and does not constitute any legal authorization to take migratory birds. The order also requires federal agencies to work with the USFWS to develop a memorandum of understanding (MOU). Protocols developed under the MOU must promote the conservation of migratory bird populations through the following means:

- avoid and minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions;
- restore and enhance habitat of migratory birds, as practicable; and prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds, as practicable.

8.2.1 APPLICABILITY TO THE PROPOSED PROJECT

While unlikely, white-tailed kite, Swainson's hawk and western burrowing owl could nest on or within a zone of influence of the project site. These raptors (birds of prey) would be protected by the Migratory Bird Treaty Act. Also, loggerhead shrike and common songbirds that could nest on the site would be protected pursuant to this Act. As long as there is no direct mortality of species protected pursuant to this Act caused by development of the site, there should be no constraints to development of the site. To comply with the Migratory Bird Treaty Act, all active nest sites would have to be avoided while such birds are nesting. Upon completion of nesting, the

project could commence as otherwise planned. Please review specific requirements for avoidance of nest sites for potentially occurring species in the Impacts and Mitigations section below.

8.3 **California Endangered Species Act**

8.3.1 SECTION 2081 OF THE STATE ENDANGERED SPECIES ACT

In 1984, the California Endangered Species Act (CESA) (Fish and Game Code §2050) was adopted. The basic policy of CESA is to conserve and enhance endangered species and their habitats. State agencies will not approve private or public projects under their jurisdiction that would impact threatened or endangered species if reasonable and prudent alternatives are available. Because CESA does not have a provision for "harm" (see discussion of FESA, above), CDFW considerations pursuant to CESA are limited to those actions that would result in the direct take of a listed species.

If CDFW determines that a proposed project could impact a state listed threatened or endangered species, CDFW will provide recommendations for "reasonable and prudent" project alternatives. The CEQA lead agency can only approve a project if these alternatives are implemented, unless it finds that the project's benefits clearly outweigh the costs, reasonable mitigation measures are adopted, there has been no "irreversible or irretrievable" commitment of resources made in the interim, and the resulting project would not result in the extinction of the species. In addition, if there would be impacts to threatened or endangered species, the lead agency typically requires project applicants to demonstrate that they have acquired "incidental take" permits from CDFW and/or USFWS (if it is a Federal listed species) prior to allowing/permitting impacts to such species.

If a proposed project would result in impacts to a state listed species, an "incidental take" permit pursuant to Section 2081 of the Fish and Game Code would be necessary (versus a federal incidental take permit for Federal listed species). CDFW will issue an incidental take permit only if:

1) The authorized take is incidental to an otherwise lawful activity;
2) The impacts of the authorized take are minimized and fully mitigated;
3) Measures required to minimize and fully mitigate the impacts of the authorized take:
   a) are roughly proportional in extent to the impact of the taking on the species;
   b) maintain the project applicant’s objectives to the greatest extent possible; and,
   c) capable of successful implementation; and,
4) Adequate funding is provided to implement the required minimization and mitigation measures and to monitor compliance with, and the effectiveness of, the measures.

If an applicant is preparing a habitat conservation plan (HCP) as part of the federal Section10(a) permit process, the HCP might be incorporated into the §2081 permit if it meets the substantive criteria of Section 2081(b). To ensure that an HCP meets the mitigation and monitoring standards in Section 2081(b), an applicant should involve CDFW staff in development of the HCP. If a final Biological Opinion (federal action) has been issued for the project pursuant to

Section 7 of the federal Endangered Species Act, it might also be incorporated into the Section 2081 permit if it meets the standards of Section 2081(b).

Fish and Game Code section 2080.1 allows an applicant who has obtained a "non-jeopardy" federal Biological Opinion pursuant to Section 7 of the FESA, or who has received a federal Section 10(a) permit (federal incidental take permit) pursuant to the FESA, to submit the federal opinion or permit to CDFW for a determination as to whether the federal document is "consistent" with CESA. If after 30 days CDFW determines that the federal incidental take permit is consistent with state law, and that all state listed species under consideration have been considered in the federal Biological Opinion, then no further permit or consultation is required under CESA for the project. However, if CDFW determines that the federal opinion or permit is not consistent with CESA, or that there are state-listed species that were not considered in the federal Biological Opinion, the applicant must apply for a state CESA permit under Section 2081(b). Section 2081(b) is of no use if an affected species is state-listed, but not federally listed.

State and federal incidental take permits are issued on a discretionary basis, and are typically only authorized if applicants are able to demonstrate that impacts to the listed species in question are unavoidable, and can be mitigated to an extent that the reviewing agency can conclude that the proposed impacts would not jeopardize the continued existence of the listed species under review. Typically, if there would be impacts to a listed species, mitigation that includes habitat avoidance, preservation, and creation of endangered species habitat is necessary to demonstrate that projects would not threaten the continued existence of a species. In addition, management endowment fees are usually collected as part of the agreement for the incidental take permit(s). The endowment is used to manage any lands set-aside to protect listed species, and for biological mitigation monitoring of these lands.

8.3.2 Applicability to The Proposed Project

No state listed plant species are expected to occur on the project site and thus, state listed plants will not be impacted by the proposed project (**Table 3**). The San Joaquin kit fox and the California tiger salamander are state listed species. The project site does not provide any suitable San Joaquin kit fox or California tiger salamander habitats. The densely urbanized landscape around the project site constitutes an effective geographic barrier to California tiger salamander and San Joaquin kit fox movements to/from the project. Therefore, the proposed project would not be required to obtain an incidental take permit from the CDFW for impact to CESA protected species.

No Swainson's hawks have been detected nesting on or adjacent to the project site during site surveys. Regardless, prior to construction, nesting surveys will be conducted that confirm or negate this species' presence as a nesting bird on the project site or within the "area of influence" (generally considered to be approximately 1,000 feet) of the proposed development project to ensure that construction-related activities do not result in impacts to nesting Swainson's hawks. If this hawk were to be found nesting on or within a zone of influence of the project, the applicant could be required to obtain an Incidental Take Permit from CDFW pursuant to Section 2081 of the Fish and Game Code.

8.4 California Fish and Game Code § 3503, 3503.5, 3511, and 3513

California Fish and Game Code sections 3503, 3503.5, 3511, and 3513 prohibit the "take, possession, or destruction of birds, their nests or eggs." Disturbance that causes nest abandonment and/or loss of reproductive effort (killing or abandonment of eggs or young) is considered "take." Such a take would also violate federal law protecting migratory birds (Migratory Bird Treaty Act).

All raptors (that is, hawks, eagles, owls), their nests, eggs, and young are protected under California Fish and Game Code (§3503.5). Additionally, "fully protected" birds, such as the white-tailed kite (*Elanus leucurus*) and golden eagle (*Aquila chrysaetos*), are protected under California Fish and Game Code (§3511). "Fully protected" birds may not be taken or possessed (that is, kept in captivity) at any time.

8.4.1 Applicability to the Proposed Project

Raptors that could be impacted by the project include white-tailed kite, Swainson's hawk and western burrowing owl. Preconstruction surveys would be conducted for these species to ensure that there is no direct take of these birds including their eggs, or young. Any active nests that may found during preconstruction surveys would have to be avoided by the project. Suitable non-disturbance buffers would have to be established around nest sites until the nesting cycle is complete. More specifics on the size of buffers are provided below in the Impacts and Mitigations section.

8.5 City of Antioch General Plan Biological Resources Policies:

Below we provide language from the portions of the City's General Plan that pertain to the biological resources. Chapter 10 of the 2003 *City of Antioch General Plan* is entitled the "Biological Resources Objective" and addresses Biological Resources Policies, including:

a. Comply with the Federal policy of no net loss of wetlands through avoidance and clustered development. Where preservation in place is found not to be feasible (such as where a road crossing cannot be avoided, or where shore stabilization or creation of shoreline trails must encroach into riparian habitats), require 1) on-site replacement of wetland areas, 2) off-site replacement, or 3) minimum ratio of one acre of replacement/restoration for each acre of impacted onsite habitat, such that the value of impacted habitat is replaced.

b. Preserve in place and restore existing wetlands and riparian resources along the San Joaquin River and other natural streams in the Planning Area, except where a need for structural flood protection is unavoidable.

c. Require appropriate setbacks adjacent to natural streams to provide adequate buffer areas ensuring the protection of biological resources, including sensitive natural habitat, special-status species habitats and water quality protection.

d. Through the project approval and environmental review processes, require new development projects to protect sensitive habitat areas, including, but not limited to, oak woodlands, riparian

woodland, vernal pools, and *native* grasslands. Ensure the preservation in place of habitat areas found to be occupied by state and federally protected species.

> If impacts to sensitive habitat areas are unavoidable, appropriate compensatory mitigation shall be required off-site within eastern Contra Costa County. Such compensatory mitigation shall be implemented through the provisions of a Resource Management Plan ("RMP") as described in Policy 10.3.2.e, except where, in the discretion of the Community Development Director, an RMP is not necessary or appropriate due to certain characteristics of the site and the project. Among the factors that are relevant to determining whether an RMP is necessary or appropriate for a given project are the size of the project and the project site, the location of the project (e.g., proximity to existing urban development or open space), the number and sensitivity of biological resources and habitats on the project site, and the nature of the project (e.g., density and intensity of development).
>
> Where preserved habitat areas occupy areas that would otherwise be graded as part of a development project facilitate the transfer of allowable density to other, non-sensitive portions of the site.

e. Limit uses within preserve and wilderness areas to resource-dependent activities and other uses compatible with the protection of natural habitats (e.g., passive recreation and public trails).

f. Through the project review process, review, permit the removal of healthy, mature oak trees on a case-by-case basis only where it is necessary to do so.

g. Preserve heritage trees throughout the Planning Area.

h. Within areas adjacent to preserve habitats, require the incorporation of native vegetation and avoid the introduction of invasive species in the landscape plans for new development.

i. Design drainage within urban areas so as to avoid creating perennial flows within intermittent streams to prevent fish and bullfrogs from becoming established within a currently intermittent stream.

j. Whenever a biological resources survey is undertaken to determine the presence or absence of a threatened or endangered species, or of a species of special concern identified by the U.S. Fish and Wildlife Service or the California Department of Fish and Wildlife, require the survey to follow established protocols for the species in question prior to any final determination that the species is absent from the site.

8.5.1 APPLICABILITY TO THE PROPOSED PROJECT

The majority of the property is characterized by non-native (ruderal) habitat and therefore would not be considered a "natural habitat area." The project site does not support significant trees, natural vegetation, or wildlife populations or important wildlife habitats, or any significant corridors for wildlife migration.

The applicant is proposing to mitigate for project-related impacts to 1.35 acres of 1602 jurisdiction (ditch and associated riparian vegetation) via the purchase of mitigation credits at the Cosumnes River Preserve, or at an alternative mitigation bank approved by CDFW, at a one-to-one (1:1) ratio consistent with the City's policy.

8.6 City of Antioch Tree Ordinance

Article 12 of the City of Antioch's Tree Preservation and Regulation provides for the protection and preservation of certain trees in the City and requires a permit to remove or destroy a tree.

As discussed below, there are six categories of "trees" defined in the City of Antioch's Tree Ordinance.

ESTABLISHED TREE. This shall be any tree that is at least 10 inches in diameter, as measured four and one half feet above natural or finished grade.

INDIGENOUS TREE. This shall be a naturally growing tree of the following species:

- Blue Oak (*Quercus douglasii*)
- Valley Oak (*Quercus lobata*)
- Coast Live Oak (*Quercus agrifolia*)
- Canyon Live Oak (*Quercus chrysolepis*)
- Interior Live Oak (*Quercus wislizenii*)
- California Buckeye (*Aesculus californica*)
- California Bay (*Umbellularia californica*)

LANDMARK TREE. This shall be any tree that is at least 48 inches in diameter and/or in excess of 40 feet in height.

MATURE TREE. This shall be any tree that is at least 26 inches in diameter, as measured four and one-half feet above natural grade.

PROTECTED TREE. This shall be defined as any of the following:

(a) Any tree required to be preserved as a condition of an approval from a "regular development application" as defined by this section, and/or any tree that is shown to be preserved on an approved development plan as submitted by the applicant and subsequently approved by the city.
(b) All established indigenous trees as defined by this section.
(c) All street trees as defined by this section.
(d) All mature and landmark trees as defined by this section.

STREET TREE. This shall be any tree planted within either the public right-of-way and/or tree planting easement, where applicable.

Approval is required to remove any trees within the City of Antioch, as detailed below:

(A) Permit or development application. Except as provided below, it is unlawful to destroy or remove any established tree on any property within the city without either:

(1) Obtaining a tree removal permit from the Department of Parks, Leisure and Community Services; or

(2) Receiving approval to remove such trees as part of the regular development application process.

(B) Penalty. A person who either removes or destroys an established tree prior to obtaining the required permits and/or approvals, or deliberately damages an established tree so that its removal is then necessitated for public safety, is subject to the penalties of this chapter and code.

(C) Exceptions. The following trees may be removed without either a tree removal permit and/or regular development application:

(1) If the condition of any tree presents an immediate hazard to life and/or property its removal may be authorized by the City Engineer.

(2) Other than for protected trees as defined by this article, trees on developed residential properties may be removed without a permit.

In accordance with the City's tree ordinance, this section outlines the conditions which encourage the preservation of trees while allowing for the removal of trees in conjunction with property development:

(A) Request for tree removal incorporated into regular development application. If any established trees are on the subject property, the following information shall be provided with the regular development application.

(1) A site plan showing the existing topography with location of all established trees, clearly labeling those trees which are proposed for either saving or removal.
(2) A description of all established trees on the property, including the size (in diameter), estimated height, species, and relative condition (i.e., healthy vs. in decline).
(3) A written statement requesting permission to remove the subject tree(s) providing the reason for the request.

(B) Action on tree removal request by decision-making body. Approval or denial of the tree removal request will be made as part of the regular development application process. As part of the discretionary project review process, the decision-making body may require the preservation of a tree proposed for removal and conversely may condition the removal of a tree. Decisions to preserve and/or remove will be based on the following factors:

1) The highest priority will be placed on the preservation of landmark and indigenous trees as defined by this chapter. Mature and established trees shall generally be preserved in respective order, although tree appearance, species and aesthetic compatibility with the proposed project are additional factors to be considered.

(C) Need of an expert opinion. Anytime during the project review process, the city may commission a certified arborist, at the applicant's expense, to provide a report on the health of a tree that the applicant requests permission to remove solely for reasons based on the alleged health of the tree such as the creation of a hazard to future circulation, buildings and/or utilities. Other factors may include the relative health and the age of the tree and its likelihood of long term survival.

(E) Required plus prior to initiating development. Prior to the granting of a building and/or grading permit, the applicant shall provide a site plan showing all protected trees as defined by this chapter. There is to be no excavation within the drip line of such trees with the drip line to be clearly shown in all grading and layout plans.

(1) Required plans and additional arborist studies. There is to be no excavation within the drip line of such trees unless specific plans are to be submitted to the Department of Community Development staff that indicates how grading within the drip is to be carried out without critically harming the tree. Additional arborist's studies must be provided to support the grading proposed.

(2) Bonding for protected trees where grading will occur within the drip line. Prior to the granting of a building and/or grading permit, the developer shall post a bond for each protected tree at which grading will occur within the drip line. The bonding schedule will be as listed under section "bonds and penalties." The city will conduct ongoing inspections during the course of the grading to assure adherence to approved plans. Should the tree(s) die "during the course of property development" as defined by this chapter, the bond shall be forfeited to the city and used for tree replacement. A percentage of the bond will be retained in either case to assure tree survival for up to five years after the issuance of a certificate of occupancy.

(G) Protection of trees during construction. Unless specific exceptions are granted prior to the initiation of construction, all construction activity and traffic shall be prohibited from the area within the drip line of a protected tree. Should the tree(s) die "during the course of property development" as defined by this chapter, the applicable penalties of this chapter shall be levied.

(H) Damage of protected tree during construction. Should a protected tree be damaged during site development, the developer shall administer all reasonable methods of treatments as approved by the Director of Community Development. The repair of the damage shall be at the expense of the developer. In addition, the city may require the posting of a bond pursuant to the requirements of this section.

In accordance with the City's tree ordinance, established tree preservation and/or removal in conjunction with property development entails the following mitigation.

J) Replacement of trees that were legally removed.

(1) All trees that are legally removed shall be replaced according to the following schedule:

(a) Each established tree: two 24 inch box trees.

(b) Each mature tree: two 48 inch box trees.

(2) Legally removed indigenous and land-mark trees shall be replaced by boxed specimens at a rate and size to be established by the decision-making body at the time of regular development application approval.

8.6.1 APPLICABILITY TO THE PROPOSED PROJECT

The applicant will need to request a tree removal permit as part of the regular development application. Since there are protected trees on the project site, the following information will be provided with the regular development application:

(1) A site plan showing the existing topography with location of all established trees, clearly labeling those trees which are proposed for either saving or removal.

(2) A description of all established trees on the property, including the size (in diameter), estimated height, species, and relative condition (i.e., healthy vs. in decline).

(3) A written statement requesting permission to remove the subject tree(s) providing the reason for the request.

The proposed project will remove 14 trees which are all native species. There are 9 Arroyo willows (*Salix lasiolepis*) and 5 red willows (*Salix laevigata*) slated for removal which, though native species, are not defined by the City as "indigenous." Eight of these willows are considered established. All willows are of recent origin, and have germinated and grown in the onsite ditch over the last 5-6 years. None have large stature. In total, 14 indigenous trees are currently identified for removal.

Removal of established and indigenous trees on this project site will require a tree removal permit from the City of Antioch and the planting of replacement trees. Please see the discussion above on tree removal permits to determine what information must be provided to the City of Antioch and what mitigation is required by the tree ordinance.

Impacts to these established native trees will be addressed in a tree removal permit application submitted to the City of Antioch. Mitigation measures below address impacts to established trees and required mitigation in further detail.

9. REGULATORY REQUIREMENTS PERTAINING TO WATERS OF THE UNITED STATES AND STATE

This section presents an overview of the criteria used by the U.S. Army Corps of Engineers, the California Regional Water Quality Control Board, the State Water Resources Control Board, and CDFW to determine those areas within a project area that would be subject to their regulation.

9.1 U.S. Army Corps of Engineers Jurisdiction and General Permitting

9.1.1 SECTION 404 OF THE CLEAN WATER ACT

Congress enacted the Clean Water Act "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters" (33 U.S.C. §1251(a)). Pursuant to Section 404 of the Clean Water Act (33 U.S.C. §1344), the U.S. Army Corps of Engineers (Corps) regulates the disposal of dredged or fill material into "waters of the United States" (33 CFR Parts 328 through 330). This requires project applicants to obtain authorization from the Corps prior to discharging dredged or fill materials into any water of the United States.

In the Federal Register "waters of the United States" are defined as, "...all interstate waters including interstate wetlands...intrastate lakes, rivers, streams (including intermittent streams), wetlands, [and] natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce..." (33 CFR § 328.3).

Limits of Corps' jurisdiction:

(a) Territorial Seas. The limit of jurisdiction in the territorial seas is measured from the baseline in a seaward direction a distance of three nautical miles. (33 CFR § 329.12)

(b) Tidal Waters of the United States. The landward limits of jurisdiction in tidal waters:

(1) Extends to the mean high tide line, or
(2) When adjacent non-tidal waters of the United States are present, the jurisdiction extends to the limits identified in paragraph (c) of this section.

(c) Non-Tidal Waters of the United States. The limits of jurisdiction in non-tidal waters:

(1) In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or
(2) When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands.
(3) When the water of the United States consists only of wetlands the jurisdiction extends to the limit of the wetland.

Section 404 jurisdiction in "other waters" such as lakes, ponds, and streams, extends to the upward limit of the ordinary high water mark (OHWM) or the upward extent of any adjacent wetland. The OHWM on a non-tidal water is:

- the "line on shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR §328.3[e]).

Wetlands are defined as: "...those areas that are inundated or saturated by surface or ground water at a frequency and duration to support a prevalence of vegetation adapted for life in saturated soil conditions" (33 CFR §328.8 [b]). Wetlands usually must possess hydrophytic vegetation (i.e., plants adapted to inundated or saturated conditions), wetland hydrology (e.g., topographic low areas, exposed water tables, stream channels), and hydric soils (i.e., soils that are periodically or permanently saturated, inundated or flooded) to be regulated by the Corps pursuant to Section 404 of the Clean Water Act.

9.1.1.1 Significant Nexus of Tributaries

On December 2, 2008, the Corps and the Environmental Protection Agency (EPA) issued joint guidance on implementing the U.S. Supreme Court decision in the consolidated cases *Rapanos v. United States* and *Carabell v. United States* (herein referred to simply as "Rapanos") which address the jurisdiction over waters of the United States under the Clean Water Act.

The EPA and Corps will assert jurisdiction over the following waters:

- Traditional navigable waters
- Wetlands adjacent to traditional navigable waters
- Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (for example, typically three months).
- Wetlands that directly abut such tributaries.

The agencies generally will not assert jurisdiction over the following features:

- Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow); and
- Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water.

The agencies will apply the significant nexus standard as follows:

- A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical and biological integrity of downstream traditional navigable waters; and

- Significant nexus includes consideration of hydrologic and ecologic factors.

9.1.1.2 Isolated Areas Excluded from Section 404 Jurisdiction

In addition to areas that may be exempt from Section 404 jurisdiction, some isolated wetlands and waters may also be considered outside of Corps jurisdiction as a result of the Supreme Court's decision in *Solid Waste Agency of Northern Cook County (SWANCC) v. United States Army Corps of Engineers* (531 U.S. 159 [2001]). Isolated wetlands and waters are those areas that do not have a surface or groundwater connection to, and are not adjacent to a navigable "waters of the U.S.," and do not otherwise exhibit an interstate commerce connection.

9.1.1.3 Permitting Corps Jurisdictional Areas

To remain in compliance with Section 404 of the Clean Water Act, project proponents and property owners (applicants) are required to be permitted by the Corps prior to discharging or otherwise impacting waters of the United States. In many cases, the Corps must visit a proposed project area (to conduct a "jurisdictional determination") to confirm the extent of area falling under their jurisdiction prior to authorizing any permit for that project area. Typically, at the time the jurisdictional determination is conducted, applicants (or their representative) will discuss the appropriate permit application that would be filed with the Corps for permitting the proposed impact(s) to "waters of the United States."

Pursuant to Section 404 of the Clean Water Act, the Corps normally provides two alternatives for permitting impacts to the type of "waters of the United States" found in the project area. The first alternative would be to use Nationwide Permit(s) (NWP). The second alternative is to apply to the Corps for an Individual Permit (33 CFR §235.5(2)(b)). The application process for Individual Permits is extensive and includes public interest review procedures (i.e., public notice and receipt of public comments) and must contain an "alternatives analysis" that is prepared pursuant to Section 404(b) of the Clean Water Act (33 U.S.C. §1344(b)). The alternatives analysis is also typically reviewed by the federal EPA and thus brings another resource agency into the permitting framework. Both the Corps and EPA take the initial viewpoint that there are practical alternatives to the proposed project if there would be impacts to waters of the U.S., and the proposed permitted action is not a water dependent project (e.g. a pier or a dredging project). Alternative analyses therefore must provide convincing reasons that the proposed permitted impacts are unavoidable. Individual Permits may be available for use in the event that discharges into regulated waters fail to meet conditions of NWP(s).

Nationwide permits or NWPs are a type of general permit administered by the Corps and issued on a nationwide basis. NWPs that authorize minor activities that affect Corps regulated waters. Under a NWP, if certain conditions are met, the specified activities can take place without the need for an individual or regional permit from the Corps (33 CFR §235.5[c][2]). In order to use NWP(s), a project must meet 27 general nationwide permit conditions, and all specific conditions pertaining to the NWP being used (as presented at 33 CFR §330, Appendices A and C). It is also important to note that pursuant to 33 CFR section 330.4(e), there may be special regional conditions or modifications to NWPs that could have relevance to individual proposed projects. Finally, pursuant to 33 CFR section 330.6(a), nationwide permittees may, and in some cases must, request from the Corps confirmation that an activity complies with the terms and conditions of the NWP intended for use (*i.e.,* must receive "verification" from the Corps).

Prior to finalizing design plans, the applicant needs to be aware that the Corps maintains a policy of "no net loss" of wetlands (waters of the United States) from project area development. Therefore, it is incumbent upon applicants that propose to impact Corps regulated areas to submit a mitigation plan that demonstrates that impacted regulated areas would be recreated (*i.e.*, impacts would be mitigated). Typically, the Corps requires mitigation to be "in-kind" (i.e., if a stream channel would be filled, mitigation would include replacing it with a new stream channel), and at a minimum of a 1:1 replacement ratio (i.e., one acre or fraction there of recreated for each acre or fraction thereof lost). Often a 2:1 replacement ratio is required. Usually the 2:1 ratio is met by recreation or enhancement of an equivalent amount of wetland as is impacted, in addition to a requirement to preserve an equivalent amount of wetland as is impacted by the project. In some cases, the Corps allows "out-of-kind" mitigation if the compensation site has greater value than the impacted site. For example, if project designs call for filling an intermittent drainage, mitigation should include recreating the same approximate jurisdictional area (same drainage widths) at an offsite location or on a set-aside portion of the project area. Finally, there are many Corps approved wetland mitigation banks where wetland mitigation credits can be purchased by applicants to meet mitigation compensation requirements. Mitigation banks have defined service areas and the Corps may only allow their use when a project would have minimal impacts to wetlands.

9.1.2 Applicability to the Proposed Project

A wetland delineation was conducted in February of 2014 by Olberding Environmental, Inc. The Corps conducted a site verification visit on May 5, 2015. The Jurisdictional Delineation Map is provided in **Attachment C**. The Corps determined that there is 1.33 acres of "isolated" non-jurisdictional wetlands and 0.05 acre of "isolated" non-jurisdictional other waters on the project site. In *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, the U.S. Supreme Court ruled that the U.S. Army Corps of Engineers exceeded its authority under the Clean Water Act when it regulated discharges of fill material into "isolated" waters used as habitat by migratory birds. Therefore, the drainage (other waters) and seasonal wetlands on the project site, which were determined to be "isolated" by the Corps, are not subject to the Corps' jurisdiction pursuant to Section 404 of the Clean Water Act, and no mitigation will be required.

9.2 State Water Resources Control Board (SWRCB) / California Regional Water Quality Control Board (RWQCB)

9.2.1 Section 401 of the Clean Water Act

The SWRCB and RWQCB regulate activities in "waters of the U.S." and waters of the state through Section 401 of the Clean Water Act. While the Corps administers a permitting program that authorizes impacts to waters of the United States, including wetlands and other waters, any Corps permit authorized for a proposed project would be inoperative unless it is a NWP that has been certified for use in California by the SWRCB, or if the RWQCB has issued a project specific certification or waiver of water quality pursuant to Section 401 of the Clean Water Act. Certification of NWPs requires a finding by the SWRCB that the activities permitted by the NWP will not violate water quality standards individually or cumulatively over the term of the permit (the term is typically for five years). Certification must be consistent with the requirements of the federal Clean Water Act, the California Environmental Quality Act, the California Endangered Species Act, and the SWRCB's mandate to protect beneficial uses of waters of the State. Any

denied (i.e., not certified) NWPs, and all Individual Corps permits, would require a project specific RWQCB certification of water quality.

Additionally, if a proposed project would impact waters of the State, including wetlands, the project applicant must demonstrate that the project is unable to avoid these adverse impacts, or water quality certification will most likely be denied. Section 401 Certification may also be denied based on significant adverse impacts to waters of the United States/State, including wetlands. The RWQCB has also adopted the Corps' policy that there shall be "no net loss" of wetlands. Thus, prior to certifying water quality, the RWQCB will impose avoidance mitigation requirements on project proponents that impact waters of the State.

There are nine RWQCBs. The proposed project is located with the Central Valley RWCQB's jurisdiction.

9.2.2 Applicability to the Proposed Project

The applicant submitted an application for waste discharge requirements and certification of water quality to the Central Valley RWQCB on May 1, 2015. Responding to that application, on September 17, 2015, the RWQCB sent a letter to the applicant stating that water quality certification would not be required given a 404 permit is not being required. Further, the RWQCB's letter stated that the discharge (fill) to the isolated wetland/water feature to repair and complete the storm drain system is a minor discharge and therefore, is not subject to waste discharge requirements. Finally, the RWQCB concluded it would take no further action on the project, thus, its letter constitutes a waiver of waste discharge requirements for the project. The RWQCB letter is provided as **Attachment D.**

9.2.3 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Cal. Water Code § 13000 et seq.) requires that "any person discharging waste, or proposing to discharge waste, that could affect the waters of the State to file a report of discharge" with the RWQCB through an application for waste discharge (Water Code § 13260(a)(1).) The term "waters of the State" is defined as any surface water or groundwater, including saline waters, within the boundaries of the State (Water Code § 13050(e)). It should be noted that pursuant to the Porter-Cologne Water Quality Control Act, the RWQCB also regulates "isolated wetlands," or those wetlands considered to be outside of the Corps' jurisdiction pursuant to the SWANCC decision (see Corps Section above).

The RWQCB generally considers filling in waters of the State to constitute "pollution." Pollution is defined as an alteration of the quality of the waters of the state by waste that unreasonably affects its beneficial uses (Water Code §13050(1)). The RWQCB litmus test for determining if a project should be regulated pursuant to the Porter-Cologne Water Quality Control Act is if the action could result in any "threat" to water quality.

The RWQCB requires complete pre- and post-development Best Management Practices Plan (BMPs) of any portion of the project site that is developed. This means that a water quality treatment plan for the pre- and post-developed project site must be prepared and implemented. Preconstruction requirements must be consistent with the requirements of the National Pollutant Discharge Elimination System (NPDES). That is, a *Stormwater Pollution Prevention Plan*

(SWPPP) must be developed prior to the time that a site is graded (see NPDES section below). In addition, a post construction BMPs plan, or a Stormwater Management Plan (SWMP) must be developed and incorporated into any site development plan.

9.2.4 APPLICABILITY TO THE PROPOSED PROJECT

The applicant will have to develop a SWMP that otherwise complies with the National Pollutant Discharge Elimination System C.3 requirements (See Section 8.3 below for further detail). As the City of Antioch is a National Pollutant Discharge Elimination System Phase I MS-4 permittee, the City is responsible for ensuring that the project remains in compliance with the NPDES through applicant development and implementation of a SWMP. Implementation of the SWMP will otherwise ensure that the project will remain in compliance with both the Clean Water Act and the Porter-Cologne Water Quality Control Act.

9.2.5 NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

In 1972 the Clean Water Act was amended to state that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with an NPDES permit. The 1987 amendments to the Clean Water Act added Section 402(p), which establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES Program.

Improving the quality of site runoff is necessary to improve water quality in impaired and threatened streams, rivers, and lakes (that is, water bodies on the EPA's 303(d) list). The RWQCB prioritizes the water bodies on the 303(d) list according to potential impacts to beneficial uses. Beneficial uses can include a wide range of uses, such as nautical navigation; wildlife habitat; fish spawning and migration; commercial fishing, including shellfish harvesting; recreation, including swimming, surfing, fishing, boating, beachcombing, and more; water supply for domestic consumption or industrial processes; and groundwater recharge, among other uses. The State is required to develop action plans and establish Total Maximum Daily Loads (TMDLs) to improve water quality within these impaired water bodies. The TMDL is the quantity of a pollutant that can be safely assimilated by a water body without violating the applicable water quality standards.

The uncontrolled discharge of pollutants into impaired water bodies is considered particularly detrimental. According to the U.S. Environmental Protection Agency (USEPA), sediment is one of the most widespread pollutants contaminating U.S. rivers and streams. Sediment runoff from construction sites is 10 to 20 times greater than from agricultural lands and 1,000 to 2,000 times greater than from forest lands. Consequently, the discharge of stormwater from large construction sites is regulated by the RWQCB under the federal CWA and California's Porter-Cologne Water Quality Control Act. Pursuant to the CWA, the RWQCB regulates construction discharges under the National Pollutant Discharge Elimination System (NPDES).

The project sponsor of construction or other ground-disturbing activities must obtain coverage under NPDES Construction General Permit Order 2009-0009-DWQ (the General Construction

Permit), administered and enforced by the nine RWQCB.[1] More specifically, the Construction General Permit requires all dischargers where construction activity disturbs *greater than one acre of land or those sites less than one acre that are part of a common plan of development* that disturbs more than one acre of land surface to:

1. Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from contacting stormwater with the intent of keeping all products of erosion from moving off site into receiving waters.

2. Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the nation. Achieve quantitatively-defined (i.e., numeric) pollutant-specific discharge standards, and conduct much more rigorous monitoring based on the project's projected risk level.

3. Perform inspections of all BMPs.

Types of Construction Activity Covered by the Construction General Permit

- Clearing,
- Grading,
- Disturbances to the ground such as stockpiling, or excavation that results in soil disturbances of at least one acre or more of total land area.

Construction activity that results in soil disturbances to less than one acre would still be subject to this General Permit if the construction activity is part of a larger common plan of development that encompasses greater than one acre of soil disturbance, or if there is significant water quality impairment resulting from the activity.

Construction activity does not include:

- Routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility,
- Disturbances to land surfaces solely related to agricultural operations (e.g., disking, harrowing, terracing, leveling, and soil preparation), or
- Emergency construction activities required to protect public health and safety.

The State Water Board's new quantitative standards (Order 2009-0009-DWQ) take a two-tiered approach, depending on the risk level associated with the site in question. Exceedance of a benchmark Numeric Action Level ("NAL") measured in terms of pH and turbidity (a measure related to both the amount of sediment in and the velocity of site runoff) triggers an additional obligation to implement additional BMPs and corrective action to improve SWPPP performance.

[1] CGP Order 2009-0009-DWQ remains in effect, but has been amended by CGP Order 2009-0014-DWQ, effective February 14, 2011, and CGP Order 2009-0016-DWQ, effective July 17, 2012. The first amendment merely provided additional clarification to Order 2009-0009-DWQ, while Order 2009-0016-DWQ eliminated numeric effluent limits on pH and turbidity (except in the case of active treatment systems), in response to a legal challenge to the original order.

New minimum BMPs include Active Treatment Systems, which may be necessary where traditional erosion and sediment controls do not effectively control accelerated erosion; where site constraints inhibit the ability to construct a correctly-sized sediment basin; where clay and/or highly erosive soils are present; or where the site has very steep or long slope lengths.

In addition, the Construction General Permit includes several "post-construction" requirements. These requirements entail that site designs provide no net increase in overall site runoff and match pre-project hydrology by maintaining runoff volume and drainage concentrations. To achieve the required results where impervious surfaces such as roofs and paved surfaces are being increased, developers must implement non-structural off-setting BMPs, such as landform grading, site design BMPs, and distributed structural BMPs (bioretention cells, rain gardens, and rain cisterns). This "runoff reduction" approach is essentially a State Water Board-imposed regulatory requirement to implement Low Impact Development ("LID") design features. Volume that cannot be addressed using non-structural BMPs must be captured in structural BMPs that are approved by the RWQCB.

9.2.6 Applicability to The Proposed Project

Excavation and other soil-disturbing activities associated with the project could potentially affect water quality as a result of erosion of sediment. In addition, leaks from construction equipment; accidental spills of fuel, oil, or hazardous liquids used for equipment maintenance; and accidental spills of construction materials are all potential sources of pollutants that could degrade water quality. Therefore, the project will be required to comply with the Construction General Permit since it will be disturbing more than one acre of land.

To obtain coverage under NPDES Construction General Permit Order 2009-0009-DWQ, the applicant must electronically file a number of permit-related compliance documents (Permit Registration Documents (PRDs), including a Notice of Intent (NOI), a risk assessment, site map, signed certification, Stormwater Pollution Prevention Plan (SWPPP), and other site-specific PRDs that may be required. The PRDs must be prepared by a Qualified SWPPP Practitioner (QSP) or Qualified SWPPP Developer (QSD) and filed by a Legally Responsible Person (LRP) on the RWQCB's Stormwater Multi-Application Report Tracking System (SMARTS). SWPPPs are typically prepared by civil engineers, professional hydrologists, engineering geologists, or landscape architects. Once filed, these documents become immediately available to the public for review and comment. At a minimum, the SWPPP shall identify Best Management Practices (BMPs) for implementation during project construction that are in accordance with the applicable guidance and procedures contained in the California Stormwater Quality Association's *California Stormwater Best Management Practices Handbook* (2015).

Construction stormwater BMPs are intended to minimize the migration of sediments offsite. They can include:

- covering soil stockpiles,
- sweeping soil from streets or other paved areas,
- performing site-disturbing activities in dry periods,
- planting vegetation or landscaping quickly after disturbance to stabilize soils.

Other typical stormwater BMPs include erosion reduction controls such as installing hay bales, water bars, covers, sediment fences, sensitive area access restrictions, vehicle mats in wet areas, geotextile blankets, fiber rolls, temporary slope drains, mulching of exposed areas, vehicle mats in wet areas, and other erosion-reducing features, and retention/settlement ponds.

When construction is complete or when ownership of the site is being transferred, the LRP must file a Notice of Termination (NOT) with the applicable Regional Board.

9.3 RWQCB Municipal Storm Water Permitting Program

The Municipal Storm Water Permitting Program regulates storm water discharges from municipal separate storm sewer systems (MS4s). MS4 permits were issued in two phases. Under Phase I, which started in 1990, the RWQCBs adopted NPDES storm water permits for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 people) municipalities. Most of these permits are issued to a group of co-permittees encompassing an entire metropolitan area. These permits are reissued as the permits expire.

As part of Phase II, the SWRCB adopted a General Permit for the Discharge of Storm Water from Small MS4s (WQ Order No. 2013-0001-DWQ) to provide permit coverage for smaller municipalities (generally more than 10,000 but under 100,000 people), including non-traditional Small MS4s, which are governmental facilities such as military bases, public campuses, and prison and hospital complexes. (40 CFR § 122.26(b)(16)(iii).)

The MS4 permits require the discharger to develop and implement a Storm Water Management Plan/Program (SWMP) with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). MEP is the performance standard specified in Section 402(p) of the Clean Water Act. The management programs specify what best management practices (BMPs) will be used to address certain program areas. The program areas include public education and outreach; illicit discharge detection and elimination; construction and post-construction; and good housekeeping for municipal operations. In general, medium and large municipalities are required to conduct chemical monitoring, though small municipalities are not.

9.3.1 RWQCB Phase I Program Requirements

The C.3 NPDES requirements went into effect for any project (public or private) that is "deemed complete" by the City (Lead Agency) on or after February 15, 2005, and which will result in the creation or replacement (other than normal maintenance) of at least 10,000 square feet of impervious surface area (roofs, streets, patios, parking lots, etc.). Intended to reduce the introduction of urban pollutants into San Francisco Bay, creeks, streams, lakes, and other water bodies in the region, Provision C.3 requires the onsite treatment of stormwater prior to its discharge into downstream receiving waters. Note that these requirements are in addition to the existing NPDES requirements for erosion and sedimentation controls during project construction.

Projects subject to Provision C3 must include the capture and onsite treatment of all stormwater from the site prior to its discharge, including rainwater falling on building rooftops. Project applicants are required to implement appropriate source control and site design measures and to

design and implement stormwater treatment measures in order to reduce the discharge of stormwater pollutants to the *maximum extent practicable.* While the Clean Water Act does not define "maximum extent practicable," the Stormwater Quality Management Plans required as a condition of the municipal NPDES permits identify control measures (known as Best Management Plans, or BMPs) and, where applicable, performance standards, to establish the level of effort required to satisfy the maximum extent practicable criterion. It is ultimately up to the professional judgment of the reviewing municipal staff in the individual jurisdictions to determine whether a project's proposed stormwater controls will satisfy the maximum extent practicable criterion. However, there are numeric criteria used to ensure that treatment BMPs have been adequately sized to accommodate and treat a site's stormwater. The C3 requirements are quite extensive, and their complete explanation is not provided here. However, the following are minimums that should be understood and adhered to:

- The applicant must provide a detailed and realistic site design *and impervious surface area calculations*. This site design and calculations will be used by the Lead Agency (County or City) to determine/verify the amount of impervious surface area that is being created or replaced. It should include all proposed buildings, roads, walkways, parking lots, landscape areas, etc., that are being created or redeveloped. If large (greater than 10,000 square feet) lots are being created an effort will need to be made to determine the total impervious surface area that could be created on that parcel. For example if only a portion of the lot is shown as a "building envelope" then the lead agency will need to consider that a driveway will have to be constructed to access the envelope and that the envelope will then be developed as shown. If the C.3 thresholds are met (creation/redevelopment of 10,000 square feet of impervious surface area), a Stormwater Control Plan (SWCP) (if required by the Lead Agency, or whatever steps for compliance with Provision C3 are required locally) must accompany the application.

- If a SWCP is required by the Lead Agency for the project it must be stamped by a Licensed Civil Engineer, Architect, or Landscape Architect.

Incorporating the C3 requirements into the early phases of new project planning will speed the approval process (by reducing or eliminating the need for redesign of the site plan once it gets to the municipal review process), improve the integration of treatment into site landscaping, enhance the project's aesthetics, reduce the water quality impacts of the project, improve the natural absorption of urban pollutants into the environment, and reduce the amount of stormwater discharged from the site. If these requirements are not incorporated into the early stages of site design, a subsequent redesign of the site plan may be required in order to provide all of the required onsite water treatment, adding unnecessarily to project development costs.

9.3.2 Applicability to the Proposed Project

The City of Antioch is a Phase I MS4 Area Wide Permittee [*California Regional Water Quality Control Board, Central Valley Region, East Contra Costa County Municipal NPDES Permit, Waste Discharge Requirements Order R5-2010-0102, NPDES Permit No. CAS083313, 23 September 2010*].

To remain in compliance with this Order, the City of Antioch is required to enforce development of a project specific post-construction SWMP that incorporates pre- and post-construction BMPs into the proposed project. The City of Antioch assumes responsibility for making sure that the project complies with the NPDES. The applicant, therefore, obtains its NPDES coverage from the City of Antioch.

When completed, the Laurel Ranch will finish tying in the incomplete storm drain pipe coming from the residential development to the west of Laurel Ranch into the City's storm drain system on the east side of the Laurel Ranch. A Storm Water Management Plan (SWMP) should be prepared by the civil engineer and submitted to the City of Antioch for review and verification that the proposed project is in compliance with the City's MS4 permit requirements, and the NPDES C.3 requirements.

9.4 California Department of Fish and Wildlife Protections

9.4.1 Section 1602 of California Fish and Game Code

Pursuant to Section 1602 of the California Fish and Game Code: "An entity may not substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake, unless all of the following occur:

(1) CDFW receives written notification regarding the activity in the manner prescribed by CDFW. The notification shall include, but is not limited to, all of the following:
   (A) A detailed description of the project's location and a map.
   (B) The name, if any, of the river, stream, or lake affected.
   (C) A detailed project description, including, but not limited to, construction plans and drawings, if applicable.
   (D) A copy of any document prepared pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.
   (E) A copy of any other applicable local, state, or federal permit or agreement already issued.
   (F) Any other information required by CDFW" (Fish & Game Code 2014).

Please see Section 1602 of the current California Fish and Game Code for further details. Please also note that while not stated in the regulations above, CDFW typically considers its jurisdiction to include riparian vegetation (that is, the trees and bushes growing along the stream). Thus, any proposed activity in a natural stream channel that would substantially adversely affect an existing fish and/or wildlife resource, including its riparian vegetation, would require entering into a Streambed Alteration Agreement (SBAA) with CDFW prior to commencing with work in the stream. However, prior to authorizing such permits, CDFW typically reviews an analysis of the expected biological impacts, any proposed mitigation plans that would be implemented to offset biological impacts and engineering and erosion control plans.

9.4.2 APPLICABILITY TO THE PROPOSED PROJECT

Mr. Robert Stanley of CDFW conducted a site visit of the project site on September 9, 2015. Mr. Stanley determined that since the onsite drainage supports a defined bed and bank, and provides wildlife habitat, the drainage would be subject to Section 1602 regulation. Any proposed changes/modifications to the drainage onsite or its riparian vegetation would require entering into a SBAA with CDFW. The applicant has submitted a SBAA application. CDFW is requiring mitigation to remove this drainage from the site. The applicant is required to connect the stormwater pipe from the development that is located to the west of the project site to the stormwater system that will be constructed within the project site. This will dewater the drainage. Furthermore, the drainage will be filled to bring the project site grades level with the housing development immediately west of the project site. Please review Impacts to CDFW 1602 Jurisdiction below.

10. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) REGULATIONS

CEQA applies to discretionary actions (e.g., approval of a conditional use permit or tentative map) or projects. Pursuant to CEQA, a lead agency determines if there could be significant adverse impacts to the environment from a proposed project. This is usually accomplished by the preparation of an "Initial Study." If there could be significant environmental impacts, the lead agency must determine an appropriate level of environmental review prior to approving and/or otherwise permitting the impacts. In some cases, there are statutory or categorical exemptions that apply to the proposed activity; thus, the activity is exempt from CEQA. If the project is not exempt from CEQA, but the project would not have significant effects on the environment, the lead agency would prepare a "Negative Declaration." If a proposed project would have only minimal impacts that could be mitigated to a level of no significance pursuant to the CEQA, then a "Mitigated Negative Declaration" is typically prepared by the lead agency. Finally, those projects that may have significant effects on the environment, or that have impacts that can't be mitigated to a level considered less than significant pursuant to the CEQA, typically must be reviewed via an Environmental Impact Report (EIR). All CEQA review documents are subject to public circulation, and comment periods.

Section 15380 of CEQA defines "endangered" species as those whose survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. "Rare" species are defined by CEQA as those who are in such low numbers that they could become endangered if their environment worsens; or the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in FESA. The CEQA Guidelines also state that a project will normally have a significant effect on the environment if it will "substantially affect a rare or endangered species of animal or plant or the habitat of the species." The significance of impacts to a species under CEQA, therefore, must be based on analyzing actual rarity and threat of extinction to that species despite its legal status or lack thereof.

10.1.1 APPLICABILITY TO THE PROPOSED PROJECT

This report has been prepared for the City of Antioch's Planning Consultant for purposes of updating the biological resources information relevant to the site in its existing condition for CEQA compliance.

11. IMPACTS ANALYSIS

Below the criteria used in assessing impacts to Biological Resources is presented.

11.1 Significance Criteria

A significant impact is determined using CEQA and CEQA Guidelines. Pursuant to CEQA section 21068, a significant effect on the environment means a substantial, or potentially substantial, adverse change in the environment. Pursuant to CEQA Guidelines section 15382, a significant effect on the environment is further defined as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. Other federal, state, and local agencies' considerations and regulations are also used in the evaluation of significance of proposed actions.

Direct and indirect adverse impacts to biological resources are classified as "significant," "potentially significant," or "less than significant." Biological resources are broken down into four categories: vegetation, wildlife, threatened and endangered species, and regulated "waters of the United States" and/or stream channels.

11.1.1 THRESHOLDS OF SIGNIFICANCE

11.1.1.1 Plants, Wildlife, Waters

In accordance with Appendix G (Environmental Checklist Form) of the CEQA Guidelines, implementing the project would have a significant biological impact if it would:

- 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 Wildlife or U.S. Fish and Wildlife Service.

- 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 Wildlife or US Fish and Wildlife Service.

- Have a substantial adverse effect on federally protected "wetlands" as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

- 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.

- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

11.1.1.2 Waters of the United States and State.

Pursuant to Section 404 of the Clean Water Act (33 U.S.C. §1344), the U.S. Army Corps of Engineers (Corps) regulates the discharge of dredged or fill material into waters of the United States, which includes wetlands, as discussed in the bulleted item above, and also includes "other waters" (stream channels, rivers) (33 CFR Parts 328 through 330). Substantial impacts to Corps regulated areas on a project site would be considered a significant adverse impact. Similarly, pursuant to Section 401 of the Clean Water Act, and to the Porter-Cologne Water Quality Control Act, the RWQCB regulates impacts to waters of the state. Thus, substantial impacts to RWQCB regulated areas on a project site would also be considered a significant adverse impact.

11.1.1.3 Stream Channels

Pursuant to Section 1602 of the California Fish and Game Code, CDFW regulates activities that divert, obstruct, or alter stream flow, or substantially modify the bed, channel, or bank of a stream which CDFW typically considers to include riparian vegetation. Any proposed activity that would result in substantial modifications to a natural stream channel would be considered a significant adverse impact.

12. IMPACT ASSESSMENT AND PROPOSED MITIGATION

In this section we discuss potential impacts to sensitive biological resources including special-status plant and wildlife species, and waters of the State. We follow each impact with a mitigation that when implemented would reduce impacts to the greatest extent possible. This impact analysis is based on the Laurel Ranch Final Development Plan, prepared by DK Consulting, June 2015 (**Attachment B**).

12.1 Impact BIO-1. Development of the project would have a potentially significant impact on special-status plants (Potentially Significant)

No state or federally listed plants, or other special-status species are expected to occur on the project site. The project site provides marginally suitable habitat for special-status plant species. Suitability does not infer presence, only that conditions are present which could support these species. To prove absence of these species, formal surveys must be conducted at appropriate times of the year when regionally known special-status plants are identifiable to a species level. Owing to many years of excessive levels of disturbance that continue today, it is unlikely that federally or state listed plants, or other plants with special-status designations would occur on the project site. Regardless, until surveys are conducted demonstrating the absence of regionally known special-status plants, impacts to such plants are regarded as potentially significant pursuant to the CEQA.

M&A qualified botanist/biologists conducted systematic rare plant surveys on the project site on August 29, 2013 and July 31, 2015. No special-status plants were found during those surveys. As both surveys were conducted in mid to late summer, these surveys are only valid for species that are identifiable in mid to late summer. Thus, earlier blooming plants cannot be dismissed as occurring on the project site until appropriately timed surveys are conducted that demonstrate absence. **Table 3** indicates which regionally known special-status plants must be surveyed to prove absence from the project site. In addition, **Table 3** indicates which late season species would have been identifiable during the two previous rare plant surveys. Additional surveys will be conducted in April and May of 2016 to dismiss all potentially occurring special-status plants. *Accordingly, impacts to special-status plants are regarded as potentially significant pursuant to the CEQA.*

This impact can be mitigated to a level considered less than significant pursuant to CEQA as follows:

12.2 Mitigation Measure BIO-1: Mitigation for potential impacts to special-status plant species

Additional rare plant surveys for special-status plants shall be conducted in April and May of 2016, or the year prior to breaking ground on the project site, in compliance with USFWS (1996 and 2002), CDFW (2009), and CNPS (2001) published rare plant survey guidelines. Project construction shall not be initiated until all special-status plant surveys are completed and subsequent mitigation, if necessary, is implemented.

Upon completion of the additional rare plant surveys, a special-status plant survey report that includes the methods used, survey participants, and findings shall be prepared and submitted to the City of Antioch. If the report documents that there are no special-status plants on the project site, then no further mitigation shall be required, and the project may proceed, provided all other applicable permits and authorizations are obtained for the project. However, if a special-status plant is found on the project site, the report shall identify the legal protections provided by regulation for the special-status plants. In addition, the following mitigation measures shall be implemented as a condition of project approval.

If a plant is found on the project site that is a CNPS Rank 1B or 2 species, and the species is not otherwise protected pursuant to state or federal regulations, prior to construction within the project area, a qualified botanist shall collect the seeds, propagules, and top soils, or other part of the plant that would ensure successful replanting of the population elsewhere. The seeds, propagules, or other plantable portion of all plants shall be collected at the appropriate time of the year. The seeds, propagules, or other plantable portion of all plants shall be planted at the appropriate time of year (late-fall months) in an area of the project site or an off-site protected property that is designated open space. This planting area shall be fenced and the fence shall be maintained until the transplanted plants have successfully colonized the planted area. The applicant shall hire a qualified biologist to conduct annual monitoring surveys of the transplanted plant population for a five-year period and shall prepare annual monitoring reports reporting the success or failure of the transplanting effort. Annual monitoring reports shall be submitted to the City of Antioch on or before December of each year, and as required by any resource agency that

also regulates the impacts to identified special-status plants. A CNDDB form shall be filled out and submitted to CDFW for any special-status plant species identified within the project site.

If impacts would occur to special-status plants regulated by the California Department of Fish and Wildlife pursuant to the CESA, or by the U.S. Fish and Wildlife Service pursuant to the FESA, appropriate incidental take permits shall be acquired from these agencies as necessary prior to ground breaking activities.

In lieu of the above prescribed mitigation, as allowed in writing by the City (for CEQA protected species only) and/or CDFW (for CEQA protected species), mitigation requirements may be satisfied by purchasing qualified mitigation credits or funding the preservation of offsite habitat.

When implemented the above mitigation measures would reduce impacts to special-status plant species to a level considered less than significant pursuant to CEQA.

12.3 Impact BIO-2. Development of the project would have a potentially significant impact on Swainson's hawk (Potentially Significant)

The Swainson's hawk is a state-listed threatened species. While the Swainson's hawk has no special federal status it is protected from direct take under the Federal Migratory Bird Treaty Act of 1918 (16 U.S.C. 703-711). Swainson's hawks, their nests, eggs, and young are also protected under California Fish and Game Code (§3503, §3503.5, §3513, and §3800).

No Swainson's hawk nests were discovered on or near the project site during M&A's project site surveys. The project site, which is surrounded by development and the Highway 4 Bypass, is likely too small to provide adequate foraging habitat necessary to support a nesting pair of Swainson's hawks. However, this species is mobile and can nest in different locations from year to year. Also, the nesting population appears to be increasing throughout its nesting range in northern California (G. Monk general observations), and thus, Swainson's hawks could conceivably nest on or adjacent to the project site in the future.

If Swainson's hawks are found to be nesting on or adjacent to the project site within 1,000 feet of the project site, implementation of the proposed project could be viewed by CDFW as a project that could impact nesting Swainson's hawks. Loss or alteration of foraging habitat or nest site disturbance which results in: (1) nest abandonment; (2) loss of young; (3) reduced health and vigor of eggs and/or nestlings (resulting in reduced survival rates), may ultimately result in the take (killing) of nestling or fledgling Swainson's hawks incidental to otherwise lawful activities. The taking of Swainson's hawks in this manner can be viewed by CDFW as a violation of the Section 2080 of the Fish and Game Code.

Typically, CDFW requires that any impact to a Swainson's hawk nest be permitted through a Fish and Game Section 2081 management authorization. If an active nest is found on or adjacent to the project site or within the area of influence of the project site (which is generally considered to be within 1,000 feet of the project site) "to avoid potential violation of Fish and Game Code 2080 (i.e., killing of listed species), project-related disturbance at active Swainson's hawk nesting sites should be reduced or eliminated during critical phases of the nesting cycle (March 1- September 15 annually)" (CDFG 1994). If disturbance would occur, a Fish and Game Section 2081 management

authorization may be required. As such, in the absence of survey results the year the project site is developed, it must be concluded that impacts to Swainson's hawk from the proposed project would be *potentially significant pursuant to CEQA.*

This impact could be mitigated to a level considered less than significant pursuant to CEQA with implementation of the mitigation measure that follows below.

12.4 Mitigation Measure BIO-2. Mitigation for potential impacts to Swainson's Hawk

To ensure that there are no impacts to nesting Swainson's hawks, preconstruction surveys should be conducted for a ½ mile radius around all project related activities and should be completed for at least the two survey periods prior to construction. The first survey should be conducted in April and the second survey in June (CDFG 2000).

If no nesting Swainson's hawks are identified during the April surveys (first survey), project construction can commence. If during the second survey (June), Swainson's hawks are found nesting in the project vicinity and project construction commenced in April/May, it should be assumed that the Swainson's hawks commenced nesting while the project site was under construction and thus, that the hawks are habituated to the ambient level of noise and disturbance emanating from the project site.

If Swainson's hawks nest on or within the area of influence of the project site (which is generally considered to be within 1,000 feet of the project site), impacts to nesting Swainson's hawks would be regarded as significant pursuant to the CEQA, and implementation of avoidance measures below would be necessary to ensure the project does not impact the nesting Swainson's hawks.

If Swainson's hawks are found to be nesting on or within 1,000 feet of the project site, a non-disturbance buffer shall be established that keeps all project activities a minimum of 1,000 feet from the nest site. If the 1,000 foot buffer only partially intersects the project site, that intersecting area shall be demarked in orange construction fencing and will ensure that noise/disturbance related impacts emanating from the project site remains at least 1,000 feet from the nest site. No project activities would be allowed in the orange construction fenced off area constituting the buffer.

If a qualified raptor biologist makes a determination that the nesting Swainson's hawks are shielded from disturbance by geographic barriers or are well acclimated to higher levels of disturbance (for example if the nesting attempt commenced after the project was under construction, or the nest site is adjacent to preexisting high levels of disturbance), the biologist may justify a recommendation for a smaller buffer. CDFW shall be consulted regarding the qualified raptor biologists' recommendations for an appropriate non-disturbance buffer. At that time the necessity of acquiring a Fish and Game Section 2081 management authorization would also be determined.

Under all circumstances the nesting buffer must ensure that all project related disturbance remains far enough away from the Swainson's hawk nest site to ensure that the level of

construction related disturbance does not result in deleterious effects on the nesting hawks, their eggs, or nestlings. If the nesting buffer is reduced to less than 1,000 feet, a qualified raptor biologist shall monitor the nesting hawks initially for a period long enough to understand the nesting hawks response to disturbance, and thereafter on a routine basis (at least 3 times a week, or as required by the CDFW) until the nestlings successfully fledge and become independent of the nesting tree. Any buffer that is smaller than 1,000 feet may have to be increased in size again if the nesting hawks respond poorly to a reduced buffer.

No project-related disturbance shall be allowed in the nesting buffer until the young fledge the nest or the nesting attempt is otherwise complete for the year. The buffer should remain in place until the Swainson's hawk young fledge the nest and become independent of the nesting tree. The young can be considered successfully fledged when the hawks no longer return to the nesting tree for several consecutive nights.

Implementation of this mitigation measure would reduce potential impacts to Swainson's hawk to a level considered less than significant pursuant to CEQA.

12.5 Impact BIO-3. Development of the project could have a potentially significant impact on western burrowing owl (Potentially Significant)

The western burrowing owl is a California Species of Special Concern. This raptor (that is, bird of prey) is also protected under the Migratory Bird Treaty Act (50 CFR 10.13) and its nest, eggs, and young are protected under California Fish and Game Code Sections 3503, 3503.5. While western burrowing owls have not been observed on the project site and their likelihood of presence on the project site is considered to be low to moderate, suitable nesting habitat (e.g., California ground squirrel burrows) occurs on the project site. Since the western burrowing owl is a mobile species impact avoidance measures are warranted. As such, the project may result in impacts to western burrowing owl that would be *potentially significant pursuant to CEQA***.**

This impact could be mitigated to a level considered less than significant pursuant to CEQA.

12.6 Mitigation Measure BIO-3. Mitigation for potential impact to western burrowing owl

Based on the presence for this species in the project vicinity and the potential habitat found on the project site, a preconstruction survey for burrowing owls should be conducted 14 days or less prior to initiating ground disturbance. As burrowing owls may recolonize a site after only a few days, time lapses between project activities trigger subsequent avoidance surveys, including but not limited to, a final survey conducted within 24 hours prior to ground disturbance to ensure absence. If no owls are found during these surveys, no further regard for the burrowing owl would be necessary.

Burrowing owl surveys should be conducted by walking the entire project site. Systematic survey transects should be spaced to allow 100 percent visual coverage of the ground surface. The distance between transect center lines should be seven meters to 20 meters and should be reduced to account for differences in terrain, vegetation density, and ground surface visibility. Poor weather may affect the surveyor's ability to detect burrowing owls thus, avoid conducting surveys when wind speed is greater than 20 kilometers per hour and there is precipitation or

dense fog. To avoid impacts to owls from surveyors, owls and/or occupied burrows should be avoided by a minimum of 50 meters (approximately 160 ft.) wherever practical to avoid flushing occupied burrows. Disturbance to occupied burrows shall be avoided during all seasons.

If burrowing owls are detected on the site, the following restricted activity dates and setback distances are recommended to ensure that there will be no take of western burrowing owls or impacts to their nests.

- From April 1 through October 1, low disturbance and medium disturbance activities shall have a 200 meter buffer while high disturbance activities shall have a 500 meter buffer from occupied nests. The size of the buffer may be reduced if a qualified burrowing owl biologist determines that smaller buffers would adequately protect the nesting burrowing owls.
- No earth-moving activities or other disturbance shall occur within the afore-mentioned buffer zones of occupied burrows. These buffer zones shall be fenced or otherwise marked to ensure that they are not impacted by the project.
- From October 1 through February 1 western burrowing owls may be passively evicted from the project site by a qualified biologist in order to ensure that an owl is not harmed by the project.

Implementation of these mitigation measures would reduce potential impacts to burrowing owls to a level considered less than significant pursuant to CEQA.

12.7 Impact BIO-4. Development of the project could have a potentially significant impact on Nesting Birds (Potentially Significant)

The trees found on and in proximity to the project site provide suitable nesting habitat for many passerine birds (such as jays, juncos, and towhees) and for urban nesting raptors such as the red-tailed hawk and red shouldered hawk (*Buteo lineatus*). All of these birds are protected under the Migratory Bird Treaty Act (50 CFR 10.13) and their eggs and young are also protected under California Fish and Game Code Sections 3503, 3503.5. Any project-related impacts to nesting birds would be considered a significant adverse impact. Potential impacts to these species from the proposed project include disturbance to nesting birds, and possibly death of adults and/or young. Impacts to nesting birds from the proposed project would be potentially significant pursuant to CEQA.

This impact will be mitigated to a level considered less than significant with the following mitigation measure.

12.8 Mitigation Measure BIO-4. Mitigation for potential impacts to Nesting Birds

In order to avoid impacts to nesting birds, a nesting survey shall be conducted 15 days prior to commencing with construction work or tree removal if this work would commence between February 1st and August 31st. The nesting survey shall include examination of all trees within 300 feet of the entire project site (i.e., within a zone of influence of nesting birds), not just trees slated for removal. The zone of influence includes those areas off the project site where birds could be disturbed by earth- moving vibrations and/or other construction-related noise.

If birds are identified nesting on or within the zone of influence of the construction project, a qualified biologist shall establish a temporary protective nest buffer around the nest(s). The nest buffer shall be staked with orange construction fencing or orange lath staking. The buffer must be of sufficient size to protect the nesting site from construction related disturbance and shall be established by a qualified ornithologist or biologist with extensive experience working with nesting birds near and on construction sites. Typically, adequate nesting buffers are 75 feet from the nest site or nest tree dripline for small birds and up to 200 feet for sensitive nesting birds that include several raptor species known the region of the project site. Upon completion of nesting surveys, if nesting birds are identified on or within a zone of influence of the project site, a qualified ornithologist/biologist that frequently works with nesting birds shall prescribe adequate nesting buffers to protect the nesting birds from harm.

No construction or earth-moving activity shall occur within any established nest protection buffer prior to September 1 unless it is determined by a qualified ornithologist/biologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid project construction zones, or that the nesting cycle is otherwise completed. In the region of the project site, most species complete nesting by mid-July. This date can be significantly earlier or later, and shall to be determined by the qualified biologist. At the end of the nesting cycle, and abandonment of the nest by its occupants, as determined by a qualified biologist, temporary nest buffers may be removed and construction may commence in established nesting buffers without further regard for the nest site.

Implementation of this mitigation measure would reduce impacts to nesting birds to a level considered less than significant pursuant to CEQA.

12.9 Impact BIO-5. Development of the project could have a potentially significant impact on the western red bat (Potentially Significant).

The western red bat is a California "species of special concern." The "species of special concern" status designation does not provide any special legally mandated protection for this bat species. However, this status designation likely meets the definition of "rare" pursuant to the CEQA. As such, potential impacts to this bat species should be considered during any CEQA review.

The riparian trees on the project site are small and only provide marginal roosting habitat for the western red bat. Regardless, preconstruction surveys will be conducted prior to any tree removal to ensure that there are no impacts to this special-status bat species. *Accordingly, impacts to western red bat are regarded as potentially significant pursuant to the CEQA.*

These impacts will be mitigated to levels considered less than significant pursuant to CEQA with implementation of the following mitigation measure.

12.10 Mitigation BIO-5. Mitigation for potential impacts to western red bat.

In order to avoid impacts to roosting special-status bats, a tree survey shall be conducted 15 days prior to commencement of project activities that include grading or tree removal. Tree cavities and exfoliated bark that could provide roosting or maternity habitat shall be examined for evidence of use by bats. All bat surveys shall be conducted by a biologist with known experience

surveying for bats. If roosts are found, a determination should be made whether there are young. If a maternity site is found, impacts to that tree shall be avoided until the young have reached independence. If adults are found roosting but no maternity sites are found, then the adult bats can be flushed prior to the time the tree in question would be removed or disturbed.

Implementation of this mitigation measure would reduce impacts to western red bat to a level considered less than significant pursuant to CEQA.

12.11 Impact BIO-6. Development of the proposed project will have a significant impact to Section 1602 jurisdictional areas (Significant).

CDFW has determined that the onsite ditch supports a bed, bank, and supports wildlife and plant communities. Therefore, the CDFW has determined it will regulate impacts to this feature pursuant to Section 1602 of the Fish and Game Code. The applicant is required to connect the stormwater pipe from the development to the west of the project site to the stormwater system that will be constructed within the project site. This will dewater the drainage. Furthermore, the drainage will be filled to bring the project site grades level with the housing development immediately west of the project site. Accordingly, impacts to this man-made drainage feature are regarded as *potentially significant pursuant to the CEQA.*

This impact will be mitigated to levels considered less than significant pursuant to CEQA with implementation of the following mitigation measure.

12.12 Mitigation Measure BIO-6. Mitigation for impacts to Section 1602 jurisdictional areas.

Because avoidance is not possible, the applicant has submitted a SBAA application to CDFW. CDFW is requiring mitigation to remove this drainage from the site. The applicant shall purchase 1.35 acres of mitigation credits from the Cosumnes River Preserve or other CDFW approved conservation bank to mitigate for project-related impacts to Section 1602 jurisdictional areas on the project site.

Implementation of this mitigation measure would reduce significant impacts to Section 1602 jurisdictional areas to a level considered less-than-significant pursuant to the CEQA

12.13 Impact BIO-7. Development of the proposed project will have a significant impact to indigenous, protected trees (Significant).

The proposed project will remove 14 trees which are all native species. There are 9 Arroyo willows (*Salix lasiolepis*) and 5 red willows (*Salix laevigata*) slated for removal which, though native species, are not defined by the City as "indigenous." Eight of these willows are considered established. All willows are of recent origin, and have germinated and grown in the onsite ditch over the last 5-6 years. None have large stature. In total, 14 indigenous trees are currently identified for removal. Accordingly, impacts to indigenous, protected trees are regarded as *significant* pursuant to the CEQA.

This impact can be mitigated to levels considered less than significant pursuant to CEQA with implementation of the following mitigation measure.

12.14 Mitigation Measure BIO-8. Mitigation for impacts to Protected Trees

Mitigation for the impacts to the 14 indigenous trees shall be addressed in a tree removal permit application, which shall be submitted by the applicant prior to any tree removal. A site plan showing the existing topography with the location of all established trees, clearly labeling those trees and providing a detailed description of all trees on the project site (i.e., diameter, estimated height, species and relative condition) shall be submitted to the City for review and approval prior to issuance of the permit.

The tree removal permit application shall also include a landscape plan that compensates for all impacts to established trees, in accordance with the City of Antioch tree ordinance:

- Each established tree shall be replaced with two 24-inch box trees
- Legally removed indigenous trees and landmark trees shall be replaced by box specimens at a rate and size to be established by the decision-making body at the time of regular development application approval.

Implementation of the landscaping plan would reduce impacts to protected/indigenous trees to a level regarded as less than significant pursuant to the CEQA because it would ensure that every tree removed is not only replaced, but an additional tree is planted.

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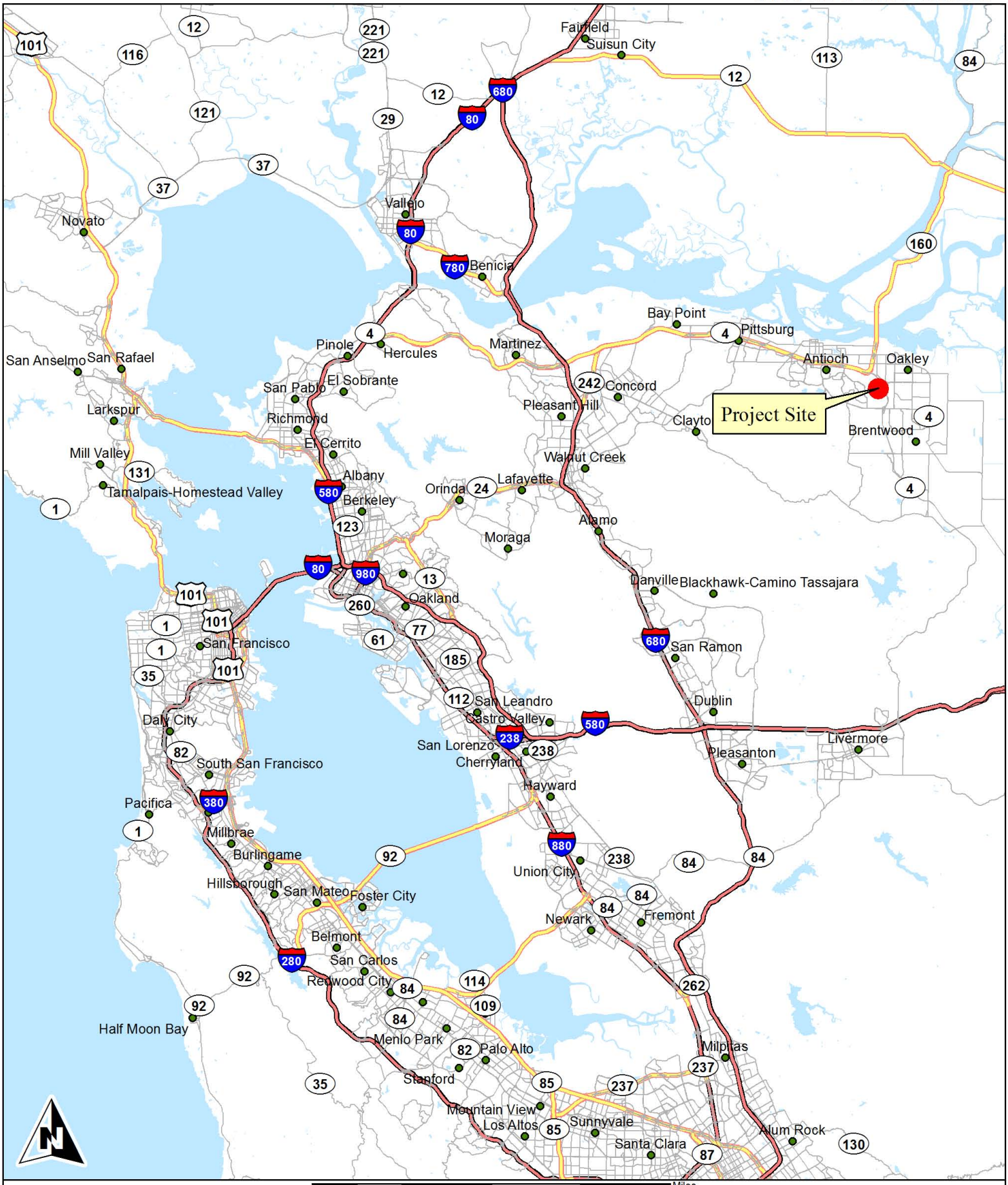

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Figure 1. Laurel Ranch Project Site
Regional Map
Antioch, California

County: Contra Costa
Map Preparation Date: July 24, 2015



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Figure 2. Laurel Ranch Project Site
Location Map
Antioch, California

Section: 34: T2N R2E
37°58'40.37N 121°44'53.17W
7.5-Minute Brentwood &
Antioch South quadrangle
Aerial Photograph Source: ESRI
Map Preparation Date: July 24, 2015



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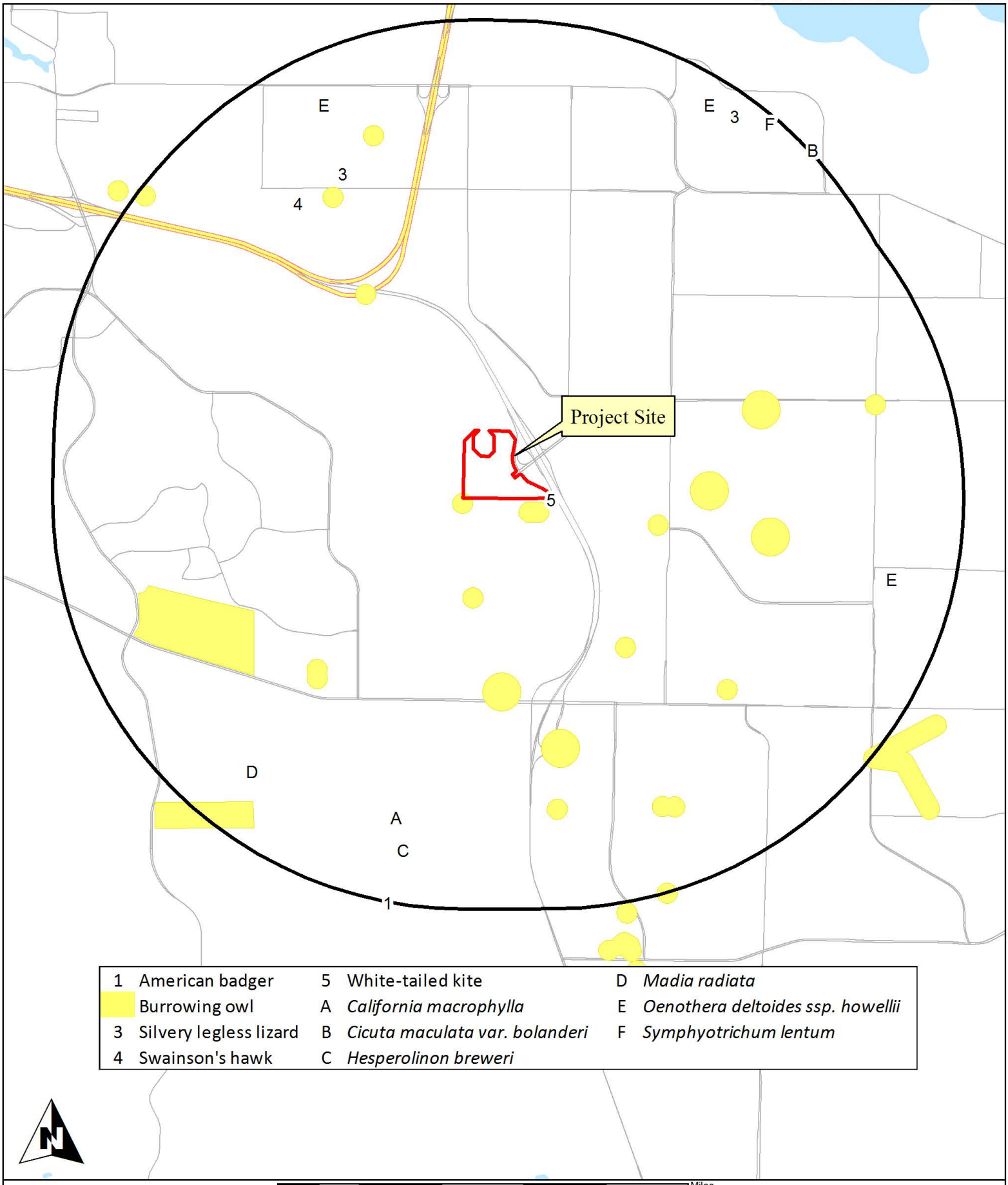
Figure 3. Aerial Photograph of the
Laurel Ranch Project Site
Antioch, California

Aerial Photograph Source: ESRI
Map Preparation Date: July 24, 2015



1	American badger	5	White-tailed kite	D	*Madia radiata*
	Burrowing owl	A	*California macrophylla*	E	*Oenothera deltoides ssp. howellii*
3	Silvery legless lizard	B	*Cicuta maculata var. bolanderi*	F	*Symphyotrichum lentum*
4	Swainson's hawk	C	*Hesperolinon breweri*		

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0 0.2 0.4 0.8 1.2 1.6 2 Miles

Figure 4. Known Special-Status CNDDB Species within 2 Miles of the Laurel Ranch Project Site

Map Preparation Date:
August 4, 2015
2-Mile Radius
Source: CDFW,
California Natural Diversity Data Base, 2015

Table 1

Plant Species Observed on the Laurel Ranch Project Site

Ferns and Allies	
Azollaceae	
Azolla sp.	Mosquito fern
Angiosperms - Dicots	
Amaranthaceae	
**Amaranthus albus*	Tumble pigweed
Anacardiaceae	
**Schinus molle*	Peruvian pepper tree
Apiaceae	
**Foeniculum vulgare*	Sweet fennel
**Torilis arvensis*	Tall sock destroyer
Apocynaceae	
Asclepias fascicularis	Narrow-leaf milkweed
**Nerium oleander*	Oleander
Asteraceae	
**Carduus pycnocephalus subsp. pycnocephalus*	Italian thistle
**Carduus tenuiflorus*	Plumeless thistle
**Centaurea calcitrapa*	Purple starthistle
**Centaurea solstitialis*	Yellow starthistle
Centromadia pungens	Common spikeweed
**Cirsium vulgare*	Bull thistle
**Cotula coronopifolia*	Brass-buttons
**Dittrichia graveolens*	Stinkwort
Erigeron canadensis	Horseweed
Grindelia camporum	Great Valley gumplant
**Helminthotheca echioides*	Bristly ox-tongue
Heterotheca grandiflora	Telegraph weed
Holocarpha virgata subsp. virgata	Virgate tarweed
**Lactuca serriola*	Prickly lettuce
**Silybum marianum*	Milk thistle
**Sonchus asper subsp. asper*	Prickly sow-thistle
Boraginaceae	
Heliotropium curassavicum var. oculatum	Heliotrope
Brassicaceae	
**Brassica nigra*	Black mustard
**Hirschfeldia incana*	Short-podded mustard
**Sinapis arvensis*	Wild mustard
Ceratophyllaceae	
Ceratophyllum demersum	Hornwort
Chenopodiaceae	
Atriplex patula	Spear oracle

* Indicates a non-native species

Table 1

Plant Species Observed on the Laurel Ranch Project Site

**Atriplex prostrata*	Hastate orache
**Salsola tragus*	Russian-thistle
Convolvulaceae	
**Convolvulus arvensis*	Bindweed
Euphorbiaceae	
Croton setiger	Turkey mullein
Fabaceae	
Acmispon americanus var. americanus	Spanish-clover
**Melilotus indicus*	Annual yellow sweetclover
**Trifolium hirtum*	Rose clover
**Vicia benghalensis*	Purple vetch
**Vicia sativa*	Common vetch
**Vicia villosa subsp. villosa*	Hairy vetch
Geraniaceae	
Erodium sp.	Filaree
**Geranium dissectum*	Cut-leaf geranium
**Geranium molle*	Dove's-foot geranium
Lythraceae	
**Lythrum hyssopifolia*	Hyssop loosestrife
Malvaceae	
**Malva parviflora*	Cheeseweed
Myrsinaceae	
**Lysimachia arvensis*	Scarlet pimpernel
Oleaceae	
**Olea europaea*	Olive
Onagraceae	
Epilobium brachycarpum	Summer cottonweed
Epilobium ciliatum	Hairy willow-herb
Epilobium ciliatum subsp. ciliatum	Hairy willow-herb
Orobanchaceae	
**Bellardia trixago*	Mediterranean linseed
Papaveraceae	
Eschscholzia californica	California poppy
Plantaginaceae	
**Plantago lanceolata*	English plantain
Veronica americana	American brooklime
**Veronica anagallis-aquatica*	Water speedwell
Polygonaceae	
**Polygonum aviculare*	Common knotweed
**Rumex crispus*	Curly dock
**Rumex pulcher*	Fiddle dock

* Indicates a non-native species

Table 1

Plant Species Observed on the Laurel Ranch Project Site

Rosaceae	
**Prunus dulcis*	Almond tree
**Prunus persica*	Peach
Salicaceae	
Salix gooddingii	Goodding's black willow
Salix laevigata	Red willow
Salix lasiolepis	Arroyo willow
Angiosperms -Monocots	
Agavaceae	
**Agave americana*	American century plant
Araceae	
Lemna minor	Lesser duckweed
Cyperaceae	
Bolboschoenus robustus	seacoast bulrush
Cyperus eragrostis	Tall flatsedge
Juncaceae	
Juncus bufonius	Toad rush
Liliaceae	
Fritillaria agrestis	Stinkbells
Poaceae	
**Avena barbata*	Slender wild oat
**Bromus diandrus*	Ripgut grass
**Bromus hordeaceus*	Soft chess
**Bromus madritensis subsp. rubens*	Red brome
**Crypsis schoenoides*	Swamp pricklegrass
Elymus glaucus	Blue wildrye
Elymus triticoides subsp. triticoides	Creeping wildrye
Festuca microstachys	Small fescue
**Festuca myuros*	Rattail sixweeks grass
**Festuca perennis*	Italian ryegrass
Hordeum brachyantherum subsp. brachyantherum	Northern barley
**Hordeum marinum subsp. gussoneanum*	Mediterranean barley
**Hordeum murinum subsp. leporinum*	Hare barley
**Paspalum dilatatum*	Dallis grass
**Phalaris aquatica*	Harding grass
**Phalaris paradoxa*	Paradox canary-grass
**Polypogon interruptus*	Ditch beard grass
**Polypogon monspeliensis*	Annual beard grass
Typhaceae	
Typha angustifolia	Narrow-leaved cattail
Typha latifolia	Broad-leaved cattail

* Indicates a non-native species

Table 2
Wildlife Species Observed on the Laurel Ranch Project Site

Amphibians	
Sierran treefrog	*Pseudacris sierra*
Reptiles	
Western fence lizard	*Sceloporus occidentalis*
Gopher snake	*Pituophis catenifer*
Birds	
Double-crested cormorant	*Phalacrocorax auritus*
Turkey vulture	*Cathartes aura*
Mallard	*Anas platyrhynchos*
White-tailed kite	*Elanus leucurus*
Red-tailed hawk	*Buteo jamaicensis*
American kestrel	*Falco sparverius*
Ring-necked pheasant	*Phasianus colchicus*
California quail	*Callipepla californica*
Rock pigeon	*Columba livia*
Mourning dove	*Zenaida macroura*
Barn owl	*Tyto alba*
Western burrowing owl	*Athene cunicularia hypugaea*
Anna's hummingbird	*Calypte anna*
Northern flicker	*Colaptes auratus*
Black phoebe	*Sayornis nigricans*
Say's phoebe	*Sayornis saya*
Western kingbird	*Tyrannus verticalis*
Loggerhead shrike	*Lanius ludovicianus*
Western scrub jay	*Aphelocoma californica*
American crow	*Corvus brachyrhynchos*
Common raven	*Corvus corax*
Ruby-crowned kinglet	*Regulus calendula*
Northern mockingbird	*Mimus polyglottos*
Song sparrow	*Melospiza melodia*
Golden-crowned sparrow	*Zonotrichia atricapilla*
Red-winged blackbird	*Agelaius phoeniceus*
Western meadowlark	*Sturnella neglecta*
Brewer's blackbird	*Euphagus cyanocephalus*
Bullock's oriole	*Icterus bullockii*
House finch	*Carpodacus mexicanus*
Mammals	
Virginia opossum	*Didelphis virginiana*
Black-tailed hare	*Lepus californicus*
California ground squirrel	*Spermophilus beecheyi*
Botta's pocket gopher	*Thomomys bottae*
Western harvest mouse	*Reithrodontomys megalotis*
California meadow vole	*Microtus californicus*
Domestic dog	*Canis familiaris*

Table 2
Wildlife Species Observed on the Laurel Ranch Project Site

Coyote	*Canis latrans*
Raccoon	*Procyon lotor*
Feral cat	*Felis catus*

Table 3

Special-Status Plant Species Known to Occur in the Vicinity of the Laurel Ranch Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Adoxaceae					
Viburnum ellipticum Western viburnum	Fed: - State: - CNPS: Rank 2B.3	May-July	Chaparral; cismontane woodland; lower montane coniferous forest.	CNPS 1-Quad Search	None. No chaparral, woodland or forest habitat on the project site. No impacts to this species are anticipated.
Apiaceae					
Cicuta maculata bolanderi Bolander's waterhemlock	Fed: - State: - CNPS: Rank 2B.1	July-September	Marshes and swamps (coastal, fresh, or brackish). 0 to 200 meters.	Closest known occurrence is approximately 3.0 miles northwest of the project site (CNDDB Occurrence No. 15).	None. No marshes or swamps on the project site. Not observed during appropriately timed surveys in 2013 or 2015. No impacts to this species are anticipated.
Lilaeopsis masonii Mason's lilaeopsis	Fed: - State: CR CNPS: Rank 1B.1	April-October	Marshes and swamps (brackish or freshwater); riparian scrub.	Closest known occurrence is approximately 2.6 miles northeast of the project site (CNDDB Occurrence No. 60).	None. No marshes or swamps on the project site. Not observed during appropriately timed survey in 2013 or 2015. No impacts to this species are anticipated.
Asteraceae					
Blepharizonia plumosa Big tarplant	Fed: - State: - CNPS: Rank 1B.1	July-October	Valley and foothill grassland.	Closest known occurrence is approximately 3.3 miles northwest of the project site (CNDDB Occurrence No. 58).	None. Marginally suitable grassland habitat on the project site. Not observed during appropriately timed surveys in 2013 or 2015. No impacts to this species are anticipated.
Centromadia parryi parryi Pappose tarplant	Fed: - State: - CNPS: Rank 1B.2	May-November	Coastal prairie; meadows and seeps; marshes and swamps; vernally wet grassland (sometimes alkaline).	CNPS 1-Quad Search	None. Marginally suitable grassland and wetland habitat on the project site. Not observed during appropriately timed surveys in 2013 or 2015. No impacts to this species are
Helianthella castanaea Diablo helianthella	Fed: - State: - CNPS: Rank 1B.2	March-June	Broadleafed upland forest; chaparral; cismontane woodland; coastal scrub; riparian woodland; valley and foothill grassland.	Closest known occurrence is approximately 4.8 miles southwest of the project site (CNDDB Occurrence No. 71).	None. No suitable woodland or scrub habitat on or adjacent to project site. Species known to occur adjacent to woodland or scrub habitat. No impacts to this species are anticipated.

Table 3

Special-Status Plant Species Known to Occur in the Vicinity of the Laurel Ranch Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Lasthenia conjugens Contra Costa goldfields	Fed: FE State: - CNPS: Rank 1B.1	March-June	Valley and foothill grassland (mesic); vernal pools.	Closest known occurrence is approximately 3.3 miles northwest of the project site (CNDDB Occurrence No. 8).	None. No vernal pools or suitable seasonal wetland on the project site. No impacts to this species are anticipated.
Madia radiata Show golden madia	Fed: - State: - CNPS: Rank 1B.1	March-May	Cismontane woodland; valley and foothill grassland.	Closest known occurrence is approximately 2.3 miles southwest of the project site (CNDDB Occurrence No. 25).	Low. Marginally suitable grassland habitat on the project site. Focused surveys will be conducted in 2016. See text.
Senecio aphanactis Chaparral ragwort	Fed: - State: - CNPS: Rank 2B.2	January-April	Foothill woodland; coastal scrub; (alkaline).	CNPS 1-Quad Search	None. No woodland or coastal scrub on the project site. No impacts to this species are anticipated.
Symphyotrichum lentum Suisun Marsh aster	Fed: - State: - CNPS: Rank 1B.2	August-November	Marshes and swamps (brackish and fresh water)	Closest known occurrence is approximately 2.4 miles northeast of the project site (CNDDB Occurrence No. 148).	None. No marshes or swamps on the project site. Not observed during appropriately timed surveys. No impacts to this species are anticipated.
Boraginaceae					
Amsinckia grandiflora Large-flowered fiddleneck	Fed: FE State: CE CNPS: Rank 1B.1	April-May	Cismontane woodland, Valley and foothill grassland	Closest known occurrence is approximately 5.3 miles southwest of the project site (CNDDB Occurrence No. 2). This is a historical record from 1887 that was confirmed extirpated in 1969.	None. Highly disturbed ruderal grassland on the project site does not provide suitable habitat. No natural, extant records are known in Contra Costa County.
Cryptantha hooveri Hoover's cryptantha	Fed: - State: - CNPS: Rank 1A	April-May	Valley and foothill grassland (sandy).	Closest known occurrence is 3.3 miles northwest of the project site (CNDDB Occurrence No. 4). Record from 1894 herbarium collection. Potentially extirpated by development.	None. Marginal grassland habitat onsite but this species is likely extirpated in California. Most recent record is from 1939. No impacts to this species are anticipated.

Table 3

Special-Status Plant Species Known to Occur in the Vicinity of the Laurel Ranch Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Brassicaceae					
Erysimum capitatum angustatum Contra Costa wallflower	Fed: FE State: CE CNPS: Rank 1B.1	March-July	Inland dunes.	Closest known occurrence is approximately 2.8 miles northwest of the project site (CNDDB Occurrence No. 3).	None. No inland dunes on the project site. No impacts to this species anticipated.
Chenopodiaceae					
Atriplex cordulata cordulata Heartscale	Fed: - State: - CNPS: Rank 1B.2	April-October	Meadows and seeps; chenopod scrub; valley and foothill grassland (sandy); [saline or alkaline].	CNPS 1-Quad Search	None. Marginally suitable grassland and wetland habitat on the project site. Not observed during appropriately timed surveys in 2013 or 2015. No impacts to this species are
Atriplex depressa Rhomboid bract saltbush	Fed: - State: - CNPS: Rank 1B.2	May-October	Chenopod scrub; playas; valley and foothill grassland; [alkaline or clay].	Closest known occurrence is approximately 2.5 miles south of the project site (CNDDB Occurrence No. 74).	None. Marginal grassland and wetland habitat on the project site but not observed during appropriately-timed surveys in 2013 or 2015. No impacts to this species are anticipated.
Extriplex joaquinana San Joaquin spearscale	Fed: - State: - CNPS: Rank 1B.2	April-October	Chenopod scrub; meadows; valley and foothill grassland; [alkaline].	Closest known occurrence is approximately 2.5 miles south of the project site (CNDDB Occurrence No. 104).	None. Marginally suitable grassland habitat on the project site. Not observed during appropriately timed surveys in 2013 or 2015. No impacts to this species are anticipated.
Ericaceae					
Arctostaphylos auriculata Mount Diablo manzanita	Fed: - State: - CNPS: Rank 1B.3	January-March	Chaparral (sandstone).	Closest known occurrence is approximately 4.8 miles northwest of the project site (CNDDB Occurrence No. 18).	None. No chaparral on the project site. No impacts to this species are anticipated.
Arctostaphylos manzanita laevigata Contra Costa manzanita	Fed: - State: - CNPS: Rank 1B.2	January-February	Chaparral (rocky),	CNPS 1-Quad Search	None. No chaparral on the project site. No impacts to this species are anticipated.

Table 3

Special-Status Plant Species Known to Occur in the Vicinity of the Laurel Ranch Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Fabaceae					
Lathyrus jepsonii jepsonii Delta tule pea	Fed: - State: - CNPS: Rank 1B.2	May-September	Marshes and swamps (freshwater and brackish).	Closest known occurrence is approximately 2.6 miles north of the project site (CNDDB Occurrence No. 163).	None. No marshes or swamps on the project site. Not observed during appropriately timed surveys in 2013 or 2015. No impacts to this species are anticipated.
Geraniaceae					
California macrophylla Round-leaved filaree	Fed: - State: - CNPS: Rank 1B.2	March-May	Cismontane woodland; valley and foothill grassland/clay.	Closest known occurrence is approximately 1.6 miles south of the project site (CNDDB Occurrence No. 48).	Low. Marginally suitable grassland habitat on the project site. Focused surveys will be conducted in 2016. See text.
Liliaceae					
Calochortus pulchellus Mt. Diablo fairy lantern	Fed: - State: - CNPS: Rank 1B.2	April-June	Chaparral; cismontane woodland; valley and foothill grassland.	CNPS 1-Quad Search	None. No suitable woodland or chaparral habitat onsite or adjacent to the project site. This species occurs at the edge of chaparral or woodland habitat. No impacts to this species are
Linaceae					
Hesperolinon breweri Brewer's western flax	Fed: - State: - CNPS: Rank 1B.2	May-July	Chaparral; cismontane woodland; valley and foothill grassland; [mostly serpentinite].	Closest known occurrence is approximately 2.7 miles southwest of the project site (CNDDB Occurrence No. 32).	None. No serpentine soils on the project site. This species has high fidelity to serpentine soils. No impacts to this species are anticipated.
Malvaceae					
Hibiscus lasiocarpos occidentalis Woolly rose-mallow	Fed: - State: - CNPS: Rank 1B.2	June-September	Marshes and swamps (freshwater).	Closest known occurrence is approximately 5.0 miles northeast of the project site (CNDDB Occurrence No. 105).	None. No marshes or swamps on the project site. Not observed during appropriately timed surveys in 2013 or 2015. No impacts to this species are anticipated.

Table 3

Special-Status Plant Species Known to Occur in the Vicinity of the Laurel Ranch Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Malacothamnus hallii Hall's bush mallow	Fed: - State: - CNPS: Rank 1B.2	May-September	Chaparral.	CNPS 1-Quad Search	None. No chaparral on the project site. No impacts to this species are anticipated.
Onagraceae					
Oenothera deltoides howellii Antioch dunes evening-primrose	Fed: FE State: CE CNPS: Rank 1B.1	March-September	Interior dunes.	Closest known occurrence is approximately 2.0 miles northeast of the project site (CNDDB Occurrence No. 1).	None. No interior dunes on the project site. No impacts to this species are anticipated.
Orobanchaceae					
Chloropyron molle molle Soft salty bird's-beak	Fed: FE State: CR CNPS: Rank 1B.2	July-September	Marshes and swamps (coastal salt).	Closest known occurrence is approximately 3.6 miles north of the project site (CNDDB Occurrence No. 18).	None. No coastal salt marsh on the project site. Not observed during appropriately timed surveys in 2013 or 2015. No impacts to this species are anticipated.
Papaveraceae					
Eschscholzia rhombipetala Diamond-petaled California poppy	Fed: - State: - CNPS: Rank 1B.1	March-April	Valley and foothill grassland (clay).	Closest known occurrence is approximately 3.2 miles northwest of the project site (CNDDB Occurrence No. 3).	Low. Marginally suitable grassland habitat on the project site. Focused surveys will be conducted in 2016. See text.
Polemoniaceae					
Navarretia nigelliformis radians Shining navarretia	Fed: - State: - CNPS: Rank 1B.2	May-June	Cismontane woodland; valley and foothill grassland; slightly mesic depressions.	Closest known occurrence is approximately 4.0 miles southwest of the project site (CNDDB Occurrence No. 63).	Low. Marginally suitable grassland habitat on the project site. Focused surveys will be conducted in 2016. See text.

Table 3

Special-Status Plant Species Known to Occur in the Vicinity of the Laurel Ranch Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Polygonaceae					
Eriogonum nudum psychicola Antioch Dunes buckwheat	Fed: State: CNPS: Rank 1B.1	June-October	Deltaic Great Central Valley Elevation: 0-66 ft	Closest known occurrence is approximately 3.6 miles northwest of the project site (CNDDB Occurrence No. 30).	None. No inland dunes on the project site. No impacts to this species are anticipated.
Eriogonum truncatum Mount Diablo buckwheat	Fed: - State: - CNPS: Rank 1B.1	April-September	Chaparral; coastal scrub; valley and foothill grassland; [sandy].	Closest known occurrence is approximately 3.5 miles northwest of the project site (CNDDB Occurrence No. 4).	None. Marginally suitable grassland habitat on the project site. Not observed during appropriately timed surveys in 2013 or 2015. No impacts to this species are anticipated.
Scrophulariaceae					
Limosella australis Delta mudwort	Fed: - State: - CNPS: Rank 2.1	May-August	Marshes and swamps; intertidal mudflats.	Closest known occurrence is approximately 2.6 miles north of the project site (CNDDB Occurrence No. 63).	None. No intertidal mudflats on the project site. No impacts to this species are anticipated.

Table 3

Special-Status Plant Species Known to Occur in the Vicinity of the Laurel Ranch Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site

***Status**

Federal:
FE - Federal Endangered
FT - Federal Threatened
FPE - Federal Proposed Endangered
FPT - Federal Proposed Threatened
FC - Federal Candidate

State:
CE - California Endangered
CT - California Threatened
CR - California Rare
CC - California Candidate
CSC - California Species of Special Concern

CNPS:
Rank 1A - Presumed extinct in California
Rank 1B - Plants rare, threatened, or endangered in California and elsewhere
Rank 1B.1 - Seriously endangered in California (over 80% occurrences threatened/ high degree and immediacy of threat)
Rank 1B.2 - Fairly endangered in California (20-80% occurrences threatened)
Rank 1B.3 - Not very endangered in California (<20% of occurrences threatened or no current threats known)

CNPS Continued:
Rank 2 - Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 2A - Extirpated in California, common elsewhere
Rank 2B.1 - Seriously endangered in California, but more common elsewhere
Rank 2B.2 - Fairly endangered in California, but more common elsewhere
Rank 2B.3 - Not very endangered in California, but more common elsewhere
Rank 3 - Plants about which we need more information (Review List)
Rank 3.1 - Plants about which we need more information (Review List) Seriously endangered in California
Rank 3.2 - Plants about which we need more information (Review List) Fairly endangered in California
Rank 4 - Plants of limited distribution - a watch list

Table 4

Special-Status Wildlife Species Known to Occur within 5 Miles of the Laurel Ranch Project Site

Species	*Status	Habitat	Closest Locations	Probability on Project Site
Invertebrates				
Vernal pool fairy shrimp *Branchinecta lynchi*	Fed: FT State: - Other:	Endemic to the grasslands of the Central Valley, central coast mountains, and south coast mountains. Inhabit static rain-filled/vernal pools, small, clear water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression	Closest record for this species is located 3.0 miles southwest (Occurrence No. 353)	No vernal pools on the project site
Vernal pool tadpole shrimp *Lepidurus packardi*	Fed: FE State: - Other:	Inhabits vernal pools with turbid and/or silty water. Mud substrate typical.	Closest record for this species is located 3.3 miles southwest (Occurrence No. 177)	No vernal pools on the project site
Fish				
Steelhead - California Central Valley ESU *Oncorhynchus mykiss*	Fed: FT State: - Other:	Found in the Sacramento and San Joaquin Rivers and their tributaries. Migrates through the estuary to spawning grounds. Eggs are laid in small and medium gravel and need a good water flow to survive.	Closest record for this species is located 3.3 miles north (Occurrence No. 27)	No suitable stream or creek on site.
Longfin smelt *Spirinichus thaleichthys*	Fed: -- State: CT Other:	Endemic to the Sacramento-San Joaquin River system. Inhabits open waters in the Delta and Suisun Bay. After spawning, larvae are carried downstream to brackish nursery areas.	Closest record for this species is located 3.3 miles north (Occurrence No. 33)	No suitable stream or creek on site.
Sacramento perch *Archoplites interruptus*	Fed: -- State: CSC Other:	Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley. Prefer warm water. Aquatic vegetation is essential for young. Tolerate wide range of physico-chemical water conditions.	Closest record for this species is located 3.0 miles north (Occurrence No. 3)	No suitable stream or creek on site.

Table 4

Special-Status Wildlife Species Known to Occur within 5 Miles of the Laurel Ranch Project Site

Species	*Status	Habitat	Closest Locations	Probability on Project Site
Amphibians				
California tiger salamander *Ambystoma californiense*	Fed: FT State: CT Other:	Central and Santa Barbara Co. DPS are Fed. Threatened. Sonoma Co. DPS is Endangered. Found in grassland habitats of the valleys and foothills. Requires burrows for aestivation and standing water until late spring (May) for larvae to metamorphose.	Closest record for this species is located 2.1 miles southwest (Occurrence No. 479)	Project site is surrounded by development and Highway 4. See text.
California red-legged frog *Rana draytonii*	Fed: FT State: CSC Other:	Occurs in lowlands and foothills in deeper pools and streams, usually with emergent wetland vegetation. Requires 11-20 weeks of permanent water for larval development.	Closest record for this species is located 2.7 miles southwest (Occurrence No. 933)	Project site is surrounded by development and Highway 4. See text.
Reptiles				
Western pond turtle *Emys marmorata*	Fed: -- State: CSC Other:	Inhabits ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Needs suitable basking sites and upland habitat for egg laying. Occurs in the Central Valley and Contra Costa County.	Closest record for this species is located 3.2 miles northeast (Occurrence No.279)	No suitable aquatic habitat on site.
Silvery legless lizard *Anniella pulchra pulchra*	Fed: -- State: CSC Other:	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with high moisture content.	Closest record for this species is located 1.7 miles north (Occurrence No. 55)	None. No sandy substrates occur on site.
Alameda whipsnake *Masticophis lateralis euryxanthus*	Fed: FT State: CT Other:	Coastal scrub and chaparral habitats of Contra Costa and Alameda Counties. Prefers south-facing slopes with a mosaic of shrubs, trees, and grassland.	Closest record for this species is located 4.6 miles southwest (Occurrence No. 68)	No core habitat on or adjacent to project site.

Table 4

Special-Status Wildlife Species Known to Occur within 5 Miles of the Laurel Ranch Project Site

Species	*Status	Habitat	Closest Locations	Probability on Project Site
Giant garter snake *Thamnophis gigas*	Fed: FT State: CT Other:	Inhabits freshwater marshes and low gradient streams. Also found in drainage canals and irrigation ditches.	Closest record for this species is located 3.0 miles north (Occurrence No. 47)	No suitable habitat on site.
Birds				
Song Sparrow (Modesto Population) *Melospiza melodia mailliardi*	Fed: State: CSC Other:	Endemic to California, residing only in the north-central portion of the Central Valley. Inhabit emergent freshwater marshed and vegetated irragation canals and levees dominated by tules, cattails, and blackberry. Nest in riparian willows and valley oak.	Closest record for this species is located 4.4 miles northwest (Occurrence No. 91)	Low. Marginal nesting habitat in cattails on site. Preconstruction surveys will be conducted.
Double-crested cormorant *Phalacrocorax auritus*	Fed: - State: WL Other:	Colonial nester on coastal cliffs on in tall trees along river and lake margins in the interior of the state. Nest along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	Closest record for this species is located 4.6 miles northwest (Occurrence No. 28)	No suitable nesting habitat on site.
White-tailed kite *Elanus leucurus*	Fed: State: Other: FP	Found in lower foothills and valley margins with scattered oaks and along river bottomlands or marshes adjacent to oak woodlands. Nests in trees with dense tops.	Record for this species located immediately south of project site (Occurrence No. 87)	Low. Marginal nesting habitat occurs onsite. Preconstruction surveys will be conducted.
Swainson's hawk *Buteo swainsoni*	Fed: - State: CT Other:	Migratory and resident raptor that breeds in open areas with scattered trees. Prefers riparian and sparse oak woodland habitats for nesting. Requires nearby grasslands, grain fields, or alfalfa for foraging.	Closest record for this species is located 1.6 miles northwest (Occurrence No. 1804)	Unlikely to nest on site. Regardless, preconstruction surveys will be conducted.
California black rail *Laterallus jamaicensis coturniculus*	Fed: -- State: CT Other:	Inhabits salt marshes bordering larger bays. Prefers tidal salt marshes of pickleweed. May also occur in fresh to brackish marshes.	Closest record for this species is located 2.3 miles northwest (Occurrence No. 109)	No marsh habitats on site.

Table 4

Special-Status Wildlife Species Known to Occur within 5 Miles of the Laurel Ranch Project Site

Species	*Status	Habitat	Closest Locations	Probability on Project Site
Western burrowing owl *Athene cunicularia hypugaea*	Fed: -- State: CSC Other:	Found in open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Closests record for this species occurs immediately south of project site (Occurrence No. 981)	Low/moderate suitable habitat and burrows occur on site. Preconstruction surveys will be conducted.
Loggerhead shrike *Lanius ludovicianus*	Fed: -- State: CSC Other:	Found in broken woodlands, shrubland, and other habitats. Prefers open country with scattered perches for hunting and fairly dense brush for nesting.	Closest record for this species is located 3.1 miles northeast (Occurrence No.3)	Low/moderate suitable nesting habitat occurs on site. Preconstruction surveys will be conducted.
Mammals				
Western red bat *Lasiurus blossevillii*	Fed: State: CSC Other:	Prefers riparian areas where they roost in tree foliage. This bat is occasionally captured in riparian habitats dominated by cottonwoods, oaks, sycamores, and walnuts and is rarely found in desert habitats.	Closest record for this species is located 3.2 miles northwest (Occurrence No. 66)	Low. Unlikely to roost on site. Regardless, preconstruction surveys will be conducted.
Salt marsh harvest mouse *Reithrodontomys raviventris*	Fed: FE State: CE Other:	Inhabits saline marshes in the San Francisco Estuary. Prefers pickleweed marshes. Requires higher areas for escaping high water.	Closest record for this species is located 5.0 miles northwest (Occurrence No. 66)	No marsh habitat on site.
San Joaquin kit fox *Vulpes macrotis mutica*	Fed: FE State: CT Other:	Inhabits open grasslands with scattered shrubs. Needs loose-textured sand soils for burrowing.	Closest record for this species is located 4.1 miles west (Occurrence No. 21)	None. Project site is surrounded by development and Highway 4.
American badger *Taxidea taxus*	Fed: - State: CSC Other:	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Need sufficient food, friable soils & open, uncultivated ground. Prey on burrowing rodents. Dig burrows.	Closest record for this species is located 2.1 miles south (Occurrence No. 398)	No connectivity to large open space habitats.

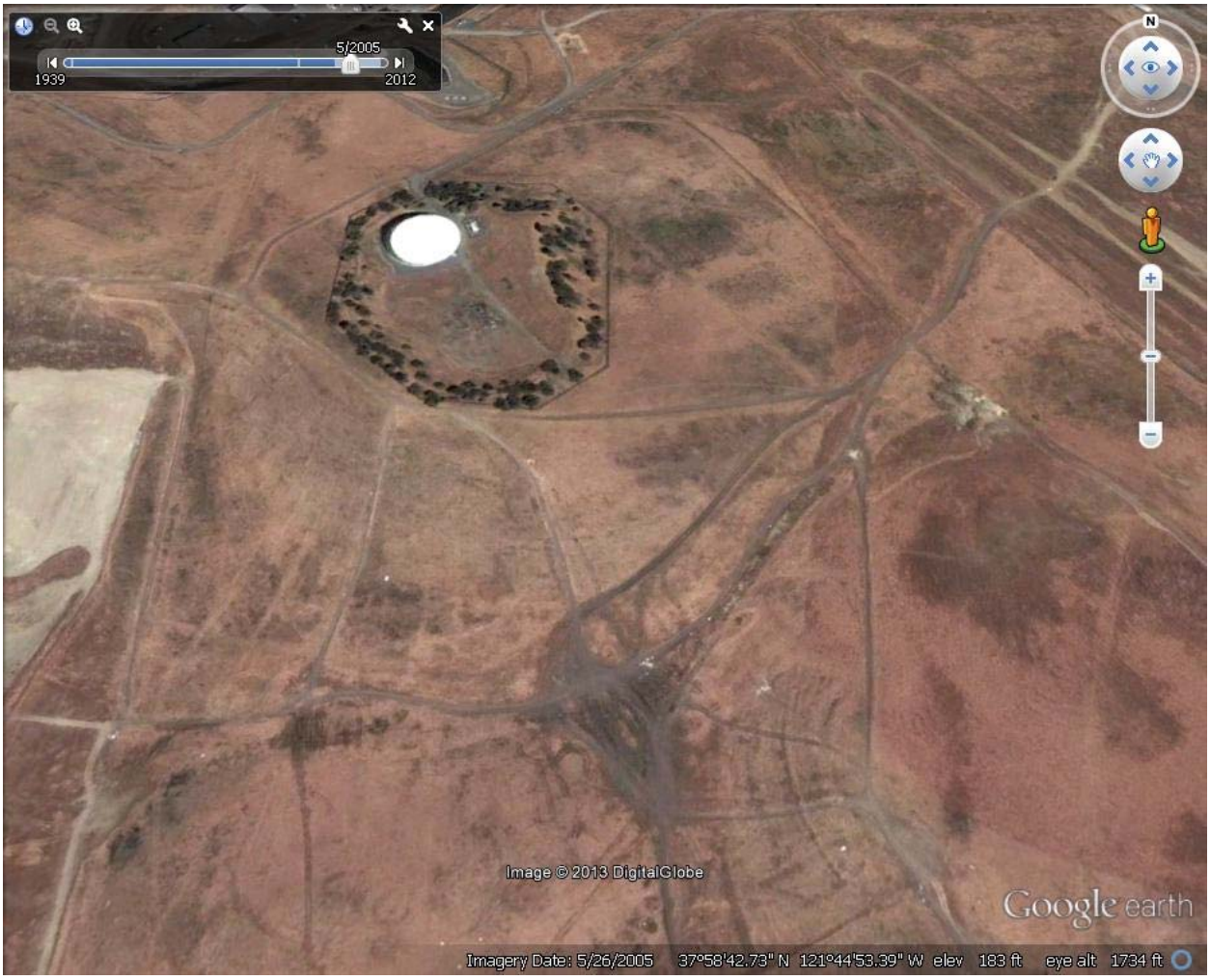
Table 4

Special-Status Wildlife Species Known to Occur within 5 Miles of the Laurel Ranch Project Site

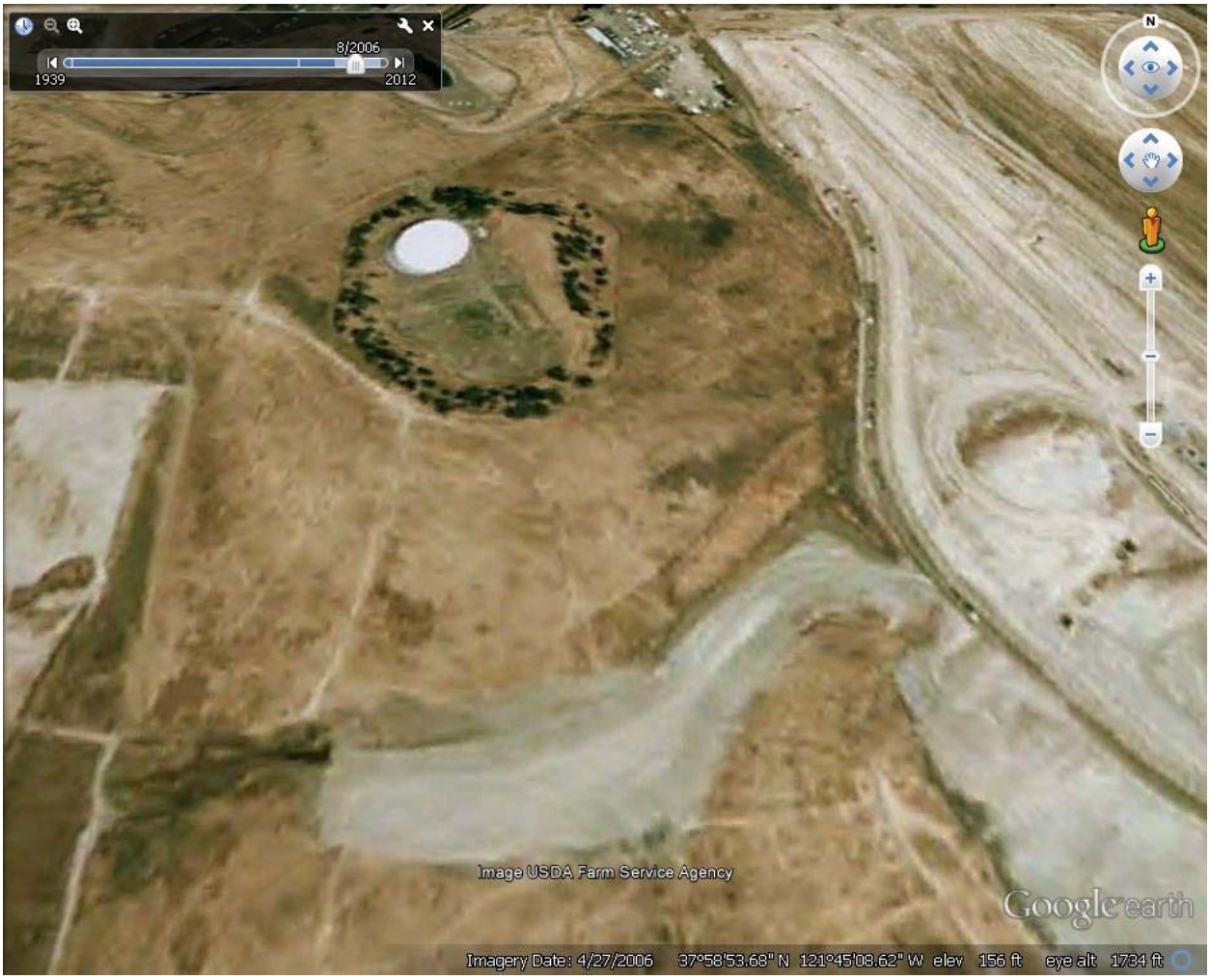
Species	*Status	Habitat	Closest Locations	Probability on Project Site

***Status**

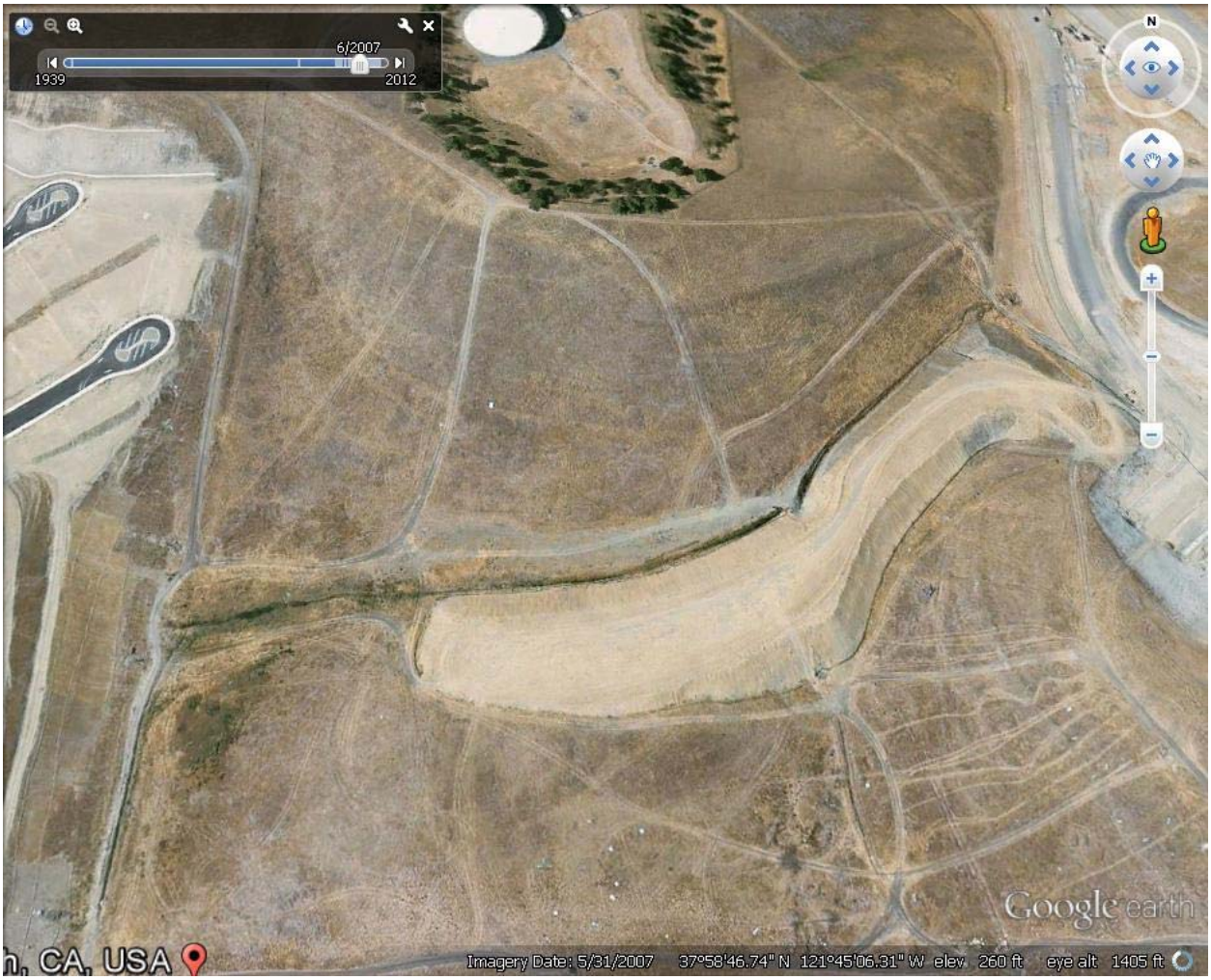
Federal:	State:
FE - Federal Endangered	CE - California Endangered
FT - Federal Threatened	CT - California Threatened
FPE - Federal Proposed Endangered	CR - California Rare
FPT - Federal Proposed Threatened	CC - California Candidate
FC - Federal Candidate	CSC - California Species of Special Concern
FPD - Federally Proposed for delisting	FP - Fully Protected
	WL - Watch List. Not protected pursuant to CEQA



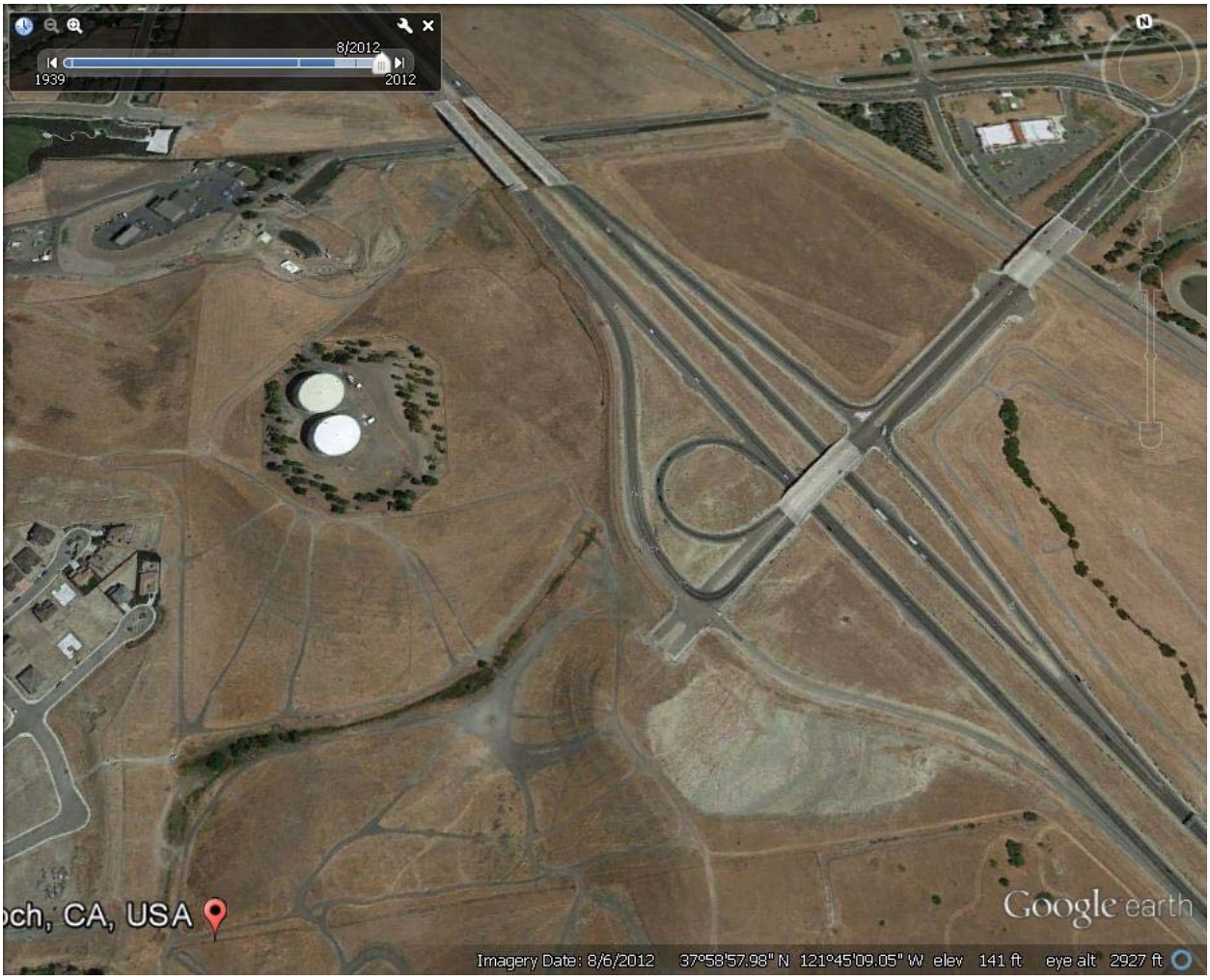
Richland Laurel Project Site 2005



Richland Laurel Project Site 2006



Richland Laurel Project Site 2007



Richland Laurel Project Site 2012



80' 0' 40' 80' 160' 320'

(IN FEET)
1 INCH = 80 ft.

LEGEND

DESCRIPTION	PROPOSED	EXISTING
SUBDIVISION BOUNDARY		
RIGHT OF WAY		
FACE OF CURB		
PROPERTY LINES		
CONTOUR LINES	10 / 2	110
LOT LINE ADJUSTMENT		
PUE		
RETAINING/SOUND WALL		
LIMITS OF GRADING		
SANITARY SEWER LINE, & MANHOLE	S	EX.SS
STORM DRAIN LINE, MANHOLE, FIELD INLET AND CATCH BASIN		
CLEAN STORM DRAIN LINE		
WATER LINE	W	W
SWALE/ V-DITCH		
PAD ELEVATION	P=125.5	
SPOT ELEVATION	x 125.5	x 125.5
STREET SLOPE	2.5%	
RECORD		(R)

11-20-2015 TM REVISION EXHIBIT

LAUREL RANCH

FINAL DEVELOPMENT PLAN
VESTING TENTATIVE MAP
SUBDIVISION 8741

A PORTION OF NORTHWEST 1/4 OF
SECTION 34, T.2 E., R.2 E., MDB & M
APN 53-060-015

CITY OF ANTIOCH, CALIFORNIA
FOR
RICHLAND COMMUNITIES
JUNE, 2015

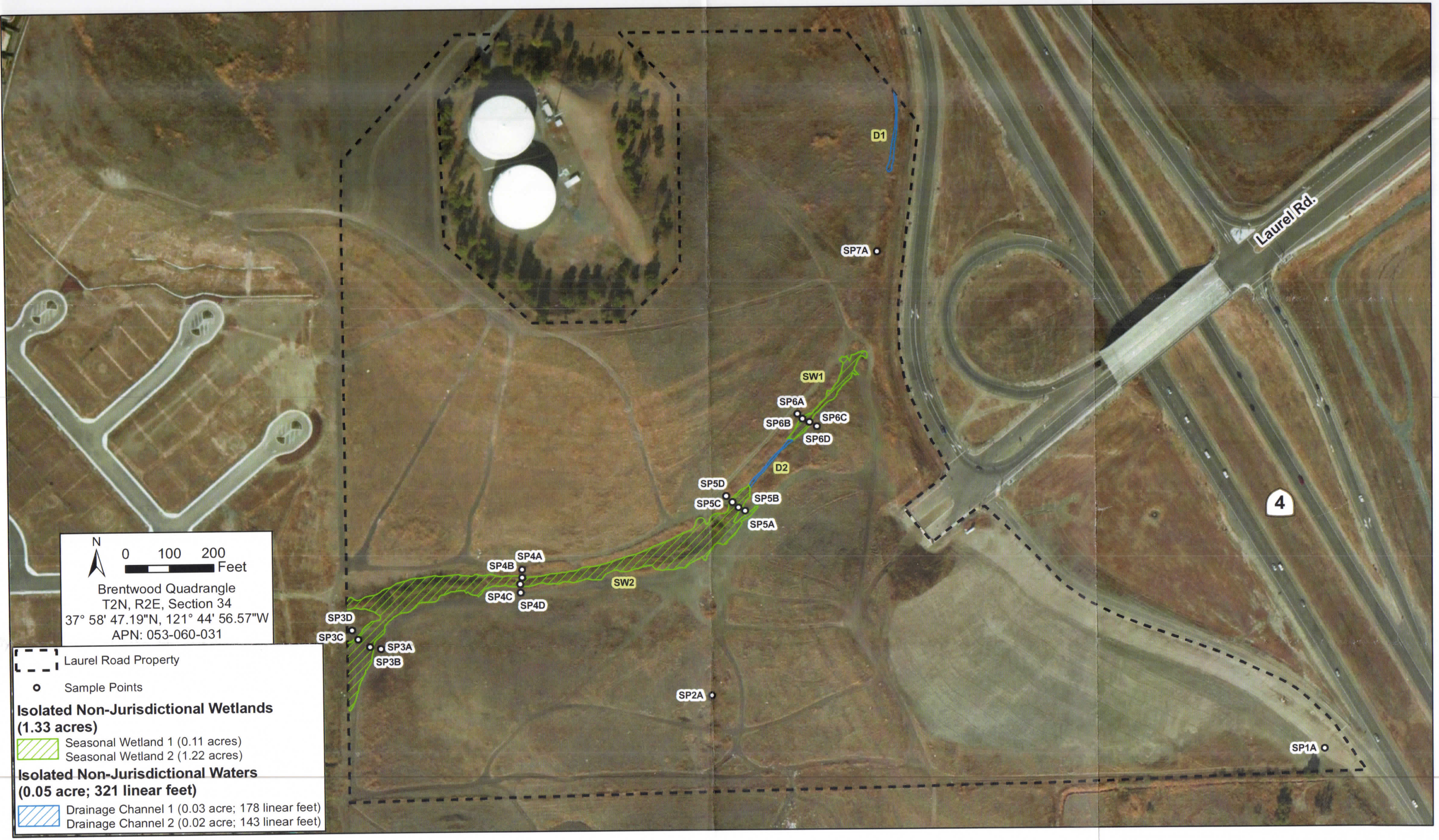
dk CONSULTING
PLANNING · ENGINEERING · CONSTRUCTION
1440 Maria Lane, Suite 200, Walnut Creek, California 94596 (925) 932-6868 Tel. (925) 932-0910 Fax

GRADING AND UTILITY PLAN

SHEET 6A OF 13

DK JOB# 13-1039-10

F:\PROJECTS\2013\13-1039-LAUREL RANCH\DWG\TM\131039-WATER DIST TM.DWG 4/20/2015



OLBERDING ENVIRONMENTAL INC.

193 Blue Ravine Rd., Ste. 165
Folsom, CA 95630
Phone: (916) 985-1188

Figure 5: Jurisdictional Delineation Map
Laurel Road Property

Imagery Date: 11/02/2010

Verified 5-May-2015 WHG

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

Central Valley Regional Water Quality Control Board

17 September 2015

Mr. Aaron Ross-Swain
Richland Communities, Inc.
810 Ygnacio Valley Road, Suite 110
Walnut Creek, CA 94596

WITHDRAWL OF CLEAN WATER ACT §401 TECHNICALLY CONDITIONED WATER QUALITY CERTIFICATION FOR DISCHARGE OF DREDGED AND/OR FILL MATERIALS FOR THE LAUREL RANCH DEVELOPMENT PROJECT (WDID#5B07CR00170), ANTIOCH, CONTRA COSTA COUNTY

On 6 August 2015 we issued a Water Quality Certification for the Laurel Ranch Development Project which consists of construction of an economically viable single-family residential development to accommodate the increasing housing demand within the City of Antioch. The original Laurel Ranch project was approved in the late 1990s/early 2000s. The developer did not get the appropriate extensions to the tentative map and the map expired. The new Laurel Ranch project is a 54-acre mixed use development in the City of Antioch, which is within a Phase I MS4 community. The proposed project is to build 88 single-family homes, 98 cluster dwellings and associated infrastructure. The water quality certification was issued with the impression that the US Army Corps of Engineers (Corps) found the on-site wetland features as jurisdictional.

However, the Corps found that the on-site water feature was non-jurisdictional (i.e., an isolated water) and not subject to Section 404 of the federal Clean Water Act (CWA). Therefore a Section 401 CWA certification is not required and making the wetland features subject to the California Water Code (CWC). The wetland/water feature contains no endangered species or suitable habitat for endangered species. We have determined that the discharge (fill) to the isolated wetland/water feature to repair & complete the storm drain system is a minor discharge and will not be subject to waste discharge requirements. The WQC application you submitted on 1 May 2015 is deemed a report of waste discharge as required by CWC Section 13260 and our failure to take further action on the project results in a waiver of waste discharge requirements. You may proceed with your project provided that all other applicable permits (including enrollment under the Construction General Permit Order 2009-0009-DWQ) are obtained.

If you have any questions or comments regarding this matter please contact me at (530) 224-4859 or by email at George.Day@waterboards.ca.gov.

George D. Day, P.E., Chief
Senior Water Resources Control Engineer
Storm Water & Water Quality Certification Unit

GDD:lmw

cc w/o enclosures: Mr. Bill Guthrie, U.S. Army Corp of Engineers, Sacramento
Department of Fish and Wildlife, Region 2, Rancho Cordova
U.S. Fish and Wildlife Service, Sacramento
Mr. Bill Jennings, CALSPA, Stockton
Mr. Jeff Olberding, Olberding Environmental, Inc., Folsom
Mr. Geoff Monk, Monk & Associates, Walnut Creek

cc w/o enclosures by email: U.S. EPA, Region 9, San Francisco
Mr. Bill Orme, SWRCB, Certification Unit, Sacramento

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B.2 - Special-Status Plant Survey Report

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MONK & ASSOCIATES
Environmental Consultants

June 1, 2016

Richland Planned Communities, Inc.
1508 Eureka Road, Suite 140
Roseville, California 95661
Attention: Mr. Aaron Ross-Swain

RE: Special-Status Plant Survey Report
Laurel Ranch Project Site
Antioch, Contra Costa County, California

Dear Mr. Ross-Swain:

1. INTRODUCTION

Monk & Associates, Inc. (M&A) completed focused surveys for special-status (that is, rare, threatened, or endangered) plants in suitable habitats within the development envelope (hereinafter referred to as the project envelope) of the proposed Laurel Ranch Development Site (hereinafter referred to as the project site) located in the City of Antioch, California (Figures 1 and 2). Below we provide our survey methods and the results of our surveys as well as a description of the project's plant communities.

2. PROPERTY LOCATION AND DESCRIPTION

The Laurel Ranch project site has been subjected to fairly intense disturbance over many years, as is clearly evident on the current aerial photograph of the project site (Figure 3). The site is bisected by numerous motorcycle trails and there are piles of debris and fill material deposited throughout the site. According to the *Biological Resources Assessment* report prepared by Michael Brandman Associates for the Laurel Ranch Subdivision[1], the project site has a history of cattle grazing and more recently (2005) the site was used for a temporary stockpile location for excess dirt generated from the Highway 4 Bypass construction project.

The 54-acre project site wraps around an enclosed reservoir ("water tank") facility owned by the Diablo Water District along the northern project site boundary (Figure 3). The Contra Costa County Water District pumping facility and high-density housing occur further to the north of the reservoir site. Several recently constructed housing developments occur to the west of the project site. An undeveloped parcel borders the southern project site boundary, and this undeveloped parcel has an approved Vesting Tentative Map consisting of 525 single family homes, roads, parks, and open space further to the south it is developed with high-density housing and commercial areas. The State Highway 4 Bypass and the Laurel Avenue off ramp occur immediately east of the project site. Further to the east there is more high-density housing and commercial developments. The project site is virtually surrounded within a densely urbanized area. Figures 2 and 3 illustrate the land use surrounding the project site.

[1] Michael Brandman Associates 2003

Residential development immediately west of the project site commenced construction in 2002 and continues through today on a mostly leveled plateau that gently slopes up from Hillcrest Avenue in the City of Antioch to the western edge of the project site. This leveled plateau drops off precipitously onto the project site. It was intended that this leveled plateau continue eastward on the project site connecting with infrastructure and street levels constructed on the east side of the project site when the Highway 4 Bypass was constructed. However, development of the project site stalled during the recession of 2008. The eastward extension of relatively recently developed high-density housing stops at what is now the western edge of the current project site. The proposed project would complete the development contemplated in the specific plan area (*Future Urbanization Area #2 Specific Plan, Antioch, California* 1995) that includes development across the project site to Laurel Avenue on the eastern edge of the project site.

3. SURVEY METHODOLOGY

3.1 Background Research

Prior to conducting the 2016 special-status plant survey, M&A searched California Department of Fish and Wildlife's (the Department) Natural Diversity Database (RareFind 3.1 Application)2 for occurrences of special-status plants within a five mile radius of the project site. M&A also searched the most current electronic version of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants of California3* for records of special-status plants known in the region of the project site. These records were compiled into a table (Table 1, attached).

3.2 Site Special-Status Plant Surveys

Special-status plant surveys of the project site were conducted by M&A biologists Ms. Christy Owens and Ms. Sadie McGarvey on August 29, 2013, and Ms. Owens and Ms. Caitlyn Bishop on July 31, 2015. Additional plant surveys were conducted by Ms. Hope Kingma and Mr. Devin Jokerst on April 7th, 2016, and Ms. Owens and Mr. Jokerst on May 18th 2016.

The M&A surveys followed USFWS (1996a and 2002), CDFW (2009), and CNPS (2001) published survey guidelines. These guidelines state that special-status plant surveys should be conducted at the proper time of year when special-status and locally significant plants are both evident and identifiable. The guidelines also state that the surveys be floristic in nature with every plant observed identified to species, subspecies, or variety as necessary to determine their rarity status. Finally, these surveys must be conducted in a manner that is consistent with conservation ethics and accepted plant collection and documentation techniques. Following these guidelines, surveys were conducted during the months when special-status plant species

2 California Natural Diversity Data Base (CNDDB). 2013. RareFind 3.1 Computer printout for special-status species within a 5-mile radius of the project site. California Natural Heritage Division, California Department of Fish and Game, Sacramento, CA.

3 CNPS (California Native Plant Society). 2001. Inventory of rare and endangered plants of California (sixth edition). Rare plant scientific advisory committee, David P. Tibor, convening editor. California Native Plant Society. Sacramento, CA. x+338 pps.

from the region are known to be evident and flowering well in advance of any ground-disturbing activities where suitable habitat is present. This may entail repeated floristic surveys to observe all the potential target species during the appropriate floristic period(s).

All areas within the proposed project development footprint were examined by systematic walking transects through potential habitat, and by closely examining any existing microhabitats that could potentially support special-status plants. All plant species found on the project site will be identified to species or to a level needed to determine whether they qualify as special-status plants. Plants that needed further evaluation were collected and keyed in the lab. Final determinations for collected plants were made by keying specimens using standard references such as *The Jepson Manual* (Baldwin 2012). A list of all vascular plant taxa encountered on the project site is provided in Table 2.

4. SURVEY RESULTS

4.1 Special-Status Plants

All plants observed on the project site during the surveys are listed in Table 2, attached. There were no special-status plant species identified within the project envelope. Overall, a total of 138 plant species were observed on the project site. Of these 138 species, 99 plants (or 72%) were non-native, and 39 plants (or 28%) were native.

4.2 Plant Communities

The plant communities found onsite are all anthropogenic communities, that is, communities that are a result of human influence and disturbance to the natural environment. Below we discuss the plant communities found on the project site.

4.2.1 RUDERAL HERBACEOUS HABITAT

The project site is excessively disturbed by four-wheel drive vehicles, and an endless stream of trespassers that drive and dump all over the project site. Landowners have been unable to stem the flow of trespassers on this property. K-rails and fencing installed to keep trespassers out are simply pushed aside allowing access to the site. Trespassers appear to routinely start large bonfires on the project site and accordingly, the landowners disk fire breaks and most accessible areas of the project site to prevent wildfires.

The project site is dominated by ruderal herbaceous habitat. Ruderal (weedy) communities are assemblages of plants that thrive in waste areas, roadsides and other sites that have been disturbed by human activity. Typically hardpacked soils of roadsides, parking lots, industrial areas and construction sites support communities of ruderal species. Ruderal vegetation is adapted to high levels of disturbance, and persists almost indefinitely in areas with continuous disturbance.

Dominant non-native grass species observed on the project site include slender oats (*Avena barbata*), ripgut brome (*Bromus diandrus*), red brome (*Bromus madritensis* ssp. *rubens*), soft chess (*Bromus hordeaceus*) and Italian ryegrass (*Festuca perennis*). Dominant non-native forb species observed on the project site include annual yellow sweetclover (*Melilotus indicus*),

prickly lettuce (*Lactuca serriola*), Italian thistle (*Carduus pycnocephalus* ssp. *pycnocephalus*), common vetch (*Vicia sativa*), mustard (*Hirschfeldia incana* and *Brassica nigra*) and star thistle (*Centaurea solstitialis* and *C. calcitrapa*), among others. Due to past disturbance, very few native, herbaceous taxa remain on the project site.

The few native plant species found in the ruderal herbaceous community includes narrow-leaved milkweed (*Asclepias fascicularis*), horseweed (*Erigeron canadensis*), Great Valley gumplant (*Grindelia camporum*), telegraph weed (*Heterotheca grandiflora*), virgate tarweed (*Holocarpha virgata* ssp. *virgata*), Spanish clover (*Acmispon americanus* var. *americanus*), California poppy (*Eschscholzia californica*), small fescue (*Festuca microstachys*), winecup clarkia (*Clarkia purpurea* ssp. *quadrivulnera*) and purple owl's clover (*Castilleja exserta* ssp. *exserta*).

Animals observed in ruderal habitats on the project site are species adapted to human disturbance and include the American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), rock pigeon (*Columba livia*), turkey vulture (*Cathartes aura*), black-tailed hare (*Lepus californicus*), Botta's pocket gopher (*Thomomys bottae*), and California ground squirrel (*Spermophilus beecheyi*).

4.2.2 DRAINAGE

There is a drainage that enters the project site on the southwestern project site boundary and drains onto the site from the development immediately to the west of the project site (see Hydrology section above). This man-made drainage is dominated by narrow-leaved and broad-leaved cattail (*Typha angustifolia* and *T. latifolia*), with dense thickets of riparian vegetation dominated by willows (*Salix lasiolepis*, *Salix laevigata* and *Salix gooddingii*), and an understory dominated by hydrophytic (wetland) vegetation. Wetland vegetation growing in the ditch includes the following native species: seacoast bulrush (*Bolboschoenus robustus*), tall flatsedge (*Cyperus eragrostis*), hairy willow herb (*Epilobium ciliatum*), knotgrass (*Paspalum distichum*), lesser duckweed (*Lemna minor*). Non-native hydrophytic (wetland) vegetation observed in the ditch includes brass-buttons (*Cotula coronopifolia*), rabbit's-foot grass (*Polypogon monspeliensis*), hyssop loosestrife (*Lythrum hyssopifolia*), Dallis grass (*Paspalum dilatatum*), water speedwell (*Veronica anagallis-aquatica*), and spear oracle (*Atriplex patula*), among others.

This concludes M&A's special-status plant species survey report. Should you have any questions, or wish to discuss any other aspect of these surveys, please do not hesitate to call me at (925) 947-4867, extension 212.

Sincerely,

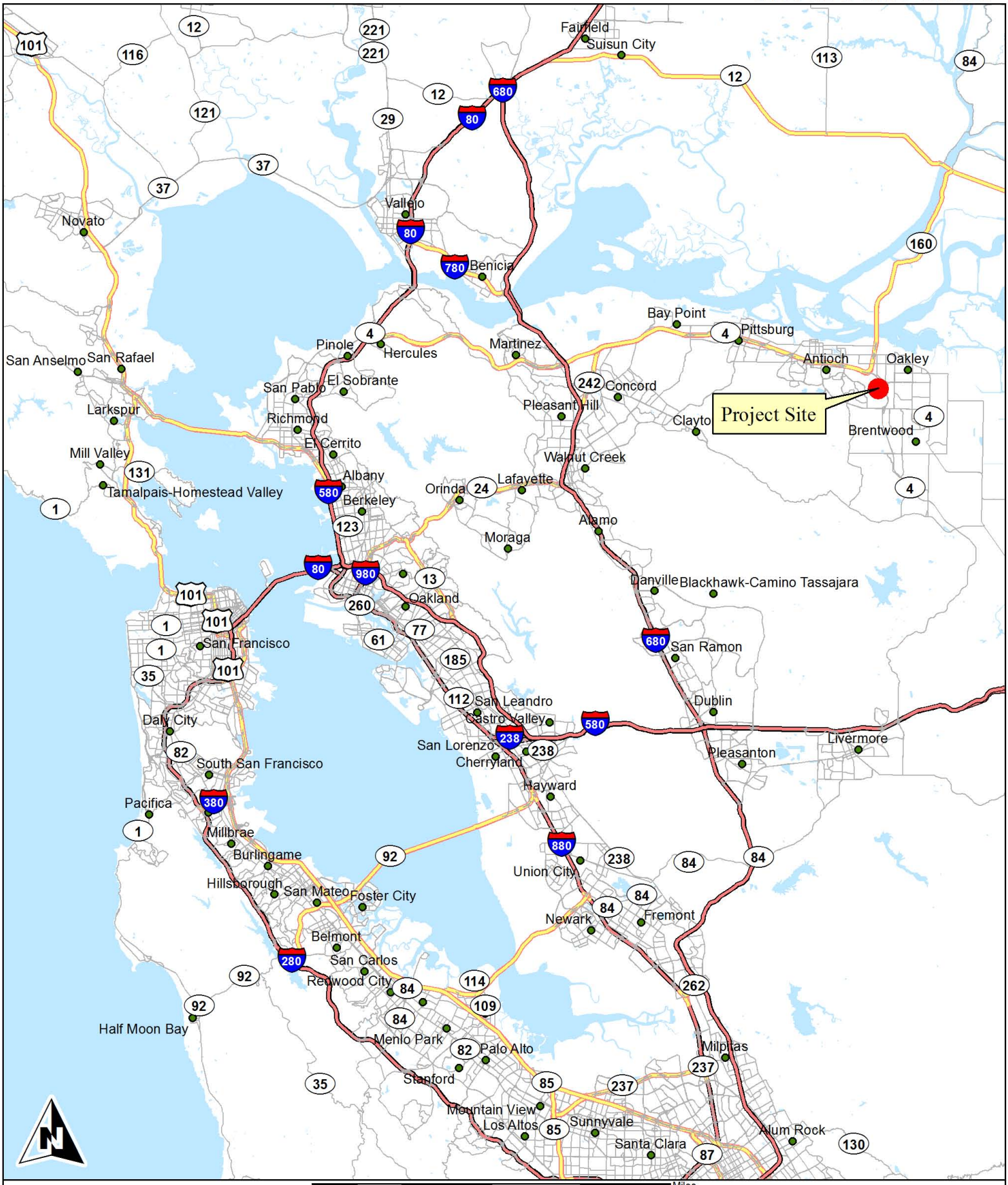


Hope Kingma
Associate Biologist

Attachments: Figure 1. Laurel Ranch Project Site Regional Map
Figure 2. Laurel Ranch Project Site Location Map
Figure 3. Aerial Photograph of Laurel Ranch Project Site

Table 1. Special-Status Plant Species Known to Occur in the Vicinity of the Laurel Ranch Project Site

Table 2. Plant Species Observed on the Laurel Ranch Project Site



Monk & Associates
Environmental Consultants
1136 Saranap Avenue, Suite Q
Walnut Creek, California 94595
(925) 947-4867

Figure 1. Laurel Ranch Project Site
Regional Map
Antioch, California

County: Contra Costa
Map Preparation Date: July 24, 2015



Monk & Associates
Environmental Consultants
1136 Saranap Avenue, Suite Q
Walnut Creek, California 94595
(925) 947-4867

Figure 2. Laurel Ranch Project Site
Location Map
Antioch, California

Section: 34: T2N R2E
37°58'40.37N 121°44'53.17W
7.5-Minute Brentwood &
Antioch South quadrangle
Aerial Photograph Source: ESRI
Map Preparation Date: July 24, 2015



Monk & Associates
Environmental Consultants
1136 Saranap Avenue, Suite Q
Walnut Creek, California 94595
(925) 947-4867

Figure 3. Aerial Photograph of the
Laurel Ranch Project Site
Antioch, California

Aerial Photograph Source: ESRI
Map Preparation Date: July 24, 2015

Special-Status Plant Species Known to Occur in the Vicinity of the Laurel Ranch Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Adoxaceae					
Viburnum ellipticum Western viburnum	Fed: - State: - CNPS: Rank 2B.3	May-July	Chaparral; cismontane woodland; lower montane coniferous forest.	CNPS 1-Quad Search	None. No chaparral, woodland or forest habitat on the project site. No impacts to this species are anticipated.
Apiaceae					
Cicuta maculata bolanderi Bolander's waterhemlock	Fed: - State: - CNPS: Rank 2B.1	July-September	Marshes and swamps (coastal, fresh, or brackish). 0 to 200 meters.	Closest known occurrence is approximately 3.0 miles northwest of the project site (CNDDB Occurrence No. 15).	None. No marshes or swamps on the project site. Not observed during appropriately timed surveys in 2013 or 2015. No impacts to this species are anticipated.
Lilaeopsis masonii Mason's lilaeopsis	Fed: - State: CR CNPS: Rank 1B.1	April-October	Marshes and swamps (brackish or freshwater); riparian scrub.	Closest known occurrence is approximately 2.6 miles northeast of the project site (CNDDB Occurrence No. 60).	None. No marshes or swamps on the project site. Not observed during appropriately timed survey in 2013, 2015, or 2016. No impacts to this species are anticipated.
Asteraceae					
Blepharizonia plumosa Big tarplant	Fed: - State: - CNPS: Rank 1B.1	July-October	Valley and foothill grassland.	Closest known occurrence is approximately 3.3 miles northwest of the project site (CNDDB Occurrence No. 58).	None. Marginally suitable grassland habitat on the project site. Not observed during appropriately timed surveys in 2013 or 2015. No impacts to this species are anticipated.
Centromadia parryi parryi Pappose tarplant	Fed: - State: - CNPS: Rank 1B.2	May-November	Coastal prairie; meadows and seeps; marshes and swamps; vernally wet grassland (sometimes alkaline).	CNPS 1-Quad Search	None. Marginally suitable grassland and wetland habitat on the project site. Not observed during appropriately timed surveys in 2013, 2015, or 2016. No impacts to this species are
Helianthella castanaea Diablo helianthella	Fed: - State: - CNPS: Rank 1B.2	March-June	Broadleafed upland forest; chaparral; cismontane woodland; coastal scrub; riparian woodland; valley and foothill grassland.	Closest known occurrence is approximately 4.8 miles southwest of the project site (CNDDB Occurrence No. 71).	None. No suitable woodland or scrub habitat on or adjacent to project site. Species known to occur adjacent to woodland or scrub habitat. No impacts to this species are anticipated.

Special-Status Plant Species Known to Occur in the Vicinity of the Laurel Ranch Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Lasthenia conjugens Contra Costa goldfields	Fed: FE State: - CNPS: Rank 1B.1	March-June	Valley and foothill grassland (mesic); vernal pools.	Closest known occurrence is approximately 3.3 miles northwest of the project site (CNDDB Occurrence No. 8).	None. No vernal pools or suitable seasonal wetland on the project site. Not observed during appropriately timed surveys. No No impacts to this species are are anticipated.
Madia radiata Show golden madia	Fed: - State: - CNPS: Rank 1B.1	March-May	Cismontane woodland; valley and foothill grassland.	Closest known occurrence is approximately 2.3 miles southwest of the project site (CNDDB Occurrence No. 25).	None. Marginally suitable grassland habitat on the project site. Not observed during appropriately timed surveys in 2016. No impacts to this species are anticipated.
Senecio aphanactis Chaparral ragwort	Fed: - State: - CNPS: Rank 2B.2	January-April	Foothill woodland; coastal scrub; (alkaline).	CNPS 1-Quad Search	None. No woodland or coastal scrub on the project site. No impacts to this species are anticipated.
Symphyotrichum lentum Suisun Marsh aster	Fed: - State: - CNPS: Rank 1B.2	August-November	Marshes and swamps (brackish and fresh water)	Closest known occurrence is approximately 2.4 miles northeast of the project site (CNDDB Occurrence No. 148).	None. No marshes or swamps on the project site. Not observed during appropriately timed surveys. No impacts to this species are anticipated.
Boraginaceae					
Amsinckia grandiflora Large-flowered fiddleneck	Fed: FE State: CE CNPS: Rank 1B.1	April-May	Cismontane woodland, Valley and foothill grassland	Closest known occurrence is approximately 5.3 miles southwest of the project site (CNDDB Occurrence No. 2). This is a historical record from 1887 that was confirmed extirpated in 1969.	None. Highly disturbed ruderal grassland on the project site does not provide suitable habitat. No natural, extant records are known in Contra Costa County.
Cryptantha hooveri Hoover's cryptantha	Fed: - State: - CNPS: Rank 1A	April-May	Valley and foothill grassland (sandy).	Closest known occurrence is 3.3 miles northwest of the project site (CNDDB Occurrence No. 4). Record from 1894 herbarium collection. Potentially extirpated by development.	None. Marginal grassland habitat onsite but this species is likely extirpated in California. Most recent record is from 1939. No impacts to this species are anticipated.

Special-Status Plant Species Known to Occur in the Vicinity of the Laurel Ranch Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Brassicaceae					
Erysimum capitatum angustatum Contra Costa wallflower	Fed: FE State: CE CNPS: Rank 1B.1	March-July	Inland dunes.	Closest known occurrence is approximately 2.8 miles northwest of the project site (CNDDB Occurrence No. 3).	None. No inland dunes on the project site. No impacts to this species anticipated.
Chenopodiaceae					
Atriplex cordulata cordulata Heartscale	Fed: - State: - CNPS: Rank 1B.2	April-October	Meadows and seeps; chenopod scrub; valley and foothill grassland (sandy); [saline or alkaline].	CNPS 1-Quad Search	None. Marginally suitable grassland and wetland habitat on the project site. Not observed during appropriately timed surveys in 2013, 2015 or 2016. No impacts to this species are anticipated
Atriplex depressa Rhomboid bract saltbush	Fed: - State: - CNPS: Rank 1B.2	May-October	Chenopod scrub; playas; valley and foothill grassland; [alkaline or clay].	Closest known occurrence is approximately 2.5 miles south of the project site (CNDDB Occurrence No. 74).	None. Marginal grassland and wetland habitat on the project site but not observed during appropriately-timed surveys in 2013, 2015 or 2016. No impacts to this species are anticipated
Extriplex joaquinana San Joaquin spearscale	Fed: - State: - CNPS: Rank 1B.2	April-October	Chenopod scrub; meadows; valley and foothill grassland; [alkaline].	Closest known occurrence is approximately 2.5 miles south of the project site (CNDDB Occurrence No. 104).	None. Marginally suitable grassland habitat on the project site. Not observed during appropriately timed surveys in 2013, 2015 or 2016. No impacts to this species are anticipated.
Ericaceae					
Arctostaphylos auriculata Mount Diablo manzanita	Fed: - State: - CNPS: Rank 1B.3	January-March	Chaparral (sandstone).	Closest known occurrence is approximately 4.8 miles northwest of the project site (CNDDB Occurrence No. 18).	None. No chaparral on the project site. No impacts to this species are anticipated.
Arctostaphylos manzanita laevigata Contra Costa manzanita	Fed: - State: - CNPS: Rank 1B.2	January-February	Chaparral (rocky),	CNPS 1-Quad Search	None. No chaparral on the project site. No impacts to this species are anticipated.

Special-Status Plant Species Known to Occur in the Vicinity of the Laurel Ranch Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Fabaceae					
Lathyrus jepsonii jepsonii Delta tule pea	Fed: - State: - CNPS: Rank 1B.2	May-September	Marshes and swamps (freshwater and brackish).	Closest known occurrence is approximately 2.6 miles north of the project site (CNDDB Occurrence No. 163).	None. No marshes or swamps on the project site. Not observed during appropriately timed surveys in 2013, 2015 or 2016. No impacts to this species are anticipated.
Geraniaceae					
California macrophylla Round-leaved filaree	Fed: - State: - CNPS: Rank 1B.2	March-May	Cismontane woodland; valley and foothill grassland/clay.	Closest known occurrence is approximately 1.6 miles south of the project site (CNDDB Occurrence No. 48).	None. Marginally suitable grassland habitat on the project site. Not observed during appropriately timed surveys in 2016. No impacts to this species are anticipated.
Liliaceae					
Calochortus pulchellus Mt. Diablo fairy lantern	Fed: - State: - CNPS: Rank 1B.2	April-June	Chaparral; cismontane woodland; valley and foothill grassland.	CNPS 1-Quad Search	None. No suitable woodland or chaparral habitat onsite or adjacent to the project site. This species occurs at the edge of chaparral or woodland habitat. No impacts to this species are anticipated.
Linaceae					
Hesperolinon breweri Brewer's western flax	Fed: - State: - CNPS: Rank 1B.2	May-July	Chaparral; cismontane woodland; valley and foothill grassland; [mostly serpentinite].	Closest known occurrence is approximately 2.7 miles southwest of the project site (CNDDB Occurrence No. 32).	None. No serpentine soils on the project site. This species has high fidelity to serpentine soils. No impacts to this species are anticipated.
Malvaceae					
Hibiscus lasiocarpos occidentalis Woolly rose-mallow	Fed: - State: - CNPS: Rank 1B.2	June-September	Marshes and swamps (freshwater).	Closest known occurrence is approximately 5.0 miles northeast of the project site (CNDDB Occurrence No. 105).	None. No marshes or swamps on the project site. Not observed during appropriately timed surveys in 2013, 2015 or 2016. No impacts to this species are anticipated.

Special-Status Plant Species Known to Occur in the Vicinity of the Laurel Ranch Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Malacothamnus hallii Hall's bush mallow	Fed: - State: - CNPS: Rank 1B.2	May-September	Chaparral.	CNPS 1-Quad Search	None. No chaparral on the project site. No impacts to this species are anticipated.
Onagraceae					
Oenothera deltoides howellii Antioch dunes evening-primrose	Fed: FE State: CE CNPS: Rank 1B.1	March-September	Interior dunes.	Closest known occurrence is approximately 2.0 miles northeast of the project site (CNDDB Occurrence No. 1).	None. No interior dunes on the project site. No impacts to this species are anticipated.
Orobanchaceae					
Chloropyron molle molle Soft salty bird's-beak	Fed: FE State: CR CNPS: Rank 1B.2	July-September	Marshes and swamps (coastal salt).	Closest known occurrence is approximately 3.6 miles north of the project site (CNDDB Occurrence No. 18).	None. No coastal salt marsh on the project site. Not observed during appropriately timed surveys in 2013 or 2015. No impacts to this species are anticipated.
Papaveraceae					
Eschscholzia rhombipetala Diamond-petaled California poppy	Fed: - State: - CNPS: Rank 1B.1	March-April	Valley and foothill grassland (clay).	Closest known occurrence is approximately 3.2 miles northwest of the project site (CNDDB Occurrence No. 3).	None. Marginally suitable grassland habitat on the project site. Not observed during appropriately timed surveys conducted in 2016. No impacts to this species are anticipated. conducted in 2016.
Polemoniaceae					
Navarretia nigelliformis radians Shining navarretia	Fed: - State: - CNPS: Rank 1B.2	May-June	Cismontane woodland; valley and foothill grassland; slightly mesic depressions.	Closest known occurrence is approximately 4.0 miles southwest of the project site (CNDDB Occurrence No. 63).	None. Marginally suitable grassland habitat on the project site. Not observed during appropriately time surveys in 2016. No impacts to this species are anticipated

Special-Status Plant Species Known to Occur in the Vicinity of the Laurel Ranch Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Polygonaceae					
Eriogonum nudum psychicola Antioch Dunes buckwheat	Fed: State: CNPS: Rank 1B.1	June-October	Deltaic Great Central Valley Elevation: 0-66 ft	Closest known occurrence is approximately 3.6 miles northwest of the project site (CNDDB Occurrence No. 30).	None. No inland dunes on the project site. No impacts to this species are anticipated.
Eriogonum truncatum Mount Diablo buckwheat	Fed: - State: - CNPS: Rank 1B.1	April-September	Chaparral; coastal scrub; valley and foothill grassland; [sandy].	Closest known occurrence is approximately 3.5 miles northwest of the project site (CNDDB Occurrence No. 4).	None. Marginally suitable grassland habitat on the project site. Not observed during appropriately timed surveys in 2013, 2015 or 2016. No impacts to this species are anticipated.
Scrophulariaceae					
Limosella australis Delta mudwort	Fed: - State: - CNPS: Rank 2.1	May-August	Marshes and swamps; intertidal mudflats.	Closest known occurrence is approximately 2.6 miles north of the project site (CNDDB Occurrence No. 63).	None. No intertidal mudflats on the project site. No impacts to this species are anticipated.

Special-Status Plant Species Known to Occur in the Vicinity of the Laurel Ranch Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site

***Status**

Federal:
FE - Federal Endangered
FT - Federal Threatened
FPE - Federal Proposed Endangered
FPT - Federal Proposed Threatened
FC - Federal Candidate

State:
CE - California Endangered
CT - California Threatened
CR - California Rare
CC - California Candidate
CSC - California Species of Special Concern

CNPS:
Rank 1A - Presumed extinct in California
Rank 1B - Plants rare, threatened, or endangered in California and elsewhere
Rank 1B.1 - Seriously endangered in California (over 80% occurrences threatened/ high degree and immediacy of threat)
Rank 1B.2 - Fairly endangered in California (20-80% occurrences threatened)
Rank 1B.3 - Not very endangered in California (<20% of occurrences threatened or no current threats known)

CNPS Continued:
Rank 2 - Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 2A - Extirpated in California, common elsewhere
Rank 2B.1 - Seriously endangered in California, but more common elsewhere
Rank 2B.2 - Fairly endangered in California, but more common elsewhere
Rank 2B.3 - Not very endangered in California, but more common elsewhere
Rank 3 - Plants about which we need more information (Review List)
Rank 3.1 - Plants about which we need more information (Review List) Seriously endangered in California
Rank 3.2 - Plants about which we need more information (Review List) Fairly endangered in California
Rank 4 - Plants of limited distribution - a watch list

Table 2.

Species Observed On Laurel Ranch Project Site

Ferns and Allies

Azollaceae

Azolla sp.	Mosquito fern

Dryopteridaceae

Dryopteris filix-mas	Male fern

Gymnosperms

Cupressaceae

**Cupressus sp.*	Cypress

Pinaceae

**Pinus sp.*	Pine

Angiosperms - Dicots

Amaranthaceae

**Amaranthus albus*	Tumble pigweed

Anacardiaceae

**Schinus molle*	Peruvian pepper tree

Apiaceae

Eryngium aristulatum var. aristulatum	California coyote-thistle
**Foeniculum vulgare*	Sweet fennel
**Torilis arvensis*	Tall sock destroyer

Apocynaceae

Asclepias fascicularis	Narrow-leaf milkweed
**Nerium oleander*	Oleander

Araliaceae

**Hedera helix*	English ivy

Asteraceae

Achillea millefolium	Common yarrow
Agoseris sp.	Agoseris
**Argyranthemum foeniculaceum*	Argyranthemum
Baccharis pilularis subsp. pilularis	Baccharis
**Carduus pycnocephalus subsp. pycnocephalus*	Italian thistle
**Carduus tenuiflorus*	Plumeless thistle
**Centaurea calcitrapa*	Purple starthistle
**Centaurea solstitialis*	Yellow starthistle
Centromadia pungens subsp. pungens	Common spikeweed
**Cirsium vulgare*	Bull thistle
**Cotula coronopifolia*	Brass-buttons
**Dittrichia graveolens*	Stinkwort
Erigeron canadensis	Horseweed
Grindelia camporum	Great Valley gumplant
**Helminthotheca echioides*	Bristly ox-tongue

* Indicates a non-native species

Table 2.

Species Observed On Laurel Ranch Project Site

Heterotheca grandiflora	Telegraph weed
Holocarpha virgata subsp. virgata	Virgate tarweed
**Hypochaeris glabra*	Smooth cat's-ear
**Lactuca serriola*	Prickly lettuce
Lasthenia glaberrima	Smooth goldfields
Lasthenia gracilis	Common goldfields
**Matricaria discoidea*	Pineapple-weed
**Silybum marianum*	Milk thistle
**Sonchus arvensis*	Field sow thistle
**Sonchus asper subsp. asper*	Prickly sow-thistle
Xanthium strumarium	Cocklebur
Bignoniaceae	
**Campsis radicans*	Trumpet creeper
**Jacaranda mimosifolia*	Blue jacaranda
Boraginaceae	
Amsinckia menziesii	Common fiddleneck
Heliotropium curassavicum var. oculatum	Heliotrope
Plagiobothrys bracteatus	Bracted popcornflower
Brassicaceae	
**Brassica nigra*	Black mustard
**Hirschfeldia incana*	Short-podded mustard
**Lepidium latifolium*	Broadleaf pepperweed
Lepidium nitidum	Shining peppergrass
**Raphanus raphanistrum*	Jointed charlock
**Raphanus sativus*	Wild radish
**Sinapis arvensis*	Wild mustard
Caryophyllaceae	
**Spergularia bocconi*	Boccone's sand-spurrey
Ceratophyllaceae	
Ceratophyllum demersum	Hornwort
Chenopodiaceae	
Atriplex patula	Spear oracle
**Atriplex prostrata*	Hastate orache
**Salsola tragus*	Russian-thistle
Convolvulaceae	
Calystegia sp.	Morning glory
**Convolvulus arvensis*	Bindweed
Ericaceae	
Vaccinium sp.	Huckleberry
Euphorbiaceae	
Croton setiger	Turkey mullein
**Euphorbia amygdaloides*	wood spurge

* Indicates a non-native species

Table 2.

Species Observed On Laurel Ranch Project Site

Fabaceae	
**Acacia sp.*	Acacia
Acmispon americanus var. americanus	Spanish-clover
**Cytisus scoparius*	Scotch broom
**Lotus corniculatus*	Birdfoot trefoil
Lupinus albifrons var. collinus	Bush lupine
Lupinus bicolor	Bicolored lupine
Lupinus succulentus	Arroyo lupine
**Medicago polymorpha*	California burclover
**Melilotus indicus*	Annual yellow sweetclover
**Trifolium hirtum*	Rose clover
**Trifolium subterraneum*	Subterranean clover
Trifolium willdenovii	Tomcat clover
**Vicia benghalensis*	Purple vetch
**Vicia sativa*	Common vetch
**Vicia villosa subsp. villosa*	Hairy vetch
Fagaceae	
Quercus agrifolia var. agrifolia	Coast live oak
Quercus douglasii	Blue oak
Quercus kelloggii	California black oak
Geraniaceae	
**Erodium botrys*	Broad-leaf filaree
**Erodium cicutarium*	Red-stem filaree
**Erodium moschatum*	White-stem filaree
**Geranium dissectum*	Cut-leaf geranium
**Geranium molle*	Dove's-foot geranium
**Geranium robertianum*	Geranium
Lamiaceae	
**Mentha pulegium*	Pennyroyal
Stachys ajugoides	Bugle hedge-nettle
Lauraceae	
**Cinnamomum camphora*	Camphor tree
Umbellularia californica	California bay
Lythraceae	
**Lythrum hyssopifolia*	Hyssop loosestrife
Malvaceae	
**Malva parviflora*	Cheeseweed
Myrsinaceae	
**Lysimachia arvensis*	Scarlet pimpernel
Myrtaceae	
**Eucalyptus globulus*	Blue gum
Oleaceae	
**Fraxinus sp.*	Ash

* Indicates a non-native species

Table 2.

Species Observed On Laurel Ranch Project Site

**Ligustrum japonicum*	Japanese privet
**Olea europaea*	Olive
Onagraceae	
Clarkia purpurea subsp. quadrivulnera	Four spot
Epilobium brachycarpum	Summer cottonweed
Epilobium ciliatum	Hairy willow-herb
Epilobium ciliatum subsp. ciliatum	Hairy willow-herb
Orobanchaceae	
**Bellardia trixago*	Mediterranean linseed
Castilleja exserta subsp. exserta	Purple owl's-clover
Oxalidaceae	
**Oxalis pes-caprae*	Bermuda buttercup
Papaveraceae	
Eschscholzia californica	California poppy
Plantaginaceae	
**Plantago coronopus*	Cut-leaf plantain
**Plantago lanceolata*	English plantain
Veronica americana	American brooklime
**Veronica anagallis-aquatica*	Water speedwell
Polygonaceae	
**Polygonum aviculare*	Common knotweed
**Rumex crispus*	Curly dock
**Rumex pulcher*	Fiddle dock
Ranunculaceae	
**Ranunculus muricatus*	Spiny-fruit buttercup
Ranunculus pusillus	Low buttercup
Rosaceae	
**Cotoneaster pannosus*	Silverleaf cotoneaster
Malus sp.	Apple tree
**Prunus dulcis*	Almond tree
**Prunus persica*	Peach
**Rubus armeniacus*	Himalayan blackberry
Rubus ursinus	California blackberry
Salicaceae	
Populus fremontii subsp. fremontii	Fremont cottonwood
**Populus nigra var. italica*	Lombardy poplar
Salix gooddingii	Goodding's black willow
Salix laevigata	Red willow
Salix lasiolepis	Arroyo willow
Ulmaceae	
**Ulmus sp.*	Elm
Urticaceae	
**Urtica urens*	Dwarf nettle

* Indicates a non-native species

Table 2.

Species Observed On Laurel Ranch Project Site

Angiosperms -Monocots

Agavaceae

**Agave americana*	American century plant

Alliaceae

**Allium triquetrum*	Onion

Araceae

Lemna minor	Lesser duckweed

Cyperaceae

Bolboschoenus robustus	seacoast bulrush
Cyperus eragrostis	Tall flatsedge
Eleocharis macrostachya	Creeping spikerush
Schoenoplectus americanus	Olney's bulrush

Juncaceae

Juncus bufonius	Toad rush
Juncus mexicanus	Mexican rush
Juncus tenuis	Slender rush

Liliaceae

Fritillaria agrestis	Stinkbells

Poaceae

**Avena barbata*	Slender wild oat
Bromus carinatus var. carinatus	California brome
**Bromus diandrus*	Ripgut grass
**Bromus hordeaceus*	Soft chess
**Bromus madritensis subsp. madritensis*	Foxtail chess
**Bromus madritensis subsp. rubens*	Red brome
**Cortaderia sp.*	Pampass grass
**Crypsis schoenoides*	Swamp pricklegrass
**Cynodon dactylon*	Bermudagrass
Distichlis spicata	Saltgrass
**Elymus caput-medusae*	Medusahead
Elymus glaucus	Blue wildrye
Elymus triticoides subsp. triticoides	Creeping wildrye
**Festuca bromoides*	Brome fescue
Festuca microstachys	Small fescue
**Festuca myuros*	Rattail sixweeks grass
**Festuca perennis*	Italian ryegrass
Hordeum brachyantherum	Meadow barley
Hordeum brachyantherum subsp. brachyantherum	Northern barley
**Hordeum marinum subsp. gussoneanum*	Mediterranean barley
**Hordeum murinum subsp. leporinum*	Hare barley
**Paspalum dilatatum*	Dallis grass
**Phalaris aquatica*	Harding grass
**Phalaris paradoxa*	Paradox canary-grass
Phragmites australis	Common reed

* Indicates a non-native species

Table 2.

Species Observed On Laurel Ranch Project Site

**Phyllostachys bambusoides*	Bamboo
Pleuropogon californicus var. californicus	Annual semaphore grass
**Polypogon interruptus*	Ditch beard grass
**Polypogon monspeliensis*	Annual beard grass
Stipa exigua	Little ricegrass
Stipa pulchra	Purple needlegrass
**Triticum aestivum*	Wheat
Themidaceae	
Triteleia laxa	Ithuriel's spear
Typhaceae	
Typha angustifolia	Narrow-leaved cattail
Typha latifolia	Broad-leaved cattail
Zannichelliaceae	
Zannichellia palustris	Horned pondweed

* Indicates a non-native species

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Appendix C:
Traffic Impact Analysis

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Transportation Impact Analysis for Laurel Ranch



Prepared for the City of Antioch

Submitted by
W-Trans

December 15, 2015

TRAFFIC ENGINEERING
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Executive Summary

The proposed Laurel Ranch subdivision would result in the construction of 187 single family dwellings. The anticipated trip generation averages 1,780 trips per day, including 140 a.m. peak hour trips and 187 trips during the p.m. peak hour.

All analysis was conducted in accordance with the guidelines set forth by Caltrans, the Contra Cost Transit Authority (CCTA), the East County Action Plan, and the General Plans for the Cities of Antioch and Brentwood. The study area includes eleven intersections. All the study intersections are located along routes of regional significance, or "suburban arterial routes" according to the East County Action Plan. As such the corresponding Multimodal Transportation Service Objectives (MTSOs) for the intersections were evaluated.

The project site would be located west of State Route (SR) 4 and north of the future Laurel Road extension, from which access would be taken, on an undeveloped site. Extension of Laurel Road and associated nearby improvements were assumed to be completed in conjunction with the project.

Analysis of the currently existing study intersections indicate they are operating acceptably under Existing conditions. With the addition of project-generated Laurel Ranch subdivision trips, including the planned roadway modifications, all study intersections analyzed would be expected to operate acceptably.

Under the Existing plus Nearby Future Projects scenario, project trips from Phase 1 of the nearby Park Ridge Subdivision were added. With the addition of the Laurel Ranch project trips and associated roadway improvements, the study intersections analyzed would be expected to continue operating acceptably according to the standards set forth by the regulating agencies.

Under the Cumulative No Project scenario, including several roadway improvements, several study intersections are expected to operate deficiently based on the projected growth from the area. For the intersections projected to be operating deficiently in the future, the delay added from the addition of the project trips would be minimal and within the threshold set forth by the City; no significant cumulative impacts are therefore anticipated.

Vehicles would access the project via the signalized Laurel Road/Country Hills Drive intersection and the stop-controlled access road at D Lane. Only right turns in and out of the driveway would be allowed at D Lane as there is a median restricting left turns. A queuing analysis for the two project driveways, with lengths as shown in the site plan, indicated that sufficient storage space is available for the projected queues.

As part of the *Davidon Homes (Park Ridge Subdivision) Addendum to the Project Level EIR*, the intersection of D Lane-Treeline Way/Laurel Road had no turning movement restrictions and was analyzed with stop-controlled side streets. Based on the significance criterion for unsignalized intersections, it did not meet this signal warrant and as such would not result in a significant impact. It was determined that if the intersection were to be signalized it, it would operate at an acceptable level of service.

An alternative access was analyzed in which the Laurel Road median would be modified to allow westbound left turns into the Park Ridge project directly to the south of D Lane. The queuing analysis for the proposed left-turn pocket indicated that there would be sufficient length to accommodate the projected queues from the Park Ridge Project.

Pedestrian, bicycle, and transit facilities would be provided along the project frontage. These include sidewalks, bike lanes, and eastbound and westbound Tri Delta Transit bus stops. With the completion of the project and the extension of Laurel Road, it is recommended that the sidewalks be constructed to connect with the existing network. Also, landscaping maintenance would be required at D Lane to maintain a clear line of site for motorists existing D Lane onto Laurel Road.

Introduction

This report presents an analysis of the potential transportation impacts that would be associated with occupation of the proposed Laurel Ranch Housing Development, consisting of 187 single family homes, to be located in the currently unoccupied area north of the future Laurel Road connection in the City of Antioch. The transportation impact study was completed in accordance with the criteria established by the California Department of Transportation (Caltrans), the Contra Costa Transit Authority (CCTA), and the City of Antioch, as found in the East County Action Plan, and it is consistent with standard traffic engineering techniques.

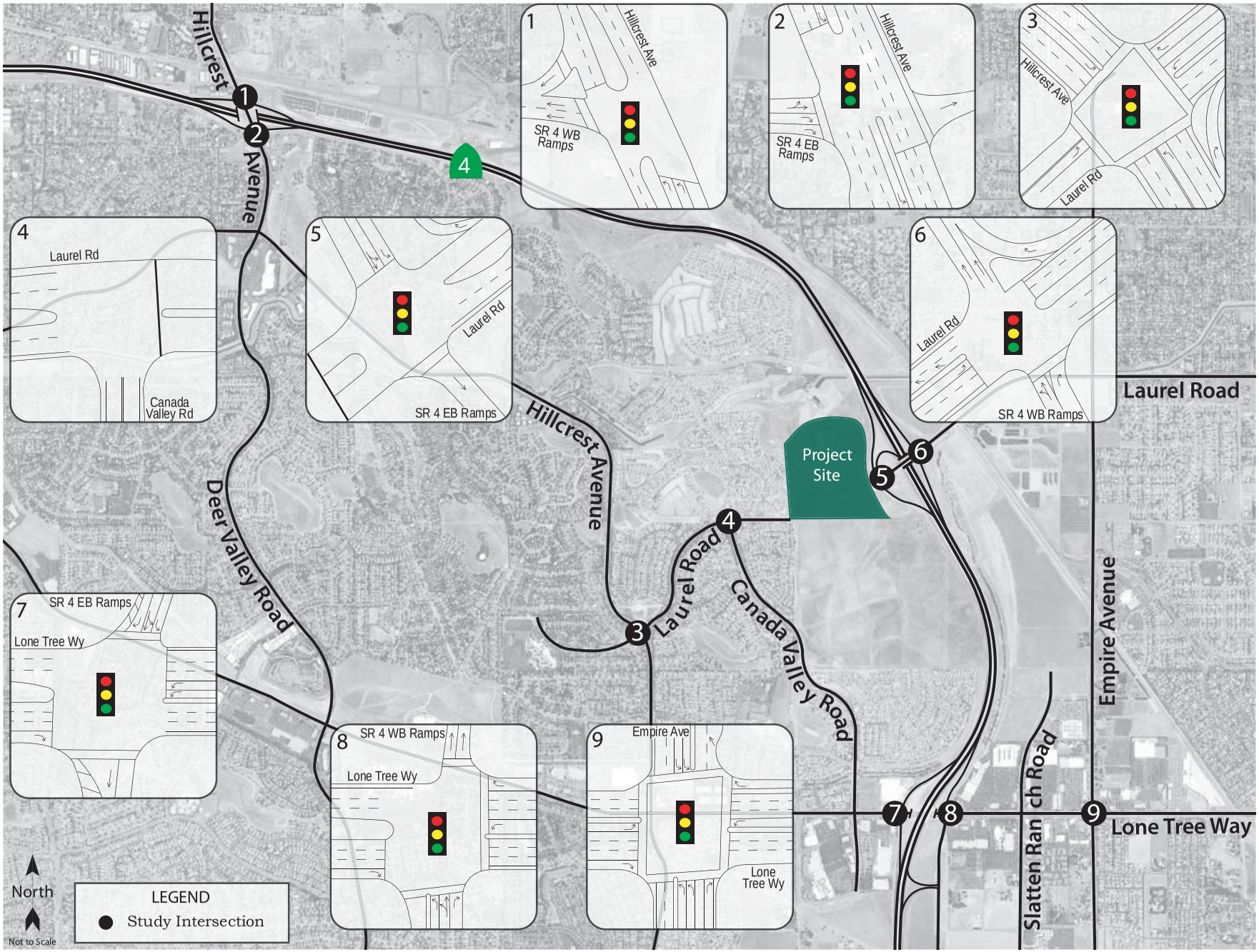
Prelude

The purpose of a transportation impact study is to provide City of Antioch staff and policy makers with data that they can use to make an informed decision regarding the potential impacts of the Laurel Ranch project, and any associated improvements that would be required in order to mitigate these impacts to a level of insignificance as defined by the City of Antioch's General Plan, CCTA guidelines, or other policies. Vehicular traffic impacts are typically evaluated by determining the number of new trips that the proposed use would be expected to generate, distributing these trips to the surrounding street system based on existing travel patterns or anticipated travel patterns specific to the proposed project, then analyzing the impact the new traffic would be expected to have on critical intersections or roadway segments. Impacts relative to access for pedestrians, bicyclists, and to transit are also addressed.

Project Profile

The proposed Laurel Ranch Subdivision has been through several iterations. The City has been planning to convert the former agricultural land into residential uses for several decades. Following the most recent addendum to the Laurel Ranch Subdivision, the project as proposed has a reduced unit count.

The project site as proposed would allow for the development of 187 single family homes on the undeveloped agricultural land. The site is located west of the newly constructed SR 4 Bypass and north of the future Laurel extension and north of the future Laurel Road/Country Hills Drive intersection, as shown in Figure 1.



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Transportation Impact Analysis for Laurel Ranch

Figure 1 – Study Area and Existing Lane Configurations

Transportation Setting

Operational Analysis

Study Area and Periods

The study area consists of the following intersections:

1. State Route (SR) 4 Westbound Ramps/Hillcrest Avenue
2. SR 4 Eastbound Ramps/Hillcrest Avenue
3. Hillcrest Road/Laurel Road
4. Laurel Road/Canada Valley Road
5. SR 4 Eastbound Ramps/Laurel Road
6. SR 4 Westbound Ramps/Laurel Road
7. SR 4 Eastbound Ramps/Lone Tree Way
8. SR 4 Westbound Ramps/Lone Tree Way
9. Lone Tree Way/Empire Avenue
10. Laurel Road/County Hills Drive[1]
11. Laurel Road/Slatten Ranch Road

Operating conditions during the a.m. and p.m. peak periods were evaluated to capture the highest potential impacts for the proposed project as well as the highest volumes on the local transportation network. The morning peak hour occurs between 7:00 and 9:00 a.m. and reflects conditions during the home to work or school commute, while the p.m. peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion during the homeward bound commute.

Study Intersections

SR 4 Westbound Ramps/Hillcrest Avenue, as of the time of this study, is a signalized tee-intersection with protected left-turn phasing for the eastbound direction. The west leg is the on-ramp for westbound SR 4 and the location of the only crosswalk.

SR 4 Eastbound Ramps/Hillcrest Avenue is a four-legged intersection with protected left-turn phasing. The west and east legs are the off- and on-ramps, respectively, for eastbound SR 4 and the location of the only crosswalks at the intersection.

Hillcrest Road/Laurel Road is a four-legged intersection with protected left-turn phasing on Hillcrest Avenue and permitted left-turn phasing on Laurel Road. The northbound right turn is channelized and yield-controlled.

Laurel Road/Canada Valley Road, as of the time of the study, is a tee-intersection only open to vehicular traffic on the west leg of Laurel Road and the south leg of Canada Valley Road. As such, the intersection is unsignalized with no conflicting movements.

SR 4 Eastbound Ramps/Laurel Road, at the time of the study, is a tee-intersection. In the area, SR 4 is directionally more north-south than east-west. The west leg of Laurel Road has yet to be completed. The north and south leg

[1] Future Intersections

of the intersection are the off- and on-ramps, respectively, for eastbound SR 4. The westbound right-turn lane leads to a cloverleaf on-ramp onto SR 4 East about 400 feet east of the intersection.

SR 4 Westbound Ramps/Laurel Road is a four-legged intersection with the north and south legs as the on- and off-ramps, respectively, for westbound SR 4. All left turns have protected left-turn phases.

SR 4 Eastbound Ramps/Lone Tree Way is a four-legged intersection with protected left-turn phasing on all inbound approaches. The north leg is the off-ramp for eastbound SR 4 and the south leg is the on-ramp. There are pedestrian crossings provided on the north and south leg.

SR 4 Westbound On-Ramps-Jeffery Way/Lone Tree Way is a four-legged intersection with protected left-turn phasing on inbound approaches. The north leg is the SR 4 on-ramp.

Lone Tree Way/Empire Avenue is a four-legged intersection with protected left-turn phasing all around. U-Turns are allowed at every approach. There are crosswalks on every approach.

The locations of the study intersections and the existing lane configurations and controls are shown in Figure 1.

Analysis Methodology

Intersection Level of Service Methodologies

In accordance with the Contra Costa Transportation Authority's (CCTA) *Technical Procedures*, 2013, the study intersections were analyzed using methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 2010. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle. In addition, the intersections in the study area were evaluated following the CCTA "Guidelines for Use of the *2010 Highway Capacity Manual* Operational Method Methodology."

The Levels of Service for intersections controlled by a traffic signal were evaluated using the signalized methodology from the HCM. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. Detailed methodology assumptions applied to the operational analysis are provided Appendix A.

The LOS for the intersections with side street stop controls were analyzed using the "Two-Way Stop-Controlled" intersection capacity method from the *Highway Capacity Manual* (HCM), Transportation Research Board, 2010. This methodology determines a level of service for each minor turning movement by estimating the level of average delay in seconds per vehicle. Results are presented for individual movements together with the weighted overall average delay for the intersection. The ranges of delay associated with the various stop-controlled levels of service are indicated in Table 1.

Table 1 – Signalized Intersection Level of Service Criteria	
LOS A	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
LOS B	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
LOS C	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
LOS D	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
LOS E	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
LOS F	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

Reference: *Highway Capacity Manual*, Transportation Research Board, 2010

Regulatory Setting

Caltrans

Caltrans has set forth guidelines for traffic operations based on measures of effectiveness (MOEs) for varying State Highway facilities. In general, Caltrans recommends a target LOS at the transition between LOS C and LOS D. If the existing location operates worse than the target LOS, then the existing LOS should be maintained.

Contra Costa Transportation Authority

The CCTA has established Multimodal Transportation Service Objectives (MTSO) to maintain county-wide connectivity. Under CCTA, the East County Regional Transportation Planning Committee (RTPC) worked closely with local jurisdictions to develop the *Draft East County Action Plan for Routes of Regional Significance* (TRANSPLAN, 2014) in which the committee selects the MTSOs to be applied to the planning area. For this study, each of the intersections are located along suburban arterial routes, or Routes of Regional Significance. In the proposed project study area, these routes are Hillcrest Avenue, Laurel Road, and Lone Tree Way. The corresponding MTSO used in accordance with the planning area is "Signalized Intersection LOS."

City of Antioch

The City of Antioch, in General Plan Growth Management Policy 3.4.1.1, has adopted the routes of regional significance standards set forth for by the East County Action Plan. This threshold is detailed below:

- Maintain an LOS D or better at all signalized intersection.
- Within Priority Development Areas, any physical improvement identified as a result of applying the above standard shall be evaluated for its effects on all intersection users, including pedestrians, cyclists, and transit users.

In addition, the following standard was used in the nearby project, *Davidon Homes (Park Ridge Subdivision #8846) Addendum to the Project Level EIR for FUA #2 Specific Plan (2009):*

- A significant impact occurs if the average delay at an intersection operating at an unacceptable level (LOS E or F) increases by more than 5 seconds (2003 General Plan EIR).

City of Brentwood

The City of Bentwood, located south of Antioch, has jurisdiction over the study intersections on Lone Tree Way. In General Plan Circulation Policy 2.1-4, the City of Brentwood has also adopted the routes of regional significance standards set forth in the Action Plan.

- Maintain an LOS D or better at all signalized intersection.

Summary of Applicable Standards

The traffic operations analysis included 11 key study intersections. Table 2 provides a summary of each study intersection, its control type, and the respective applicable standard.

Table 2 – Level of Service Standards

Intersection	Control Type	Jurisdiction	LOS Standard
1. SR 4 WB Ramps/Hillcrest Ave	Signal	Caltrans	C/D*
2. SR 4 EB Ramps/Hillcrest Ave	Signal	Caltrans	C/D*
3. Hillcrest Rd/Laurel Rd	Signal	City of Antioch	LOS D
4. Laurel Rd/Canada Valley Rd	Uncontrolled/Signal**	City of Antioch	LOS D
5. SR 4 EB Ramps/Laurel Rd	Signal	Caltrans	C/D*
6. SR 4 WB Ramps/Laurel Rd	Signal	Caltrans	C/D*
7. SR 4 EB Ramps/Lone Tree Way	Signal	Caltrans	C/D*
8. SR 4 WB Ramps/Lone Tree Way	Signal	Caltrans	C/D*
9. Lone Tree Way/Empire Ave	Signal	Cities of Antioch and Brentwood	LOS D
10. Laurel Rd/Country Hills Dr	Signal	City of Antioch	LOS D
11. Laurel Rd/Slatten Ranch Rd	Signal	City of Antioch	LOS D

Notes LOS= Level of Service; * = Caltrans target LOS is the transition between LOS C and D; ** = depending on the scenario analyzed and whether the Laurel Road Connection is completed, the intersection is either uncontrolled, and not analyzed, or signalized

Alternative Modes

Pedestrian Facilities

Pedestrian facilities include trails/paths, sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. In general, a network of sidewalks, crosswalks, pedestrian signals, and curb ramps provide access for pedestrians in the vicinity of the proposed project site where development exists; however, where there is no development, like the connection of Laurel Road, there are sidewalk gaps, obstacles, and barriers can be found adjacent to the project site. Between the location of the proposed project site and the adjacent development to the west there exists a public trail that provides connectivity with the Delta De Anza Regional Trail which provides access between the Cities of Pittsburg/Bay Point and the City of Oakley.

At the future adjacent intersection of SR 4 Eastbound Ramps/Laurel Road, there are currently no sidewalks provided on the north side of Laurel Road from the existing westerly terminus to just east of the westbound channelized right-turn.

Bicycle Facilities

The *Highway Design Manual*, Caltrans, 2012, classifies bikeways into three categories:

- **Class I Multi-Use Path** – a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.

- **Class II Bike Lane** – a striped and signed lane for one-way bike travel on a street or highway.

- **Class III Bike Route** – signing only for shared use with motor vehicles within the same travel lane on a street or highway.

In the project area, there are Class II bike lanes on the existing portions of Laurel Road and on Hillcrest Avenue between the Davison Drive-Deer Valley Road/Hillcrest Avenue intersection and the existing southern terminus. As mentioned previously, just north of the project site is the multi-use Delta de Anza Regional Trail.

Transit Facilities

Tri Delta Transit

Tri Delta Transit (TDT) provides fixed route bus service in the Cities of Antioch, Brentwood, Oakley, Bay Point, Pittsburg, Discovery Bay, and Concord. Route 380, which is the closest to the project site, has its nearest stop approximately 0.5 miles from the proposed project. TDT Route 380 provides weekday service to destinations from the Pittsburg/Bay Point Bart Station to the Tri Delta Transit Center in the City of Oakley. Headways range from 30 minutes to an hour depending on the time of day. The Eastbound Route operates from 4:00 a.m. to 11:30 p.m. and the Westbound Route operates from 3:00 a.m. to 11:00 p.m.

Within a mile of the proposed project site, at the intersection of Hillcrest Avenue and Laurel Road, there are stops for Routes 385 and 392. Route 385 is weekday route providing service between the Antioch Park and Ride, Heritage High School, John Muir Medical Center, and the Brentwood Park-and-Ride. Route 392 is a weekend service that provides service to The Pittsburg Bay Point Station and other park-and-rides.

Two bicycles can be carried on most TDT buses. Bike rack space is on a first come, first served basis. Additional bicycles are allowed on the buses at the discretion of the driver.

Dial-a-ride, also known as paratransit, or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. Tri Delta Paratransit is designed to serve the needs of individuals with disabilities within the Eastern Contra Costa County.

County Connections

County Connection Transit provides one regional route to the Hillcrest Park-and-Ride lot, which is the Route 93X identified as the Kirker Pass Express route. The route operates during commute hours with headways ranging from 30 to 60 minutes and provides access to the Walnut Creek Bart Station.

Bart Extension/Bay Area Rapid Transit

Bart Extension (eBART) is a park-and-ride service located on the future site of the Antioch BART Station. eBART is located north of SR 4 and East of Hillcrest Avenue. Tri Delta Transit provides direct routes from the park–and- ride to the nearest BART station, Pittsburg/Bay Point. In addition, the Antioch park-and-ride lot has a dozen other routes that use the facilities.

The Bay Area Rapid Transit District (BART) provides heavy-rail rapid transit service within Alameda, Contra Costa, San Francisco and San Mateo Counties. The future Hillcrest Antioch Station, located in the median of SR 4, will be approximately three miles from the proposed project site. One BART line would provide service from the existing Pittsburg/Bay Point station to the proposed terminating Antioch Station to the north. Connecting services will terminate in Richmond, Dublin-Pleasanton, Fremont, and Millbrae-San Francisco International Airport.

Capacity Analysis

Existing Conditions

The Existing Conditions scenario provides an evaluation of current operation based on existing traffic volumes during the a.m. and p.m. peak periods. Turning movement counts were collected at the study intersections on September 22, 2015 when nearby schools were in session.

The roadway geometries can be seen in Figure 1. This condition does not include project-generated traffic volumes.

Intersection Levels of Service

Under existing conditions, all intersections operate within an acceptable level of service. While the two-legged intersection of Laurel Road/Canada Valley Road has vehicles using it, there are no conflicting movements, so the intersection operates freely with no delay. As an uncontrolled intersection, it was therefore not analyzed. The existing traffic volumes are shown in Figure 2. A summary of the intersection level of service calculations is contained in Table 3, and copies of the Level of Service calculations are provided in Appendix B.

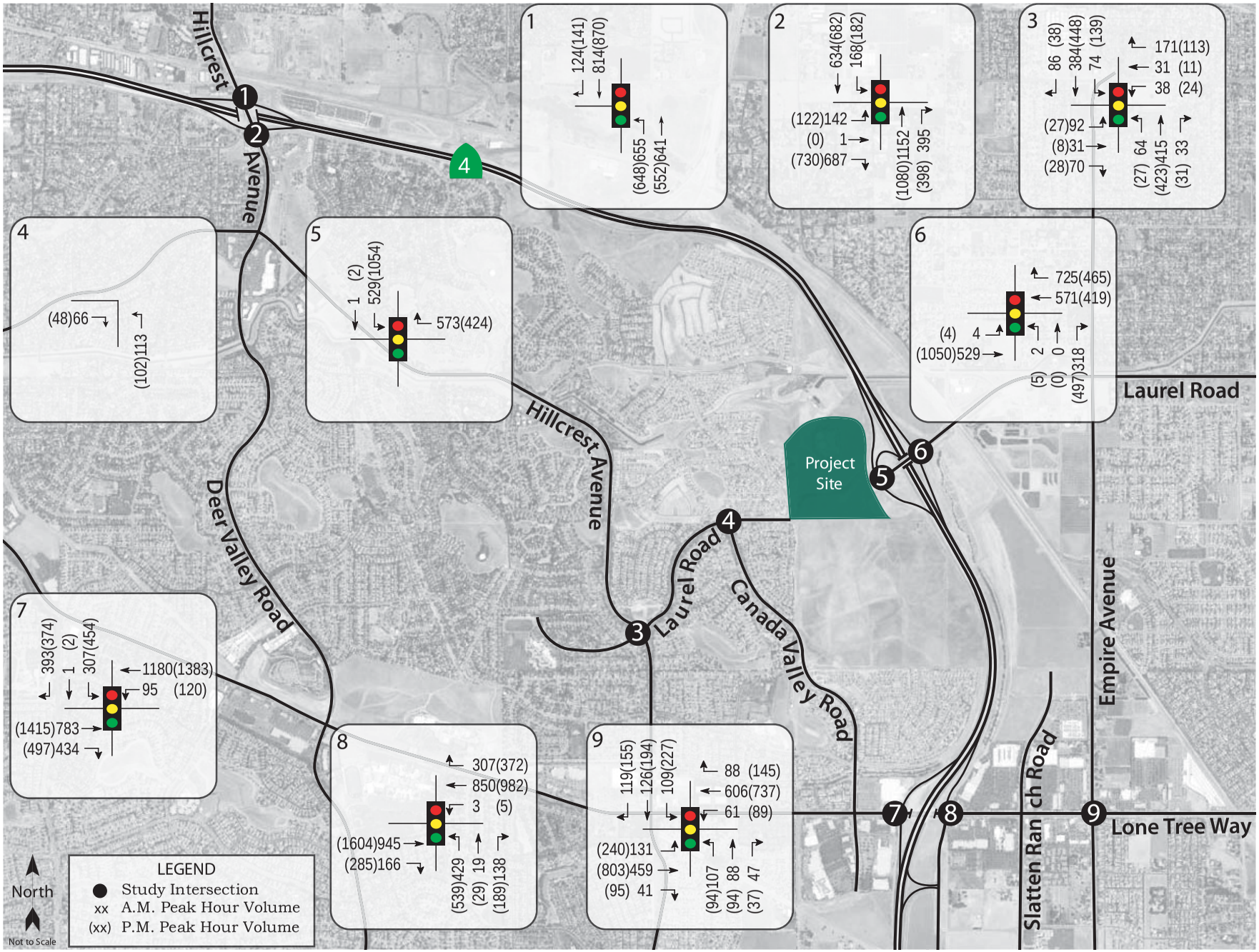
Table 3 – Existing Peak Hour Intersection Levels of Service

Study Intersection *Approach*	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
1. SR 4 WB Ramps/Hillcrest Ave	7.7	A	8.0	B
2. SR 4 EB Ramps/Hillcrest Ave	26.5	C	25.5	C
3. Hillcrest Rd/Laurel Rd	10.4	B	8.5	A
4. Laurel Rd/Canada Valley Rd*	-	-	-	-
5. SR 4 EB Ramps/Laurel Rd	1.4	A	1.0	A
6. SR 4 WB Ramps/Laurel Rd	9.5	A	15.4	B
7. SR 4 EB Ramps/Lone Tree Way	14.7	B	16.3	B
8. SR 4 WB Ramps/Lone Tree Way	8.2	A	10.8	B
9. Lone Tree Way/Empire Ave	15.2	B	18.8	B

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; * = uncontrolled intersection under construction

Existing Plus Nearby Future Projects

Short-term operating conditions were determined with traffic from phase one of the *Davidon Homes (Park Ridge Subdivision #8846) Addendum to the Project Level EIR for FUA #2 Specific Plan (2009)* added to the existing volumes. The project as planned would be completed in seven phases and include 525 homes. Only Phase One of the project was used for the near-term analysis and includes 123 single family dwellings to be built on the southern portion of the project site, connecting to several existing roads, including Canada Valley Drive. Under this condition, the assumptions for road geometries and distributions from the Park Ridge study were used; the extension of Laurel Road was assumed to be unconstructed. These results are summarized in Table 4, and Short-Term volumes are shown in Figure 3.



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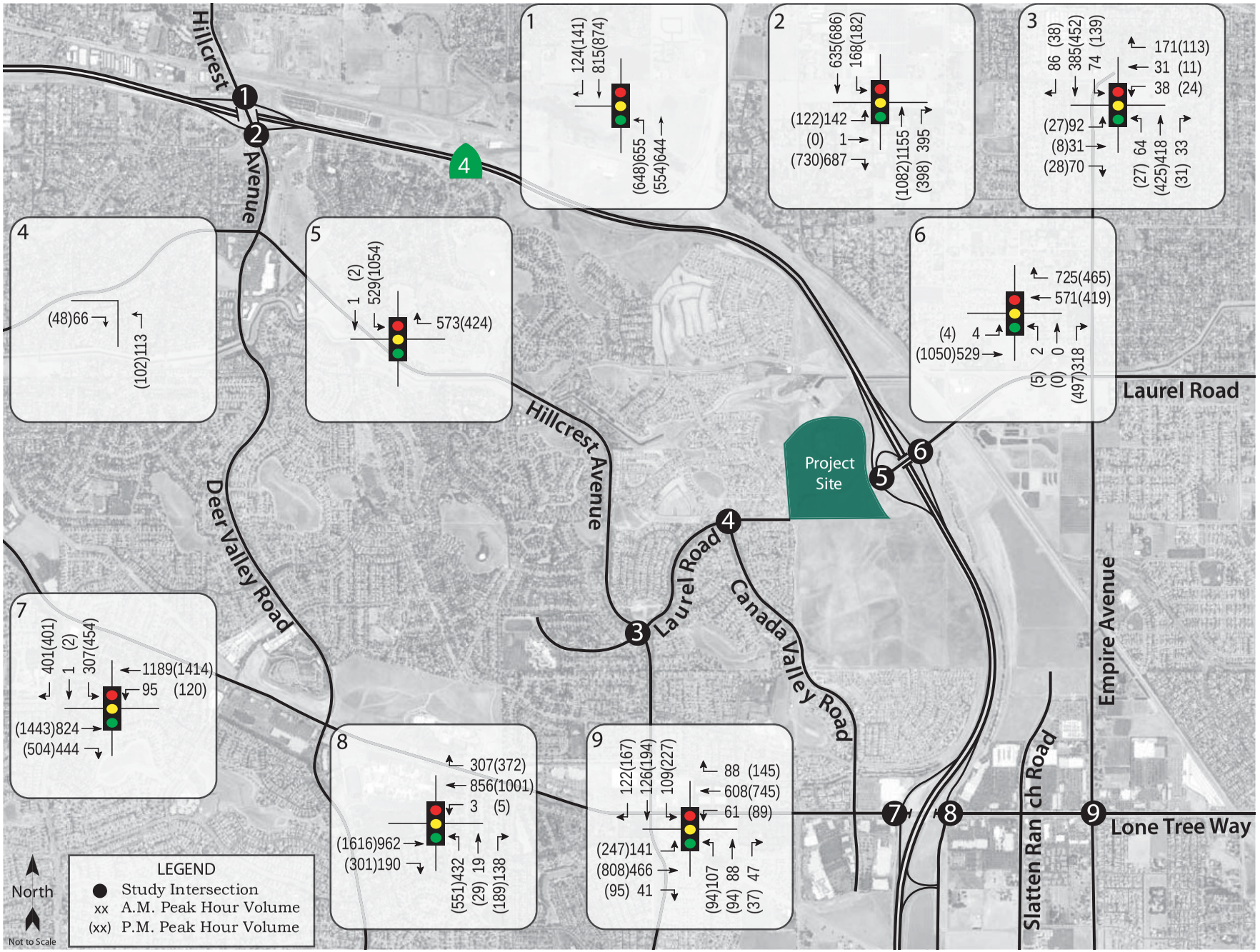
Transportation Impact Analysis for Laurel Ranch

Figure 2 – Existing Traffic Volumes



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Transportation Impact Analysis for Laurel Ranch

Figure 3 – Existing plus Nearby Future Project Traffic Volumes

Table 4 – Existing plus Nearby Future Project Peak Hour Intersection Levels of Service					
Study Intersection Approach		**AM Peak**		**PM Peak**	
		Delay	**LOS**	**Delay**	**LOS**
1.	SR 4 WB Ramps/Hillcrest Ave	7.7	A	8.0	B
2.	SR 4 EB Ramps/Hillcrest Ave	26.6	C	25.5	C
3.	Hillcrest Rd/Laurel Rd	10.4	B	8.5	A
4.	Laurel Rd/Canada Valley Rd*	-	-	-	-
5.	SR 4 EB Ramps/Laurel Rd	1.4	A	1.0	A
6.	SR 4 WB Ramps/Laurel Rd	9.5	A	15.4	B
7.	SR 4 EB Ramps/Lone Tree Way	15.1	B	22.6	B
8.	SR 4 WB Ramps/Lone Tree Way	8.3	A	11.1	B
9.	Lone Tree Way/Empire Ave	16.0	B	19.6	B

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; * = uncontrolled intersection under construction

Cumulative No Project Conditions

Several approaches were used in determining the cumulative base volumes for the year 2040. For the Cumulative Conditions, no development is assumed on the project parcel.

Where possible, previously projected future volumes were taken from studies for other nearby development and incrementally increased based on the growth assumptions used and projected growth from the CCTA model for the year 2040.

For the intersections located on Laurel Road, future volumes were projected from the Park Ridge study's 2025 Cumulative plus Project scenario. For the intersection of Hillcrest Avenue/Laurel Road, the growth per year was determined from the study's existing counts and future projections. This growth per year (growth factor) was then applied to the Laurel Ranch existing counts to project the year 2040 volumes. Where existing counts from the Park Ridge project were unavailable, the projected growth was determined using the CCTA model volumes.

For the intersection of Hillcrest Avenue/SR 4 EB Ramps, 2035 volumes from the *Hillcrest Station Area Specific Plan* (2008), were projected based on the Plan's growth per year determined from the existing and future traffic volumes. This growth per year was then applied to the Laurel Ranch project's existing counts to achieve the year 2040 volumes. Under the Cumulative Scenario, study intersection 1, Hillcrest Avenue/WB SR 4 Ramps, was not analyzed. According to the 4eastcounty.org website, the ramps are to be relocated to Slatten Ranch Road, just west of the future Hillcrest Avenue BART station. Because few project and nearby future project trips were predicted to use the intersection, further analysis of the relocated interchange was not conducted.

Future 2040 peak hour volume projections for the intersections on Lone Tree Way are directly from the Brentwood General Plan Update (2014); this scenario represents Cumulative 2040 traffic conditions that would be expected upon Brentwood's build out to City limits as identified in their Updated General Plan.

Under the Cumulative Conditions, the following roadway modification projects were assumed:

- The connection of Laurel Road from the existing terminus east at Canada Valley Road to the SR 4 eastbound ramps would be completed. The extension would include the following elements:
  - A southbound right-turn pocket would be added to the SR 4 Eastbound Ramps at Laurel Road.

  - The intersection at Country Hills Drive/Laurel Road would be completed. The intersection geometry used was from the site plan and protected left-turn phasing was assumed.
  - The intersection of Canada Valley Drive/Laurel Road would be signalized. The intersection geometry from the Park Ridge study was used and protected left-turn phasing was assumed.
- Country Hills Drive would be extended north to Laurel Road.
- The Hillcrest Avenue overpass would be widened. The project would add a second eastbound left-turn lane on the off-ramp and widen to the neck. In addition, a second southbound left-turn lane would be constructed.
- Hillcrest Avenue/SR 4 Westbound Ramps would be relocated to Slatten Ranch Road.
- The eastbound lanes of Lone Tree Way/SR 4 Eastbound Ramps would be modified to provide two through lanes and two right-turn lanes.
- Slatten Ranch Road would be constructed. From the north, it would connect to Sunset Drive/Hillcrest Avenue and intersect Laurel Road, and to the south, it would connect to an existing portion already built that is north of Lone Tree Way. The intersection geometry was the same used in the Park Ridge study analysis.

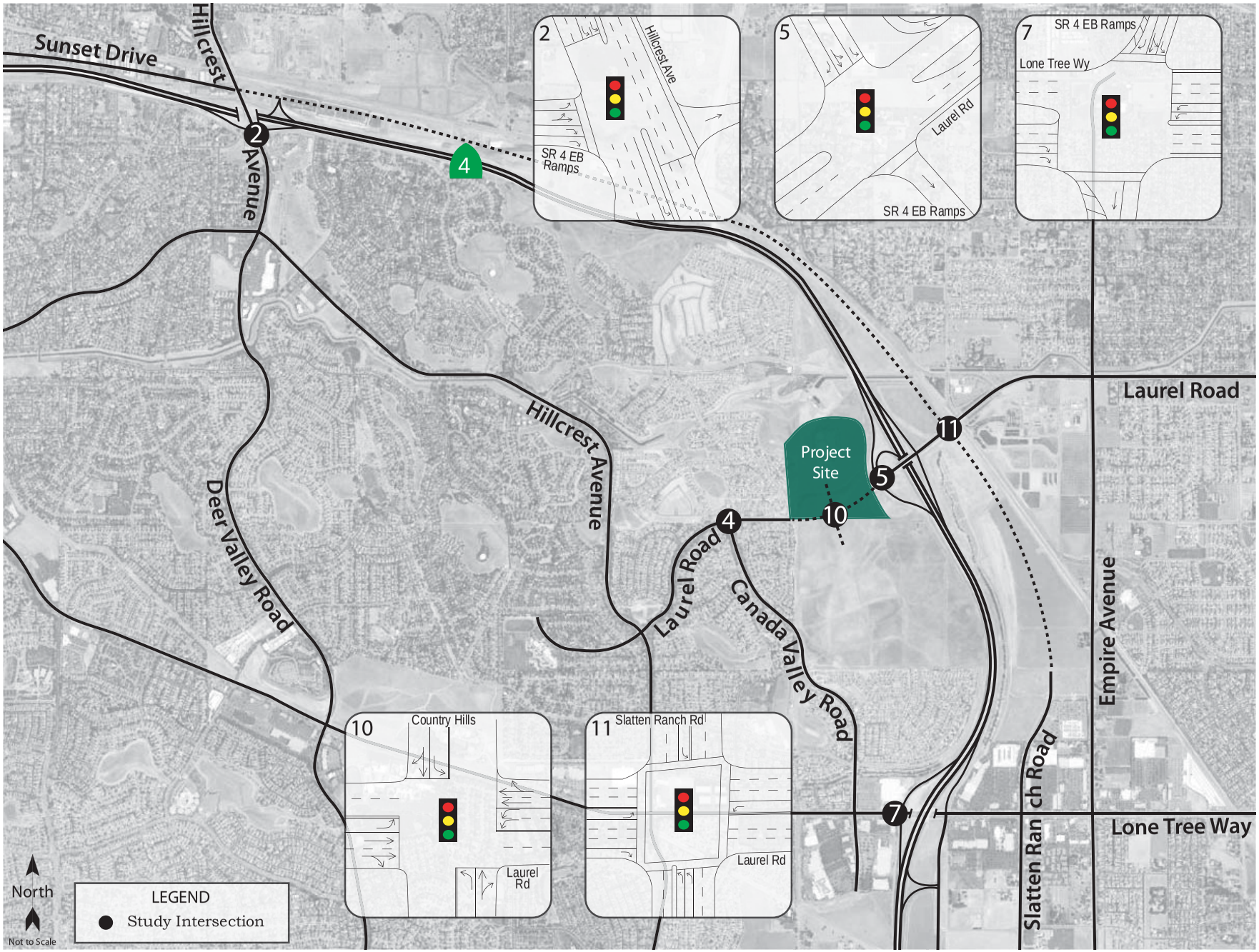
In addition, all seven phases of the Park Ridge project, for a total of 525 single family homes, were assumed completed as well as the Antioch BART Station.

Under the anticipated Future volumes, assuming completion of the improvements noted above and with the addition of the above projects, the study intersections are expected to operate acceptably with the exception of Hillcrest Road/Laurel Road in the a.m. and p.m. peak hours and Laurel Road/Slatten Ranch Road in the p.m. peak hour. While the intersections of SR 4 Eastbound Ramps/Hillcrest Avenue and SR 4 Eastbound Ramps/Lone Tree Way are expected to operate above the desired Caltrans threshold, operation would be acceptable based on the East County Action Plan. Future geometries and volumes are shown in Figures 4 and 5, respectively, and operating conditions are summarized in Table 5.

Table 5 – Cumulative No Project Conditions Peak Hour Intersection Levels of Service

Study Intersection ***Approach***	**AM Peak**		**PM Peak**	
	Delay	**LOS**	**Delay**	**LOS**
1. SR 4 WB Ramps/Hillcrest Ave	-	-	-	-
2. SR 4 EB Ramps/Hillcrest Ave	13.9	B	**51.0**	**D**
3. Hillcrest Rd/Laurel Rd	**68.8**	**E**	**107.3**	**F**
4. Laurel Rd/Canada Valley Rd	19.6	B	43.7	D
5. SR 4 EB Ramps/Laurel Rd	17.4	B	25.4	C
6. SR 4 WB Ramps/Laurel Rd	15.8	B	21.4	C
7. SR 4 EB Ramps/Lone Tree Way	30.2	C	**49.7**	**D**
8. SR 4 WB Ramps/Lone Tree Way	13.4	B	21.2	C
9. Lone Tree Way/Empire Ave	18.6	B	27.4	C
10. Laurel Rd/Country Hills Dr	20.3	C	13.9	B
11. Laurel Rd/Slatten Ranch Rd	30.6	C	**55.9**	**E**

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service
Bold text = deficient operation



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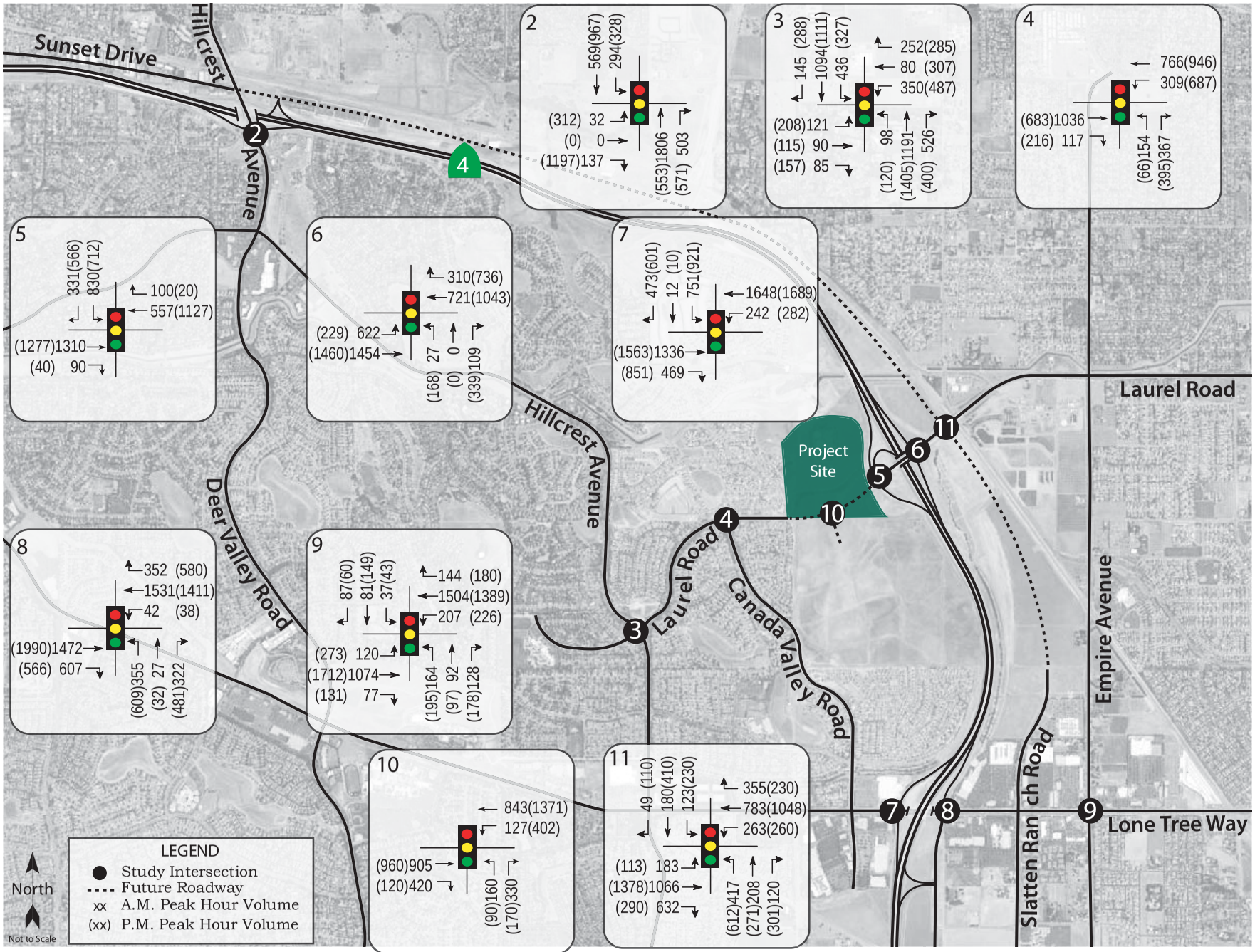
Transportation Impact Analysis for Laurel Ranch

Figure 4 – Future Lane Configurations



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Transportation Impact Analysis for Laurel Ranch

Figure 5 – Future Traffic Volumes

Project Description

The project consists of 187 single family homes on 54 acres, located north of the future Laurel Road connection and west of the SR 4 Eastbound Ramps. The site would be accessed by a signalized intersection at Laurel Road/Country Hills Drive and a stop-controlled driveway west of the intersection with right-in and right-out access only. Currently the site is unused. The proposed project site plan is shown in Figure 6.

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 9th Edition, 2012 for "Single Family Detached Housing" (ITE LU 210). Because the site is currently unoccupied, there are no existing trips being generated by the site.

Total Project Trip Generation

The expected trip generation potential for the proposed project is indicated in Table 6. The proposed project is expected to generate an average of 1,780 trips per day, including 140 trips during the a.m. peak hour and 187 during the p.m. peak hour. These new trips represent the increase in traffic associated with the project compared to existing volumes.

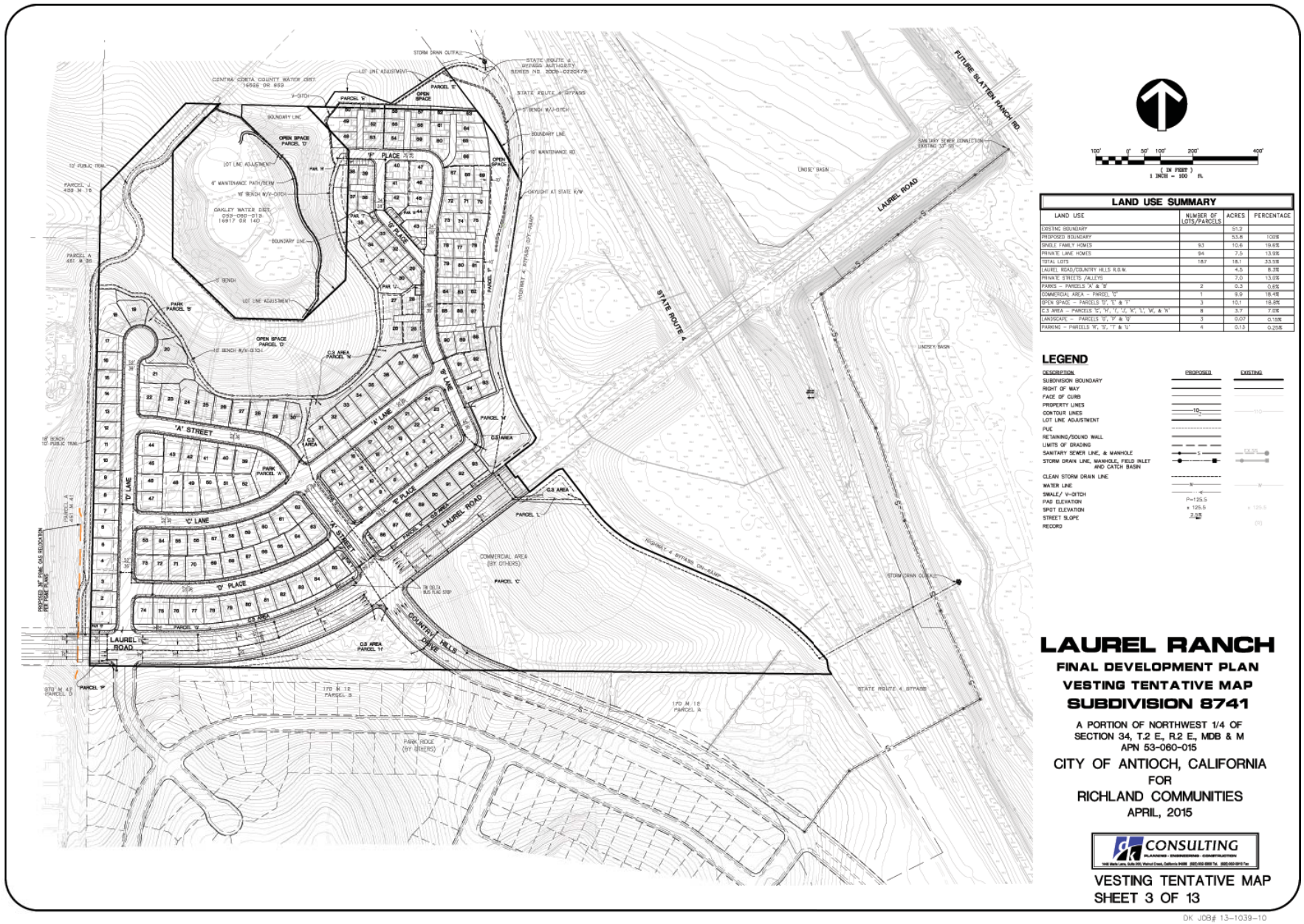
Table 6 – Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Single Family Detached Housing	187 du	9.52	1,780	0.75	140	35	105	1.00	187	118	69

Note: du = dwelling unit

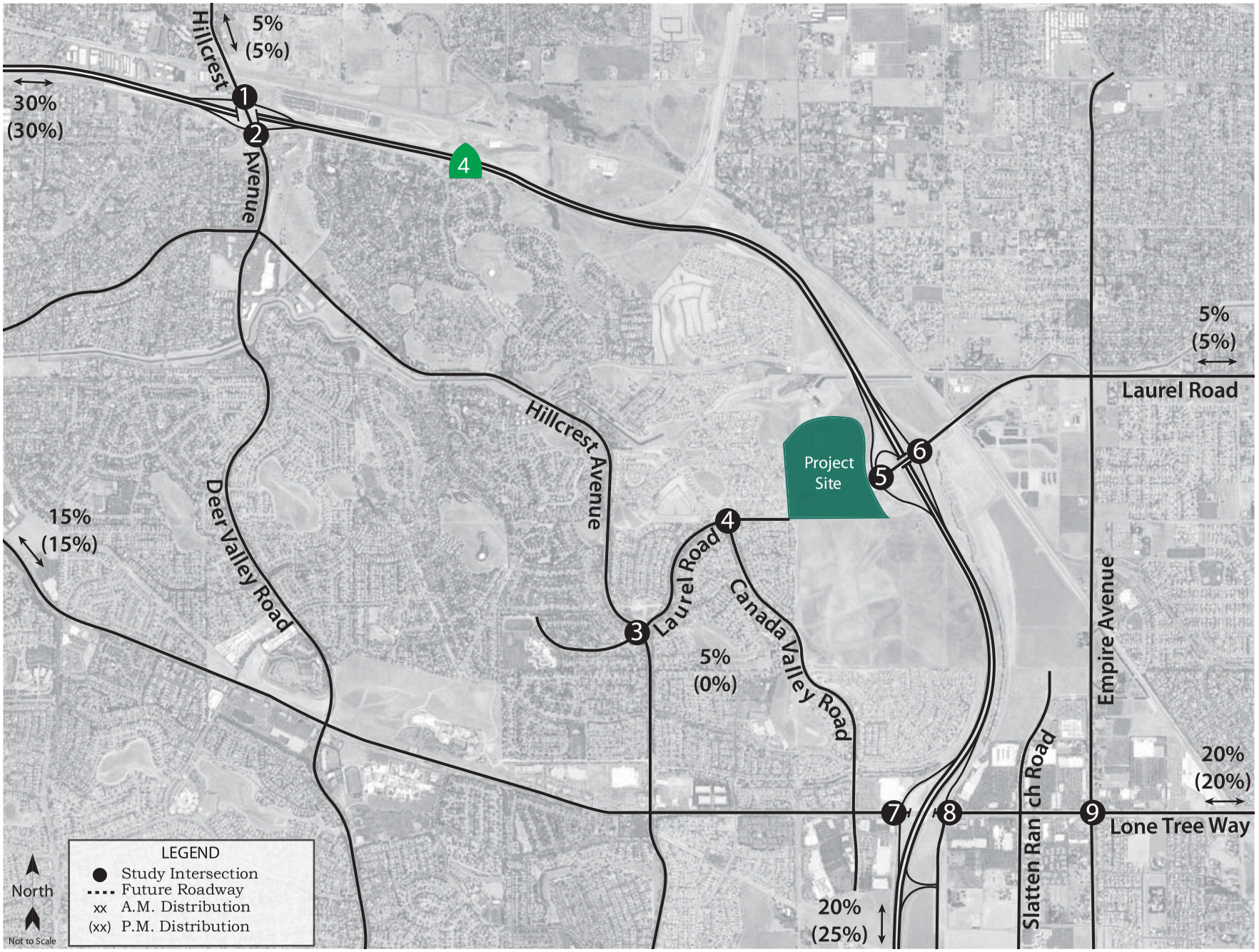
Trip Distribution

The pattern used to allocate new project trips to the street network was based on existing traffic patterns as identified by the City as well as recent transportation studies completed for other projects in the study area. These applied distribution assumptions and resulting trips are shown in Figure 7 and detailed in Table 7.



Transportation Impact Analysis for Laurel Ranch

Figure 6 – Site Plan



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Transportation Impact Analysis for Laurel Ranch

Figure 7 – Trip Distribution

Table 7 – Trip Distribution Assumptions				
Route	**AM Percent**	**PM Percent**	**AM Trips**	**PM Trips**
To/From the North (West) via SR 4	30%	30%	42	56
To/From the South (East) via SR 4	20%	25%	28	47
To/From the East via Lone Tree Way	20%	20%	28	38
To/From the West via Lone Tree Way	15%	15%	21	28
To/From the East via Laurel Rd	5%	5%	7	9
To/From eBART via Hillcrest Ave*	5%	5%	7	9
To/From Carmen Dragon School	5%	0%	7	0
TOTAL	**100%**	**100%**	**140**	**187**

Note: * The route will be via Slatten Ranch Rd under the Cumulative Scenario

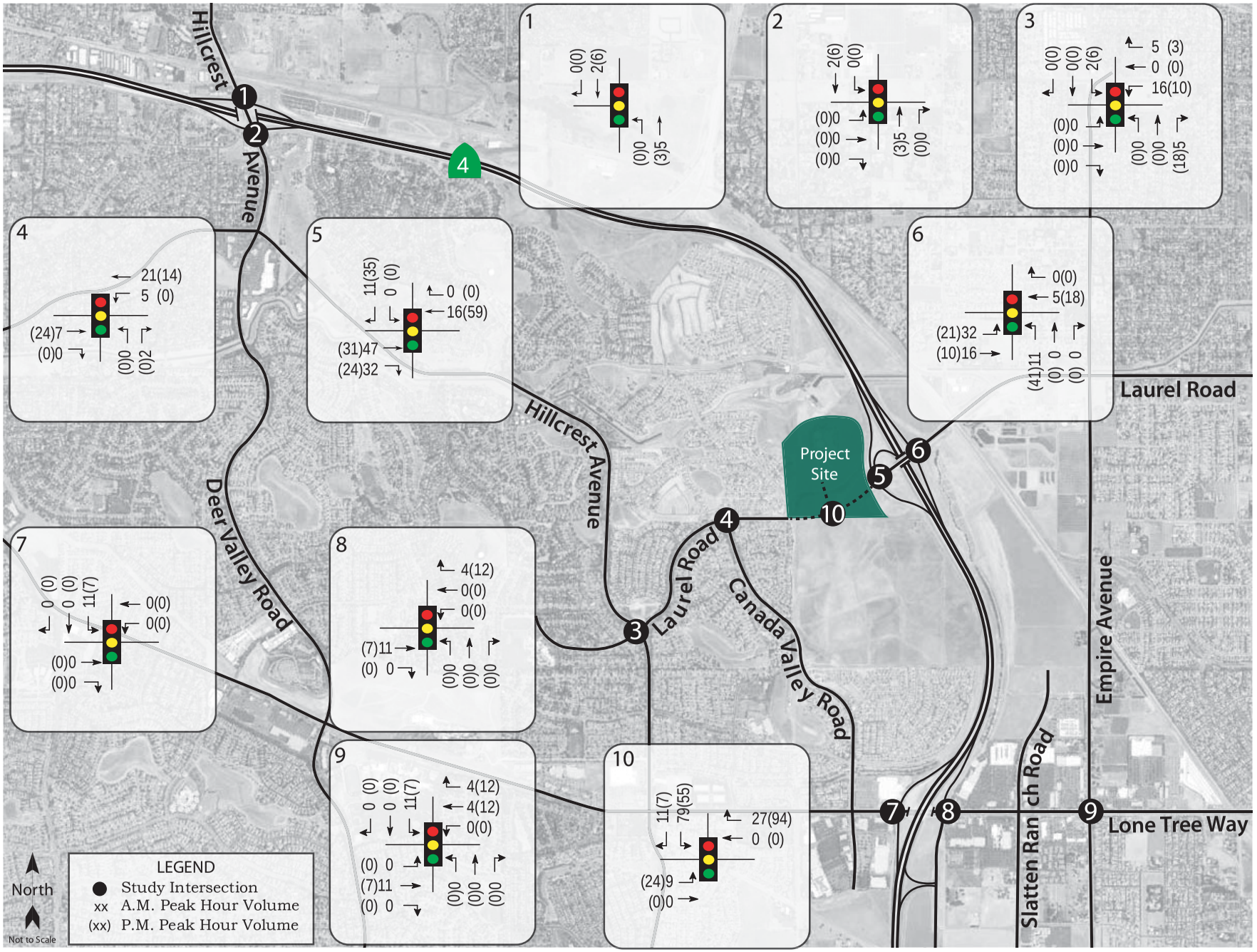
Intersection Operation

Existing plus Project Conditions

Because the proposed Laurel Ranch Project would be accessed exclusively through Laurel Road the improvements assumed under the Cumulative Condition would instead be first implemented with the project completion. The roadway modifications include all the improvements associated with the Laurel Road extension described in the Cumulative scenario. Based on the site plan, it was assumed that the signalized project intersection at Country Hills Drive/Laurel Road would have all four legs constructed; however, since no development was assumed to have occurred directly south, no vehicle trips would be on that leg and the intersection was analyzed as a tee-intersection.

In addition, the Laurel Road connection would provide improved access to SR 4 for the residential communities to the west, while also providing more direct access to and from the City of Oakley and the surrounding area. With the Laurel Road connection, existing traffic patterns would shift. New base volumes along Laurel Road were estimated using the existing counts and the projected growth trends from the CCTA model.

Upon the addition of project-related traffic to the Existing volumes, and with the shifts in traffic anticipated due to the extension of Laurel road, the study intersections are expected to operate at LOS C or better. These results are summarized in Table 8. Added project traffic volumes are shown in Figure 8.



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Transportation Impact Analysis for Laurel Ranch

Figure 8 – Existing Project Traffic Volumes

Table 8 – Existing and Existing plus Project Peak Hour Intersection Levels of Service								
Study Intersection ***Approach***	**Existing Conditions**				**Existing plus Project**			
	AM Peak		**PM Peak**		**AM Peak**		**PM Peak**	
	Delay	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
1. SR 4 WB Ramps/Hillcrest Ave	7.7	A	8.0	B	7.7	A	8.0	B
2. SR 4 EB Ramps/Hillcrest Ave	26.5	C	25.5	C	26.6	C	25.5	C
3. Hillcrest Rd/Laurel Rd	10.4	B	8.5	A	13.7	B	12.9	A
4. Laurel Rd/Canada Valley Rd	-	-	-	-	9.1	A	8.0	A
5. SR 4 EB Ramps/Laurel Rd	1.4	A	1.0	A	7.8	A	14.4	B
6. SR 4 WB Ramps/Laurel Rd	9.5	A	15.4	B	21.0	C	30.9	C
7. SR 4 EB Ramps/Lone Tree Way	14.7	B	16.3	B	14.7	B	16.3	B
8. SR 4 WB Ramps/Lone Tree Way	8.2	A	10.8	B	8.3	A	10.9	B
9. Lone Tree Way/Empire Ave	15.2	B	18.8	B	15.3	B	18.9	B
10. Laurel Rd/Country Hills Dr	-	-	-	-	4.5	A	4.7	A

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

Finding – The study intersections are expected to continue operating acceptably with the shift in traffic volumes due to the Laurel Road connection and upon the addition of project-generated traffic, and the project would result in less-than-significant intersection impacts.

Existing plus Nearby Project plus Project Conditions

Similarly to the Existing plus Project conditions, the completion of the Laurel Ranch project would include the roadway improvements along Laurel Road assumed in the Cumulative Scenario. With this connection, the trips generated from the nearby project, Park Ridge, would use the SR 4 ramps on Laurel Road instead of the ramps on Lone Tree Way. This assumption matches the route assignments used in the Park Ridge study with Laurel Road connection completed. The same new base volumes from the Existing plus Project scenario were used in the analysis, then the Park Ridge trips were added in addition to the project traffic.

Upon the addition of project-related traffic to the Existing plus Nearby Project condition volumes and assumed geometric changes with new base volumes, the study intersections are expected to operate acceptably at LOS C or better. These results are summarized in Table 9.

Table 9 – Existing plus Nearby Project and Existing plus Nearby Project plus Project Peak Hour Intersection Levels of Service

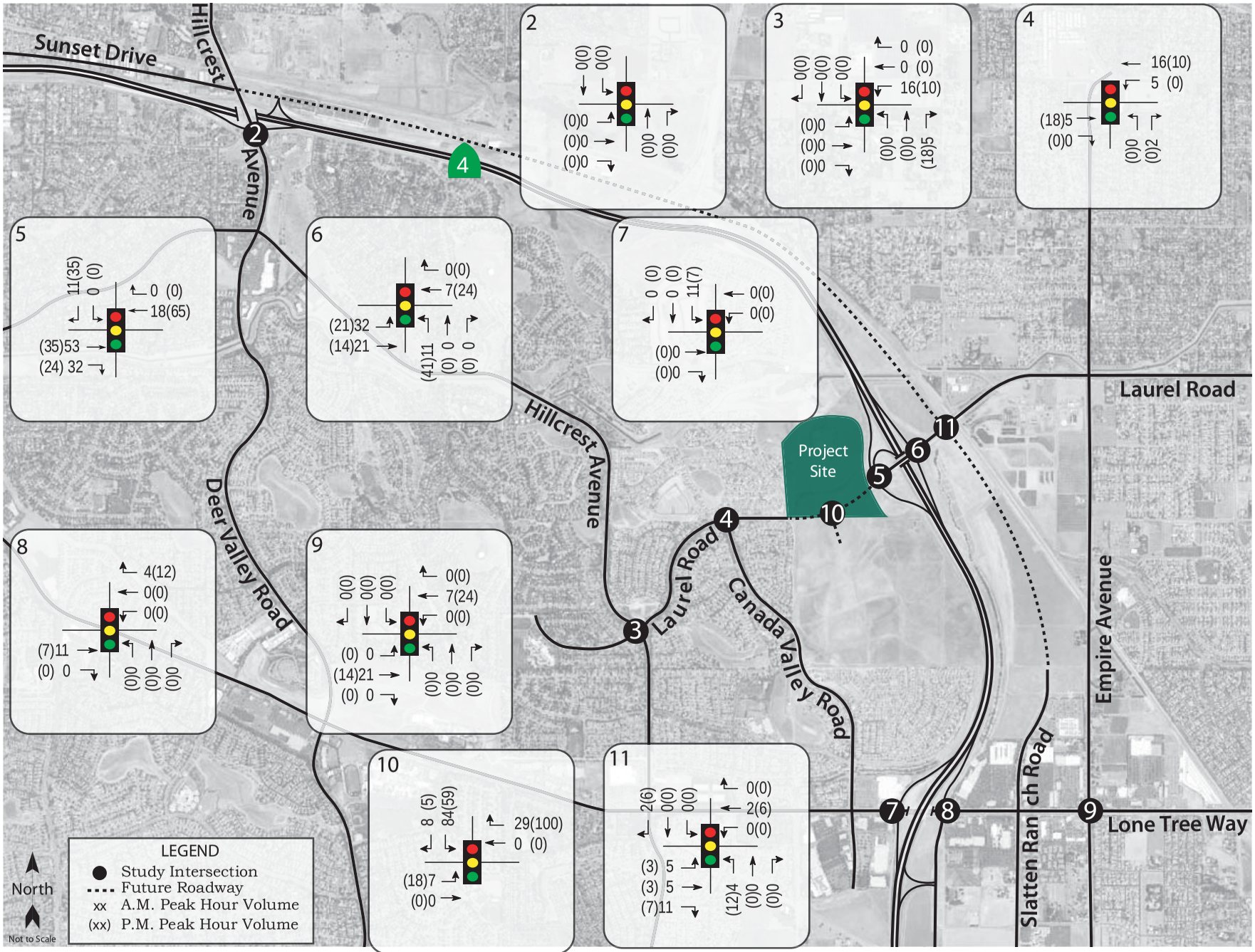
Study Intersection *Approach*	Existing plus Nearby Project				Existing plus Nearby Project plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. SR 4 WB Ramps/Hillcrest Ave	7.7	A	8.0	B	7.7	A	8.0	B
2. SR 4 EB Ramps/Hillcrest Ave	26.6	C	25.5	C	26.6	C	25.9	C
3. Hillcrest Rd/Laurel Rd	10.4	B	8.5	A	13.8	B	12.9	B
4. Laurel Rd/Canada Valley Rd	-	-	-	-	9.6	A	9.0	A
5. SR 4 EB Ramps/Laurel Rd	1.4	A	1.0	A	8.0	A	15.3	B
6. SR 4 WB Ramps/Laurel Rd	9.5	A	15.4	B	22.3	A	32.7	C
7. SR 4 EB Ramps/Lone Tree Way	15.1	B	22.6	B	14.7	B	16.3	B
8. SR 4 WB Ramps/Lone Tree Way	8.3	A	11.1	B	8.3	A	10.9	B
9. Lone Tree Way/Empire Ave	16.0	B	19.6	B	15.7	B	19.0	B
10. Laurel Rd/Country Hills Dr	-	-	-	-	4.5	A	4.7	A

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service

Finding – The study intersections are expected to continue operating acceptably upon the addition of project-generated traffic and completion of the Laurel Road connection project.

Cumulative plus Project Conditions

Upon the addition of project-generated traffic to the anticipated Future volumes, as seen in Figure 9, and with the planned improvements, the study intersections are expected to operate acceptably, with the exception of the same four intersections and peak periods that would operate at a deficient level under the Cumulative No Project Scenario. While the intersections of SR 4 Eastbound Ramps/Hillcrest Avenue and SR 4 Eastbound Ramps/Lone Tree Way would still operate below the desired Caltrans threshold, the intersections would continue to operate acceptably based on the East County Action Plan. The Cumulative plus Project operating conditions are summarized in Table 10.



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Transportation Impact Analysis for Laurel Ranch

Figure 9 – Future Project Traffic Volumes

Table 10 – Cumulative and Cumulative plus Project Peak Hour Levels of Service								
Study Intersection *Approach*	**Cumulative Conditions**				**Cumulative plus Project**			
	AM Peak		**PM Peak**		**AM Peak**		**PM Peak**	
	Delay	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
1. SR 4 WB Ramps/Hillcrest Ave	-	-	-	-	-	-	-	-
2. SR 4 EB Ramps/Hillcrest Ave	13.9	B	**51.0**	**D**	13.9	B	**51.0**	**D**
3. Hillcrest Rd/Laurel Rd	**68.8**	**E**	**107.3**	**F**	**71.6**	**E**	**108.9**	**F**
4. Laurel Rd/Canada Valley Rd	19.6	B	43.7	D	19.9	B	45.4	D
5. SR 4 EB Ramps/Laurel Rd	17.4	B	25.4	C	18.8	B	30.3	C
6. SR 4 WB Ramps/Laurel Rd	15.8	B	21.4	C	17.3	B	23.0	C
7. SR 4 EB Ramps/Lone Tree Way	30.2	C	**49.7**	**D**	30.3	C	**49.7**	**D**
8. SR 4 WB Ramps/Lone Tree Way	13.4	B	21.2	C	13.4	B	21.3	C
9. Lone Tree Way/Empire Ave	18.6	B	27.4	C	18.6	B	27.5	C
10. Laurel Rd/Country Hills Dr	20.3	C	13.9	B	37.6	D	23.2	C
11. Laurel Rd/Slatten Ranch Rd	30.6	C	**55.9**	**E**	30.9	C	**57.0**	**E**

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service; **Bold** text = deficient operation

Finding – The study intersections previously operating acceptably would continue to do so with project traffic added. Where operation is LOS D or worse, the increase in delay due to the project is less than five seconds and therefore within the acceptable threshold as set forth by the regulating agencies, and the project would not result in any significant cumulative intersection impacts.

CCTA Regional Roadway Analysis

According to the East County Action Plan, one of the MTSOs for all freeway segments in East County is a delay index. However, following the CCTA Final Technical Procedures (2013), the threshold for analysis of freeway MTSOs would not be satisfied. As stated, "when the proposed project adds more than 50 net new peak hour vehicle trips to a freeway ramp, then the impact of the project on freeway MTSOs should be evaluated." Therefore, because the proposed project would not add more than 50 net new peak hour trips to any one of the ten freeway ramps from the five study intersections under the Cumulative scenario, the freeway MTSOs were not required to be analyzed.

Queuing

Project Access Roadways

Queuing analysis was performed for the project driveways in order to determine adequacy of turn pocket lengths in reference to projected queue lengths. Analysis for the project driveways was performed under volumes for the Cumulative and Cumulative plus Project scenarios. As noted in the site plan, there are two roads that access Laurel Road; one is the signalized study intersection of Country Hills Drive/Laurel Road and the second is Laurel Road/ "Lane D", a side street stop-controlled intersection with only right-in and right-out access due to the median on Laurel Road.

Under the Cumulative Scenarios, the projected 95th percentile queues in left-turn pockets at the study intersection and the queue at the unsignalized intersection of Laurel Road/D Lane were determined using the SIMTRAFFIC

application of Synchro, and averaging the projected 95th percentile queue for each of five runs. The 95th percentile queue represents the peak of the peak, or queues that only have a five percent chance of being exceeded. The estimated available storage lengths for the intersections are all approximations based on the site plan for the project. Summarized in Table 11 are the predicted queue lengths for approaches to intersections. Copies of the SIMTRAFFIC projections are contained in Appendix C.

Table 11 – 95th Percentile Project Driveway Queues

Intersection Approach	Estimated Available Storage*	95th Percent Queues			
		AM Peak Hour		PM Peak Hour	
		C	C+P	C	C+P
Laurel Rd/Country Hills Dr					
SB Left-Turn	100	-	76	-	64
NB Left-Turn	250	147	154	81	96
WB Left-Turn #1	200	61	61	116	106
WB Left-Turn #2	200	94	82	127	165
EB Left-Turn	215	-	25	-	28
Laurel Road/Lane D					
SB Right-Turn	100	-	42	-	20

Notes: 95th Percent Queue based on the calculated potential from five averaged SIMTRAFFIC runs
* = Storage length estimated based on site plan, measured in feet
C = cumulative conditions; C+P = future plus project conditions;

The results of the 95th percentile queuing analysis indicate that the estimated available storage lengths, as proposed, would be adequate to accommodate future volumes in addition to proposed Laurel Ranch and Park Ridge project traffic volumes.

Finding – The project would not result in queues exceeding the estimated available storage.

Alternative Access Queuing Analysis

In addition, a proposed second access alternative for the side-street stop-controlled intersection Laurel Road/ D Lane-Treeline Way (Park Ridge project access road) was analyzed for potential vehicle queue lengths.

As part of the *Davidon Homes (Park Ridge Subdivision) Addendum to the Project Level EIR*, the intersection of D Lane-Treeline Way/Laurel Road had no turning movement restrictions and was analyzed with stop-controlled side streets. Under the cumulative scenario with the completion of both the Laurel Ranch Project and the Park Ridge Project, the intersection as a whole was expected to operate at LOS A but the southbound side street, specifically the left-turn from D Lane, was projected to operate deficiently at LOS F with 67 seconds of delay in the a.m. peak hour and 68 seconds during the p.m. peak hour. Based on the significance criterion for unsignalized intersections, the project would only cause a significant impact if the intersection operated at an unacceptable LOS overall and satisfied the CA MUTCD peak hour signal warrant. As documented in the Park Ridge EIR report, it was determined that the intersection did not meet this signal warrant and as such would not result in a significant impact. If the intersection were to be signalized, it would operate at an acceptable level.

In the Park Ridge project analysis, this intersection was assumed with no median or turning movement restrictions. However, the geometry assumed for Laurel Ranch's access Alternative 2 would allow westbound left turns from Laurel Road into the Park Ridge project in addition to the right turns in, but restrict egress to right turns out. The

access to the Laurel Ranch project would continue to be right-in and right-out only. The traffic volumes accessing Treeline Way were the same assumed in the Park Ridge study.

Under the Cumulative scenarios, the projected 95th percent queues in westbound left-turn pocket on Laurel Road to Treeline Way were also determined using the SIMTRAFFIC application of Synchro. Summarized in Table 12 are the predicted queue lengths for access Alternative 2 for the Park Ridge project. Copies of the SIMTRAFFIC projections are contained in Appendix D.

Table 12 – 95th Percentile Left-Turn Queues on Westbound Laurel Rd at D Lane, Alternative Access 2

Intersection ***Approach***	**Estimated Available Storage**	**95th Percent Queues**			
		AM Peak Hour		**PM Peak Hour**	
		C	**C+P**	**C**	**C+P**
Laurel Rd/Lane D-Treeline Way					
WB Left-Turn	200*	36	52	75	68

Notes: 95th Percent Queue based on the calculated potential from five averaged SIMTRAFFIC runs; * = Storage length estimated based on potential space according to site plan, measured in feet; C = Cumulative Conditions; C+P = Future plus Project Conditions

According to the queuing calculations, there would be adequate space in the proposed Laurel Road median to incorporate a left-turn pocket. While the median can accommodate a storage length of approximately 200 feet, based on the queuing calculations, the storage length can be shorter if desired.

Finding – Projected queue lengths from Alternative 2 can be accommodated in the available length of the Laurel Road median.

Alternative Modes

Pedestrian Facilities

Given the proximity of other residential neighborhoods, schools, open space, and commercial areas near the site, it is reasonable to assume that some Laurel Ranch residents would want to walk, bicycle, and/or use transit to reach what the surrounding area has to offer.

Project Site – Based on the site plan, sidewalks are planned along both sides of Laurel Road fronting the project site. However, the site plan shows a connection with the existing sidewalk network only on the south side of Laurel Road near the SR 4 Eastbound on-ramps; the north side of Laurel Road does not have existing facilities west of the channelized westbound right-turn. The proposed sidewalks to the south and west of the Country Hills Drive/Laurel Road intersection do not indicate a connection with proposed nearby facilities.

In addition, there is no indication of pedestrian crossings at the signalized study intersection.

As part of the Park Ridge subdivision, much of the internal land would remain as open space and include pedestrian trails. To improve connectivity with the other nearby trail networks, particularly the Delta De Anza trail located just north of the Laurel Ranch project, the internal trails from the Park Ridge Subdivision would cross Laurel Road in the vicinity of the Laurel Ranch Project. This would require some manner of pedestrian facilities, such as a pedestrian signal or rectangular rapid flashing beacons (RRFB) which are described in more detail in the Park Ridge EIR.

Starting from the open space trailhead on the Park Ridge subdivision street of Treeline Court, the trail would continue through the court and Treeline Way to meet at the intersection of Laurel Road/Treeline Way. Just to the west of this intersection, on the north side of Laurel Road, is the existing trail that connects to Delta De Anza Trail. The improvements to Laurel Road would connect the north and south side pedestrian facilities in the vicinity of this area.

Finding – There would be a gap in pedestrian facilities serving the project site if no sidewalk connections to the existing facilities are provided.

Recommendation – The proposed pedestrian facilities should connect either with the existing or proposed sidewalk facilities on the north and south side Laurel Road to the east and west of the project site. In addition to pedestrian curb ramps at the intersection, crosswalks with pedestrian phase should be included in the project.

Bicycle Facilities

Proposed bicycle facilities include bike lanes on Laurel Road fronting the site and connecting to existing facilities to the west. Together with shared use of minor streets, adequate access for bicyclists would be provided.

Finding – Bicycle facilities proposed for the project site are expected to be adequate.

Recommendation – Bike lanes should be provided on Laurel Road as indicated on preliminary site plans.

Transit

According to the site plan, there would be proposed Tri Delta Bus stop locations on the northwest and southeast corners of the Laurel Road/Country Hills Drive intersection. Given these additional stops and the existing stops located west of Canada Valley Road, transit routes are expected to be adequate to accommodate project-generated transit trips.

Finding – Proposed and existing transit facilities serving the project site are expected to be adequate.

Access and Circulation

Site Access

As mentioned in the queuing analysis section, there would be two project access points: the signalized study intersection of Country Hills Drive/Laurel Road and the side-street stop-controlled intersection of Laurel Road/D Lane, which would be limited to right-turn in and out only. Access through the signalized study intersection was assumed to have protected left-turn phasing. Access through the unsignalized intersection would remain right-in and right-out for both access alternatives proposed at the intersection. Further details of the alternative access can be found in the Queuing section.

On-site circulation was reviewed based on the design as presented in the preliminary plans under the assumption that the design of the subdivision adhered to the proper ordinances and regulations set forth by the regulatory agencies. Review of the site plan indicated no circulation issues.

Sight Distance

At unsignalized intersections a substantially clear line of sight should be maintained between the driver of a vehicle waiting at the crossroad and the driver of an approaching vehicle. Adequate time must be provided for the waiting vehicle to turn right, without requiring the through traffic to radically alter their speed. Sight distance should be measured from a 3.5-foot height at the location of the driver on the minor road to a 4.25-foot object height in the center of the approaching lane of the major road. Set-back for the driver on the crossroad shall be a minimum of 15 feet, measured from the edge of the traveled way.

Sight distance along Laurel Road at D Lane was evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. The recommended sight distance at intersections of public streets is based on corner sight distances, which uses the approach travel speeds as the basis for determining the recommended sight distance.

Sight distance at the intersection was measured using the site plan. Based on the posted speed limit on Laurel Road between Hillcrest Avenue and Canada Valley Drive of 45 mph, the minimum corner sight distance needed is 495 feet. Because the intersection would be restricted to right-turn only movements, only sight distance to the east was reviewed. Based on the site plan, the lines of sight would adequate. A graphic of the sight distance is provided in Appendix E.

However, in order to maintain these sight lines for vehicles leaving the site, it is recommended that landscaping be trimmed such that tree canopies are at least seven feet above the ground; other landscaping within the sight lines should be limited to low-lying vegetation no greater than three feet in height. In addition, signs and monuments planned along the project's frontage should be placed in a manner that does not obstruct sight distance at the project intersections.

Finding – Sight distance lines at the unsignalized intersection of Laurel Road/D Lane would require landscaping maintenance.

Recommendation – In order to maintain adequate sight lines for vehicles leaving the site it is recommended that landscaping be trimmed such that tree canopies are at least seven feet above the ground; other landscaping within the sight lines should be limited to low-lying vegetation no greater than three feet in height.

Conclusions and Recommendations

Conclusions

- The project is expected to generate an average of 1,780 trips per day, including 140 a.m. peak hour trips and 187 trips during the p.m. peak hour.
- Study intersections analyzed under existing conditions operate acceptably and are expected to continue to do so in the near-term as well as for the cumulative scenarios with the addition of the project traffic and the associated roadway improvements.
- Under the projected future volumes, the study intersections are expected to operate acceptably with the exception of Hillcrest Road/Laurel Road in the a.m. and p.m. peak hours and Laurel Road/Slatten Ranch Road during the p.m. peak hour. The intersections of SR 4 Eastbound Ramps/Hillcrest Avenue and SR 4 Eastbound Ramps/Lone Tree Way are projected to operate below the desired Caltrans threshold, but acceptably based on the East County Action Plan.
- Queuing analysis for the proposed project driveway indicates the projected queue lengths would not exceed the estimated available storage.
- Under access Alternative 2, which would allow westbound left turns into the Park Ridge project, there would be sufficient storage space to accommodate the projected queue lengths.
- Proposed pedestrian facilities as shown on the site plan include sidewalks but do not include a connection to existing facilities. The site plan does not indicate if the signalized intersection would include pedestrian crossings.
- Bicycle and transit facilities, including the addition of bike lanes on Laurel Road based on the site plan, were determined to be adequate for the project.
- No circulation issues were identified on-site.
- Maintaining adequate sight distance at the unsignalized intersection of Laurel Road/D Lane would require landscaping maintenance.

Recommendations

- The sidewalks fronting the project site should connect to existing facilities.
- Pedestrian crosswalks, with a pedestrian phase, should be included in the design of the traffic signal at the Country Hills Drive/Laurel Road intersection.
- In order to maintain adequate sight lines for vehicles leaving the site on D Lane, it is recommended that landscaping be trimmed such that tree canopies are at least seven feet above the ground; other landscaping within the sight lines should be limited to low-lying vegetation no greater than three feet in height.
- Bike lanes should be provided on Laurel Road as indicated on preliminary site plans.

Study Participants and References

Study Participants

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Technician/Graphics	Deborah J. Mizell
Editing/Formatting	Angela McCoy
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Appendix A

Intersection LOS Methodology Clarifications and Modifications to CCTA Guidelines

Intersection LOS Methodology
Clarifications and Modifications to CCTA Guidelines

The study intersections were analyzed using the Synchro analysis software, employing methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 2010 and in accordance with *Technical Procedures* established by the Contra Costa Transportation Authority (CCTA), January 16, 2013. During the course of preparing the analysis, it was necessary to make assumptions and modifications when applying these methodologies. This document summarizes these assumptions.

HCM 2010 Methodology Limitation

The HCM 2010 methodology currently has limitations in determining LOS for certain shared lane configurations, including approaches with through-left lanes that are opposed by more than one through lane. The developers of Synchro, the software used for this analysis, have developed methodologies to approximate the LOS for intersections that have been affected by this limitation. This approximation was applied to the each of study intersections.

Right turn on Red

HCM 2010 methodologies require the number of vehicles observed to complete a right-turn on red movement (RTOR); however, such data was not available for the study intersections. Therefore, the RTOR volumes were estimated using the following method. This method is consistent with recommended methodologies presented in the HCM 2010 when field collected data is not available.

- RTOR volumes were entered only if the right turn movement is served by an exclusive lane and there is a complementary left-turn phase on the cross street
- RTOR may not exceed the number of shadowed left turners on a per lane basis
- RTOR may not exceed 50% of the total right turn volume
- RTOR volumes were not entered channelized yield-controlled right turns, as HCM 2010 methodologies address these movements separately
- RTOR volumes were only entered if there are projected to be 10 or more such movements during a peak hour

Lane Utilization Factor

Lane utilization factors calculated by Synchro were used for the analysis.

Traffic Signal Timing

Traffic signal timing was optimized using Synchro. The following assumptions were applied to the signal timing optimization:

- Assume a minimum 100 second cycle length for all actuated signals
- Green times were allocated by Synchro

Peak Hour Factor

Per CCTA guidance, the peak hour factor (PHF) for intersections is to be 0.92 at intersections with a peak hour entering volume of 1,000 vehicles or more. For intersections with less than 1,000 vehicles entering per peak hour, the PHF is to be 0.90. Under each scenario, every intersection has at least 1,000 vehicles entering so a base PHF of 0.92 was used. However, from the counts conducted at each study intersection, some intersections experience peak hour factors approaching 0.95 to 1.00. For the purposes of this

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analysis, the PHF for those intersections was capped at 0.95. Unless otherwise stated in the below table, the PHF used for the analysis was 0.92.

Peak Hour Factor Adjustments

Intersections	AM Peak	PM Peak
State Route 4 Westbound Ramps/ Hillcrest Avenue	--	--
State Route 4 Eastbound Ramps/ Hillcrest Avenue	--	0.95
Hillcrest Road/ Laurel Road	--	0.95
Laurel Road/ Canada Valley Road	--	--
State Route 4 Eastbound Ramps/ Laurel Road	--	--
State Route 4 Westbound Ramps/ Laurel Road	--	--
State Route 4 Eastbound Ramps/ Lone Tree Way	--	0.95
State Route 4 Westbound Ramps/ Lone Tree Way	--	0.95
Lone Tree Way/ Empire Avenue	--	0.95
Laurel Road / County Hills Drive	--	--
Laurel Road / Slatten Ranch Road	--	--

Note: Unless stated otherwise in the table, a PHF of 0.92 was used for all intersections

Appendix B

Intersection Level of Service Calculations

HCM 2010 Signalized Intersection Summary
1: Hillcrest Ave & SR4 WB Ramps

10/24/2015

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	655	641	814	124
Number			5	2	6	16
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1845	1845	1845	1900
Adj Flow Rate, veh/h			712	697	885	0
Adj No. of Lanes			2	1	2	0
Peak Hour Factor			0.92	0.92	0.92	0.92
Percent Heavy Veh, %			3	3	3	3
Cap, veh/h			989	1686	1884	0
Arrive On Green			0.29	0.91	0.54	0.00
Sat Flow, veh/h			3408	1845	3689	0
Grp Volume(v), veh/h			712	697	885	0
Grp Sat Flow(s),veh/h/ln			1704	1845	1752	0
Q Serve(g_s), s			8.7	2.4	7.3	0.0
Cycle Q Clear(g_c), s			8.7	2.4	7.3	0.0
Prop In Lane			1.00			0.00
Lane Grp Cap(c), veh/h			989	1686	1884	0
V/C Ratio(X)			0.72	0.41	0.47	0.00
Avail Cap(c_a), veh/h			2862	3813	4000	0
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			14.8	0.3	6.6	0.0
Incr Delay (d2), s/veh			1.0	0.2	0.2	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			4.2	1.0	3.5	0.0
LnGrp Delay(d),s/veh			15.8	0.4	6.8	0.0
LnGrp LOS			B	A	A	
Approach Vol, veh/h				1409	885	
Approach Delay, s/veh				8.2	6.8	
Approach LOS				A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		46.4			17.5	29.0		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		96.0			39.0	53.0		
Max Q Clear Time (g_c+I1), s		4.4			10.7	9.3		
Green Ext Time (p_c), s		17.7			2.8	15.7		

Intersection Summary	
HCM 2010 Ctrl Delay	7.7
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
2: Hillcrest Ave & SR 4 EB Ramps

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	142	1	687	0	0	0	0	1152	395	168	634	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845				0	1845	1900	1845	1845	0
Adj Flow Rate, veh/h	154	1	747				0	1252	429	183	689	0
Adj No. of Lanes	0	1	2				0	3	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3				0	3	3	3	3	0
Cap, veh/h	511	3	808				0	1660	568	221	2166	0
Arrive On Green	0.29	0.29	0.29				0.00	0.45	0.45	0.13	0.62	0.00
Sat Flow, veh/h	1746	11	2760				0	3876	1268	1757	3597	0
Grp Volume(v), veh/h	155	0	747				0	1133	548	183	689	0
Grp Sat Flow(s),veh/h/ln	1757	0	1380				0	1679	1621	1757	1752	0
Q Serve(g_s), s	6.1	0.0	23.5				0.0	25.2	25.3	9.1	8.4	0.0
Cycle Q Clear(g_c), s	6.1	0.0	23.5				0.0	25.2	25.3	9.1	8.4	0.0
Prop In Lane	0.99		1.00				0.00		0.78	1.00		0.00
Lane Grp Cap(c), veh/h	514	0	808				0	1503	725	221	2166	0
V/C Ratio(X)	0.30	0.00	0.92				0.00	0.75	0.76	0.83	0.32	0.00
Avail Cap(c_a), veh/h	531	0	833				0	1614	779	354	2547	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.5	0.0	30.7				0.0	20.6	20.6	38.2	8.1	0.0
Incr Delay (d2), s/veh	0.3	0.0	15.7				0.0	1.9	4.0	8.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	10.7				0.0	12.0	12.1	5.0	4.0	0.0
LnGrp Delay(d),s/veh	24.9	0.0	46.4				0.0	22.5	24.6	46.8	8.2	0.0
LnGrp LOS	C		D					C	C	D	A	
Approach Vol, veh/h		902						1681			872	
Approach Delay, s/veh		42.7						23.2			16.3	
Approach LOS		D						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.2	44.0		30.2		59.3		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	18.0	43.0		27.0		65.0		
Max Q Clear Time (g_c+I1), s	11.1	27.3		25.5		10.4		
Green Ext Time (p_c), s	0.3	12.8		0.7		30.9		

Intersection Summary	
HCM 2010 Ctrl Delay	26.5
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
3: Hillcrest Ave & Laurel Road

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	92	31	70	38	31	171	64	415	33	74	384	86
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	100	34	76	41	34	106	70	451	0	80	417	93
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	437	99	220	389	358	304	101	1336	0	111	1104	244
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.06	0.38	0.00	0.06	0.39	0.39
Sat Flow, veh/h	1232	508	1136	1266	1845	1568	1757	3597	0	1757	2854	631
Grp Volume(v), veh/h	100	0	110	41	34	106	70	451	0	80	255	255
Grp Sat Flow(s),veh/h/ln	1232	0	1644	1266	1845	1568	1757	1752	0	1757	1752	1733
Q Serve(g_s), s	2.4	0.0	1.9	1.0	0.5	1.9	1.3	3.0	0.0	1.5	3.5	3.5
Cycle Q Clear(g_c), s	2.9	0.0	1.9	2.9	0.5	1.9	1.3	3.0	0.0	1.5	3.5	3.5
Prop In Lane	1.00		0.69	1.00		1.00	1.00		0.00	1.00		0.36
Lane Grp Cap(c), veh/h	437	0	319	389	358	304	101	1336	0	111	678	670
V/C Ratio(X)	0.23	0.00	0.35	0.11	0.10	0.35	0.69	0.34	0.00	0.72	0.38	0.38
Avail Cap(c_a), veh/h	1350	0	1538	1328	1725	1466	901	4124	0	954	2115	2092
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.2	0.0	11.5	12.8	11.0	11.6	15.3	7.3	0.0	15.2	7.3	7.3
Incr Delay (d2), s/veh	0.3	0.0	0.6	0.1	0.1	0.7	8.3	0.1	0.0	8.6	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.9	0.3	0.3	0.9	0.9	1.5	0.0	1.0	1.7	1.7
LnGrp Delay(d),s/veh	12.4	0.0	12.2	12.9	11.1	12.2	23.6	7.4	0.0	23.9	7.6	7.7
LnGrp LOS	B		B	B	B	B	C	A		C	A	A
Approach Vol, veh/h		210			181			521			590	
Approach Delay, s/veh		12.3			12.2			9.6			9.9	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.1	16.6		10.4	5.9	16.8		10.4
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	18.0	39.0		31.0	17.0	40.0		31.0
Max Q Clear Time (g_c+I1), s	3.5	5.0		4.9	3.3	5.5		4.9
Green Ext Time (p_c), s	0.1	7.3		1.7	0.1	7.3		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	10.4
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
5: SR 4 EB On-Ramps/SR 4 EB Off-Ramps & Laurel Road

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	0	573	0	0	0	529	1	0
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1900				1845	1845	1900
Adj Flow Rate, veh/h	0	0	0	0	0	0				576	0	0
Adj No. of Lanes	0	2	0	0	2	0				2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	0	3	3				3	3	3
Cap, veh/h	0	47	0	0	47	0				1649	866	0
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.00				0.47	0.00	0.00
Sat Flow, veh/h	0	-71942	0	0	-71942	0				3514	1845	0
Grp Volume(v), veh/h	0	0	0	0	0	0				576	0	0
Grp Sat Flow(s),veh/h/ln	0	1752	0	0	1752	0				1757	1845	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0				0.8	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0				0.8	0.0	0.0
Prop In Lane	0.00		0.00	0.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	47	0	0	47	0				1649	866	0
V/C Ratio(X)	0.00	0.00	0.00	0.00	0.00	0.00				0.35	0.00	0.00
Avail Cap(c_a), veh/h	0	16741	0	0	16741	0				26107	13706	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	0.00	0.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				1.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0				0.3	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				1.4	0.0	0.0
LnGrp LOS										A		
Approach Vol, veh/h		0			0						576	
Approach Delay, s/veh		0.0			0.0						1.4	
Approach LOS											A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				0.0		7.5		0.0
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				36.0		56.0		36.0
Max Q Clear Time (g_c+I1), s				0.0		2.8		0.0
Green Ext Time (p_c), s				0.0		2.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	1.4
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
6: SR 4 WB Off-Ramps/SR 4 WB On-Ramps & Laurel Road

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	529	0	0	571	725	2	0	318	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	4	575	0	0	621	0	2	0	346			
Adj No. of Lanes	1	2	0	0	2	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	8	1855	0	0	1502	672	488	0	435			
Arrive On Green	0.00	0.53	0.00	0.00	0.43	0.00	0.28	0.00	0.28			
Sat Flow, veh/h	1757	3597	0	0	3597	1568	1757	0	1568			
Grp Volume(v), veh/h	4	575	0	0	621	0	2	0	346			
Grp Sat Flow(s),veh/h/ln	1757	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	0.1	3.8	0.0	0.0	5.1	0.0	0.0	0.0	8.5			
Cycle Q Clear(g_c), s	0.1	3.8	0.0	0.0	5.1	0.0	0.0	0.0	8.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	8	1855	0	0	1502	672	488	0	435			
V/C Ratio(X)	0.52	0.31	0.00	0.00	0.41	0.00	0.00	0.00	0.80			
Avail Cap(c_a), veh/h	170	4652	0	0	3976	1779	1569	0	1400			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	20.6	5.5	0.0	0.0	8.2	0.0	10.8	0.0	13.9			
Incr Delay (d2), s/veh	46.2	0.1	0.0	0.0	0.2	0.0	0.0	0.0	3.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.1	1.9	0.0	0.0	2.5	0.0	0.0	0.0	4.1			
LnGrp Delay(d),s/veh	66.8	5.6	0.0	0.0	8.4	0.0	10.8	0.0	17.2			
LnGrp LOS	E	A			A		B		B			
Approach Vol, veh/h		579			621			348				
Approach Delay, s/veh		6.0			8.4			17.2				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		15.5		25.9			4.2	21.8
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		37.0		55.0			4.0	47.0
Max Q Clear Time (g_c+I1), s		10.5		5.8			2.1	7.1
Green Ext Time (p_c), s		1.2		11.0			0.0	10.7

Intersection Summary	
HCM 2010 Ctrl Delay	9.5
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
7: SR 4 EB On-ramps/SR 4 EB Off-Ramps & Lone Tree Way

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	783	434	95	1180	0	0	0	0	307	1	393
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	851	472	103	1283	0				335	0	427
Adj No. of Lanes	0	3	1	2	3	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	2277	709	174	2825	0				1138	0	508
Arrive On Green	0.00	0.45	0.45	0.05	0.56	0.00				0.32	0.00	0.32
Sat Flow, veh/h	0	5202	1568	3408	5202	0				3514	0	1568
Grp Volume(v), veh/h	0	851	472	103	1283	0				335	0	427
Grp Sat Flow(s),veh/h/ln	0	1679	1568	1704	1679	0				1757	0	1568
Q Serve(g_s), s	0.0	7.7	16.4	2.1	10.4	0.0				4.9	0.0	17.6
Cycle Q Clear(g_c), s	0.0	7.7	16.4	2.1	10.4	0.0				4.9	0.0	17.6
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2277	709	174	2825	0				1138	0	508
V/C Ratio(X)	0.00	0.37	0.67	0.59	0.45	0.00				0.29	0.00	0.84
Avail Cap(c_a), veh/h	0	2466	768	344	3263	0				2378	0	1061
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	12.5	14.9	32.2	9.0	0.0				17.6	0.0	21.8
Incr Delay (d2), s/veh	0.0	0.1	2.0	3.2	0.1	0.0				0.1	0.0	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.6	7.5	1.0	4.8	0.0				2.4	0.0	8.1
LnGrp Delay(d),s/veh	0.0	12.6	16.9	35.4	9.1	0.0				17.7	0.0	25.7
LnGrp LOS		B	B	D	A					B		C
Approach Vol, veh/h		1323			1386						762	
Approach Delay, s/veh		14.2			11.0						22.2	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			7.6	35.4		26.5		43.0
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			7.0	34.0		47.0		45.0
Max Q Clear Time (g_c+I1), s			4.1	18.4		19.6		12.4
Green Ext Time (p_c), s			0.1	13.0		2.9		23.4

Intersection Summary	
HCM 2010 Ctrl Delay	14.7
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	0	945	166	8	3	850	307	429	19	138	0	0
Number	7	4	14		3	8	18	5	2	12		
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00		
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	0	1845	1845		1845	1845	1845	1845	1845	1845		
Adj Flow Rate, veh/h	0	1027	90		3	924	334	481	0	147		
Adj No. of Lanes	0	3	1		1	3	1	2	0	1		
Peak Hour Factor	0.92	0.92	0.92		0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	3	3		3	3	3	3	3	3		
Cap, veh/h	0	2718	846		6	3145	979	746	0	333		
Arrive On Green	0.00	0.54	0.54		0.00	0.62	0.62	0.21	0.00	0.21		
Sat Flow, veh/h	0	5202	1568		1757	5036	1568	3514	0	1568		
Grp Volume(v), veh/h	0	1027	90		3	924	334	481	0	147		
Grp Sat Flow(s),veh/h/ln	0	1679	1568		1757	1679	1568	1757	0	1568		
Q Serve(g_s), s	0.0	5.8	1.4		0.1	4.1	5.0	6.1	0.0	4.0		
Cycle Q Clear(g_c), s	0.0	5.8	1.4		0.1	4.1	5.0	6.1	0.0	4.0		
Prop In Lane	0.00		1.00		1.00		1.00	1.00		1.00		
Lane Grp Cap(c), veh/h	0	2718	846		6	3145	979	746	0	333		
V/C Ratio(X)	0.00	0.38	0.11		0.52	0.29	0.34	0.64	0.00	0.44		
Avail Cap(c_a), veh/h	0	3799	1183		501	5647	1758	2651	0	1183		
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	0.0	6.5	5.5		24.4	4.2	4.4	17.6	0.0	16.8		
Incr Delay (d2), s/veh	0.0	0.1	0.1		58.4	0.1	0.2	0.9	0.0	0.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	2.7	0.6		0.1	1.9	2.2	3.0	0.0	1.8		
LnGrp Delay(d),s/veh	0.0	6.6	5.6		82.8	4.3	4.6	18.6	0.0	17.7		
LnGrp LOS		A	A		F	A	A	B		B		
Approach Vol, veh/h		1117				1261			628			
Approach Delay, s/veh		6.5				4.6			18.4			
Approach LOS		A				A			B			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		14.4	4.2	30.5				34.6
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		37.0	14.0	37.0				55.0
Max Q Clear Time (g_c+I1), s		8.1	2.1	7.8				7.0
Green Ext Time (p_c), s		2.3	0.0	18.1				23.6

Intersection Summary	
HCM 2010 Ctrl Delay	8.2
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
8: Jefferey Way /SR 4 WB On-Ramps & Lone Tree Way 10/24/2015

Movement	SBR
Lane Configurations	
Volume (veh/h)	0
Number	
Initial Q (Qb), veh	
Ped-Bike Adj(A_pbT)	
Parking Bus, Adj	
Adj Sat Flow, veh/h/ln	
Adj Flow Rate, veh/h	
Adj No. of Lanes	
Peak Hour Factor	
Percent Heavy Veh, %	
Cap, veh/h	
Arrive On Green	
Sat Flow, veh/h	
Grp Volume(v), veh/h	
Grp Sat Flow(s),veh/h/ln	
Q Serve(g_s), s	
Cycle Q Clear(g_c), s	
Prop In Lane	
Lane Grp Cap(c), veh/h	
V/C Ratio(X)	
Avail Cap(c_a), veh/h	
HCM Platoon Ratio	
Upstream Filter(I)	
Uniform Delay (d), s/veh	
Incr Delay (d2), s/veh	
Initial Q Delay(d3),s/veh	
%ile BackOfQ(50%),veh/ln	
LnGrp Delay(d),s/veh	
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer

User approved ignoring U-Turning movement.

Laurel Ranch Traffic Impact Analysis
AM Existing Conditions
Synchro 8 Report

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (veh/h)	43	131	459	41	61	606	88	15	107	88	47	25
Number		7	4	14	3	8	18		5	2	12	
Initial Q (Qb), veh		0	0	0	0	0	0		0	0	0	
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00		1.00		1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln		1845	1845	1845	1845	1845	1845		1845	1845	1845	
Adj Flow Rate, veh/h		142	499	23	66	659	48		116	96	26	
Adj No. of Lanes		1	3	1	1	3	1		2	1	1	
Peak Hour Factor		0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92	
Percent Heavy Veh, %		3	3	3	3	3	3		3	3	3	
Cap, veh/h		192	1731	539	89	1437	448		239	294	250	
Arrive On Green		0.11	0.34	0.34	0.05	0.29	0.29		0.07	0.16	0.16	
Sat Flow, veh/h		1757	5036	1568	1757	5036	1568		3408	1845	1568	
Grp Volume(v), veh/h		142	499	23	66	659	48		116	96	26	
Grp Sat Flow(s),veh/h/ln		1757	1679	1568	1757	1679	1568		1704	1845	1568	
Q Serve(g_s), s		3.3	3.1	0.4	1.6	4.6	1.0		1.4	2.0	0.6	
Cycle Q Clear(g_c), s		3.3	3.1	0.4	1.6	4.6	1.0		1.4	2.0	0.6	
Prop In Lane		1.00		1.00	1.00		1.00		1.00		1.00	
Lane Grp Cap(c), veh/h		192	1731	539	89	1437	448		239	294	250	
V/C Ratio(X)		0.74	0.29	0.04	0.74	0.46	0.11		0.49	0.33	0.10	
Avail Cap(c_a), veh/h		1979	6501	2024	371	1891	589		320	693	589	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Uniform Delay (d), s/veh		18.4	10.2	9.3	19.9	12.5	11.2		19.1	15.9	15.3	
Incr Delay (d2), s/veh		5.5	0.1	0.0	11.2	0.2	0.1		1.5	0.6	0.2	
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln		1.9	1.4	0.2	1.0	2.1	0.4		0.7	1.0	0.3	
LnGrp Delay(d),s/veh		23.9	10.3	9.3	31.1	12.7	11.3		20.6	16.5	15.5	
LnGrp LOS		C	B	A	C	B	B		C	B	B	
Approach Vol, veh/h			664			773				238		
Approach Delay, s/veh			13.2			14.2				18.4		
Approach LOS			B			B				B		

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.0	10.8	6.2	18.6	7.0	10.8	8.7	16.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.0	16.0	9.0	55.0	4.0	16.0	48.0	16.0
Max Q Clear Time (g_c+I1), s	3.4	4.0	3.6	5.1	3.4	5.3	5.3	6.6
Green Ext Time (p_c), s	0.0	1.7	0.0	9.6	0.0	1.6	0.4	4.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Notes

User approved ignoring U-Turning movement.

HCM 2010 Signalized Intersection Summary
9: Empire Avenue & Lone Tree Way 10/24/2015

Movement	SBL	SBT	SBR
Lane Configurations			
Volume (veh/h)	109	126	119
Number	1	6	16
Initial Q (Qb), veh	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900
Adj Flow Rate, veh/h	118	137	129
Adj No. of Lanes	2	2	0
Peak Hour Factor	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3
Cap, veh/h	241	284	247
Arrive On Green	0.07	0.16	0.16
Sat Flow, veh/h	3408	1778	1546
Grp Volume(v), veh/h	118	135	131
Grp Sat Flow(s),veh/h/ln	1704	1752	1572
Q Serve(g_s), s	1.4	3.0	3.3
Cycle Q Clear(g_c), s	1.4	3.0	3.3
Prop In Lane	1.00		0.98
Lane Grp Cap(c), veh/h	241	280	251
V/C Ratio(X)	0.49	0.48	0.52
Avail Cap(c_a), veh/h	320	658	590
HCM Platoon Ratio	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.1	16.3	16.4
Incr Delay (d2), s/veh	1.5	1.3	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	1.5	1.5
LnGrp Delay(d),s/veh	20.6	17.6	18.1
LnGrp LOS	C	B	B
Approach Vol, veh/h		384	
Approach Delay, s/veh		18.7	
Approach LOS		B	

Timer

Laurel Ranch Traffic Impact Analysis
AM Existing Conditions
Synchro 8 Report

HCM 2010 Signalized Intersection Summary
1: Hillcrest Ave & SR4 WB Ramps

10/24/2015



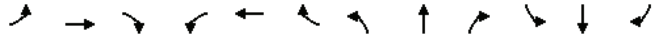
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	648	552	870	141
Number			5	2	6	16
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1845	1845	1845	1900
Adj Flow Rate, veh/h			704	600	946	0
Adj No. of Lanes			2	1	2	0
Peak Hour Factor			0.92	0.92	0.92	0.92
Percent Heavy Veh, %			3	3	3	3
Cap, veh/h			979	1685	1893	0
Arrive On Green			0.29	0.91	0.54	0.00
Sat Flow, veh/h			3408	1845	3689	0
Grp Volume(v), veh/h			704	600	946	0
Grp Sat Flow(s),veh/h/ln			1704	1845	1752	0
Q Serve(g_s), s			8.6	1.9	7.9	0.0
Cycle Q Clear(g_c), s			8.6	1.9	7.9	0.0
Prop In Lane			1.00			0.00
Lane Grp Cap(c), veh/h			979	1685	1893	0
V/C Ratio(X)			0.72	0.36	0.50	0.00
Avail Cap(c_a), veh/h			2722	3822	4161	0
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			14.8	0.3	6.7	0.0
Incr Delay (d2), s/veh			1.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			4.1	0.9	3.7	0.0
LnGrp Delay(d),s/veh			15.8	0.4	6.9	0.0
LnGrp LOS			B	A	A	
Approach Vol, veh/h				1304	946	
Approach Delay, s/veh				8.7	6.9	
Approach LOS				A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		46.3			17.3	29.0		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		96.0			37.0	55.0		
Max Q Clear Time (g_c+I1), s		3.9			10.6	9.9		
Green Ext Time (p_c), s		16.8			2.7	15.1		

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
2: Hillcrest Ave & SR 4 EB Ramps

10/24/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	122	0	730	0	0	0	0	1080	398	182	682	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845				0	1845	1900	1845	1845	0
Adj Flow Rate, veh/h	128	0	768				0	1137	419	192	718	0
Adj No. of Lanes	0	1	2				0	3	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3				0	3	3	3	3	0
Cap, veh/h	540	0	848				0	1537	566	231	2106	0
Arrive On Green	0.31	0.00	0.31				0.00	0.42	0.42	0.13	0.60	0.00
Sat Flow, veh/h	1757	0	2760				0	3795	1337	1757	3597	0
Grp Volume(v), veh/h	128	0	768				0	1052	504	192	718	0
Grp Sat Flow(s),veh/h/ln	1757	0	1380				0	1679	1609	1757	1752	0
Q Serve(g_s), s	4.7	0.0	23.3				0.0	22.9	22.9	9.3	9.0	0.0
Cycle Q Clear(g_c), s	4.7	0.0	23.3				0.0	22.9	22.9	9.3	9.0	0.0
Prop In Lane	1.00		1.00				0.00		0.83	1.00		0.00
Lane Grp Cap(c), veh/h	540	0	848				0	1422	681	231	2106	0
V/C Ratio(X)	0.24	0.00	0.91				0.00	0.74	0.74	0.83	0.34	0.00
Avail Cap(c_a), veh/h	584	0	918				0	1541	738	383	2533	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.6	0.0	29.0				0.0	21.1	21.1	36.9	8.7	0.0
Incr Delay (d2), s/veh	0.2	0.0	11.9				0.0	1.8	3.7	7.6	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	10.3				0.0	10.9	10.8	5.0	4.3	0.0
LnGrp Delay(d),s/veh	22.8	0.0	40.8				0.0	22.9	24.8	44.4	8.8	0.0
LnGrp LOS	C		D					C	C	D	A	
Approach Vol, veh/h		896						1556			910	
Approach Delay, s/veh		38.3						23.5			16.3	
Approach LOS		D						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.5	40.9		30.8		56.4		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	19.0	40.0		29.0		63.0		
Max Q Clear Time (g_c+I1), s	11.3	24.9		25.3		11.0		
Green Ext Time (p_c), s	0.3	12.0		1.5		28.2		

Intersection Summary	
HCM 2010 Ctrl Delay	25.5
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
3: Hillcrest Ave & Laurel Road

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	8	28	24	11	113	27	423	31	139	448	38
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	28	8	29	25	12	60	28	445	0	146	472	40
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	360	34	125	343	182	154	49	1374	0	197	1559	132
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.03	0.39	0.00	0.11	0.48	0.48
Sat Flow, veh/h	1310	350	1270	1352	1845	1568	1757	3597	0	1757	3272	276
Grp Volume(v), veh/h	28	0	37	25	12	60	28	445	0	146	252	260
Grp Sat Flow(s),veh/h/ln	1310	0	1621	1352	1845	1568	1757	1752	0	1757	1752	1796
Q Serve(g_s), s	0.6	0.0	0.6	0.5	0.2	1.1	0.5	2.7	0.0	2.4	2.7	2.7
Cycle Q Clear(g_c), s	0.8	0.0	0.6	1.2	0.2	1.1	0.5	2.7	0.0	2.4	2.7	2.7
Prop In Lane	1.00		0.78	1.00		1.00	1.00		0.00	1.00		0.15
Lane Grp Cap(c), veh/h	360	0	160	343	182	154	49	1374	0	197	835	855
V/C Ratio(X)	0.08	0.00	0.23	0.07	0.07	0.39	0.57	0.32	0.00	0.74	0.30	0.30
Avail Cap(c_a), veh/h	1272	0	1288	1285	1466	1246	582	4411	0	1513	3134	3212
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.7	0.0	12.6	13.1	12.4	12.8	14.5	6.4	0.0	13.0	4.8	4.8
Incr Delay (d2), s/veh	0.1	0.0	0.7	0.1	0.2	1.6	10.2	0.1	0.0	5.4	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.3	0.2	0.1	0.5	0.4	1.3	0.0	1.5	1.3	1.3
LnGrp Delay(d),s/veh	12.8	0.0	13.3	13.2	12.5	14.4	24.7	6.5	0.0	18.4	5.0	5.0
LnGrp LOS	B		B	B	B	B	C	A		B	A	A
Approach Vol, veh/h		65			97			473			658	
Approach Delay, s/veh		13.1			13.8			7.6			8.0	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.4	15.8		7.0	4.8	18.4		7.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	26.0	38.0		24.0	10.0	54.0		24.0
Max Q Clear Time (g_c+I1), s	4.4	4.7		2.8	2.5	4.7		3.2
Green Ext Time (p_c), s	0.4	7.2		0.6	0.0	7.5		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	8.5
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
5: SR 4 EB On-Ramps/SR 4 EB Off-Ramps & Laurel Road

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	0	424	0	0	0	1054	2	2
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1900				1845	1845	1900
Adj Flow Rate, veh/h	0	0	0	0	0	0				1149	0	0
Adj No. of Lanes	0	2	0	0	2	0				2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	0	3	3				3	3	3
Cap, veh/h	0	26	0	0	26	0				2456	1289	0
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.00				0.70	0.00	0.00
Sat Flow, veh/h	0	-71942	0	0	-71942	0				3514	1845	0
Grp Volume(v), veh/h	0	0	0	0	0	0				1149	0	0
Grp Sat Flow(s),veh/h/ln	0	1752	0	0	1752	0				1757	1845	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0				1.9	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0				1.9	0.0	0.0
Prop In Lane	0.00		0.00	0.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	26	0	0	26	0				2456	1289	0
V/C Ratio(X)	0.00	0.00	0.00	0.00	0.00	0.00				0.47	0.00	0.00
Avail Cap(c_a), veh/h	0	5805	0	0	5805	0				18516	9721	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	0.00	0.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0				0.8	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				1.0	0.0	0.0
LnGrp LOS										A		
Approach Vol, veh/h		0			0						1149	
Approach Delay, s/veh		0.0			0.0						1.0	
Approach LOS											A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				0.0		13.3		0.0
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				22.0		70.0		22.0
Max Q Clear Time (g_c+I1), s				0.0		3.9		0.0
Green Ext Time (p_c), s				0.0		5.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	1.0
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
6: SR 4 WB Off-Ramps/SR 4 WB On-Ramps & Laurel Road

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	1050	0	0	419	465	5	0	497	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	4	1141	0	0	455	0	5	0	540			
Adj No. of Lanes	1	2	0	0	2	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	8	1703	0	0	1466	656	681	0	608			
Arrive On Green	0.00	0.49	0.00	0.00	0.42	0.00	0.39	0.00	0.39			
Sat Flow, veh/h	1757	3597	0	0	3597	1568	1757	0	1568			
Grp Volume(v), veh/h	4	1141	0	0	455	0	5	0	540			
Grp Sat Flow(s),veh/h/ln	1757	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	0.1	15.7	0.0	0.0	5.5	0.0	0.1	0.0	20.3			
Cycle Q Clear(g_c), s	0.1	15.7	0.0	0.0	5.5	0.0	0.1	0.0	20.3			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	8	1703	0	0	1466	656	681	0	608			
V/C Ratio(X)	0.53	0.67	0.00	0.00	0.31	0.00	0.01	0.00	0.89			
Avail Cap(c_a), veh/h	111	2328	0	0	1885	843	1389	0	1240			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	31.4	12.4	0.0	0.0	12.3	0.0	11.9	0.0	18.1			
Incr Delay (d2), s/veh	47.6	0.5	0.0	0.0	0.1	0.0	0.0	0.0	4.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.2	7.6	0.0	0.0	2.7	0.0	0.1	0.0	9.5			
LnGrp Delay(d),s/veh	79.0	12.8	0.0	0.0	12.4	0.0	11.9	0.0	22.8			
LnGrp LOS	E	B			B		B		C			
Approach Vol, veh/h		1145			455			545				
Approach Delay, s/veh		13.1			12.4			22.7				
Approach LOS		B			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		28.5		34.7			4.3	30.5
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		50.0		42.0			4.0	34.0
Max Q Clear Time (g_c+I1), s		22.3		17.7			2.1	7.5
Green Ext Time (p_c), s		2.2		13.0			0.0	13.7

Intersection Summary	
HCM 2010 Ctrl Delay	15.4
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
7: SR 4 EB On-ramps/SR 4 EB Off-Ramps & Lone Tree Way

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1415	497	120	1383	0	0	0	0	454	2	374
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1489	523	126	1456	0				479	0	394
Adj No. of Lanes	0	3	1	2	3	0				2	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	2468	768	200	3017	0				1055	0	471
Arrive On Green	0.00	0.49	0.49	0.06	0.60	0.00				0.30	0.00	0.30
Sat Flow, veh/h	0	5202	1568	3408	5202	0				3514	0	1568
Grp Volume(v), veh/h	0	1489	523	126	1456	0				479	0	394
Grp Sat Flow(s),veh/h/ln	0	1679	1568	1704	1679	0				1757	0	1568
Q Serve(g_s), s	0.0	17.0	20.3	2.9	13.0	0.0				8.8	0.0	18.7
Cycle Q Clear(g_c), s	0.0	17.0	20.3	2.9	13.0	0.0				8.8	0.0	18.7
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2468	768	200	3017	0				1055	0	471
V/C Ratio(X)	0.00	0.60	0.68	0.63	0.48	0.00				0.45	0.00	0.84
Avail Cap(c_a), veh/h	0	2535	789	343	3295	0				1769	0	789
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.7	15.5	36.6	9.0	0.0				22.5	0.0	26.0
Incr Delay (d2), s/veh	0.0	0.4	2.3	3.3	0.1	0.0				0.3	0.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.9	9.2	1.4	6.0	0.0				4.3	0.0	8.6
LnGrp Delay(d),s/veh	0.0	15.1	17.8	39.8	9.1	0.0				22.8	0.0	30.0
LnGrp LOS		B	B	D	A					C		C
Approach Vol, veh/h		2012			1582						873	
Approach Delay, s/veh		15.8			11.6						26.1	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			8.7	42.9		27.9		51.6
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			8.0	40.0		40.0		52.0
Max Q Clear Time (g_c+I1), s			4.9	22.3		20.7		15.0
Green Ext Time (p_c), s			0.1	16.6		3.2		32.6

Intersection Summary	
HCM 2010 Ctrl Delay	16.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	0	1604	285	20	5	982	372	539	29	189	0	0
Number	7	4	14		3	8	18	5	2	12		
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00		
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	0	1845	1845		1845	1845	1845	1845	1845	1845		
Adj Flow Rate, veh/h	0	1688	153		5	1034	392	589	0	197		
Adj No. of Lanes	0	3	1		1	3	1	2	0	1		
Peak Hour Factor	0.95	0.95	0.95		0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	0	3	3		3	3	3	3	3	3		
Cap, veh/h	0	3011	937		9	3328	1036	786	0	351		
Arrive On Green	0.00	0.60	0.60		0.01	0.66	0.66	0.22	0.00	0.22		
Sat Flow, veh/h	0	5202	1568		1757	5036	1568	3514	0	1568		
Grp Volume(v), veh/h	0	1688	153		5	1034	392	589	0	197		
Grp Sat Flow(s),veh/h/ln	0	1679	1568		1757	1679	1568	1757	0	1568		
Q Serve(g_s), s	0.0	14.1	3.0		0.2	6.1	7.8	10.8	0.0	7.7		
Cycle Q Clear(g_c), s	0.0	14.1	3.0		0.2	6.1	7.8	10.8	0.0	7.7		
Prop In Lane	0.00		1.00		1.00		1.00	1.00		1.00		
Lane Grp Cap(c), veh/h	0	3011	937		9	3328	1036	786	0	351		
V/C Ratio(X)	0.00	0.56	0.16		0.54	0.31	0.38	0.75	0.00	0.56		
Avail Cap(c_a), veh/h	0	3011	937		507	4578	1425	1470	0	656		
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	0.0	8.4	6.2		34.4	5.0	5.3	25.1	0.0	23.9		
Incr Delay (d2), s/veh	0.0	0.2	0.1		40.6	0.1	0.2	1.5	0.0	1.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	6.5	1.3		0.2	2.8	3.4	5.4	0.0	3.5		
LnGrp Delay(d),s/veh	0.0	8.7	6.3		75.0	5.1	5.5	26.5	0.0	25.3		
LnGrp LOS		A	A		E	A	A	C		C		
Approach Vol, veh/h		1841				1431			786			
Approach Delay, s/veh		8.5				5.4			26.2			
Approach LOS		A				A			C			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		19.5	4.4	45.4				49.8
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		29.0	20.0	39.0				63.0
Max Q Clear Time (g_c+I1), s		12.8	2.2	16.1				9.8
Green Ext Time (p_c), s		2.7	0.0	19.8				36.0

Intersection Summary	
HCM 2010 Ctrl Delay	10.8
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
8: Jefferey Way /SR 4 WB On-Ramps & Lone Tree Way 10/24/2015

Movement	SBR
Lane Configurations	
Volume (veh/h)	0
Number	
Initial Q (Qb), veh	
Ped-Bike Adj(A_pbT)	
Parking Bus, Adj	
Adj Sat Flow, veh/h/ln	
Adj Flow Rate, veh/h	
Adj No. of Lanes	
Peak Hour Factor	
Percent Heavy Veh, %	
Cap, veh/h	
Arrive On Green	
Sat Flow, veh/h	
Grp Volume(v), veh/h	
Grp Sat Flow(s),veh/h/ln	
Q Serve(g_s), s	
Cycle Q Clear(g_c), s	
Prop In Lane	
Lane Grp Cap(c), veh/h	
V/C Ratio(X)	
Avail Cap(c_a), veh/h	
HCM Platoon Ratio	
Upstream Filter(I)	
Uniform Delay (d), s/veh	
Incr Delay (d2), s/veh	
Initial Q Delay(d3),s/veh	
%ile BackOfQ(50%),veh/ln	
LnGrp Delay(d),s/veh	
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer

User approved ignoring U-Turning movement.

Laurel Ranch Traffic Impact Analysis
PM Existing Conditions
Synchro 8 Report

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (veh/h)	101	240	803	95	90	737	145	16	94	94	37	59
Number		7	4	14	3	8	18		5	2	12	
Initial Q (Qb), veh		0	0	0	0	0	0		0	0	0	
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00		1.00		1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln		1845	1845	1845	1845	1845	1845		1845	1845	1845	
Adj Flow Rate, veh/h		253	845	58	95	776	100		99	99	22	
Adj No. of Lanes		1	3	1	1	3	1		2	1	1	
Peak Hour Factor		0.95	0.95	0.95	0.95	0.95	0.95		0.95	0.95	0.95	
Percent Heavy Veh, %		3	3	3	3	3	3		3	3	3	
Cap, veh/h		320	2075	646	123	1509	470		191	239	203	
Arrive On Green		0.18	0.41	0.41	0.07	0.30	0.30		0.06	0.13	0.13	
Sat Flow, veh/h		1757	5036	1568	1757	5036	1568		3408	1845	1568	
Grp Volume(v), veh/h		253	845	58	95	776	100		99	99	22	
Grp Sat Flow(s),veh/h/ln		1757	1679	1568	1757	1679	1568		1704	1845	1568	
Q Serve(g_s), s		7.7	6.6	1.3	3.0	7.1	2.7		1.6	2.8	0.7	
Cycle Q Clear(g_c), s		7.7	6.6	1.3	3.0	7.1	2.7		1.6	2.8	0.7	
Prop In Lane		1.00		1.00	1.00		1.00		1.00		1.00	
Lane Grp Cap(c), veh/h		320	2075	646	123	1509	470		191	239	203	
V/C Ratio(X)		0.79	0.41	0.09	0.77	0.51	0.21		0.52	0.41	0.11	
Avail Cap(c_a), veh/h		1381	4318	1344	377	1509	470		365	560	476	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Uniform Delay (d), s/veh		21.9	11.6	10.1	25.6	16.2	14.7		25.7	22.4	21.5	
Incr Delay (d2), s/veh		4.4	0.1	0.1	9.8	0.3	0.2		2.2	1.1	0.2	
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln		4.1	3.1	0.6	1.8	3.3	1.2		0.8	1.5	0.3	
LnGrp Delay(d),s/veh		26.2	11.8	10.1	35.4	16.5	14.9		27.8	23.6	21.7	
LnGrp LOS		C	B	B	D	B	B		C	C	C	
Approach Vol, veh/h			1156			971				220		
Approach Delay, s/veh			14.8			18.2				25.3		
Approach LOS			B			B				C		

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	11.3	7.9	27.1	7.1	13.9	14.2	20.8
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	17.0	12.0	48.0	6.0	18.0	44.0	16.0
Max Q Clear Time (g_c+I1), s	5.8	4.8	5.0	8.6	3.6	7.9	9.7	9.1
Green Ext Time (p_c), s	0.1	2.2	0.1	14.4	0.1	2.0	0.7	5.0

Intersection Summary	
HCM 2010 Ctrl Delay	18.8
HCM 2010 LOS	B

Notes

User approved ignoring U-Turning movement.

HCM 2010 Signalized Intersection Summary
9: Empire Avenue & Lone Tree Way 10/24/2015

Movement	SBL	SBT	SBR
Lane Configurations			
Volume (veh/h)	227	194	155
Number	1	6	16
Initial Q (Qb), veh	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900
Adj Flow Rate, veh/h	239	204	163
Adj No. of Lanes	2	2	0
Peak Hour Factor	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3
Cap, veh/h	350	335	254
Arrive On Green	0.10	0.18	0.18
Sat Flow, veh/h	3408	1900	1443
Grp Volume(v), veh/h	239	187	180
Grp Sat Flow(s),veh/h/ln	1704	1752	1590
Q Serve(g_s), s	3.8	5.5	5.9
Cycle Q Clear(g_c), s	3.8	5.5	5.9
Prop In Lane	1.00		0.91
Lane Grp Cap(c), veh/h	350	309	280
V/C Ratio(X)	0.68	0.61	0.64
Avail Cap(c_a), veh/h	426	563	511
HCM Platoon Ratio	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.2	21.3	21.4
Incr Delay (d2), s/veh	3.4	1.9	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.8	2.7
LnGrp Delay(d),s/veh	27.6	23.2	23.9
LnGrp LOS	C	C	C
Approach Vol, veh/h		606	
Approach Delay, s/veh		25.1	
Approach LOS		C	

Timer

Laurel Ranch Traffic Impact Analysis
PM Existing Conditions
Synchro 8 Report

HCM 2010 Signalized Intersection Summary
1: Hillcrest Ave & SR4 WB Ramps

10/24/2015

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	655	644	815	124
Number			5	2	6	16
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1845	1845	1845	1900
Adj Flow Rate, veh/h			712	700	886	0
Adj No. of Lanes			2	1	2	0
Peak Hour Factor			0.92	0.92	0.92	0.92
Percent Heavy Veh, %			3	3	3	3
Cap, veh/h			988	1686	1886	0
Arrive On Green			0.29	0.91	0.54	0.00
Sat Flow, veh/h			3408	1845	3689	0
Grp Volume(v), veh/h			712	700	886	0
Grp Sat Flow(s),veh/h/ln			1704	1845	1752	0
Q Serve(g_s), s			8.7	2.4	7.3	0.0
Cycle Q Clear(g_c), s			8.7	2.4	7.3	0.0
Prop In Lane			1.00			0.00
Lane Grp Cap(c), veh/h			988	1686	1886	0
V/C Ratio(X)			0.72	0.42	0.47	0.00
Avail Cap(c_a), veh/h			2856	3805	3991	0
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			14.8	0.3	6.6	0.0
Incr Delay (d2), s/veh			1.0	0.2	0.2	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			4.2	1.0	3.5	0.0
LnGrp Delay(d),s/veh			15.8	0.4	6.8	0.0
LnGrp LOS			B	A	A	
Approach Vol, veh/h				1412	886	
Approach Delay, s/veh				8.2	6.8	
Approach LOS				A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		46.5			17.5	29.1		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		96.0			39.0	53.0		
Max Q Clear Time (g_c+I1), s		4.4			10.7	9.3		
Green Ext Time (p_c), s		17.8			2.8	15.8		

Intersection Summary	
HCM 2010 Ctrl Delay	7.7
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
2: Hillcrest Ave & SR 4 EB Ramps

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	142	1	687	0	0	0	0	1155	395	168	635	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845				0	1845	1900	1845	1845	0
Adj Flow Rate, veh/h	154	1	747				0	1255	429	183	690	0
Adj No. of Lanes	0	1	2				0	3	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3				0	3	3	3	3	0
Cap, veh/h	511	3	808				0	1662	567	221	2166	0
Arrive On Green	0.29	0.29	0.29				0.00	0.45	0.45	0.13	0.62	0.00
Sat Flow, veh/h	1746	11	2760				0	3879	1266	1757	3597	0
Grp Volume(v), veh/h	155	0	747				0	1135	549	183	690	0
Grp Sat Flow(s),veh/h/ln	1757	0	1380				0	1679	1621	1757	1752	0
Q Serve(g_s), s	6.1	0.0	23.5				0.0	25.2	25.3	9.1	8.4	0.0
Cycle Q Clear(g_c), s	6.1	0.0	23.5				0.0	25.2	25.3	9.1	8.4	0.0
Prop In Lane	0.99		1.00				0.00		0.78	1.00		0.00
Lane Grp Cap(c), veh/h	514	0	808				0	1503	726	221	2166	0
V/C Ratio(X)	0.30	0.00	0.93				0.00	0.75	0.76	0.83	0.32	0.00
Avail Cap(c_a), veh/h	530	0	833				0	1613	779	353	2546	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.6	0.0	30.7				0.0	20.6	20.6	38.2	8.1	0.0
Incr Delay (d2), s/veh	0.3	0.0	15.7				0.0	1.9	4.0	8.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	10.7				0.0	12.1	12.1	5.0	4.1	0.0
LnGrp Delay(d),s/veh	24.9	0.0	46.4				0.0	22.6	24.7	46.9	8.2	0.0
LnGrp LOS	C		D					C	C	D	A	
Approach Vol, veh/h		902						1684			873	
Approach Delay, s/veh		42.7						23.2			16.3	
Approach LOS		D						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.2	44.1		30.2		59.3		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	18.0	43.0		27.0		65.0		
Max Q Clear Time (g_c+I1), s	11.1	27.3		25.5		10.4		
Green Ext Time (p_c), s	0.3	12.7		0.7		31.0		

Intersection Summary	
HCM 2010 Ctrl Delay	26.6
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
3: Hillcrest Ave & Laurel Road

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	92	31	70	38	31	171	64	418	33	74	385	86
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	100	34	76	41	34	106	70	454	0	80	418	93
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	437	98	220	389	357	304	101	1339	0	110	1107	244
Arrive On Green	0.19	0.19	0.19	0.19	0.19	0.19	0.06	0.38	0.00	0.06	0.39	0.39
Sat Flow, veh/h	1232	508	1136	1266	1845	1568	1757	3597	0	1757	2856	630
Grp Volume(v), veh/h	100	0	110	41	34	106	70	454	0	80	255	256
Grp Sat Flow(s),veh/h/ln	1232	0	1644	1266	1845	1568	1757	1752	0	1757	1752	1733
Q Serve(g_s), s	2.4	0.0	1.9	1.0	0.5	1.9	1.3	3.1	0.0	1.5	3.5	3.5
Cycle Q Clear(g_c), s	2.9	0.0	1.9	2.9	0.5	1.9	1.3	3.1	0.0	1.5	3.5	3.5
Prop In Lane	1.00		0.69	1.00		1.00	1.00		0.00	1.00		0.36
Lane Grp Cap(c), veh/h	437	0	318	389	357	304	101	1339	0	110	679	672
V/C Ratio(X)	0.23	0.00	0.35	0.11	0.10	0.35	0.70	0.34	0.00	0.72	0.38	0.38
Avail Cap(c_a), veh/h	1348	0	1535	1325	1722	1464	899	4117	0	952	2111	2088
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.2	0.0	11.6	12.8	11.0	11.6	15.4	7.3	0.0	15.3	7.3	7.3
Incr Delay (d2), s/veh	0.3	0.0	0.6	0.1	0.1	0.7	8.3	0.1	0.0	8.6	0.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	0.9	0.3	0.3	0.9	0.9	1.5	0.0	1.0	1.7	1.7
LnGrp Delay(d),s/veh	12.5	0.0	12.2	12.9	11.1	12.3	23.7	7.4	0.0	23.9	7.6	7.7
LnGrp LOS	B		B	B	B	B	C	A		C	A	A
Approach Vol, veh/h		210			181			524			591	
Approach Delay, s/veh		12.3			12.2			9.6			9.8	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.1	16.7		10.4	5.9	16.9		10.4
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	18.0	39.0		31.0	17.0	40.0		31.0
Max Q Clear Time (g_c+I1), s	3.5	5.1		4.9	3.3	5.5		4.9
Green Ext Time (p_c), s	0.1	7.3		1.7	0.1	7.3		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	10.4
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
5: SR 4 EB On-Ramps/SR 4 EB Off-Ramps & Laurel Road

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	0	573	0	0	0	529	1	0
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1900				1845	1845	1900
Adj Flow Rate, veh/h	0	0	0	0	0	0				576	0	0
Adj No. of Lanes	0	2	0	0	2	0				2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	0	3	3				3	3	3
Cap, veh/h	0	47	0	0	47	0				1649	866	0
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.00				0.47	0.00	0.00
Sat Flow, veh/h	0	-71942	0	0	-71942	0				3514	1845	0
Grp Volume(v), veh/h	0	0	0	0	0	0				576	0	0
Grp Sat Flow(s),veh/h/ln	0	1752	0	0	1752	0				1757	1845	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0				0.8	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0				0.8	0.0	0.0
Prop In Lane	0.00		0.00	0.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	47	0	0	47	0				1649	866	0
V/C Ratio(X)	0.00	0.00	0.00	0.00	0.00	0.00				0.35	0.00	0.00
Avail Cap(c_a), veh/h	0	16741	0	0	16741	0				26107	13706	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	0.00	0.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				1.3	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0				0.3	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				1.4	0.0	0.0
LnGrp LOS										A		
Approach Vol, veh/h		0			0						576	
Approach Delay, s/veh		0.0			0.0						1.4	
Approach LOS											A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				0.0		7.5		0.0
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				36.0		56.0		36.0
Max Q Clear Time (g_c+I1), s				0.0		2.8		0.0
Green Ext Time (p_c), s				0.0		2.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	1.4
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
6: SR 4 WB Off-Ramps/SR 4 WB On-Ramps & Laurel Road

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	529	0	0	571	725	2	0	318	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	4	575	0	0	621	0	2	0	346			
Adj No. of Lanes	1	2	0	0	2	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	8	1855	0	0	1502	672	488	0	435			
Arrive On Green	0.00	0.53	0.00	0.00	0.43	0.00	0.28	0.00	0.28			
Sat Flow, veh/h	1757	3597	0	0	3597	1568	1757	0	1568			
Grp Volume(v), veh/h	4	575	0	0	621	0	2	0	346			
Grp Sat Flow(s),veh/h/ln	1757	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	0.1	3.8	0.0	0.0	5.1	0.0	0.0	0.0	8.5			
Cycle Q Clear(g_c), s	0.1	3.8	0.0	0.0	5.1	0.0	0.0	0.0	8.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	8	1855	0	0	1502	672	488	0	435			
V/C Ratio(X)	0.52	0.31	0.00	0.00	0.41	0.00	0.00	0.00	0.80			
Avail Cap(c_a), veh/h	170	4652	0	0	3976	1779	1569	0	1400			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	20.6	5.5	0.0	0.0	8.2	0.0	10.8	0.0	13.9			
Incr Delay (d2), s/veh	46.2	0.1	0.0	0.0	0.2	0.0	0.0	0.0	3.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.1	1.9	0.0	0.0	2.5	0.0	0.0	0.0	4.1			
LnGrp Delay(d),s/veh	66.8	5.6	0.0	0.0	8.4	0.0	10.8	0.0	17.2			
LnGrp LOS	E	A			A		B		B			
Approach Vol, veh/h		579			621			348				
Approach Delay, s/veh		6.0			8.4			17.2				
Approach LOS		A			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		15.5		25.9			4.2	21.8
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		37.0		55.0			4.0	47.0
Max Q Clear Time (g_c+I1), s		10.5		5.8			2.1	7.1
Green Ext Time (p_c), s		1.2		11.0			0.0	10.7

Intersection Summary	
HCM 2010 Ctrl Delay	9.5
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
7: SR 4 EB On-ramps/SR 4 EB Off-Ramps & Lone Tree Way

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	824	444	95	1189	0	0	0	0	307	1	401
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	896	483	103	1292	0				335	0	436
Adj No. of Lanes	0	3	1	2	3	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	2268	706	174	2810	0				1155	0	515
Arrive On Green	0.00	0.45	0.45	0.05	0.56	0.00				0.33	0.00	0.33
Sat Flow, veh/h	0	5202	1568	3408	5202	0				3514	0	1568
Grp Volume(v), veh/h	0	896	483	103	1292	0				335	0	436
Grp Sat Flow(s),veh/h/ln	0	1679	1568	1704	1679	0				1757	0	1568
Q Serve(g_s), s	0.0	8.4	17.3	2.1	10.8	0.0				5.0	0.0	18.3
Cycle Q Clear(g_c), s	0.0	8.4	17.3	2.1	10.8	0.0				5.0	0.0	18.3
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2268	706	174	2810	0				1155	0	515
V/C Ratio(X)	0.00	0.40	0.68	0.59	0.46	0.00				0.29	0.00	0.85
Avail Cap(c_a), veh/h	0	2424	755	338	3209	0				2338	0	1043
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.0	15.4	32.8	9.3	0.0				17.6	0.0	22.0
Incr Delay (d2), s/veh	0.0	0.1	2.4	3.2	0.1	0.0				0.1	0.0	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.9	7.8	1.1	4.9	0.0				2.4	0.0	8.4
LnGrp Delay(d),s/veh	0.0	13.1	17.8	36.0	9.4	0.0				17.7	0.0	26.0
LnGrp LOS		B	B	D	A					B		C
Approach Vol, veh/h		1379			1395						771	
Approach Delay, s/veh		14.7			11.4						22.4	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			7.6	35.8		27.2		43.4
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			7.0	34.0		47.0		45.0
Max Q Clear Time (g_c+I1), s			4.1	19.3		20.3		12.8
Green Ext Time (p_c), s			0.1	12.5		2.9		23.8

Intersection Summary	
HCM 2010 Ctrl Delay	15.1
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	0	962	190	8	3	856	307	432	19	138	0	0
Number	7	4	14		3	8	18	5	2	12		
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00		
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	0	1845	1845		1845	1845	1845	1845	1845	1845		
Adj Flow Rate, veh/h	0	1046	104		3	930	334	485	0	145		
Adj No. of Lanes	0	3	1		1	3	1	2	0	1		
Peak Hour Factor	0.92	0.92	0.92		0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	3	3		3	3	3	3	3	3		
Cap, veh/h	0	2777	865		6	3187	992	740	0	330		
Arrive On Green	0.00	0.55	0.55		0.00	0.63	0.63	0.21	0.00	0.21		
Sat Flow, veh/h	0	5202	1568		1757	5036	1568	3514	0	1568		
Grp Volume(v), veh/h	0	1046	104		3	930	334	485	0	145		
Grp Sat Flow(s),veh/h/ln	0	1679	1568		1757	1679	1568	1757	0	1568		
Q Serve(g_s), s	0.0	6.0	1.6		0.1	4.3	5.1	6.5	0.0	4.1		
Cycle Q Clear(g_c), s	0.0	6.0	1.6		0.1	4.3	5.1	6.5	0.0	4.1		
Prop In Lane	0.00		1.00		1.00		1.00	1.00		1.00		
Lane Grp Cap(c), veh/h	0	2777	865		6	3187	992	740	0	330		
V/C Ratio(X)	0.00	0.38	0.12		0.52	0.29	0.34	0.66	0.00	0.44		
Avail Cap(c_a), veh/h	0	4136	1288		206	5120	1594	2748	0	1226		
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	0.0	6.5	5.5		25.4	4.2	4.4	18.5	0.0	17.6		
Incr Delay (d2), s/veh	0.0	0.1	0.1		58.5	0.1	0.2	1.0	0.0	0.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	2.7	0.7		0.1	1.9	2.2	3.2	0.0	1.9		
LnGrp Delay(d),s/veh	0.0	6.6	5.6		84.0	4.3	4.6	19.5	0.0	18.5		
LnGrp LOS		A	A		F	A	A	B		B		
Approach Vol, veh/h		1150				1267			630			
Approach Delay, s/veh		6.5				4.5			19.2			
Approach LOS		A				A			B			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		14.8	4.2	32.2				36.4
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		40.0	6.0	42.0				52.0
Max Q Clear Time (g_c+I1), s		8.5	2.1	8.0				7.1
Green Ext Time (p_c), s		2.3	0.0	20.2				23.4

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
8: Jefferey Way /SR 4 WB On-Ramps & Lone Tree Way 10/24/2015

Movement	SBR
Lane Configurations	
Volume (veh/h)	0
Number	
Initial Q (Qb), veh	
Ped-Bike Adj(A_pbT)	
Parking Bus, Adj	
Adj Sat Flow, veh/h/ln	
Adj Flow Rate, veh/h	
Adj No. of Lanes	
Peak Hour Factor	
Percent Heavy Veh, %	
Cap, veh/h	
Arrive On Green	
Sat Flow, veh/h	
Grp Volume(v), veh/h	
Grp Sat Flow(s),veh/h/ln	
Q Serve(g_s), s	
Cycle Q Clear(g_c), s	
Prop In Lane	
Lane Grp Cap(c), veh/h	
V/C Ratio(X)	
Avail Cap(c_a), veh/h	
HCM Platoon Ratio	
Upstream Filter(I)	
Uniform Delay (d), s/veh	
Incr Delay (d2), s/veh	
Initial Q Delay(d3),s/veh	
%ile BackOfQ(50%),veh/ln	
LnGrp Delay(d),s/veh	
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer

User approved ignoring U-Turning movement.

Laurel Ranch Traffic Impact Analysis Synchro 8 Report
AM Existing Plus Nearby Future Prj Conditions

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (veh/h)	43	141	466	41	61	608	88	15	107	88	47	25
Number		7	4	14	3	8	18		5	2	12	
Initial Q (Qb), veh		0	0	0	0	0	0		0	0	0	
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00		1.00		1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln		1845	1845	1845	1845	1845	1845		1845	1845	1845	
Adj Flow Rate, veh/h		153	507	23	66	661	48		116	96	26	
Adj No. of Lanes		1	3	1	1	3	1		2	1	1	
Peak Hour Factor		0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92	
Percent Heavy Veh, %		3	3	3	3	3	3		3	3	3	
Cap, veh/h		204	1903	593	87	1568	488		227	299	254	
Arrive On Green		0.12	0.38	0.38	0.05	0.31	0.31		0.07	0.16	0.16	
Sat Flow, veh/h		1757	5036	1568	1757	5036	1568		3408	1845	1568	
Grp Volume(v), veh/h		153	507	23	66	661	48		116	96	26	
Grp Sat Flow(s),veh/h/ln		1757	1679	1568	1757	1679	1568		1704	1845	1568	
Q Serve(g_s), s		3.9	3.2	0.4	1.7	4.8	1.0		1.5	2.1	0.7	
Cycle Q Clear(g_c), s		3.9	3.2	0.4	1.7	4.8	1.0		1.5	2.1	0.7	
Prop In Lane		1.00		1.00	1.00		1.00		1.00		1.00	
Lane Grp Cap(c), veh/h		204	1903	593	87	1568	488		227	299	254	
V/C Ratio(X)		0.75	0.27	0.04	0.76	0.42	0.10		0.51	0.32	0.10	
Avail Cap(c_a), veh/h		867	3999	1245	490	2918	909		805	910	774	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Uniform Delay (d), s/veh		20.0	10.0	9.2	21.9	12.7	11.4		21.0	17.3	16.6	
Incr Delay (d2), s/veh		5.5	0.1	0.0	12.8	0.2	0.1		1.8	0.6	0.2	
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln		2.2	1.5	0.2	1.1	2.2	0.4		0.8	1.1	0.3	
LnGrp Delay(d),s/veh		25.5	10.1	9.2	34.7	12.9	11.5		22.8	17.9	16.8	
LnGrp LOS		C	B	A	C	B	B		C	B	B	
Approach Vol, veh/h			683			775				238		
Approach Delay, s/veh			13.5			14.7				20.1		
Approach LOS			B			B				C		

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	11.6	6.3	21.6	7.1	11.6	9.4	18.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	11.0	23.0	13.0	37.0	11.0	23.0	23.0	27.0
Max Q Clear Time (g_c+I1), s	3.6	4.1	3.7	5.2	3.5	5.6	5.9	6.8
Green Ext Time (p_c), s	0.2	2.0	0.1	9.0	0.2	2.0	0.3	7.7

Intersection Summary	
HCM 2010 Ctrl Delay	16.0
HCM 2010 LOS	B

Notes

User approved ignoring U-Turning movement.

HCM 2010 Signalized Intersection Summary
9: Empire Avenue & Lone Tree Way 10/24/2015

Movement	SBL	SBT	SBR
Lane Configurations			
Volume (veh/h)	109	126	122
Number	1	6	16
Initial Q (Qb), veh	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900
Adj Flow Rate, veh/h	118	137	133
Adj No. of Lanes	2	2	0
Peak Hour Factor	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3
Cap, veh/h	229	285	255
Arrive On Green	0.07	0.16	0.16
Sat Flow, veh/h	3408	1752	1568
Grp Volume(v), veh/h	118	137	133
Grp Sat Flow(s),veh/h/ln	1704	1752	1568
Q Serve(g_s), s	1.6	3.3	3.6
Cycle Q Clear(g_c), s	1.6	3.3	3.6
Prop In Lane	1.00		1.00
Lane Grp Cap(c), veh/h	229	285	255
V/C Ratio(X)	0.52	0.48	0.52
Avail Cap(c_a), veh/h	805	865	774
HCM Platoon Ratio	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.0	17.7	17.8
Incr Delay (d2), s/veh	1.8	1.3	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.7	1.7
LnGrp Delay(d),s/veh	22.8	19.0	19.5
LnGrp LOS	C	B	B
Approach Vol, veh/h		388	
Approach Delay, s/veh		20.3	
Approach LOS		C	

Timer

HCM 2010 Signalized Intersection Summary
1: Hillcrest Ave & SR4 WB Ramps

10/24/2015

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	648	554	874	141
Number			5	2	6	16
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1845	1845	1845	1900
Adj Flow Rate, veh/h			704	602	950	0
Adj No. of Lanes			2	1	2	0
Peak Hour Factor			0.92	0.92	0.92	0.92
Percent Heavy Veh, %			3	3	3	3
Cap, veh/h			978	1686	1897	0
Arrive On Green			0.29	0.91	0.54	0.00
Sat Flow, veh/h			3408	1845	3689	0
Grp Volume(v), veh/h			704	602	950	0
Grp Sat Flow(s),veh/h/ln			1704	1845	1752	0
Q Serve(g_s), s			8.6	1.9	7.9	0.0
Cycle Q Clear(g_c), s			8.6	1.9	7.9	0.0
Prop In Lane			1.00			0.00
Lane Grp Cap(c), veh/h			978	1686	1897	0
V/C Ratio(X)			0.72	0.36	0.50	0.00
Avail Cap(c_a), veh/h			2711	3807	4144	0
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			14.9	0.3	6.7	0.0
Incr Delay (d2), s/veh			1.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			4.1	0.9	3.7	0.0
LnGrp Delay(d),s/veh			15.9	0.4	6.9	0.0
LnGrp LOS			B	A	A	
Approach Vol, veh/h				1306	950	
Approach Delay, s/veh				8.8	6.9	
Approach LOS				A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		46.5			17.3	29.2		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		96.0			37.0	55.0		
Max Q Clear Time (g_c+I1), s		3.9			10.6	9.9		
Green Ext Time (p_c), s		16.9			2.7	15.2		

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
2: Hillcrest Ave & SR 4 EB Ramps

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	122	0	730	0	0	0	0	1082	398	182	686	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845				0	1845	1900	1845	1845	0
Adj Flow Rate, veh/h	128	0	768				0	1139	419	192	722	0
Adj No. of Lanes	0	1	2				0	3	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3				0	3	3	3	3	0
Cap, veh/h	540	0	848				0	1538	566	231	2107	0
Arrive On Green	0.31	0.00	0.31				0.00	0.42	0.42	0.13	0.60	0.00
Sat Flow, veh/h	1757	0	2760				0	3797	1335	1757	3597	0
Grp Volume(v), veh/h	128	0	768				0	1053	505	192	722	0
Grp Sat Flow(s),veh/h/ln	1757	0	1380				0	1679	1609	1757	1752	0
Q Serve(g_s), s	4.7	0.0	23.3				0.0	23.0	23.0	9.3	9.0	0.0
Cycle Q Clear(g_c), s	4.7	0.0	23.3				0.0	23.0	23.0	9.3	9.0	0.0
Prop In Lane	1.00		1.00				0.00		0.83	1.00		0.00
Lane Grp Cap(c), veh/h	540	0	848				0	1422	682	231	2107	0
V/C Ratio(X)	0.24	0.00	0.91				0.00	0.74	0.74	0.83	0.34	0.00
Avail Cap(c_a), veh/h	584	0	918				0	1540	738	383	2532	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.6	0.0	29.0				0.0	21.1	21.1	36.9	8.7	0.0
Incr Delay (d2), s/veh	0.2	0.0	11.9				0.0	1.8	3.7	7.6	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	10.3				0.0	10.9	10.8	5.0	4.3	0.0
LnGrp Delay(d),s/veh	22.8	0.0	40.9				0.0	22.9	24.8	44.5	8.8	0.0
LnGrp LOS	C		D					C	C	D	A	
Approach Vol, veh/h		896						1558			914	
Approach Delay, s/veh		38.3						23.5			16.3	
Approach LOS		D						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.5	40.9		30.8		56.4		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	19.0	40.0		29.0		63.0		
Max Q Clear Time (g_c+I1), s	11.3	25.0		25.3		11.0		
Green Ext Time (p_c), s	0.3	12.0		1.5		28.3		

Intersection Summary	
HCM 2010 Ctrl Delay	25.5
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
3: Hillcrest Ave & Laurel Road

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	8	28	24	11	113	27	425	31	139	452	38
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	28	8	29	25	12	60	28	447	0	146	476	40
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	359	34	125	342	181	154	49	1378	0	197	1564	131
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.03	0.39	0.00	0.11	0.48	0.48
Sat Flow, veh/h	1310	350	1270	1352	1845	1568	1757	3597	0	1757	3274	274
Grp Volume(v), veh/h	28	0	37	25	12	60	28	447	0	146	254	262
Grp Sat Flow(s),veh/h/ln	1310	0	1621	1352	1845	1568	1757	1752	0	1757	1752	1796
Q Serve(g_s), s	0.6	0.0	0.6	0.5	0.2	1.1	0.5	2.7	0.0	2.4	2.7	2.7
Cycle Q Clear(g_c), s	0.8	0.0	0.6	1.2	0.2	1.1	0.5	2.7	0.0	2.4	2.7	2.7
Prop In Lane	1.00		0.78	1.00		1.00	1.00		0.00	1.00		0.15
Lane Grp Cap(c), veh/h	359	0	159	342	181	154	49	1378	0	197	837	858
V/C Ratio(X)	0.08	0.00	0.23	0.07	0.07	0.39	0.57	0.32	0.00	0.74	0.30	0.31
Avail Cap(c_a), veh/h	1269	0	1285	1281	1462	1243	580	4399	0	1509	3126	3204
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.7	0.0	12.6	13.1	12.4	12.8	14.5	6.4	0.0	13.0	4.8	4.8
Incr Delay (d2), s/veh	0.1	0.0	0.7	0.1	0.2	1.6	10.3	0.1	0.0	5.4	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.3	0.2	0.1	0.5	0.4	1.3	0.0	1.5	1.3	1.4
LnGrp Delay(d),s/veh	12.8	0.0	13.3	13.2	12.5	14.4	24.8	6.5	0.0	18.4	5.0	5.0
LnGrp LOS	B		B	B	B	B	C	A		B	A	A
Approach Vol, veh/h		65			97			475			662	
Approach Delay, s/veh		13.1			13.9			7.6			8.0	
Approach LOS		B			B			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.4	15.9		7.0	4.8	18.5		7.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	26.0	38.0		24.0	10.0	54.0		24.0
Max Q Clear Time (g_c+I1), s	4.4	4.7		2.8	2.5	4.7		3.2
Green Ext Time (p_c), s	0.4	7.2		0.6	0.0	7.6		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	8.5
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
5: SR 4 EB On-Ramps/SR 4 EB Off-Ramps & Laurel Road

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	0	0	424	0	0	0	1054	2	2
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1900				1845	1845	1900
Adj Flow Rate, veh/h	0	0	0	0	0	0				1149	0	0
Adj No. of Lanes	0	2	0	0	2	0				2	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	0	3	3				3	3	3
Cap, veh/h	0	26	0	0	26	0				2456	1289	0
Arrive On Green	0.00	0.00	0.00	0.00	0.00	0.00				0.70	0.00	0.00
Sat Flow, veh/h	0	-71942	0	0	-71942	0				3514	1845	0
Grp Volume(v), veh/h	0	0	0	0	0	0				1149	0	0
Grp Sat Flow(s),veh/h/ln	0	1752	0	0	1752	0				1757	1845	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0				1.9	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0				1.9	0.0	0.0
Prop In Lane	0.00		0.00	0.00		0.00				1.00		0.00
Lane Grp Cap(c), veh/h	0	26	0	0	26	0				2456	1289	0
V/C Ratio(X)	0.00	0.00	0.00	0.00	0.00	0.00				0.47	0.00	0.00
Avail Cap(c_a), veh/h	0	5805	0	0	5805	0				18516	9721	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	0.00	0.00	0.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.9	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.0	0.0	0.0				0.8	0.0	0.0
LnGrp Delay(d),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				1.0	0.0	0.0
LnGrp LOS										A		
Approach Vol, veh/h		0			0						1149	
Approach Delay, s/veh		0.0			0.0						1.0	
Approach LOS											A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				0.0		13.3		0.0
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				22.0		70.0		22.0
Max Q Clear Time (g_c+I1), s				0.0		3.9		0.0
Green Ext Time (p_c), s				0.0		5.5		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	1.0
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
6: SR 4 WB Off-Ramps/SR 4 WB On-Ramps & Laurel Road

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	1050	0	0	419	465	5	0	497	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	4	1141	0	0	455	0	5	0	540			
Adj No. of Lanes	1	2	0	0	2	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	8	1703	0	0	1466	656	681	0	608			
Arrive On Green	0.00	0.49	0.00	0.00	0.42	0.00	0.39	0.00	0.39			
Sat Flow, veh/h	1757	3597	0	0	3597	1568	1757	0	1568			
Grp Volume(v), veh/h	4	1141	0	0	455	0	5	0	540			
Grp Sat Flow(s),veh/h/ln	1757	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	0.1	15.7	0.0	0.0	5.5	0.0	0.1	0.0	20.3			
Cycle Q Clear(g_c), s	0.1	15.7	0.0	0.0	5.5	0.0	0.1	0.0	20.3			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	8	1703	0	0	1466	656	681	0	608			
V/C Ratio(X)	0.53	0.67	0.00	0.00	0.31	0.00	0.01	0.00	0.89			
Avail Cap(c_a), veh/h	111	2328	0	0	1885	843	1389	0	1240			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	31.4	12.4	0.0	0.0	12.3	0.0	11.9	0.0	18.1			
Incr Delay (d2), s/veh	47.6	0.5	0.0	0.0	0.1	0.0	0.0	0.0	4.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.2	7.6	0.0	0.0	2.7	0.0	0.1	0.0	9.5			
LnGrp Delay(d),s/veh	79.0	12.8	0.0	0.0	12.4	0.0	11.9	0.0	22.8			
LnGrp LOS	E	B			B		B		C			
Approach Vol, veh/h		1145			455			545				
Approach Delay, s/veh		13.1			12.4			22.7				
Approach LOS		B			B			C				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		28.5		34.7			4.3	30.5
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		50.0		42.0			4.0	34.0
Max Q Clear Time (g_c+I1), s		22.3		17.7			2.1	7.5
Green Ext Time (p_c), s		2.2		13.0			0.0	13.7

Intersection Summary	
HCM 2010 Ctrl Delay	15.4
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
7: SR 4 EB On-ramps/SR 4 EB Off-Ramps & Lone Tree Way

10/24/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1443	504	120	1414	0	0	0	0	454	2	401
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1519	531	126	2828	0				479	0	422
Adj No. of Lanes	0	3	1	2	3	0				2	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.50	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	2443	761	197	2973	0				1106	0	494
Arrive On Green	0.00	0.49	0.49	0.06	0.59	0.00				0.31	0.00	0.31
Sat Flow, veh/h	0	5202	1568	3408	5202	0				3514	0	1568
Grp Volume(v), veh/h	0	1519	531	126	2828	0				479	0	422
Grp Sat Flow(s),veh/h/ln	0	1679	1568	1704	1679	0				1757	0	1568
Q Serve(g_s), s	0.0	18.7	22.2	3.0	44.2	0.0				9.1	0.0	21.3
Cycle Q Clear(g_c), s	0.0	18.7	22.2	3.0	44.2	0.0				9.1	0.0	21.3
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2443	761	197	2973	0				1106	0	494
V/C Ratio(X)	0.00	0.62	0.70	0.64	0.95	0.00				0.43	0.00	0.86
Avail Cap(c_a), veh/h	0	2443	761	323	3047	0				1709	0	763
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	16.0	16.9	38.9	16.1	0.0				22.9	0.0	27.1
Incr Delay (d2), s/veh	0.0	0.5	2.8	3.4	7.7	0.0				0.3	0.0	5.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.7	10.2	1.5	22.3	0.0				4.4	0.0	10.0
LnGrp Delay(d),s/veh	0.0	16.5	19.7	42.3	23.9	0.0				23.2	0.0	33.0
LnGrp LOS		B	B	D	C					C		C
Approach Vol, veh/h		2050			2954						901	
Approach Delay, s/veh		17.3			24.7						27.8	
Approach LOS		B			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			8.9	44.9		30.5		53.8
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			8.0	39.0		41.0		51.0
Max Q Clear Time (g_c+I1), s			5.0	24.2		23.3		46.2
Green Ext Time (p_c), s			0.1	14.7		3.3		3.5

Intersection Summary	
HCM 2010 Ctrl Delay	22.6
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	0	1616	301	20	5	1001	372	551	29	189	0	0
Number	7	4	14		3	8	18	5	2	12		
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00		
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	0	1845	1845		1845	1845	1845	1845	1845	1845		
Adj Flow Rate, veh/h	0	1701	170		5	1054	392	602	0	197		
Adj No. of Lanes	0	3	1		1	3	1	2	0	1		
Peak Hour Factor	0.95	0.95	0.95		0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	0	3	3		3	3	3	3	3	3		
Cap, veh/h	0	3014	938		9	3322	1034	803	0	358		
Arrive On Green	0.00	0.60	0.60		0.01	0.66	0.66	0.23	0.00	0.23		
Sat Flow, veh/h	0	5202	1568		1757	5036	1568	3514	0	1568		
Grp Volume(v), veh/h	0	1701	170		5	1054	392	602	0	197		
Grp Sat Flow(s),veh/h/ln	0	1679	1568		1757	1679	1568	1757	0	1568		
Q Serve(g_s), s	0.0	14.6	3.5		0.2	6.4	8.1	11.4	0.0	7.9		
Cycle Q Clear(g_c), s	0.0	14.6	3.5		0.2	6.4	8.1	11.4	0.0	7.9		
Prop In Lane	0.00		1.00		1.00		1.00	1.00		1.00		
Lane Grp Cap(c), veh/h	0	3014	938		9	3322	1034	803	0	358		
V/C Ratio(X)	0.00	0.56	0.18		0.54	0.32	0.38	0.75	0.00	0.55		
Avail Cap(c_a), veh/h	0	3380	1053		98	3944	1228	1769	0	789		
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	0.0	8.7	6.5		35.5	5.2	5.5	25.7	0.0	24.3		
Incr Delay (d2), s/veh	0.0	0.2	0.1		40.8	0.1	0.2	1.4	0.0	1.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	6.7	1.5		0.2	2.9	3.6	5.7	0.0	3.5		
LnGrp Delay(d),s/veh	0.0	8.9	6.6		76.2	5.3	5.8	27.1	0.0	25.7		
LnGrp LOS		A	A		E	A	A	C		C		
Approach Vol, veh/h		1871				1451			799			
Approach Delay, s/veh		8.7				5.7			26.8			
Approach LOS		A				A			C			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		20.3	4.4	46.8				51.2
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		36.0	4.0	48.0				56.0
Max Q Clear Time (g_c+I1), s		13.4	2.2	16.6				10.1
Green Ext Time (p_c), s		2.9	0.0	26.1				35.6

Intersection Summary	
HCM 2010 Ctrl Delay	11.1
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
8: Jefferey Way /SR 4 WB On-Ramps & Lone Tree Way 10/24/2015

Movement	SBR
Lane Configurations	
Volume (veh/h)	0
Number	
Initial Q (Qb), veh	
Ped-Bike Adj(A_pbT)	
Parking Bus, Adj	
Adj Sat Flow, veh/h/ln	
Adj Flow Rate, veh/h	
Adj No. of Lanes	
Peak Hour Factor	
Percent Heavy Veh, %	
Cap, veh/h	
Arrive On Green	
Sat Flow, veh/h	
Grp Volume(v), veh/h	
Grp Sat Flow(s),veh/h/ln	
Q Serve(g_s), s	
Cycle Q Clear(g_c), s	
Prop In Lane	
Lane Grp Cap(c), veh/h	
V/C Ratio(X)	
Avail Cap(c_a), veh/h	
HCM Platoon Ratio	
Upstream Filter(I)	
Uniform Delay (d), s/veh	
Incr Delay (d2), s/veh	
Initial Q Delay(d3),s/veh	
%ile BackOfQ(50%),veh/ln	
LnGrp Delay(d),s/veh	
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer

User approved ignoring U-Turning movement.

Laurel Ranch Traffic Impact Analysis Synchro 8 Report
PM Existing Plus Nearby Future Prj Conditions

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (veh/h)	101	247	808	95	89	745	145	16	94	94	37	59
Number		7	4	14	3	8	18		5	2	12	
Initial Q (Qb), veh		0	0	0	0	0	0		0	0	0	
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00		1.00		1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln		1845	1845	1845	1845	1845	1845		1845	1845	1845	
Adj Flow Rate, veh/h		260	851	58	94	784	100		99	99	22	
Adj No. of Lanes		1	3	1	1	3	1		2	1	1	
Peak Hour Factor		0.95	0.95	0.95	0.95	0.95	0.95		0.95	0.95	0.95	
Percent Heavy Veh, %		3	3	3	3	3	3		3	3	3	
Cap, veh/h		322	2138	666	122	1563	487		184	248	211	
Arrive On Green		0.18	0.42	0.42	0.07	0.31	0.31		0.05	0.13	0.13	
Sat Flow, veh/h		1757	5036	1568	1757	5036	1568		3408	1845	1568	
Grp Volume(v), veh/h		260	851	58	94	784	100		99	99	22	
Grp Sat Flow(s),veh/h/ln		1757	1679	1568	1757	1679	1568		1704	1845	1568	
Q Serve(g_s), s		8.5	7.0	1.3	3.2	7.6	2.8		1.7	2.9	0.7	
Cycle Q Clear(g_c), s		8.5	7.0	1.3	3.2	7.6	2.8		1.7	2.9	0.7	
Prop In Lane		1.00		1.00	1.00		1.00		1.00		1.00	
Lane Grp Cap(c), veh/h		322	2138	666	122	1563	487		184	248	211	
V/C Ratio(X)		0.81	0.40	0.09	0.77	0.50	0.21		0.54	0.40	0.10	
Avail Cap(c_a), veh/h		790	3273	1019	351	2014	627		398	646	549	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Uniform Delay (d), s/veh		23.5	12.0	10.3	27.5	16.9	15.2		27.7	23.8	22.8	
Incr Delay (d2), s/veh		4.8	0.1	0.1	9.9	0.3	0.2		2.5	1.0	0.2	
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln		4.5	3.3	0.6	1.9	3.5	1.2		0.9	1.6	0.3	
LnGrp Delay(d),s/veh		28.3	12.1	10.4	37.4	17.1	15.4		30.1	24.8	23.0	
LnGrp LOS		C	B	B	D	B	B		C	C	C	
Approach Vol, veh/h			1169			978				220		
Approach Delay, s/veh			15.6			18.9				27.0		
Approach LOS			B			B				C		

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	12.1	8.2	29.5	7.2	15.1	15.0	22.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	12.0	21.0	12.0	39.0	7.0	26.0	27.0	24.0
Max Q Clear Time (g_c+I1), s	6.0	4.9	5.2	9.0	3.7	8.5	10.5	9.6
Green Ext Time (p_c), s	0.4	2.6	0.1	13.8	0.1	2.7	0.6	9.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.6
HCM 2010 LOS	B

Notes

User approved ignoring U-Turning movement.

HCM 2010 Signalized Intersection Summary
9: Empire Avenue & Lone Tree Way 10/24/2015

Movement	SBL	SBT	SBR
Lane Configurations			
Volume (veh/h)	227	194	167
Number	1	6	16
Initial Q (Qb), veh	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900
Adj Flow Rate, veh/h	239	204	176
Adj No. of Lanes	2	2	0
Peak Hour Factor	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3
Cap, veh/h	359	340	279
Arrive On Green	0.11	0.19	0.19
Sat Flow, veh/h	3408	1832	1500
Grp Volume(v), veh/h	239	195	185
Grp Sat Flow(s),veh/h/ln	1704	1752	1580
Q Serve(g_s), s	4.0	6.1	6.5
Cycle Q Clear(g_c), s	4.0	6.1	6.5
Prop In Lane	1.00		0.95
Lane Grp Cap(c), veh/h	359	326	294
V/C Ratio(X)	0.67	0.60	0.63
Avail Cap(c_a), veh/h	682	759	685
HCM Platoon Ratio	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.8	22.4	22.5
Incr Delay (d2), s/veh	2.1	1.8	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	3.1	3.0
LnGrp Delay(d),s/veh	28.0	24.1	24.8
LnGrp LOS	C	C	C
Approach Vol, veh/h		619	
Approach Delay, s/veh		25.8	
Approach LOS		C	

Timer

Laurel Ranch Traffic Impact Analysis
PM Existing Plus Nearby Future Prj Conditions
Synchro 8 Report

HCM 2010 Signalized Intersection Summary
2: Hillcrest Ave & SR 4 EB Ramps

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	0	137	0	0	0	0	1806	503	294	569	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845				0	1845	1900	1845	1845	0
Adj Flow Rate, veh/h	35	0	149				0	1963	547	320	618	0
Adj No. of Lanes	2	0	2				0	3	0	2	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3				0	3	3	3	3	0
Cap, veh/h	259	0	231				0	2636	702	406	2915	0
Arrive On Green	0.07	0.00	0.07				0.00	0.67	0.67	0.12	0.83	0.00
Sat Flow, veh/h	3514	0	3136				0	4127	1055	3408	3597	0
Grp Volume(v), veh/h	35	0	149				0	1650	860	320	618	0
Grp Sat Flow(s),veh/h/ln	1757	0	1568				0	1679	1659	1704	1752	0
Q Serve(g_s), s	0.8	0.0	3.9				0.0	27.4	30.5	7.7	3.0	0.0
Cycle Q Clear(g_c), s	0.8	0.0	3.9				0.0	27.4	30.5	7.7	3.0	0.0
Prop In Lane	1.00		1.00				0.00		0.64	1.00		0.00
Lane Grp Cap(c), veh/h	259	0	231				0	2234	1104	406	2915	0
V/C Ratio(X)	0.14	0.00	0.64				0.00	0.74	0.78	0.79	0.21	0.00
Avail Cap(c_a), veh/h	664	0	593				0	2339	1156	523	3146	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.7	0.0	38.1				0.0	9.3	9.8	36.3	1.5	0.0
Incr Delay (d2), s/veh	0.2	0.0	3.0				0.0	1.2	3.3	6.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.8				0.0	12.8	14.6	4.0	1.5	0.0
LnGrp Delay(d),s/veh	36.9	0.0	41.1				0.0	10.5	13.2	42.3	1.5	0.0
LnGrp LOS	D		D					B	B	D	A	
Approach Vol, veh/h		184						2510			938	
Approach Delay, s/veh		40.3						11.4			15.4	
Approach LOS		D						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	14.1	60.3		10.2		74.4		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	13.0	59.0		16.0		76.0		
Max Q Clear Time (g_c+I1), s	9.7	32.5		5.9		5.0		
Green Ext Time (p_c), s	0.4	23.8		0.4		54.9		

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
3: Hillcrest Ave & Laurel Road

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	121	90	85	350	80	252	98	1191	526	436	1094	145
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	132	98	92	380	87	138	107	1295	0	474	1189	158
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	354	248	232	299	521	443	134	1419	0	337	1619	214
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.08	0.40	0.00	0.19	0.52	0.52
Sat Flow, veh/h	1140	877	823	1177	1845	1568	1757	3597	0	1757	3112	412
Grp Volume(v), veh/h	132	0	190	380	87	138	107	1295	0	474	668	679
Grp Sat Flow(s),veh/h/ln	1140	0	1699	1177	1845	1568	1757	1752	0	1757	1752	1772
Q Serve(g_s), s	9.8	0.0	9.0	19.0	3.5	6.9	5.9	34.6	0.0	19.0	29.3	29.6
Cycle Q Clear(g_c), s	13.3	0.0	9.0	28.0	3.5	6.9	5.9	34.6	0.0	19.0	29.3	29.6
Prop In Lane	1.00		0.48	1.00		1.00	1.00		0.00	1.00		0.23
Lane Grp Cap(c), veh/h	354	0	480	299	521	443	134	1419	0	337	912	922
V/C Ratio(X)	0.37	0.00	0.40	1.27	0.17	0.31	0.80	0.91	0.00	1.41	0.73	0.74
Avail Cap(c_a), veh/h	354	0	480	299	521	443	160	1450	0	337	912	922
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.8	0.0	28.7	42.4	26.8	28.0	45.0	27.8	0.0	40.1	18.4	18.5
Incr Delay (d2), s/veh	0.7	0.0	0.5	145.9	0.1	0.4	21.1	9.0	0.0	200.3	3.1	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	4.3	20.2	1.8	3.0	3.7	18.3	0.0	27.9	14.9	15.1
LnGrp Delay(d),s/veh	32.4	0.0	29.3	188.3	26.9	28.4	66.2	36.9	0.0	240.3	21.5	21.6
LnGrp LOS	C		C	F	C	C	E	D		F	C	C
Approach Vol, veh/h		322			605			1402			1821	
Approach Delay, s/veh		30.6			128.6			39.1			78.5	
Approach LOS		C			F			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	23.0	44.1		32.0	11.5	55.6		32.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	19.0	41.0		28.0	9.0	51.0		28.0
Max Q Clear Time (g_c+I1), s	21.0	36.6		15.3	7.9	31.6		30.0
Green Ext Time (p_c), s	0.0	3.5		3.6	0.0	16.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	68.8
HCM 2010 LOS	E

HCM 2010 Signalized Intersection Summary
4: Canada Valley Road & Laurel Road

10/27/2015

Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Volume (veh/h)	1036	117	309	766	154	367		
Number	4	14	3	8	5	12		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845		
Adj Flow Rate, veh/h	1126	127	336	833	167	200		
Adj No. of Lanes	2	0	1	2	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	3	3	3	3	3	3		
Cap, veh/h	1491	168	385	2591	279	249		
Arrive On Green	0.47	0.47	0.22	0.74	0.16	0.16		
Sat Flow, veh/h	3269	358	1757	3597	1757	1568		
Grp Volume(v), veh/h	620	633	336	833	167	200		
Grp Sat Flow(s),veh/h/ln	1752	1782	1757	1752	1757	1568		
Q Serve(g_s), s	22.9	23.0	14.5	6.4	6.9	9.7		
Cycle Q Clear(g_c), s	22.9	23.0	14.5	6.4	6.9	9.7		
Prop In Lane		0.20	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	823	836	385	2591	279	249		
V/C Ratio(X)	0.75	0.76	0.87	0.32	0.60	0.80		
Avail Cap(c_a), veh/h	914	929	581	3165	469	419		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	17.1	17.2	29.6	3.5	30.7	31.9		
Incr Delay (d2), s/veh	3.2	3.2	9.4	0.1	2.1	5.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	11.8	12.0	8.0	3.0	3.5	4.6		
LnGrp Delay(d),s/veh	20.4	20.4	39.0	3.6	32.8	37.8		
LnGrp LOS	C	C	D	A	C	D		
Approach Vol, veh/h	1253			1169	367			
Approach Delay, s/veh	20.4			13.8	35.5			
Approach LOS	C			B	D			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		16.5	21.2	40.9				62.1
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		21.0	26.0	41.0				71.0
Max Q Clear Time (g_c+I1), s		11.7	16.5	25.0				8.4
Green Ext Time (p_c), s		0.8	0.7	11.9				27.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.6
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
5: SR 4 EB On-Ramps/SR 4 EB Off-Ramps & Laurel Road

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1310	90	0	557	100	0	0	0	830	0	331
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1900				1845	1845	1845
Adj Flow Rate, veh/h	0	1424	98	0	605	0				902	0	360
Adj No. of Lanes	0	2	0	0	2	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	0	3	3				3	3	3
Cap, veh/h	0	1906	131	0	2007	0				1140	0	509
Arrive On Green	0.00	0.57	0.57	0.00	0.57	0.00				0.32	0.00	0.32
Sat Flow, veh/h	0	3421	228	0	3689	0				3514	0	1568
Grp Volume(v), veh/h	0	747	775	0	605	0				902	0	360
Grp Sat Flow(s),veh/h/ln	0	1752	1804	0	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	24.7	25.0	0.0	6.9	0.0				18.1	0.0	15.6
Cycle Q Clear(g_c), s	0.0	24.7	25.0	0.0	6.9	0.0				18.1	0.0	15.6
Prop In Lane	0.00		0.13	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1003	1033	0	2007	0				1140	0	509
V/C Ratio(X)	0.00	0.74	0.75	0.00	0.30	0.00				0.79	0.00	0.71
Avail Cap(c_a), veh/h	0	1174	1209	0	2348	0				1811	0	808
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	12.4	12.4	0.0	8.6	0.0				23.8	0.0	23.0
Incr Delay (d2), s/veh	0.0	2.2	2.2	0.0	0.1	0.0				1.3	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	12.4	12.9	0.0	3.3	0.0				9.0	0.0	7.0
LnGrp Delay(d),s/veh	0.0	14.6	14.7	0.0	8.7	0.0				25.1	0.0	24.8
LnGrp LOS		B	B		A					C		C
Approach Vol, veh/h		1522			605						1262	
Approach Delay, s/veh		14.6			8.7						25.0	
Approach LOS		B			A						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				48.4		29.2		48.4
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				52.0		40.0		52.0
Max Q Clear Time (g_c+I1), s				27.0		20.1		8.9
Green Ext Time (p_c), s				17.5		5.1		24.8

Intersection Summary	
HCM 2010 Ctrl Delay	17.4
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
6: SR 4 WB Off-Ramps/SR 4 WB On-Ramps & Laurel Road

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	622	1454	0	0	721	310	27	0	109	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	676	1580	0	0	784	0	29	0	118			
Adj No. of Lanes	1	2	0	0	2	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	735	2793	0	0	1143	511	174	0	155			
Arrive On Green	0.42	0.80	0.00	0.00	0.33	0.00	0.10	0.00	0.10			
Sat Flow, veh/h	1757	3597	0	0	3597	1568	1757	0	1568			
Grp Volume(v), veh/h	676	1580	0	0	784	0	29	0	118			
Grp Sat Flow(s),veh/h/ln	1757	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	27.9	12.8	0.0	0.0	14.9	0.0	1.2	0.0	5.6			
Cycle Q Clear(g_c), s	27.9	12.8	0.0	0.0	14.9	0.0	1.2	0.0	5.6			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	735	2793	0	0	1143	511	174	0	155			
V/C Ratio(X)	0.92	0.57	0.00	0.00	0.69	0.00	0.17	0.00	0.76			
Avail Cap(c_a), veh/h	1031	3429	0	0	1189	532	390	0	348			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	21.1	2.9	0.0	0.0	22.4	0.0	31.6	0.0	33.7			
Incr Delay (d2), s/veh	10.0	0.2	0.0	0.0	1.6	0.0	0.4	0.0	7.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	15.4	6.0	0.0	0.0	7.4	0.0	0.6	0.0	2.7			
LnGrp Delay(d),s/veh	31.1	3.1	0.0	0.0	24.0	0.0	32.1	0.0	41.1			
LnGrp LOS	C	A			C		C		D			
Approach Vol, veh/h		2256			784			147				
Approach Delay, s/veh		11.5			24.0			39.4				
Approach LOS		B			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		11.6		65.1			36.1	29.0
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		17.0		75.0			45.0	26.0
Max Q Clear Time (g_c+I1), s		7.6		14.8			29.9	16.9
Green Ext Time (p_c), s		0.3		36.0			2.2	8.1

Intersection Summary	
HCM 2010 Ctrl Delay	15.8
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
7: SR 4 EB On-ramps/SR 4 EB Off-Ramps & Lone Tree Way

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1336	469	242	1648	0	0	0	0	751	12	473
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1452	510	263	1791	0				825	0	514
Adj No. of Lanes	0	2	2	2	3	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1560	1229	276	2854	0				1238	0	552
Arrive On Green	0.00	0.45	0.45	0.08	0.57	0.00				0.35	0.00	0.35
Sat Flow, veh/h	0	3597	2760	3408	5202	0				3514	0	1568
Grp Volume(v), veh/h	0	1452	510	263	1791	0				825	0	514
Grp Sat Flow(s),veh/h/ln	0	1752	1380	1704	1679	0				1757	0	1568
Q Serve(g_s), s	0.0	38.7	12.4	7.6	23.6	0.0				19.6	0.0	31.2
Cycle Q Clear(g_c), s	0.0	38.7	12.4	7.6	23.6	0.0				19.6	0.0	31.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1560	1229	276	2854	0				1238	0	552
V/C Ratio(X)	0.00	0.93	0.42	0.95	0.63	0.00				0.67	0.00	0.93
Avail Cap(c_a), veh/h	0	1562	1230	276	2856	0				1281	0	572
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	25.9	18.6	45.2	14.4	0.0				27.1	0.0	30.8
Incr Delay (d2), s/veh	0.0	10.3	0.2	41.3	0.4	0.0				1.3	0.0	21.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	20.8	4.7	5.1	10.9	0.0				9.7	0.0	16.8
LnGrp Delay(d),s/veh	0.0	36.3	18.9	86.4	14.8	0.0				28.3	0.0	52.5
LnGrp LOS		D	B	F	B					C		D
Approach Vol, veh/h		1962			2054						1339	
Approach Delay, s/veh		31.7			24.0						37.6	
Approach LOS		C			C						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			12.0	48.0		38.8		60.0
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			8.0	44.0		36.0		56.0
Max Q Clear Time (g_c+I1), s			9.6	40.7		33.2		25.6
Green Ext Time (p_c), s			0.0	3.2		1.6		28.5

Intersection Summary	
HCM 2010 Ctrl Delay	30.2
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	0	1472	607	8	42	1531	352	355	27	322	0	0
Number	7	4	14		3	8	18	5	2	12		
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00		
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	0	1845	1845		1845	1845	1845	1845	1845	1845		
Adj Flow Rate, veh/h	0	1600	443		46	1664	383	407	0	323		
Adj No. of Lanes	0	3	1		1	3	1	2	0	1		
Peak Hour Factor	0.92	0.92	0.92		0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	3	3		3	3	3	3	3	3		
Cap, veh/h	0	2958	921		59	3382	1053	797	0	356		
Arrive On Green	0.00	0.59	0.59		0.03	0.67	0.67	0.23	0.00	0.23		
Sat Flow, veh/h	0	5202	1568		1757	5036	1568	3514	0	1568		
Grp Volume(v), veh/h	0	1600	443		46	1664	383	407	0	323		
Grp Sat Flow(s),veh/h/ln	0	1679	1568		1757	1679	1568	1757	0	1568		
Q Serve(g_s), s	0.0	15.1	12.8		2.0	12.8	8.4	8.0	0.0	15.8		
Cycle Q Clear(g_c), s	0.0	15.1	12.8		2.0	12.8	8.4	8.0	0.0	15.8		
Prop In Lane	0.00		1.00		1.00		1.00	1.00		1.00		
Lane Grp Cap(c), veh/h	0	2958	921		59	3382	1053	797	0	356		
V/C Ratio(X)	0.00	0.54	0.48		0.79	0.49	0.36	0.51	0.00	0.91		
Avail Cap(c_a), veh/h	0	2958	921		825	4731	1473	803	0	358		
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	0.0	9.8	9.3		37.8	6.3	5.6	26.6	0.0	29.6		
Incr Delay (d2), s/veh	0.0	0.2	0.4		20.1	0.1	0.2	0.5	0.0	25.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	7.0	5.6		1.3	5.9	3.6	3.9	0.0	9.4		
LnGrp Delay(d),s/veh	0.0	10.0	9.7		57.9	6.5	5.8	27.2	0.0	55.6		
LnGrp LOS		B	A		E	A	A	C		E		
Approach Vol, veh/h		2043				2093			730			
Approach Delay, s/veh		10.0				7.5			39.7			
Approach LOS		A				A			D			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		21.9	6.6	50.3				56.9
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		18.0	37.0	33.0				74.0
Max Q Clear Time (g_c+I1), s		17.8	4.0	17.1				14.8
Green Ext Time (p_c), s		0.1	0.1	15.2				38.1

Intersection Summary	
HCM 2010 Ctrl Delay	13.4
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
8: Jefferey Way /SR 4 WB On-Ramps & Lone Tree Way 10/27/2015

Movement	SBR
Lane Configurations	
Volume (veh/h)	0
Number	
Initial Q (Qb), veh	
Ped-Bike Adj(A_pbT)	
Parking Bus, Adj	
Adj Sat Flow, veh/h/ln	
Adj Flow Rate, veh/h	
Adj No. of Lanes	
Peak Hour Factor	
Percent Heavy Veh, %	
Cap, veh/h	
Arrive On Green	
Sat Flow, veh/h	
Grp Volume(v), veh/h	
Grp Sat Flow(s),veh/h/ln	
Q Serve(g_s), s	
Cycle Q Clear(g_c), s	
Prop In Lane	
Lane Grp Cap(c), veh/h	
V/C Ratio(X)	
Avail Cap(c_a), veh/h	
HCM Platoon Ratio	
Upstream Filter(I)	
Uniform Delay (d), s/veh	
Incr Delay (d2), s/veh	
Initial Q Delay(d3),s/veh	
%ile BackOfQ(50%),veh/ln	
LnGrp Delay(d),s/veh	
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer

User approved ignoring U-Turning movement.

Laurel Ranch Traffic Impact Analysis
AM Cumulative Conditions Alt Access 1
Synchro 8 Report

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (veh/h)	43	120	1074	77	207	1504	144	15	164	92	128	25
Number		7	4	14	3	8	18		5	2	12	
Initial Q (Qb), veh		0	0	0	0	0	0		0	0	0	
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00		1.00		1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln		1845	1845	1845	1845	1845	1845		1845	1845	1845	
Adj Flow Rate, veh/h		130	1167	48	225	1635	117		178	100	114	
Adj No. of Lanes		1	3	1	1	3	1		2	1	1	
Peak Hour Factor		0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92	
Percent Heavy Veh, %		3	3	3	3	3	3		3	3	3	
Cap, veh/h		172	2006	625	279	2314	720		268	293	249	
Arrive On Green		0.10	0.40	0.40	0.16	0.46	0.46		0.08	0.16	0.16	
Sat Flow, veh/h		1757	5036	1568	1757	5036	1568		3408	1845	1568	
Grp Volume(v), veh/h		130	1167	48	225	1635	117		178	100	114	
Grp Sat Flow(s),veh/h/ln		1757	1679	1568	1757	1679	1568		1704	1845	1568	
Q Serve(g_s), s		4.6	11.5	1.2	7.8	16.5	2.8		3.2	3.1	4.2	
Cycle Q Clear(g_c), s		4.6	11.5	1.2	7.8	16.5	2.8		3.2	3.1	4.2	
Prop In Lane		1.00		1.00	1.00		1.00		1.00		1.00	
Lane Grp Cap(c), veh/h		172	2006	625	279	2314	720		268	293	249	
V/C Ratio(X)		0.76	0.58	0.08	0.81	0.71	0.16		0.66	0.34	0.46	
Avail Cap(c_a), veh/h		1106	3251	1012	581	2314	720		268	523	444	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Uniform Delay (d), s/veh		27.9	15.0	11.9	25.8	13.7	10.0		28.4	23.8	24.2	
Incr Delay (d2), s/veh		6.6	0.3	0.1	5.4	1.0	0.1		6.0	0.7	1.3	
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln		2.5	5.3	0.5	4.2	7.8	1.2		1.7	1.6	1.9	
LnGrp Delay(d),s/veh		34.5	15.2	11.9	31.2	14.7	10.1		34.5	24.4	25.5	
LnGrp LOS		C	B	B	C	B	B		C	C	C	
Approach Vol, veh/h			1345			1977				392		
Approach Delay, s/veh			17.0			16.3				29.3		
Approach LOS			B			B				C		

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	14.1	14.1	29.3	9.0	11.1	10.2	33.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.0	18.0	21.0	41.0	5.0	17.0	40.0	22.0
Max Q Clear Time (g_c+I1), s	2.7	6.2	9.8	13.5	5.2	5.6	6.6	18.5
Green Ext Time (p_c), s	0.0	1.5	0.4	11.8	0.0	1.5	0.3	3.3

Intersection Summary	
HCM 2010 Ctrl Delay	18.6
HCM 2010 LOS	B

Notes

User approved ignoring U-Turning movement.

HCM 2010 Signalized Intersection Summary
9: Empire Avenue & Lone Tree Way 10/27/2015

Movement	SBL	SBT	SBR
Lane Configurations			
Volume (veh/h)	37	81	87
Number	1	6	16
Initial Q (Qb), veh	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900
Adj Flow Rate, veh/h	40	88	95
Adj No. of Lanes	2	2	0
Peak Hour Factor	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3
Cap, veh/h	109	196	176
Arrive On Green	0.03	0.11	0.11
Sat Flow, veh/h	3408	1752	1568
Grp Volume(v), veh/h	40	88	95
Grp Sat Flow(s),veh/h/ln	1704	1752	1568
Q Serve(g_s), s	0.7	3.0	3.6
Cycle Q Clear(g_c), s	0.7	3.0	3.6
Prop In Lane	1.00		1.00
Lane Grp Cap(c), veh/h	109	196	176
V/C Ratio(X)	0.37	0.45	0.54
Avail Cap(c_a), veh/h	215	469	420
HCM Platoon Ratio	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00
Uniform Delay (d), s/veh	30.1	26.4	26.7
Incr Delay (d2), s/veh	2.1	1.6	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.5	1.7
LnGrp Delay(d),s/veh	32.2	28.0	29.2
LnGrp LOS	C	C	C
Approach Vol, veh/h		223	
Approach Delay, s/veh		29.3	
Approach LOS		C	

Timer

Laurel Ranch Traffic Impact Analysis
AM Cumulative Conditions Alt Access 1
Synchro 8 Report

HCM 2010 Signalized Intersection Summary
10: Country Hills Road & Laurel Road

10/27/2015

Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Volume (veh/h)	905	420	127	843	160	330		
Number	4	14	3	8	5	12		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845		
Adj Flow Rate, veh/h	984	457	138	916	174	359		
Adj No. of Lanes	2	0	2	2	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	3	3	3	3	3	3		
Cap, veh/h	1269	579	209	2279	452	403		
Arrive On Green	0.54	0.54	0.06	0.65	0.26	0.26		
Sat Flow, veh/h	2433	1068	3408	3597	1757	1568		
Grp Volume(v), veh/h	732	709	138	916	174	359		
Grp Sat Flow(s),veh/h/ln	1752	1656	1704	1752	1757	1568		
Q Serve(g_s), s	28.3	29.5	3.4	10.7	7.0	19.0		
Cycle Q Clear(g_c), s	28.3	29.5	3.4	10.7	7.0	19.0		
Prop In Lane		0.64	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	950	898	209	2279	452	403		
V/C Ratio(X)	0.77	0.79	0.66	0.40	0.39	0.89		
Avail Cap(c_a), veh/h	1057	999	316	2602	571	509		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	15.5	15.8	39.6	7.1	26.4	30.9		
Incr Delay (d2), s/veh	3.2	3.9	3.5	0.1	0.5	15.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	14.5	14.4	1.7	5.1	3.5	9.9		
LnGrp Delay(d),s/veh	18.7	19.7	43.1	7.3	26.9	45.9		
LnGrp LOS	B	B	D	A	C	D		
Approach Vol, veh/h	1441			1054	533			
Approach Delay, s/veh	19.2			11.9	39.7			
Approach LOS	B			B	D			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		26.2	9.3	50.8				60.1
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		28.0	8.0	52.0				64.0
Max Q Clear Time (g_c+I1), s		21.0	5.4	31.5				12.7
Green Ext Time (p_c), s		1.1	0.1	15.2				27.7

Intersection Summary	
HCM 2010 Ctrl Delay	20.3
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
11: Slatten Ranch Road & Laurel Road

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	183	1066	632	263	783	355	417	208	120	123	180	49
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	199	1159	344	286	851	386	453	226	130	134	196	53
Adj No. of Lanes	1	3	1	1	3	0	2	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	237	1716	534	327	1330	601	543	408	226	169	341	90
Arrive On Green	0.14	0.34	0.34	0.19	0.39	0.39	0.16	0.19	0.19	0.10	0.12	0.12
Sat Flow, veh/h	1757	5036	1568	1757	3396	1535	3408	2178	1206	1757	2745	724
Grp Volume(v), veh/h	199	1159	344	286	841	396	453	180	176	134	123	126
Grp Sat Flow(s),veh/h/ln	1757	1679	1568	1757	1679	1574	1704	1752	1632	1757	1752	1717
Q Serve(g_s), s	9.3	16.6	15.6	13.3	17.2	17.2	10.9	7.9	8.3	6.3	5.6	5.8
Cycle Q Clear(g_c), s	9.3	16.6	15.6	13.3	17.2	17.2	10.9	7.9	8.3	6.3	5.6	5.8
Prop In Lane	1.00		1.00	1.00		0.98	1.00		0.74	1.00		0.42
Lane Grp Cap(c), veh/h	237	1716	534	327	1315	617	543	328	306	169	218	213
V/C Ratio(X)	0.84	0.68	0.64	0.87	0.64	0.64	0.83	0.55	0.57	0.79	0.57	0.59
Avail Cap(c_a), veh/h	312	1791	558	417	1393	653	647	395	368	312	374	366
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.6	23.8	23.5	33.4	20.8	20.8	34.4	31.0	31.2	37.3	34.8	34.9
Incr Delay (d2), s/veh	14.2	1.0	2.4	15.3	0.9	2.0	8.0	1.4	1.7	8.2	2.3	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	7.9	7.1	7.8	8.1	7.8	5.7	3.9	3.9	3.4	2.8	2.9
LnGrp Delay(d),s/veh	49.8	24.8	25.9	48.7	21.7	22.8	42.4	32.5	32.9	45.5	37.1	37.5
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	D	D
Approach Vol, veh/h		1702			1523			809			383	
Approach Delay, s/veh		27.9			27.1			38.1			40.2	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	19.8	19.7	32.7	17.4	14.5	15.4	37.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	15.0	19.0	20.0	30.0	16.0	18.0	15.0	35.0
Max Q Clear Time (g_c+I1), s	8.3	10.3	15.3	18.6	12.9	7.8	11.3	19.2
Green Ext Time (p_c), s	0.2	2.4	0.4	10.1	0.6	2.6	0.2	13.6

Intersection Summary	
HCM 2010 Ctrl Delay	30.6
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
2: Hillcrest Ave & SR 4 EB Ramps

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	312	0	1197	0	0	0	0	553	571	328	967	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845				0	1845	1900	1845	1845	0
Adj Flow Rate, veh/h	328	0	1260				0	582	601	345	1018	0
Adj No. of Lanes	2	0	2				0	3	0	2	2	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3				0	3	3	3	3	0
Cap, veh/h	1601	0	1429				0	966	451	422	1597	0
Arrive On Green	0.46	0.00	0.46				0.00	0.29	0.29	0.12	0.46	0.00
Sat Flow, veh/h	3514	0	3136				0	3523	1568	3408	3597	0
Grp Volume(v), veh/h	328	0	1260				0	582	601	345	1018	0
Grp Sat Flow(s),veh/h/ln	1757	0	1568				0	1679	1568	1704	1752	0
Q Serve(g_s), s	5.1	0.0	33.0				0.0	13.5	26.0	8.9	20.1	0.0
Cycle Q Clear(g_c), s	5.1	0.0	33.0				0.0	13.5	26.0	8.9	20.1	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	1601	0	1429				0	966	451	422	1597	0
V/C Ratio(X)	0.20	0.00	0.88				0.00	0.60	1.33	0.82	0.64	0.00
Avail Cap(c_a), veh/h	1905	0	1700				0	966	451	490	1668	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	14.8	0.0	22.4				0.0	27.7	32.2	38.6	18.9	0.0
Incr Delay (d2), s/veh	0.1	0.0	5.1				0.0	1.1	164.1	9.2	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	15.2				0.0	6.4	31.7	4.8	9.8	0.0
LnGrp Delay(d),s/veh	14.8	0.0	27.5				0.0	28.8	196.3	47.8	19.6	0.0
LnGrp LOS	B		C					C	F	D	B	
Approach Vol, veh/h		1588						1183			1363	
Approach Delay, s/veh		24.9						113.9			26.8	
Approach LOS		C						F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.2	30.0		45.2		45.2		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	13.0	26.0		49.0		43.0		
Max Q Clear Time (g_c+I1), s	10.9	28.0		35.0		22.1		
Green Ext Time (p_c), s	0.3	0.0		6.1		15.3		

Intersection Summary			
HCM 2010 Ctrl Delay			51.0
HCM 2010 LOS			D

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
3: Hillcrest Ave & Laurel Road

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	208	115	157	487	307	285	120	1405	400	327	1111	288
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	219	121	165	513	323	153	126	1479	0	344	1169	303
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	297	269	367	344	701	596	123	1332	0	211	1188	305
Arrive On Green	0.38	0.38	0.38	0.38	0.38	0.38	0.07	0.38	0.00	0.12	0.43	0.43
Sat Flow, veh/h	906	708	966	1078	1845	1568	1757	3597	0	1757	2764	708
Grp Volume(v), veh/h	219	0	286	513	323	153	126	1479	0	344	736	736
Grp Sat Flow(s),veh/h/ln	906	0	1674	1078	1845	1568	1757	1752	0	1757	1752	1720
Q Serve(g_s), s	24.0	0.0	12.8	25.2	13.2	6.7	7.0	38.0	0.0	12.0	41.3	42.6
Cycle Q Clear(g_c), s	37.1	0.0	12.8	38.0	13.2	6.7	7.0	38.0	0.0	12.0	41.3	42.6
Prop In Lane	1.00		0.58	1.00		1.00	1.00		0.00	1.00		0.41
Lane Grp Cap(c), veh/h	297	0	636	344	701	596	123	1332	0	211	754	739
V/C Ratio(X)	0.74	0.00	0.45	1.49	0.46	0.26	1.02	1.11	0.00	1.63	0.98	0.99
Avail Cap(c_a), veh/h	297	0	636	344	701	596	123	1332	0	211	754	739
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.3	0.0	23.2	40.0	23.3	21.3	46.5	31.0	0.0	44.0	28.0	28.4
Incr Delay (d2), s/veh	9.3	0.0	0.5	236.0	0.5	0.2	87.9	60.8	0.0	304.8	27.1	31.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	0.0	6.0	32.0	6.7	2.9	6.4	29.6	0.0	23.6	25.5	26.5
LnGrp Delay(d),s/veh	46.5	0.0	23.7	276.0	23.8	21.5	134.7	91.8	0.0	348.8	55.1	60.1
LnGrp LOS	D		C	F	C	C	F	F		F	E	E
Approach Vol, veh/h		505			989			1605			1816	
Approach Delay, s/veh		33.6			154.3			95.2			112.8	
Approach LOS		C			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.0	42.0		42.0	11.0	47.0		42.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	12.0	38.0		38.0	7.0	43.0		38.0
Max Q Clear Time (g_c+I1), s	14.0	40.0		39.1	9.0	44.6		40.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0

Intersection Summary			
HCM 2010 Ctrl Delay			107.3
HCM 2010 LOS			F

HCM 2010 Signalized Intersection Summary
4: Canada Valley Road & Laurel Road

10/27/2015

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	683	216	687	946	66	395
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	742	235	747	1028	72	215
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	746	236	768	2672	274	245
Arrive On Green	0.28	0.28	0.44	0.76	0.16	0.16
Sat Flow, veh/h	2713	830	1757	3597	1757	1568
Grp Volume(v), veh/h	496	481	747	1028	72	215
Grp Sat Flow(s),veh/h/ln	1752	1698	1757	1752	1757	1568
Q Serve(g_s), s	27.8	27.8	41.0	9.7	3.5	13.2
Cycle Q Clear(g_c), s	27.8	27.8	41.0	9.7	3.5	13.2
Prop In Lane		0.49	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	499	484	768	2672	274	245
V/C Ratio(X)	0.99	0.99	0.97	0.38	0.26	0.88
Avail Cap(c_a), veh/h	499	484	768	2673	304	271
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.1	35.1	27.1	3.9	36.5	40.6
Incr Delay (d2), s/veh	38.7	39.4	25.8	0.1	0.5	24.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.7	18.2	25.2	4.6	1.8	7.4
LnGrp Delay(d),s/veh	73.8	74.4	53.0	4.0	37.0	65.2
LnGrp LOS	E	E	D	A	D	E
Approach Vol, veh/h	977			1775	287	
Approach Delay, s/veh	74.1			24.6	58.1	
Approach LOS	E			C	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		19.4	47.0	32.0				79.0
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		17.0	43.0	28.0				75.0
Max Q Clear Time (g_c+I1), s		15.2	43.0	29.8				11.7
Green Ext Time (p_c), s		0.2	0.0	0.0				25.2

Intersection Summary	
HCM 2010 Ctrl Delay	43.7
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
5: SR 4 EB On-Ramps/SR 4 EB Off-Ramps & Laurel Road

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1277	40	0	1127	20	0	0	0	712	0	566
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1900				1845	1845	1845
Adj Flow Rate, veh/h	0	1388	43	0	1225	0				774	0	615
Adj No. of Lanes	0	2	0	0	2	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	0	3	3				3	3	3
Cap, veh/h	0	1657	51	0	1674	0				1530	0	683
Arrive On Green	0.00	0.48	0.48	0.00	0.48	0.00				0.44	0.00	0.44
Sat Flow, veh/h	0	3563	107	0	3689	0				3514	0	1568
Grp Volume(v), veh/h	0	700	731	0	1225	0				774	0	615
Grp Sat Flow(s),veh/h/ln	0	1752	1826	0	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	32.0	32.1	0.0	25.8	0.0				14.7	0.0	33.5
Cycle Q Clear(g_c), s	0.0	32.0	32.1	0.0	25.8	0.0				14.7	0.0	33.5
Prop In Lane	0.00		0.06	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	837	872	0	1674	0				1530	0	683
V/C Ratio(X)	0.00	0.84	0.84	0.00	0.73	0.00				0.51	0.00	0.90
Avail Cap(c_a), veh/h	0	857	892	0	1713	0				1794	0	801
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	20.9	21.0	0.0	19.3	0.0				18.8	0.0	24.1
Incr Delay (d2), s/veh	0.0	7.2	7.0	0.0	1.6	0.0				0.3	0.0	12.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	17.0	17.7	0.0	12.8	0.0				7.2	0.0	16.6
LnGrp Delay(d),s/veh	0.0	28.1	28.0	0.0	20.9	0.0				19.1	0.0	36.1
LnGrp LOS		C	C		C					B		D
Approach Vol, veh/h		1431			1225						1389	
Approach Delay, s/veh		28.0			20.9						26.6	
Approach LOS		C			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				48.0		44.1		48.0
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				45.0		47.0		45.0
Max Q Clear Time (g_c+I1), s				34.1		35.5		27.8
Green Ext Time (p_c), s				9.8		4.6		14.9

Intersection Summary	
HCM 2010 Ctrl Delay	25.4
HCM 2010 LOS	C

Notes
User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
6: SR 4 WB Off-Ramps/SR 4 WB On-Ramps & Laurel Road

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	229	1460	0	0	1043	736	168	0	339	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	249	1587	0	0	1134	0	183	0	368			
Adj No. of Lanes	1	2	0	0	2	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	290	2231	0	0	1489	666	474	0	423			
Arrive On Green	0.16	0.64	0.00	0.00	0.42	0.00	0.27	0.00	0.27			
Sat Flow, veh/h	1757	3597	0	0	3597	1568	1757	0	1568			
Grp Volume(v), veh/h	249	1587	0	0	1134	0	183	0	368			
Grp Sat Flow(s),veh/h/ln	1757	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	11.8	25.6	0.0	0.0	23.4	0.0	7.2	0.0	19.1			
Cycle Q Clear(g_c), s	11.8	25.6	0.0	0.0	23.4	0.0	7.2	0.0	19.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	290	2231	0	0	1489	666	474	0	423			
V/C Ratio(X)	0.86	0.71	0.00	0.00	0.76	0.00	0.39	0.00	0.87			
Avail Cap(c_a), veh/h	392	2468	0	0	1522	681	660	0	589			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	34.6	10.3	0.0	0.0	20.8	0.0	25.4	0.0	29.7			
Incr Delay (d2), s/veh	13.5	0.9	0.0	0.0	2.3	0.0	0.5	0.0	10.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.8	12.4	0.0	0.0	11.8	0.0	3.6	0.0	9.5			
LnGrp Delay(d),s/veh	48.1	11.2	0.0	0.0	23.1	0.0	25.9	0.0	39.8			
LnGrp LOS	D	B			C		C		D			
Approach Vol, veh/h		1836			1134			551				
Approach Delay, s/veh		16.2			23.1			35.2				
Approach LOS		B			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		27.0		58.2			18.0	40.2
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		32.0		60.0			19.0	37.0
Max Q Clear Time (g_c+I1), s		21.1		27.6			13.8	25.4
Green Ext Time (p_c), s		1.9		26.6			0.3	10.6

Intersection Summary	
HCM 2010 Ctrl Delay	21.4
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
7: SR 4 EB On-ramps/SR 4 EB Off-Ramps & Lone Tree Way

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1563	851	282	1689	0	0	0	0	921	10	601
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1645	896	297	1778	0				977	0	633
Adj No. of Lanes	0	2	2	2	3	0				2	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1507	1187	307	2820	0				1265	0	564
Arrive On Green	0.00	0.43	0.43	0.09	0.56	0.00				0.36	0.00	0.36
Sat Flow, veh/h	0	3597	2760	3408	5202	0				3514	0	1568
Grp Volume(v), veh/h	0	1645	896	297	1778	0				977	0	633
Grp Sat Flow(s),veh/h/ln	0	1752	1380	1704	1679	0				1757	0	1568
Q Serve(g_s), s	0.0	43.0	27.4	8.7	24.0	0.0				24.6	0.0	36.0
Cycle Q Clear(g_c), s	0.0	43.0	27.4	8.7	24.0	0.0				24.6	0.0	36.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1507	1187	307	2820	0				1265	0	564
V/C Ratio(X)	0.00	1.09	0.76	0.97	0.63	0.00				0.77	0.00	1.12
Avail Cap(c_a), veh/h	0	1507	1187	307	2820	0				1265	0	564
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	28.5	24.1	45.4	15.0	0.0				28.4	0.0	32.0
Incr Delay (d2), s/veh	0.0	52.4	2.8	42.7	0.5	0.0				3.0	0.0	75.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	31.7	10.8	5.9	11.1	0.0				12.5	0.0	27.4
LnGrp Delay(d),s/veh	0.0	80.9	26.9	88.0	15.4	0.0				31.4	0.0	107.9
LnGrp LOS		F	C	F	B					C		F
Approach Vol, veh/h		2541			2075						1610	
Approach Delay, s/veh		61.8			25.8						61.4	
Approach LOS		E			C						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			13.0	47.0		40.0		60.0
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			9.0	43.0		36.0		56.0
Max Q Clear Time (g_c+I1), s			10.7	45.0		38.0		26.0
Green Ext Time (p_c), s			0.0	0.0		0.0		29.0

Intersection Summary	
HCM 2010 Ctrl Delay	49.7
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	0	1990	566	20	38	1411	580	609	32	481	0	0
Number	7	4	14		3	8	18	5	2	12		
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00		
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	0	1845	1845		1845	1845	1845	1845	1845	1845		
Adj Flow Rate, veh/h	0	2095	385		40	1485	611	665	0	480		
Adj No. of Lanes	0	3	1		1	3	1	2	0	1		
Peak Hour Factor	0.95	0.95	0.95		0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	0	3	3		3	3	3	3	3	3		
Cap, veh/h	0	2526	786		50	2884	898	1203	0	537		
Arrive On Green	0.00	0.50	0.50		0.03	0.57	0.57	0.34	0.00	0.34		
Sat Flow, veh/h	0	5202	1568		1757	5036	1568	3514	0	1568		
Grp Volume(v), veh/h	0	2095	385		40	1485	611	665	0	480		
Grp Sat Flow(s),veh/h/ln	0	1679	1568		1757	1679	1568	1757	0	1568		
Q Serve(g_s), s	0.0	33.4	15.2		2.1	16.8	25.6	14.4	0.0	27.3		
Cycle Q Clear(g_c), s	0.0	33.4	15.2		2.1	16.8	25.6	14.4	0.0	27.3		
Prop In Lane	0.00		1.00		1.00		1.00	1.00		1.00		
Lane Grp Cap(c), veh/h	0	2526	786		50	2884	898	1203	0	537		
V/C Ratio(X)	0.00	0.83	0.49		0.80	0.51	0.68	0.55	0.00	0.89		
Avail Cap(c_a), veh/h	0	2526	786		75	2947	918	1383	0	617		
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	0.0	20.0	15.5		45.4	12.2	14.1	25.1	0.0	29.3		
Incr Delay (d2), s/veh	0.0	2.5	0.5		29.4	0.1	2.0	0.4	0.0	14.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	15.9	6.6		1.4	7.7	11.5	7.1	0.0	13.8		
LnGrp Delay(d),s/veh	0.0	22.4	15.9		74.8	12.3	16.1	25.5	0.0	43.5		
LnGrp LOS		C	B		E	B	B	C		D		
Approach Vol, veh/h		2480				2136			1145			
Approach Delay, s/veh		21.4				14.6			33.0			
Approach LOS		C				B			C			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		36.2	6.7	51.1				57.8
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		37.0	4.0	47.0				55.0
Max Q Clear Time (g_c+I1), s		29.3	4.1	35.4				27.6
Green Ext Time (p_c), s		2.9	0.0	11.4				26.2

Intersection Summary	
HCM 2010 Ctrl Delay	21.2
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
8: Jefferey Way /SR 4 WB On-Ramps & Lone Tree Way 10/27/2015

Movement	SBR
Lane Configurations	
Volume (veh/h)	0
Number	
Initial Q (Qb), veh	
Ped-Bike Adj(A_pbT)	
Parking Bus, Adj	
Adj Sat Flow, veh/h/ln	
Adj Flow Rate, veh/h	
Adj No. of Lanes	
Peak Hour Factor	
Percent Heavy Veh, %	
Cap, veh/h	
Arrive On Green	
Sat Flow, veh/h	
Grp Volume(v), veh/h	
Grp Sat Flow(s),veh/h/ln	
Q Serve(g_s), s	
Cycle Q Clear(g_c), s	
Prop In Lane	
Lane Grp Cap(c), veh/h	
V/C Ratio(X)	
Avail Cap(c_a), veh/h	
HCM Platoon Ratio	
Upstream Filter(I)	
Uniform Delay (d), s/veh	
Incr Delay (d2), s/veh	
Initial Q Delay(d3),s/veh	
%ile BackOfQ(50%),veh/ln	
LnGrp Delay(d),s/veh	
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer

User approved ignoring U-Turning movement.

Laurel Ranch Traffic Impact Analysis
PM Cumulative Conditions Alt Access 1
Synchro 8 Report

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (veh/h)	101	273	1712	131	226	1389	180	16	195	97	178	59
Number		7	4	14	3	8	18		5	2	12	
Initial Q (Qb), veh		0	0	0	0	0	0		0	0	0	
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00		1.00		1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln		1845	1845	1845	1845	1845	1845		1845	1845	1845	
Adj Flow Rate, veh/h		297	1861	120	246	1510	148		212	105	168	
Adj No. of Lanes		1	3	1	1	3	1		2	1	1	
Peak Hour Factor		0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92	
Percent Heavy Veh, %		3	3	3	3	3	3		3	3	3	
Cap, veh/h		336	2335	727	284	2186	681		285	295	251	
Arrive On Green		0.19	0.46	0.46	0.16	0.43	0.43		0.08	0.16	0.16	
Sat Flow, veh/h		1757	5036	1568	1757	5036	1568		3408	1845	1568	
Grp Volume(v), veh/h		297	1861	120	246	1510	148		212	105	168	
Grp Sat Flow(s),veh/h/ln		1757	1679	1568	1757	1679	1568		1704	1845	1568	
Q Serve(g_s), s		14.4	27.4	3.9	11.9	21.2	5.2		5.3	4.4	8.8	
Cycle Q Clear(g_c), s		14.4	27.4	3.9	11.9	21.2	5.2		5.3	4.4	8.8	
Prop In Lane		1.00		1.00	1.00		1.00		1.00		1.00	
Lane Grp Cap(c), veh/h		336	2335	727	284	2186	681		285	295	251	
V/C Ratio(X)		0.88	0.80	0.17	0.86	0.69	0.22		0.74	0.36	0.67	
Avail Cap(c_a), veh/h		422	2364	736	362	2191	682		312	444	377	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Uniform Delay (d), s/veh		34.3	19.9	13.6	35.7	20.0	15.4		39.1	32.7	34.5	
Incr Delay (d2), s/veh		16.4	2.0	0.1	16.0	0.9	0.2		8.4	0.7	3.1	
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln		8.5	13.0	1.7	7.0	10.0	2.3		2.8	2.3	4.0	
LnGrp Delay(d),s/veh		50.8	21.9	13.7	51.6	20.9	15.6		47.5	33.4	37.6	
LnGrp LOS		D	C	B	D	C	B		D	C	D	
Approach Vol, veh/h			2278			1904				485		
Approach Delay, s/veh			25.2			24.5				41.0		
Approach LOS			C			C				D		

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	18.0	18.1	44.5	11.3	13.4	20.7	41.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.0	21.0	18.0	41.0	8.0	17.0	21.0	38.0
Max Q Clear Time (g_c+I1), s	3.2	10.8	13.9	29.4	7.3	7.7	16.4	23.2
Green Ext Time (p_c), s	0.0	1.8	0.3	11.0	0.0	1.7	0.4	14.1

Intersection Summary	
HCM 2010 Ctrl Delay	27.4
HCM 2010 LOS	C

Notes

User approved ignoring U-Turning movement.

HCM 2010 Signalized Intersection Summary
9: Empire Avenue & Lone Tree Way 10/27/2015

Movement	SBL	SBT	SBR
Lane Configurations			
Volume (veh/h)	43	149	60
Number	1	6	16
Initial Q (Qb), veh	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900
Adj Flow Rate, veh/h	47	162	65
Adj No. of Lanes	2	2	0
Peak Hour Factor	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3
Cap, veh/h	106	266	103
Arrive On Green	0.03	0.11	0.11
Sat Flow, veh/h	3408	2474	955
Grp Volume(v), veh/h	47	113	114
Grp Sat Flow(s),veh/h/ln	1704	1752	1676
Q Serve(g_s), s	1.2	5.4	5.7
Cycle Q Clear(g_c), s	1.2	5.4	5.7
Prop In Lane	1.00		0.57
Lane Grp Cap(c), veh/h	106	188	180
V/C Ratio(X)	0.44	0.60	0.63
Avail Cap(c_a), veh/h	156	341	326
HCM Platoon Ratio	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.6	37.2	37.3
Incr Delay (d2), s/veh	2.9	3.0	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.8	2.8
LnGrp Delay(d),s/veh	44.4	40.2	41.0
LnGrp LOS	D	D	D
Approach Vol, veh/h		274	
Approach Delay, s/veh		41.3	
Approach LOS		D	

Timer

Laurel Ranch Traffic Impact Analysis
PM Cumulative Conditions Alt Access 1
Synchro 8 Report

HCM 2010 Signalized Intersection Summary
10: Country Hills Road & Laurel Road

10/27/2015

Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations								
Volume (veh/h)	960	120	402	1371	90	170		
Number	4	14	3	8	5	12		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845		
Adj Flow Rate, veh/h	1043	130	437	1490	98	185		
Adj No. of Lanes	2	0	2	2	1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	3	3	3	3	3	3		
Cap, veh/h	1677	209	556	2627	258	230		
Arrive On Green	0.53	0.53	0.16	0.75	0.15	0.15		
Sat Flow, veh/h	3230	391	3408	3597	1757	1568		
Grp Volume(v), veh/h	582	591	437	1490	98	185		
Grp Sat Flow(s),veh/h/ln	1752	1776	1704	1752	1757	1568		
Q Serve(g_s), s	17.9	17.9	9.5	14.3	3.9	8.8		
Cycle Q Clear(g_c), s	17.9	17.9	9.5	14.3	3.9	8.8		
Prop In Lane		0.22	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	937	949	556	2627	258	230		
V/C Ratio(X)	0.62	0.62	0.79	0.57	0.38	0.80		
Avail Cap(c_a), veh/h	1089	1103	926	3311	432	386		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	12.5	12.5	31.0	4.2	29.8	31.9		
Incr Delay (d2), s/veh	0.8	0.8	2.5	0.2	0.9	6.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	8.8	8.9	4.7	6.9	1.9	4.2		
LnGrp Delay(d),s/veh	13.4	13.4	33.5	4.4	30.7	38.3		
LnGrp LOS	B	B	C	A	C	D		
Approach Vol, veh/h	1173			1927	283			
Approach Delay, s/veh	13.4			11.0	35.7			
Approach LOS	B			B	D			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		15.4	16.6	45.3				61.9
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		19.0	21.0	48.0				73.0
Max Q Clear Time (g_c+I1), s		10.8	11.5	19.9				16.3
Green Ext Time (p_c), s		0.6	1.1	21.4				34.6

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
11: Slatten Ranch Road & Laurel Road

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	113	1378	290	260	1048	230	612	271	301	230	410	110
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	123	1498	157	283	1139	250	665	295	327	250	446	120
Adj No. of Lanes	1	3	1	1	3	0	2	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	151	1511	470	299	1587	348	682	367	328	282	465	124
Arrive On Green	0.09	0.30	0.30	0.17	0.38	0.38	0.20	0.21	0.21	0.16	0.17	0.17
Sat Flow, veh/h	1757	5036	1568	1757	4134	907	3408	1752	1568	1757	2737	731
Grp Volume(v), veh/h	123	1498	157	283	925	464	665	295	327	250	284	282
Grp Sat Flow(s),veh/h/ln	1757	1679	1568	1757	1679	1685	1704	1752	1568	1757	1752	1716
Q Serve(g_s), s	6.9	29.6	7.8	15.9	23.4	23.4	19.4	16.0	20.8	13.9	16.1	16.3
Cycle Q Clear(g_c), s	6.9	29.6	7.8	15.9	23.4	23.4	19.4	16.0	20.8	13.9	16.1	16.3
Prop In Lane	1.00		1.00	1.00		0.54	1.00		1.00	1.00		0.43
Lane Grp Cap(c), veh/h	151	1511	470	299	1289	647	682	367	328	282	298	292
V/C Ratio(X)	0.81	0.99	0.33	0.95	0.72	0.72	0.98	0.80	1.00	0.89	0.95	0.97
Avail Cap(c_a), veh/h	176	1511	470	299	1289	647	682	367	328	316	298	292
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.9	34.9	27.2	41.1	26.2	26.2	39.8	37.6	39.5	41.1	41.1	41.2
Incr Delay (d2), s/veh	21.7	21.1	0.4	38.2	1.9	3.8	28.3	12.3	48.6	22.9	39.8	43.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	16.7	3.4	10.9	11.1	11.5	11.8	9.0	13.4	8.5	11.0	11.3
LnGrp Delay(d),s/veh	66.6	56.0	27.6	79.2	28.2	30.0	68.1	49.8	88.1	64.0	80.9	84.5
LnGrp LOS	E	E	C	E	C	C	E	D	F	E	F	F
Approach Vol, veh/h		1778			1672			1287			816	
Approach Delay, s/veh		54.2			37.3			69.0			77.0	
Approach LOS		D			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.1	24.9	21.0	34.0	24.0	21.0	12.6	42.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	18.0	19.0	17.0	30.0	20.0	17.0	10.0	37.0
Max Q Clear Time (g_c+I1), s	15.9	22.8	17.9	31.6	21.4	18.3	8.9	25.4
Green Ext Time (p_c), s	0.2	0.0	0.0	0.0	0.0	0.0	0.0	10.8

Intersection Summary	
HCM 2010 Ctrl Delay	55.9
HCM 2010 LOS	E

HCM 2010 Signalized Intersection Summary
1: Hillcrest Ave & SR4 WB Ramps

10/26/2015

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	655	646	816	124
Number			5	2	6	16
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1845	1845	1845	1900
Adj Flow Rate, veh/h			712	702	887	0
Adj No. of Lanes			2	1	2	0
Peak Hour Factor			0.92	0.92	0.92	0.92
Percent Heavy Veh, %			3	3	3	3
Cap, veh/h			988	1686	1888	0
Arrive On Green			0.29	0.91	0.54	0.00
Sat Flow, veh/h			3408	1845	3689	0
Grp Volume(v), veh/h			712	702	887	0
Grp Sat Flow(s),veh/h/ln			1704	1845	1752	0
Q Serve(g_s), s			8.7	2.5	7.3	0.0
Cycle Q Clear(g_c), s			8.7	2.5	7.3	0.0
Prop In Lane			1.00			0.00
Lane Grp Cap(c), veh/h			988	1686	1888	0
V/C Ratio(X)			0.72	0.42	0.47	0.00
Avail Cap(c_a), veh/h			2851	3798	3984	0
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			14.9	0.3	6.6	0.0
Incr Delay (d2), s/veh			1.0	0.2	0.2	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			4.2	1.1	3.5	0.0
LnGrp Delay(d),s/veh			15.9	0.4	6.8	0.0
LnGrp LOS			B	A	A	
Approach Vol, veh/h				1414	887	
Approach Delay, s/veh				8.2	6.8	
Approach LOS				A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		46.6			17.5	29.1		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		96.0			39.0	53.0		
Max Q Clear Time (g_c+I1), s		4.5			10.7	9.3		
Green Ext Time (p_c), s		17.9			2.8	15.8		

Intersection Summary	
HCM 2010 Ctrl Delay	7.7
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
2: Hillcrest Ave & SR 4 EB Ramps

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	142	1	687	0	0	0	0	1157	395	168	636	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845				0	1845	1900	1845	1845	0
Adj Flow Rate, veh/h	154	1	747				0	1258	429	183	691	0
Adj No. of Lanes	0	1	2				0	3	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3				0	3	3	3	3	0
Cap, veh/h	511	3	807				0	1664	566	221	2166	0
Arrive On Green	0.29	0.29	0.29				0.00	0.45	0.45	0.13	0.62	0.00
Sat Flow, veh/h	1746	11	2760				0	3881	1264	1757	3597	0
Grp Volume(v), veh/h	155	0	747				0	1136	551	183	691	0
Grp Sat Flow(s),veh/h/ln	1757	0	1380				0	1679	1622	1757	1752	0
Q Serve(g_s), s	6.1	0.0	23.5				0.0	25.3	25.4	9.1	8.4	0.0
Cycle Q Clear(g_c), s	6.1	0.0	23.5				0.0	25.3	25.4	9.1	8.4	0.0
Prop In Lane	0.99		1.00				0.00		0.78	1.00		0.00
Lane Grp Cap(c), veh/h	514	0	807				0	1504	726	221	2166	0
V/C Ratio(X)	0.30	0.00	0.93				0.00	0.76	0.76	0.83	0.32	0.00
Avail Cap(c_a), veh/h	530	0	832				0	1612	779	353	2544	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.6	0.0	30.7				0.0	20.6	20.7	38.2	8.1	0.0
Incr Delay (d2), s/veh	0.3	0.0	15.8				0.0	2.0	4.0	8.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	10.7				0.0	12.1	12.1	5.0	4.1	0.0
LnGrp Delay(d),s/veh	24.9	0.0	46.5				0.0	22.6	24.7	46.9	8.2	0.0
LnGrp LOS	C		D					C	C	D	A	
Approach Vol, veh/h		902						1687			874	
Approach Delay, s/veh		42.8						23.3			16.3	
Approach LOS		D						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.2	44.1		30.2		59.3		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	18.0	43.0		27.0		65.0		
Max Q Clear Time (g_c+I1), s	11.1	27.4		25.5		10.4		
Green Ext Time (p_c), s	0.3	12.7		0.7		31.1		

Intersection Summary	
HCM 2010 Ctrl Delay	26.6
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
3: Hillcrest Ave & Laurel Road

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	79	59	55	174	40	196	64	331	142	183	327	86
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	86	64	60	189	43	106	70	360	0	199	355	93
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	513	258	242	472	543	462	94	927	0	267	1001	259
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.05	0.26	0.00	0.15	0.36	0.36
Sat Flow, veh/h	1222	877	822	1250	1845	1568	1757	3597	0	1757	2758	713
Grp Volume(v), veh/h	86	0	124	189	43	106	70	360	0	199	224	224
Grp Sat Flow(s),veh/h/ln	1222	0	1700	1250	1845	1568	1757	1752	0	1757	1752	1719
Q Serve(g_s), s	2.3	0.0	2.3	5.6	0.7	2.1	1.6	3.5	0.0	4.5	3.9	4.0
Cycle Q Clear(g_c), s	3.0	0.0	2.3	7.9	0.7	2.1	1.6	3.5	0.0	4.5	3.9	4.0
Prop In Lane	1.00		0.48	1.00		1.00	1.00		0.00	1.00		0.42
Lane Grp Cap(c), veh/h	513	0	500	472	543	462	94	927	0	267	636	624
V/C Ratio(X)	0.17	0.00	0.25	0.40	0.08	0.23	0.75	0.39	0.00	0.75	0.35	0.36
Avail Cap(c_a), veh/h	1125	0	1352	1098	1468	1247	551	2535	0	1059	1774	1740
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.6	0.0	11.1	14.2	10.6	11.1	19.4	12.5	0.0	16.8	9.6	9.7
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.5	0.1	0.3	11.1	0.3	0.0	4.1	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	1.1	2.0	0.4	1.0	1.1	1.7	0.0	2.5	1.9	1.9
LnGrp Delay(d),s/veh	11.8	0.0	11.4	14.7	10.6	11.3	30.5	12.8	0.0	21.0	10.0	10.0
LnGrp LOS	B		B	B	B	B	C	B		C	A	B
Approach Vol, veh/h		210			338			430			647	
Approach Delay, s/veh		11.6			13.1			15.6			13.4	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.3	15.0		16.2	6.2	19.1		16.2
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	25.0	30.0		33.0	13.0	42.0		33.0
Max Q Clear Time (g_c+I1), s	6.5	5.5		5.0	3.6	6.0		9.9
Green Ext Time (p_c), s	0.5	5.5		2.4	0.1	5.9		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	13.7
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
4: Canada Valley Road & Laurel Road

10/26/2015

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	483	66	179	510	113	195
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	525	72	195	554	123	107
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1256	172	264	2322	219	195
Arrive On Green	0.41	0.41	0.15	0.66	0.12	0.12
Sat Flow, veh/h	3191	424	1757	3597	1757	1568
Grp Volume(v), veh/h	296	301	195	554	123	107
Grp Sat Flow(s),veh/h/ln	1752	1770	1757	1752	1757	1568
Q Serve(g_s), s	4.5	4.6	4.0	2.4	2.5	2.4
Cycle Q Clear(g_c), s	4.5	4.6	4.0	2.4	2.5	2.4
Prop In Lane		0.24	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	710	717	264	2322	219	195
V/C Ratio(X)	0.42	0.42	0.74	0.24	0.56	0.55
Avail Cap(c_a), veh/h	1588	1604	1264	6072	1264	1128
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.0	8.0	15.2	2.5	15.5	15.4
Incr Delay (d2), s/veh	0.4	0.4	4.0	0.1	2.3	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	2.3	2.2	1.1	1.3	1.2
LnGrp Delay(d),s/veh	8.4	8.4	19.2	2.6	17.7	17.8
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	597			749	230	
Approach Delay, s/veh	8.4			6.9	17.8	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		8.7	9.6	19.2				28.9
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		27.0	27.0	34.0				65.0
Max Q Clear Time (g_c+I1), s		4.5	6.0	6.6				4.4
Green Ext Time (p_c), s		0.7	0.5	8.6				9.9

Intersection Summary	
HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
5: SR 4 EB On-Ramps/SR 4 EB Off-Ramps & Laurel Road

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	697	75	0	616	487	0	0	0	450	1	160
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1900				1845	1845	1845
Adj Flow Rate, veh/h	0	758	82	0	670	0				490	0	174
Adj No. of Lanes	0	2	0	0	2	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	0	3	3				3	3	3
Cap, veh/h	0	1791	194	0	1967	0				831	0	371
Arrive On Green	0.00	0.56	0.56	0.00	0.56	0.00				0.24	0.00	0.24
Sat Flow, veh/h	0	3283	345	0	3689	0				3514	0	1568
Grp Volume(v), veh/h	0	416	424	0	670	0				490	0	174
Grp Sat Flow(s),veh/h/ln	0	1752	1784	0	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	5.4	5.4	0.0	4.1	0.0				4.9	0.0	3.8
Cycle Q Clear(g_c), s	0.0	5.4	5.4	0.0	4.1	0.0				4.9	0.0	3.8
Prop In Lane	0.00		0.19	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	983	1001	0	1967	0				831	0	371
V/C Ratio(X)	0.00	0.42	0.42	0.00	0.34	0.00				0.59	0.00	0.47
Avail Cap(c_a), veh/h	0	2570	2616	0	5139	0				3020	0	1348
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	5.0	5.0	0.0	4.7	0.0				13.4	0.0	13.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.0	0.1	0.0				0.7	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.6	2.7	0.0	2.0	0.0				2.4	0.0	1.7
LnGrp Delay(d),s/veh	0.0	5.3	5.3	0.0	4.8	0.0				14.1	0.0	13.9
LnGrp LOS		A	A		A					B		B
Approach Vol, veh/h		840			670						664	
Approach Delay, s/veh		5.3			4.8						14.0	
Approach LOS		A			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				26.2		13.4		26.2
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				58.0		34.0		58.0
Max Q Clear Time (g_c+I1), s				7.4		6.9		6.1
Green Ext Time (p_c), s				14.8		2.5		14.9

Intersection Summary	
HCM 2010 Ctrl Delay	7.8
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
6: SR 4 WB Off-Ramps/SR 4 WB On-Ramps & Laurel Road

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	227	921	0	0	1092	725	26	0	318	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	247	1001	0	0	1187	0	28	0	346			
Adj No. of Lanes	1	2	0	0	2	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	289	2293	0	0	1547	692	438	0	391			
Arrive On Green	0.16	0.65	0.00	0.00	0.44	0.00	0.25	0.00	0.25			
Sat Flow, veh/h	1757	3597	0	0	3597	1568	1757	0	1568			
Grp Volume(v), veh/h	247	1001	0	0	1187	0	28	0	346			
Grp Sat Flow(s),veh/h/ln	1757	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	11.3	11.4	0.0	0.0	23.7	0.0	1.0	0.0	17.6			
Cycle Q Clear(g_c), s	11.3	11.4	0.0	0.0	23.7	0.0	1.0	0.0	17.6			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	289	2293	0	0	1547	692	438	0	391			
V/C Ratio(X)	0.85	0.44	0.00	0.00	0.77	0.00	0.06	0.00	0.89			
Avail Cap(c_a), veh/h	403	2624	0	0	1651	739	637	0	568			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	33.6	6.9	0.0	0.0	19.5	0.0	23.7	0.0	30.0			
Incr Delay (d2), s/veh	12.1	0.1	0.0	0.0	2.1	0.0	0.1	0.0	11.3			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.5	5.5	0.0	0.0	11.8	0.0	0.5	0.0	8.8			
LnGrp Delay(d),s/veh	45.8	7.1	0.0	0.0	21.6	0.0	23.8	0.0	41.3			
LnGrp LOS	D	A			C		C		D			
Approach Vol, veh/h		1248			1187			374				
Approach Delay, s/veh		14.7			21.6			40.0				
Approach LOS		B			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		24.6		58.2			17.6	40.5
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		30.0		62.0			19.0	39.0
Max Q Clear Time (g_c+I1), s		19.6		13.4			13.3	25.7
Green Ext Time (p_c), s		1.0		27.8			0.4	10.9

Intersection Summary	
HCM 2010 Ctrl Delay	21.0
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
7: SR 4 EB On-ramps/SR 4 EB Off-Ramps & Lone Tree Way

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	783	434	95	1180	0	0	0	0	318	1	393
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	851	472	103	1283	0				347	0	427
Adj No. of Lanes	0	3	1	2	3	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	2276	709	174	2823	0				1139	0	508
Arrive On Green	0.00	0.45	0.45	0.05	0.56	0.00				0.32	0.00	0.32
Sat Flow, veh/h	0	5202	1568	3408	5202	0				3514	0	1568
Grp Volume(v), veh/h	0	851	472	103	1283	0				347	0	427
Grp Sat Flow(s),veh/h/ln	0	1679	1568	1704	1679	0				1757	0	1568
Q Serve(g_s), s	0.0	7.7	16.4	2.1	10.4	0.0				5.1	0.0	17.6
Cycle Q Clear(g_c), s	0.0	7.7	16.4	2.1	10.4	0.0				5.1	0.0	17.6
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2276	709	174	2823	0				1139	0	508
V/C Ratio(X)	0.00	0.37	0.67	0.59	0.45	0.00				0.30	0.00	0.84
Avail Cap(c_a), veh/h	0	2463	767	343	3260	0				2376	0	1060
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	12.6	14.9	32.3	9.0	0.0				17.6	0.0	21.8
Incr Delay (d2), s/veh	0.0	0.1	2.0	3.2	0.1	0.0				0.1	0.0	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.6	7.5	1.0	4.8	0.0				2.5	0.0	8.1
LnGrp Delay(d),s/veh	0.0	12.7	16.9	35.4	9.1	0.0				17.8	0.0	25.6
LnGrp LOS		B	B	D	A					B		C
Approach Vol, veh/h		1323			1386						774	
Approach Delay, s/veh		14.2			11.1						22.1	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			7.6	35.4		26.5		43.0
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			7.0	34.0		47.0		45.0
Max Q Clear Time (g_c+I1), s			4.1	18.4		19.6		12.4
Green Ext Time (p_c), s			0.1	13.0		3.0		23.4

Intersection Summary	
HCM 2010 Ctrl Delay	14.7
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
8: Jefferey Way /SR 4 WB On-Ramps & Lone Tree Way

10/26/2015

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	0	956	166	8	3	850	311	429	19	138	0	0
Number	7	4	14		3	8	18	5	2	12		
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00		
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	0	1845	1845		1845	1845	1845	1845	1845	1845		
Adj Flow Rate, veh/h	0	1039	90		3	924	338	481	0	150		
Adj No. of Lanes	0	3	1		1	3	1	2	0	1		
Peak Hour Factor	0.92	0.92	0.92		0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	3	3		3	3	3	3	3	3		
Cap, veh/h	0	2783	867		6	3197	995	728	0	325		
Arrive On Green	0.00	0.55	0.55		0.00	0.63	0.63	0.21	0.00	0.21		
Sat Flow, veh/h	0	5202	1568		1757	5036	1568	3514	0	1568		
Grp Volume(v), veh/h	0	1039	90		3	924	338	481	0	150		
Grp Sat Flow(s),veh/h/ln	0	1679	1568		1757	1679	1568	1757	0	1568		
Q Serve(g_s), s	0.0	5.9	1.4		0.1	4.2	5.1	6.4	0.0	4.2		
Cycle Q Clear(g_c), s	0.0	5.9	1.4		0.1	4.2	5.1	6.4	0.0	4.2		
Prop In Lane	0.00		1.00		1.00		1.00	1.00		1.00		
Lane Grp Cap(c), veh/h	0	2783	867		6	3197	995	728	0	325		
V/C Ratio(X)	0.00	0.37	0.10		0.52	0.29	0.34	0.66	0.00	0.46		
Avail Cap(c_a), veh/h	0	2783	867		1214	6561	2043	1803	0	805		
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	0.0	6.4	5.4		25.2	4.1	4.3	18.4	0.0	17.6		
Incr Delay (d2), s/veh	0.0	0.1	0.1		58.5	0.0	0.2	1.0	0.0	1.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	2.7	0.6		0.1	1.9	2.2	3.2	0.0	1.9		
LnGrp Delay(d),s/veh	0.0	6.5	5.4		83.7	4.2	4.5	19.5	0.0	18.6		
LnGrp LOS		A	A		F	A	A	B		B		
Approach Vol, veh/h		1129				1265			631			
Approach Delay, s/veh		6.4				4.5			19.3			
Approach LOS		A				A			B			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		14.5	4.2	32.0				36.2
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		26.0	35.0	27.0				66.0
Max Q Clear Time (g_c+I1), s		8.4	2.1	7.9				7.1
Green Ext Time (p_c), s		2.1	0.0	13.6				25.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
8: Jefferey Way /SR 4 WB On-Ramps & Lone Tree Way

10/26/2015

Movement	SBR
Lane Configurations	
Volume (veh/h)	0
Number	
Initial Q (Qb), veh	
Ped-Bike Adj(A_pbT)	
Parking Bus, Adj	
Adj Sat Flow, veh/h/ln	
Adj Flow Rate, veh/h	
Adj No. of Lanes	
Peak Hour Factor	
Percent Heavy Veh, %	
Cap, veh/h	
Arrive On Green	
Sat Flow, veh/h	
Grp Volume(v), veh/h	
Grp Sat Flow(s),veh/h/ln	
Q Serve(g_s), s	
Cycle Q Clear(g_c), s	
Prop In Lane	
Lane Grp Cap(c), veh/h	
V/C Ratio(X)	
Avail Cap(c_a), veh/h	
HCM Platoon Ratio	
Upstream Filter(I)	
Uniform Delay (d), s/veh	
Incr Delay (d2), s/veh	
Initial Q Delay(d3),s/veh	
%ile BackOfQ(50%),veh/ln	
LnGrp Delay(d),s/veh	
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer

User approved ignoring U-Turning movement.

HCM 2010 Signalized Intersection Summary
9: Empire Avenue & Lone Tree Way

10/26/2015

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (veh/h)	43	131	470	41	61	610	92	15	107	88	47	25
Number		7	4	14	3	8	18		5	2	12	
Initial Q (Qb), veh		0	0	0	0	0	0		0	0	0	
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00		1.00		1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln		1845	1845	1845	1845	1845	1845		1845	1845	1845	
Adj Flow Rate, veh/h		142	511	23	66	663	50		116	96	26	
Adj No. of Lanes		1	3	1	1	3	1		2	1	1	
Peak Hour Factor		0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92	
Percent Heavy Veh, %		3	3	3	3	3	3		3	3	3	
Cap, veh/h		192	1751	545	89	1456	453		238	287	244	
Arrive On Green		0.11	0.35	0.35	0.05	0.29	0.29		0.07	0.16	0.16	
Sat Flow, veh/h		1757	5036	1568	1757	5036	1568		3408	1845	1568	
Grp Volume(v), veh/h		142	511	23	66	663	50		116	96	26	
Grp Sat Flow(s),veh/h/ln		1757	1679	1568	1757	1679	1568		1704	1845	1568	
Q Serve(g_s), s		3.4	3.2	0.4	1.6	4.6	1.0		1.4	2.0	0.6	
Cycle Q Clear(g_c), s		3.4	3.2	0.4	1.6	4.6	1.0		1.4	2.0	0.6	
Prop In Lane		1.00		1.00	1.00		1.00		1.00		1.00	
Lane Grp Cap(c), veh/h		192	1751	545	89	1456	453		238	287	244	
V/C Ratio(X)		0.74	0.29	0.04	0.74	0.46	0.11		0.49	0.33	0.11	
Avail Cap(c_a), veh/h		1964	6452	2009	368	1877	584		318	687	584	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Uniform Delay (d), s/veh		18.5	10.2	9.3	20.1	12.5	11.2		19.2	16.1	15.6	
Incr Delay (d2), s/veh		5.5	0.1	0.0	11.3	0.2	0.1		1.5	0.7	0.2	
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln		1.9	1.5	0.2	1.1	2.2	0.4		0.7	1.1	0.3	
LnGrp Delay(d),s/veh		24.0	10.3	9.3	31.4	12.7	11.3		20.8	16.8	15.8	
LnGrp LOS		C	B	A	C	B	B		C	B	B	
Approach Vol, veh/h			676			779				238		
Approach Delay, s/veh			13.1			14.2				18.6		
Approach LOS			B			B				B		

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.2	10.7	6.2	18.9	7.0	10.8	8.7	16.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.0	16.0	9.0	55.0	4.0	16.0	48.0	16.0
Max Q Clear Time (g_c+I1), s	3.6	4.0	3.6	5.2	3.4	5.3	5.4	6.6
Green Ext Time (p_c), s	0.0	1.7	0.0	9.8	0.0	1.6	0.4	5.0

Intersection Summary	
HCM 2010 Ctrl Delay	15.3
HCM 2010 LOS	B

Notes

User approved ignoring U-Turning movement.

HCM 2010 Signalized Intersection Summary
9: Empire Avenue & Lone Tree Way

10/26/2015

Movement	SBL	SBT	SBR
Lane Configurations			
Volume (veh/h)	120	126	119
Number	1	6	16
Initial Q (Qb), veh	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900
Adj Flow Rate, veh/h	130	137	129
Adj No. of Lanes	2	2	0
Peak Hour Factor	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3
Cap, veh/h	250	283	246
Arrive On Green	0.07	0.16	0.16
Sat Flow, veh/h	3408	1778	1546
Grp Volume(v), veh/h	130	135	131
Grp Sat Flow(s),veh/h/ln	1704	1752	1572
Q Serve(g_s), s	1.6	3.0	3.3
Cycle Q Clear(g_c), s	1.6	3.0	3.3
Prop In Lane	1.00		0.98
Lane Grp Cap(c), veh/h	250	279	250
V/C Ratio(X)	0.52	0.48	0.52
Avail Cap(c_a), veh/h	318	653	586
HCM Platoon Ratio	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.2	16.4	16.6
Incr Delay (d2), s/veh	1.7	1.3	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	1.6	1.5
LnGrp Delay(d),s/veh	20.8	17.7	18.3
LnGrp LOS	C	B	B
Approach Vol, veh/h		396	
Approach Delay, s/veh		18.9	
Approach LOS		B	

Timer

HCM 2010 Signalized Intersection Summary
10: Laurel Road & Country Hills Road

10/26/2015

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	9	669	675	27	79	11
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1900	1845	1845
Adj Flow Rate, veh/h	10	727	734	29	86	12
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	19	2465	1991	79	123	110
Arrive On Green	0.01	0.70	0.58	0.58	0.07	0.07
Sat Flow, veh/h	1757	3597	3530	136	1757	1568
Grp Volume(v), veh/h	10	727	374	389	86	12
Grp Sat Flow(s),veh/h/ln	1757	1752	1752	1821	1757	1568
Q Serve(g_s), s	0.2	2.7	4.0	4.0	1.7	0.3
Cycle Q Clear(g_c), s	0.2	2.7	4.0	4.0	1.7	0.3
Prop In Lane	1.00			0.07	1.00	1.00
Lane Grp Cap(c), veh/h	19	2465	1015	1055	123	110
V/C Ratio(X)	0.54	0.29	0.37	0.37	0.70	0.11
Avail Cap(c_a), veh/h	398	6756	2782	2890	1195	1067
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.4	2.0	4.0	4.0	16.0	15.4
Incr Delay (d2), s/veh	22.0	0.1	0.2	0.2	7.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.2	1.9	2.0	1.1	0.2
LnGrp Delay(d),s/veh	39.4	2.0	4.2	4.2	23.0	15.8
LnGrp LOS	D	A	A	A	C	B
Approach Vol, veh/h		737	763		98	
Approach Delay, s/veh		2.5	4.2		22.2	
Approach LOS		A	A		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				28.8		6.5	4.4	24.4
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				68.0		24.0	8.0	56.0
Max Q Clear Time (g_c+I1), s				4.7		3.7	2.2	6.0
Green Ext Time (p_c), s				15.0		0.2	0.0	14.4

Intersection Summary	
HCM 2010 Ctrl Delay	4.5
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
1: Hillcrest Ave & SR4 WB Ramps

10/26/2015

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	648	555	876	141
Number			5	2	6	16
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1845	1845	1845	1900
Adj Flow Rate, veh/h			704	603	952	0
Adj No. of Lanes			2	1	2	0
Peak Hour Factor			0.92	0.92	0.92	0.92
Percent Heavy Veh, %			3	3	3	3
Cap, veh/h			977	1686	1898	0
Arrive On Green			0.29	0.91	0.54	0.00
Sat Flow, veh/h			3408	1845	3689	0
Grp Volume(v), veh/h			704	603	952	0
Grp Sat Flow(s),veh/h/ln			1704	1845	1752	0
Q Serve(g_s), s			8.7	1.9	8.0	0.0
Cycle Q Clear(g_c), s			8.7	1.9	8.0	0.0
Prop In Lane			1.00			0.00
Lane Grp Cap(c), veh/h			977	1686	1898	0
V/C Ratio(X)			0.72	0.36	0.50	0.00
Avail Cap(c_a), veh/h			2705	3799	4136	0
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			14.9	0.3	6.7	0.0
Incr Delay (d2), s/veh			1.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			4.1	0.9	3.9	0.0
LnGrp Delay(d),s/veh			16.0	0.4	6.9	0.0
LnGrp LOS			B	A	A	
Approach Vol, veh/h				1307	952	
Approach Delay, s/veh				8.8	6.9	
Approach LOS				A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		46.6			17.4	29.2		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		96.0			37.0	55.0		
Max Q Clear Time (g_c+I1), s		3.9			10.7	10.0		
Green Ext Time (p_c), s		17.0			2.7	15.3		

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
2: Hillcrest Ave & SR 4 EBRamps/SR 4 EB Ramps

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	122	0	730	0	0	0	0	1083	398	182	688	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845				0	1845	1900	1845	1845	0
Adj Flow Rate, veh/h	128	0	768				0	1140	419	192	724	0
Adj No. of Lanes	0	1	2				0	3	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3				0	3	3	3	3	0
Cap, veh/h	540	0	848				0	1539	565	231	2107	0
Arrive On Green	0.31	0.00	0.31				0.00	0.42	0.42	0.13	0.60	0.00
Sat Flow, veh/h	1757	0	2760				0	3798	1334	1757	3597	0
Grp Volume(v), veh/h	128	0	768				0	1054	505	192	724	0
Grp Sat Flow(s),veh/h/ln	1757	0	1380				0	1679	1609	1757	1752	0
Q Serve(g_s), s	4.8	0.0	23.3				0.0	23.0	23.0	9.3	9.1	0.0
Cycle Q Clear(g_c), s	4.8	0.0	23.3				0.0	23.0	23.0	9.3	9.1	0.0
Prop In Lane	1.00		1.00				0.00		0.83	1.00		0.00
Lane Grp Cap(c), veh/h	540	0	848				0	1422	682	231	2107	0
V/C Ratio(X)	0.24	0.00	0.91				0.00	0.74	0.74	0.83	0.34	0.00
Avail Cap(c_a), veh/h	584	0	917				0	1539	738	383	2531	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.6	0.0	29.0				0.0	21.1	21.1	36.9	8.7	0.0
Incr Delay (d2), s/veh	0.2	0.0	11.9				0.0	1.8	3.7	7.6	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	10.3				0.0	10.9	10.8	5.0	4.4	0.0
LnGrp Delay(d),s/veh	22.8	0.0	40.9				0.0	22.9	24.8	44.5	8.8	0.0
LnGrp LOS	C		D					C	C	D	A	
Approach Vol, veh/h		896						1559			916	
Approach Delay, s/veh		38.3						23.5			16.3	
Approach LOS		D						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.5	41.0		30.8		56.4		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	19.0	40.0		29.0		63.0		
Max Q Clear Time (g_c+I1), s	11.3	25.0		25.3		11.1		
Green Ext Time (p_c), s	0.3	11.9		1.5		28.4		

Intersection Summary	
HCM 2010 Ctrl Delay	25.5
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
3: Hillcrest Ave & Laurel Road

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	15	21	229	138	131	27	373	119	189	454	38
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	28	16	22	241	145	70	28	393	0	199	478	40
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	419	195	268	523	510	434	47	999	0	266	1342	112
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.03	0.28	0.00	0.15	0.41	0.41
Sat Flow, veh/h	1150	705	969	1351	1845	1568	1757	3597	0	1757	3276	273
Grp Volume(v), veh/h	28	0	38	241	145	70	28	393	0	199	255	263
Grp Sat Flow(s),veh/h/ln	1150	0	1674	1351	1845	1568	1757	1752	0	1757	1752	1796
Q Serve(g_s), s	0.8	0.0	0.7	6.7	2.6	1.4	0.7	3.8	0.0	4.5	4.2	4.2
Cycle Q Clear(g_c), s	3.4	0.0	0.7	7.4	2.6	1.4	0.7	3.8	0.0	4.5	4.2	4.2
Prop In Lane	1.00		0.58	1.00		1.00	1.00		0.00	1.00		0.15
Lane Grp Cap(c), veh/h	419	0	463	523	510	434	47	999	0	266	718	736
V/C Ratio(X)	0.07	0.00	0.08	0.46	0.28	0.16	0.60	0.39	0.00	0.75	0.36	0.36
Avail Cap(c_a), veh/h	1064	0	1401	1280	1544	1312	294	2431	0	1008	1928	1976
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.2	0.0	11.2	13.9	11.9	11.5	20.1	12.0	0.0	17.0	8.5	8.5
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.6	0.3	0.2	11.7	0.3	0.0	4.2	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	2.6	1.3	0.6	0.5	1.8	0.0	2.5	2.0	2.1
LnGrp Delay(d),s/veh	13.3	0.0	11.3	14.6	12.2	11.6	31.9	12.3	0.0	21.2	8.8	8.8
LnGrp LOS	B		B	B	B	B	C	B		C	A	A
Approach Vol, veh/h		66			456			421			717	
Approach Delay, s/veh		12.1			13.4			13.6			12.2	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.3	15.9		15.6	5.1	21.1		15.6
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	24.0	29.0		35.0	7.0	46.0		35.0
Max Q Clear Time (g_c+I1), s	6.5	5.8		5.4	2.7	6.2		9.4
Green Ext Time (p_c), s	0.5	6.1		2.2	0.0	6.9		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.9
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
4: Canada Valley Road & Laurel Road

10/26/2015

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	423	48	153	600	102	189
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	460	52	166	652	111	103
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1296	146	225	2281	211	188
Arrive On Green	0.41	0.41	0.13	0.65	0.12	0.12
Sat Flow, veh/h	3269	358	1757	3597	1757	1568
Grp Volume(v), veh/h	253	259	166	652	111	103
Grp Sat Flow(s),veh/h/ln	1752	1782	1757	1752	1757	1568
Q Serve(g_s), s	3.5	3.5	3.2	2.8	2.1	2.2
Cycle Q Clear(g_c), s	3.5	3.5	3.2	2.8	2.1	2.2
Prop In Lane		0.20	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	715	727	225	2281	211	188
V/C Ratio(X)	0.35	0.36	0.74	0.29	0.53	0.55
Avail Cap(c_a), veh/h	1606	1633	1308	6224	1510	1347
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.1	7.2	14.6	2.6	14.4	14.5
Incr Delay (d2), s/veh	0.3	0.3	4.6	0.1	2.0	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	1.8	1.8	1.3	1.1	1.1
LnGrp Delay(d),s/veh	7.4	7.5	19.3	2.7	16.5	16.9
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	512			818	214	
Approach Delay, s/veh	7.5			6.1	16.7	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		8.2	8.5	18.2				26.7
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		30.0	26.0	32.0				62.0
Max Q Clear Time (g_c+I1), s		4.2	5.2	5.5				4.8
Green Ext Time (p_c), s		0.6	0.4	8.7				10.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
5: SR 4 EB On-Ramps/SR 4 EB Off-Ramps & Laurel Road

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	602	42	0	946	360	0	0	0	896	2	417
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1900				1845	1845	1845
Adj Flow Rate, veh/h	0	654	46	0	1028	0				975	0	453
Adj No. of Lanes	0	2	0	0	2	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	0	3	3				3	3	3
Cap, veh/h	0	1639	115	0	1729	0				1340	0	598
Arrive On Green	0.00	0.49	0.49	0.00	0.49	0.00				0.38	0.00	0.38
Sat Flow, veh/h	0	3415	233	0	3689	0				3514	0	1568
Grp Volume(v), veh/h	0	345	355	0	1028	0				975	0	453
Grp Sat Flow(s),veh/h/ln	0	1752	1803	0	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	7.9	7.9	0.0	13.4	0.0				15.2	0.0	16.0
Cycle Q Clear(g_c), s	0.0	7.9	7.9	0.0	13.4	0.0				15.2	0.0	16.0
Prop In Lane	0.00		0.13	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	864	890	0	1729	0				1340	0	598
V/C Ratio(X)	0.00	0.40	0.40	0.00	0.59	0.00				0.73	0.00	0.76
Avail Cap(c_a), veh/h	0	1346	1385	0	2692	0				2369	0	1057
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	10.2	10.2	0.0	11.6	0.0				16.9	0.0	17.2
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.0	0.3	0.0				0.8	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.9	4.0	0.0	6.5	0.0				7.5	0.0	7.3
LnGrp Delay(d),s/veh	0.0	10.5	10.5	0.0	11.9	0.0				17.7	0.0	19.2
LnGrp LOS		B	B		B					B		B
Approach Vol, veh/h		700			1028						1428	
Approach Delay, s/veh		10.5			11.9						18.1	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				35.5		28.3		35.5
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				49.0		43.0		49.0
Max Q Clear Time (g_c+I1), s				9.9		18.0		15.4
Green Ext Time (p_c), s				17.1		6.3		16.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.4
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
6: SR 4 WB Off-Ramps/SR 4 WB On-Ramps & Laurel Road

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	98	1399	0	0	1265	465	128	0	497	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	107	1521	0	0	1375	0	139	0	540			
Adj No. of Lanes	1	2	0	0	2	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	128	1924	0	0	1524	682	646	0	577			
Arrive On Green	0.07	0.55	0.00	0.00	0.43	0.00	0.37	0.00	0.37			
Sat Flow, veh/h	1757	3597	0	0	3597	1568	1757	0	1568			
Grp Volume(v), veh/h	107	1521	0	0	1375	0	139	0	540			
Grp Sat Flow(s),veh/h/ln	1757	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	5.8	33.3	0.0	0.0	35.1	0.0	5.2	0.0	31.9			
Cycle Q Clear(g_c), s	5.8	33.3	0.0	0.0	35.1	0.0	5.2	0.0	31.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	128	1924	0	0	1524	682	646	0	577			
V/C Ratio(X)	0.84	0.79	0.00	0.00	0.90	0.00	0.22	0.00	0.94			
Avail Cap(c_a), veh/h	128	1931	0	0	1530	685	712	0	636			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	44.0	17.3	0.0	0.0	25.3	0.0	20.9	0.0	29.3			
Incr Delay (d2), s/veh	36.1	2.3	0.0	0.0	7.8	0.0	0.2	0.0	20.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.1	16.5	0.0	0.0	18.5	0.0	2.6	0.0	17.1			
LnGrp Delay(d),s/veh	80.1	19.6	0.0	0.0	33.1	0.0	21.0	0.0	49.8			
LnGrp LOS	F	B			C		C		D			
Approach Vol, veh/h		1628			1375			679				
Approach Delay, s/veh		23.6			33.1			43.9				
Approach LOS		C			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		39.4		56.8			11.0	45.8
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		39.0		53.0			7.0	42.0
Max Q Clear Time (g_c+I1), s		33.9		35.3			7.8	37.1
Green Ext Time (p_c), s		1.4		16.2			0.0	4.7

Intersection Summary	
HCM 2010 Ctrl Delay	30.9
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
7: SR 4 EB On-ramps/SR 4 EB Off-Ramps & Lone Tree Way

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1415	497	120	1383	0	0	0	0	461	2	374
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1489	523	126	1456	0				486	0	394
Adj No. of Lanes	0	3	1	2	3	0				2	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	2467	768	200	3016	0				1056	0	471
Arrive On Green	0.00	0.49	0.49	0.06	0.60	0.00				0.30	0.00	0.30
Sat Flow, veh/h	0	5202	1568	3408	5202	0				3514	0	1568
Grp Volume(v), veh/h	0	1489	523	126	1456	0				486	0	394
Grp Sat Flow(s),veh/h/ln	0	1679	1568	1704	1679	0				1757	0	1568
Q Serve(g_s), s	0.0	17.0	20.3	2.9	13.0	0.0				8.9	0.0	18.7
Cycle Q Clear(g_c), s	0.0	17.0	20.3	2.9	13.0	0.0				8.9	0.0	18.7
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2467	768	200	3016	0				1056	0	471
V/C Ratio(X)	0.00	0.60	0.68	0.63	0.48	0.00				0.46	0.00	0.84
Avail Cap(c_a), veh/h	0	2534	789	343	3294	0				1768	0	789
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.7	15.5	36.6	9.0	0.0				22.6	0.0	26.0
Incr Delay (d2), s/veh	0.0	0.4	2.3	3.3	0.1	0.0				0.3	0.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	7.9	9.2	1.4	6.0	0.0				4.4	0.0	8.6
LnGrp Delay(d),s/veh	0.0	15.1	17.8	39.8	9.1	0.0				22.9	0.0	30.0
LnGrp LOS		B	B	D	A					C		C
Approach Vol, veh/h		2012			1582						880	
Approach Delay, s/veh		15.8			11.6						26.1	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			8.7	42.9		27.9		51.6
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			8.0	40.0		40.0		52.0
Max Q Clear Time (g_c+I1), s			4.9	22.3		20.7		15.0
Green Ext Time (p_c), s			0.1	16.6		3.2		32.6

Intersection Summary	
HCM 2010 Ctrl Delay	16.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
8: Jefferey Way /SR 4 WB On-Ramps & Lone Tree Way

10/26/2015

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	0	1611	285	20	5	982	384	539	29	189	0	0
Number	7	4	14		3	8	18	5	2	12		
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00		
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	0	1845	1845		1845	1845	1845	1845	1845	1845		
Adj Flow Rate, veh/h	0	1696	153		5	1034	404	589	0	199		
Adj No. of Lanes	0	3	1		1	3	1	2	0	1		
Peak Hour Factor	0.95	0.95	0.95		0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	0	3	3		3	3	3	3	3	3		
Cap, veh/h	0	3028	943		9	3343	1041	780	0	348		
Arrive On Green	0.00	0.60	0.60		0.01	0.66	0.66	0.22	0.00	0.22		
Sat Flow, veh/h	0	5202	1568		1757	5036	1568	3514	0	1568		
Grp Volume(v), veh/h	0	1696	153		5	1034	404	589	0	199		
Grp Sat Flow(s),veh/h/ln	0	1679	1568		1757	1679	1568	1757	0	1568		
Q Serve(g_s), s	0.0	14.2	3.0		0.2	6.1	8.2	11.0	0.0	7.9		
Cycle Q Clear(g_c), s	0.0	14.2	3.0		0.2	6.1	8.2	11.0	0.0	7.9		
Prop In Lane	0.00		1.00		1.00		1.00	1.00		1.00		
Lane Grp Cap(c), veh/h	0	3028	943		9	3343	1041	780	0	348		
V/C Ratio(X)	0.00	0.56	0.16		0.54	0.31	0.39	0.76	0.00	0.57		
Avail Cap(c_a), veh/h	0	3028	943		552	4679	1457	1356	0	605		
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	0.0	8.4	6.2		34.7	5.0	5.3	25.4	0.0	24.3		
Incr Delay (d2), s/veh	0.0	0.2	0.1		40.7	0.1	0.2	1.5	0.0	1.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	6.5	1.3		0.2	2.8	3.5	5.5	0.0	3.5		
LnGrp Delay(d),s/veh	0.0	8.6	6.2		75.4	5.0	5.6	27.0	0.0	25.7		
LnGrp LOS		A	A		E	A	A	C		C		
Approach Vol, veh/h		1849				1443			788			
Approach Delay, s/veh		8.4				5.4			26.7			
Approach LOS		A				A			C			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		19.5	4.4	46.1				50.4
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		27.0	22.0	39.0				65.0
Max Q Clear Time (g_c+I1), s		13.0	2.2	16.2				10.2
Green Ext Time (p_c), s		2.6	0.0	19.8				36.3

Intersection Summary	
HCM 2010 Ctrl Delay	10.9
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	SBR
Lane Configurations	
Volume (veh/h)	0
Number	
Initial Q (Qb), veh	
Ped-Bike Adj(A_pbT)	
Parking Bus, Adj	
Adj Sat Flow, veh/h/ln	
Adj Flow Rate, veh/h	
Adj No. of Lanes	
Peak Hour Factor	
Percent Heavy Veh, %	
Cap, veh/h	
Arrive On Green	
Sat Flow, veh/h	
Grp Volume(v), veh/h	
Grp Sat Flow(s),veh/h/ln	
Q Serve(g_s), s	
Cycle Q Clear(g_c), s	
Prop In Lane	
Lane Grp Cap(c), veh/h	
V/C Ratio(X)	
Avail Cap(c_a), veh/h	
HCM Platoon Ratio	
Upstream Filter(I)	
Uniform Delay (d), s/veh	
Incr Delay (d2), s/veh	
Initial Q Delay(d3),s/veh	
%ile BackOfQ(50%),veh/ln	
LnGrp Delay(d),s/veh	
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer

User approved ignoring U-Turning movement.



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (veh/h)	101	240	810	95	90	749	157	16	94	94	37	59
Number		7	4	14	3	8	18		5	2	12	
Initial Q (Qb), veh		0	0	0	0	0	0		0	0	0	
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00		1.00		1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln		1845	1845	1845	1845	1845	1845		1845	1845	1845	
Adj Flow Rate, veh/h		253	853	52	95	788	86		99	99	20	
Adj No. of Lanes		1	3	1	1	3	1		2	1	1	
Peak Hour Factor		0.95	0.95	0.95	0.95	0.95	0.95		0.95	0.95	0.95	
Percent Heavy Veh, %		3	3	3	3	3	3		3	3	3	
Cap, veh/h		320	2079	647	123	1514	471		191	235	200	
Arrive On Green		0.18	0.41	0.41	0.07	0.30	0.30		0.06	0.13	0.13	
Sat Flow, veh/h		1757	5036	1568	1757	5036	1568		3408	1845	1568	
Grp Volume(v), veh/h		253	853	52	95	788	86		99	99	20	
Grp Sat Flow(s),veh/h/ln		1757	1679	1568	1757	1679	1568		1704	1845	1568	
Q Serve(g_s), s		7.7	6.7	1.1	3.0	7.3	2.3		1.6	2.8	0.6	
Cycle Q Clear(g_c), s		7.7	6.7	1.1	3.0	7.3	2.3		1.6	2.8	0.6	
Prop In Lane		1.00		1.00	1.00		1.00		1.00		1.00	
Lane Grp Cap(c), veh/h		320	2079	647	123	1514	471		191	235	200	
V/C Ratio(X)		0.79	0.41	0.08	0.77	0.52	0.18		0.52	0.42	0.10	
Avail Cap(c_a), veh/h		1378	4308	1341	376	1514	471		364	559	475	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Uniform Delay (d), s/veh		21.9	11.6	10.0	25.7	16.3	14.5		25.7	22.6	21.6	
Incr Delay (d2), s/veh		4.4	0.1	0.1	9.8	0.3	0.2		2.2	1.2	0.2	
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln		4.1	3.1	0.5	1.8	3.4	1.0		0.8	1.5	0.3	
LnGrp Delay(d),s/veh		26.3	11.8	10.1	35.5	16.6	14.7		27.9	23.8	21.9	
LnGrp LOS		C	B	B	D	B	B		C	C	C	
Approach Vol, veh/h			1158			969				218		
Approach Delay, s/veh			14.9			18.3				25.5		
Approach LOS			B			B				C		

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.9	11.1	7.9	27.2	7.1	13.9	14.2	20.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	17.0	12.0	48.0	6.0	18.0	44.0	16.0
Max Q Clear Time (g_c+I1), s	5.9	4.8	5.0	8.7	3.6	7.9	9.7	9.3
Green Ext Time (p_c), s	0.1	2.2	0.1	14.5	0.1	2.0	0.7	5.0

Intersection Summary	
HCM 2010 Ctrl Delay	18.9
HCM 2010 LOS	B

Notes

User approved ignoring U-Turning movement.

HCM 2010 Signalized Intersection Summary
9: Empire Avenue & Lone Tree Way

10/26/2015

Movement	SBL	SBT	SBR
Lane Configurations			
Volume (veh/h)	234	194	155
Number	1	6	16
Initial Q (Qb), veh	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900
Adj Flow Rate, veh/h	246	204	163
Adj No. of Lanes	2	2	0
Peak Hour Factor	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3
Cap, veh/h	357	334	254
Arrive On Green	0.10	0.18	0.18
Sat Flow, veh/h	3408	1900	1443
Grp Volume(v), veh/h	246	187	180
Grp Sat Flow(s),veh/h/ln	1704	1752	1590
Q Serve(g_s), s	3.9	5.5	5.9
Cycle Q Clear(g_c), s	3.9	5.5	5.9
Prop In Lane	1.00		0.91
Lane Grp Cap(c), veh/h	357	308	280
V/C Ratio(X)	0.69	0.61	0.64
Avail Cap(c_a), veh/h	425	562	510
HCM Platoon Ratio	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.2	21.3	21.5
Incr Delay (d2), s/veh	3.7	1.9	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.8	2.8
LnGrp Delay(d),s/veh	27.9	23.3	23.9
LnGrp LOS	C	C	C
Approach Vol, veh/h		613	
Approach Delay, s/veh		25.3	
Approach LOS		C	

Timer

HCM 2010 Signalized Intersection Summary
10: Laurel Road & Country Hills Road

10/26/2015

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	24	589	1141	94	55	7
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1900	1845	1845
Adj Flow Rate, veh/h	26	640	1240	102	60	8
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	42	2793	2281	187	85	76
Arrive On Green	0.02	0.80	0.70	0.70	0.05	0.05
Sat Flow, veh/h	1757	3597	3373	269	1757	1568
Grp Volume(v), veh/h	26	640	661	681	60	8
Grp Sat Flow(s),veh/h/ln	1757	1752	1752	1797	1757	1568
Q Serve(g_s), s	0.8	2.3	9.5	9.6	1.7	0.3
Cycle Q Clear(g_c), s	0.8	2.3	9.5	9.6	1.7	0.3
Prop In Lane	1.00			0.15	1.00	1.00
Lane Grp Cap(c), veh/h	42	2793	1219	1250	85	76
V/C Ratio(X)	0.61	0.23	0.54	0.54	0.71	0.11
Avail Cap(c_a), veh/h	238	5224	2239	2296	510	455
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.0	1.3	3.9	3.9	24.2	23.5
Incr Delay (d2), s/veh	13.5	0.0	0.4	0.4	10.3	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.1	4.5	4.7	1.1	0.2
LnGrp Delay(d),s/veh	38.5	1.3	4.2	4.2	34.5	24.1
LnGrp LOS	D	A	A	A	C	C
Approach Vol, veh/h		666	1342		68	
Approach Delay, s/veh		2.8	4.2		33.3	
Approach LOS		A	A		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				45.2		6.5	5.2	39.9
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				77.0		15.0	7.0	66.0
Max Q Clear Time (g_c+I1), s				4.3		3.7	2.8	11.6
Green Ext Time (p_c), s				26.7		0.1	0.0	24.3

Intersection Summary	
HCM 2010 Ctrl Delay	4.7
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
1: Hillcrest Ave & SR4 Ramps

10/26/2015

Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Volume (veh/h)	0	0	655	650	817	124		
Number			5	2	6	16		
Initial Q (Qb), veh			0	0	0	0		
Ped-Bike Adj(A_pbT)			1.00			1.00		
Parking Bus, Adj			1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln			1845	1845	1845	1900		
Adj Flow Rate, veh/h			712	707	888	0		
Adj No. of Lanes			2	1	2	0		
Peak Hour Factor			0.92	0.92	0.92	0.92		
Percent Heavy Veh, %			3	3	3	3		
Cap, veh/h			987	1687	1891	0		
Arrive On Green			0.29	0.91	0.54	0.00		
Sat Flow, veh/h			3408	1845	3689	0		
Grp Volume(v), veh/h			712	707	888	0		
Grp Sat Flow(s),veh/h/ln			1704	1845	1752	0		
Q Serve(g_s), s			8.8	2.5	7.3	0.0		
Cycle Q Clear(g_c), s			8.8	2.5	7.3	0.0		
Prop In Lane			1.00			0.00		
Lane Grp Cap(c), veh/h			987	1687	1891	0		
V/C Ratio(X)			0.72	0.42	0.47	0.00		
Avail Cap(c_a), veh/h			2841	3785	3970	0		
HCM Platoon Ratio			1.00	1.00	1.00	1.00		
Upstream Filter(I)			1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh			14.9	0.3	6.6	0.0		
Incr Delay (d2), s/veh			1.0	0.2	0.2	0.0		
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln			4.2	1.1	3.5	0.0		
LnGrp Delay(d),s/veh			15.9	0.4	6.8	0.0		
LnGrp LOS			B	A	A			
Approach Vol, veh/h				1419	888			
Approach Delay, s/veh				8.2	6.8			
Approach LOS				A	A			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		46.8			17.5	29.2		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		96.0			39.0	53.0		
Max Q Clear Time (g_c+I1), s		4.5			10.8	9.3		
Green Ext Time (p_c), s		18.1			2.8	15.9		

Intersection Summary	
HCM 2010 Ctrl Delay	7.7
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
2: Hillcrest Ave & SR 4 Ramps

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	142	1	687	0	0	0	0	1161	395	168	637	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845				0	1845	1900	1845	1845	0
Adj Flow Rate, veh/h	154	1	747				0	1262	429	183	692	0
Adj No. of Lanes	0	1	2				0	3	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3				0	3	3	3	3	0
Cap, veh/h	510	3	807				0	1666	565	221	2167	0
Arrive On Green	0.29	0.29	0.29				0.00	0.45	0.45	0.13	0.62	0.00
Sat Flow, veh/h	1746	11	2760				0	3885	1261	1757	3597	0
Grp Volume(v), veh/h	155	0	747				0	1139	552	183	692	0
Grp Sat Flow(s),veh/h/ln	1757	0	1380				0	1679	1622	1757	1752	0
Q Serve(g_s), s	6.1	0.0	23.5				0.0	25.4	25.5	9.1	8.4	0.0
Cycle Q Clear(g_c), s	6.1	0.0	23.5				0.0	25.4	25.5	9.1	8.4	0.0
Prop In Lane	0.99		1.00				0.00		0.78	1.00		0.00
Lane Grp Cap(c), veh/h	514	0	807				0	1504	727	221	2167	0
V/C Ratio(X)	0.30	0.00	0.93				0.00	0.76	0.76	0.83	0.32	0.00
Avail Cap(c_a), veh/h	530	0	832				0	1611	779	353	2543	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.6	0.0	30.8				0.0	20.6	20.7	38.2	8.1	0.0
Incr Delay (d2), s/veh	0.3	0.0	15.9				0.0	2.0	4.1	8.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	10.7				0.0	12.1	12.2	5.0	4.1	0.0
LnGrp Delay(d),s/veh	24.9	0.0	46.6				0.0	22.6	24.8	47.0	8.2	0.0
LnGrp LOS	C		D					C	C	D	A	
Approach Vol, veh/h		902						1691			875	
Approach Delay, s/veh		42.9						23.3			16.3	
Approach LOS		D						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.2	44.1		30.2		59.4		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	18.0	43.0		27.0		65.0		
Max Q Clear Time (g_c+I1), s	11.1	27.5		25.5		10.4		
Green Ext Time (p_c), s	0.3	12.6		0.7		31.2		

Intersection Summary	
HCM 2010 Ctrl Delay	26.6
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
3: Hillcrest Ave & Laurel Road

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	79	59	55	174	40	196	64	334	142	183	328	86
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	86	64	60	189	43	133	70	363	0	199	357	93
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	501	258	242	468	542	461	93	954	0	263	1018	262
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.05	0.27	0.00	0.15	0.37	0.37
Sat Flow, veh/h	1192	877	822	1250	1845	1568	1757	3597	0	1757	2761	710
Grp Volume(v), veh/h	86	0	124	189	43	133	70	363	0	199	225	225
Grp Sat Flow(s),veh/h/ln	1192	0	1700	1250	1845	1568	1757	1752	0	1757	1752	1719
Q Serve(g_s), s	2.4	0.0	2.3	5.7	0.7	2.8	1.7	3.5	0.0	4.6	3.9	4.0
Cycle Q Clear(g_c), s	3.1	0.0	2.3	8.1	0.7	2.8	1.7	3.5	0.0	4.6	3.9	4.0
Prop In Lane	1.00		0.48	1.00		1.00	1.00		0.00	1.00		0.41
Lane Grp Cap(c), veh/h	501	0	499	468	542	461	93	954	0	263	646	634
V/C Ratio(X)	0.17	0.00	0.25	0.40	0.08	0.29	0.75	0.38	0.00	0.76	0.35	0.36
Avail Cap(c_a), veh/h	998	0	1208	989	1311	1115	708	3322	0	749	1702	1670
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	11.9	0.0	11.4	14.4	10.8	11.5	19.7	12.5	0.0	17.2	9.6	9.7
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.6	0.1	0.3	11.4	0.3	0.0	4.4	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	1.1	2.0	0.4	1.2	1.1	1.7	0.0	2.5	1.9	1.9
LnGrp Delay(d),s/veh	12.0	0.0	11.6	15.0	10.8	11.8	31.1	12.7	0.0	21.6	10.0	10.0
LnGrp LOS	B		B	B	B	B	C	B		C	A	B
Approach Vol, veh/h		210			365			433			649	
Approach Delay, s/veh		11.8			13.4			15.7			13.6	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.3	15.5		16.4	6.2	19.6		16.4
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	18.0	40.0		30.0	17.0	41.0		30.0
Max Q Clear Time (g_c+I1), s	6.6	5.5		5.1	3.7	6.0		10.1
Green Ext Time (p_c), s	0.4	5.9		2.4	0.1	6.0		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	13.8
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
4: Canada Valley Road & Laurel Road

10/26/2015

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	483	66	194	510	113	240
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	525	72	211	554	123	131
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1206	165	284	2293	246	219
Arrive On Green	0.39	0.39	0.16	0.65	0.14	0.14
Sat Flow, veh/h	3191	424	1757	3597	1757	1568
Grp Volume(v), veh/h	296	301	211	554	123	131
Grp Sat Flow(s),veh/h/ln	1752	1770	1757	1752	1757	1568
Q Serve(g_s), s	4.8	4.9	4.4	2.5	2.5	3.0
Cycle Q Clear(g_c), s	4.8	4.9	4.4	2.5	2.5	3.0
Prop In Lane		0.24	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	682	689	284	2293	246	219
V/C Ratio(X)	0.43	0.44	0.74	0.24	0.50	0.60
Avail Cap(c_a), veh/h	1399	1413	1221	5595	1357	1211
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.7	8.7	15.5	2.8	15.4	15.7
Incr Delay (d2), s/veh	0.4	0.4	3.8	0.1	1.6	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	2.4	2.4	1.2	1.3	1.4
LnGrp Delay(d),s/veh	9.2	9.2	19.3	2.8	17.0	18.3
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	597			765	254	
Approach Delay, s/veh	9.2			7.4	17.7	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		9.4	10.3	19.1				29.4
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		30.0	27.0	31.0				62.0
Max Q Clear Time (g_c+I1), s		5.0	6.4	6.9				4.5
Green Ext Time (p_c), s		0.8	0.6	8.3				9.9

Intersection Summary	
HCM 2010 Ctrl Delay	9.6
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
5: SR 4 On-Ramps/SR 4 Off-Ramps & Laurel Road

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	732	85	0	623	487	0	0	0	450	1	168
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1900				1845	1845	1845
Adj Flow Rate, veh/h	0	796	92	0	677	0				490	0	183
Adj No. of Lanes	0	2	0	0	2	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	0	3	3				3	3	3
Cap, veh/h	0	1812	209	0	2005	0				821	0	366
Arrive On Green	0.00	0.57	0.57	0.00	0.57	0.00				0.23	0.00	0.23
Sat Flow, veh/h	0	3259	366	0	3689	0				3514	0	1568
Grp Volume(v), veh/h	0	440	448	0	677	0				490	0	183
Grp Sat Flow(s),veh/h/ln	0	1752	1780	0	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	5.9	5.9	0.0	4.2	0.0				5.1	0.0	4.2
Cycle Q Clear(g_c), s	0.0	5.9	5.9	0.0	4.2	0.0				5.1	0.0	4.2
Prop In Lane	0.00		0.21	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1003	1018	0	2005	0				821	0	366
V/C Ratio(X)	0.00	0.44	0.44	0.00	0.34	0.00				0.60	0.00	0.50
Avail Cap(c_a), veh/h	0	2469	2508	0	4937	0				2901	0	1295
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	5.0	5.0	0.0	4.7	0.0				14.1	0.0	13.7
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.0	0.1	0.0				0.7	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.9	2.9	0.0	2.0	0.0				2.5	0.0	1.9
LnGrp Delay(d),s/veh	0.0	5.3	5.3	0.0	4.8	0.0				14.8	0.0	14.7
LnGrp LOS		A	A		A					B		B
Approach Vol, veh/h		888			677						673	
Approach Delay, s/veh		5.3			4.8						14.8	
Approach LOS		A			A						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				27.6		13.6		27.6
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				58.0		34.0		58.0
Max Q Clear Time (g_c+I1), s				7.9		7.1		6.2
Green Ext Time (p_c), s				15.6		2.5		15.8

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
6: SR 4 Off-Ramps/SR 4 On-Ramps & Laurel Road

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	251	931	0	0	1096	725	29	0	318	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	273	1012	0	0	1191	0	32	0	346			
Adj No. of Lanes	1	2	0	0	2	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	315	2300	0	0	1506	674	437	0	390			
Arrive On Green	0.18	0.66	0.00	0.00	0.43	0.00	0.25	0.00	0.25			
Sat Flow, veh/h	1757	3597	0	0	3597	1568	1757	0	1568			
Grp Volume(v), veh/h	273	1012	0	0	1191	0	32	0	346			
Grp Sat Flow(s),veh/h/ln	1757	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	12.7	11.7	0.0	0.0	24.7	0.0	1.2	0.0	17.9			
Cycle Q Clear(g_c), s	12.7	11.7	0.0	0.0	24.7	0.0	1.2	0.0	17.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	315	2300	0	0	1506	674	437	0	390			
V/C Ratio(X)	0.87	0.44	0.00	0.00	0.79	0.00	0.07	0.00	0.89			
Avail Cap(c_a), veh/h	417	2582	0	0	1582	708	626	0	559			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	33.6	7.0	0.0	0.0	20.7	0.0	24.2	0.0	30.5			
Incr Delay (d2), s/veh	13.9	0.1	0.0	0.0	2.7	0.0	0.1	0.0	11.9			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	7.4	5.7	0.0	0.0	12.5	0.0	0.6	0.0	9.0			
LnGrp Delay(d),s/veh	47.5	7.1	0.0	0.0	23.4	0.0	24.3	0.0	42.3			
LnGrp LOS	D	A			C		C		D			
Approach Vol, veh/h		1285			1191			378				
Approach Delay, s/veh		15.7			23.4			40.8				
Approach LOS		B			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		24.9		59.2			19.1	40.2
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		30.0		62.0			20.0	38.0
Max Q Clear Time (g_c+I1), s		19.9		13.7			14.7	26.7
Green Ext Time (p_c), s		1.0		28.0			0.4	9.5

Intersection Summary	
HCM 2010 Ctrl Delay	22.3
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
7: SR 4 EB On-ramps/SR 4 EB Off-Ramps & Lone Tree Way

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	790	434	95	1182	0	0	0	0	318	1	393
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	859	472	103	1285	0				347	0	427
Adj No. of Lanes	0	3	1	2	3	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	2276	709	174	2824	0				1139	0	508
Arrive On Green	0.00	0.45	0.45	0.05	0.56	0.00				0.32	0.00	0.32
Sat Flow, veh/h	0	5202	1568	3408	5202	0				3514	0	1568
Grp Volume(v), veh/h	0	859	472	103	1285	0				347	0	427
Grp Sat Flow(s),veh/h/ln	0	1679	1568	1704	1679	0				1757	0	1568
Q Serve(g_s), s	0.0	7.8	16.4	2.1	10.5	0.0				5.2	0.0	17.6
Cycle Q Clear(g_c), s	0.0	7.8	16.4	2.1	10.5	0.0				5.2	0.0	17.6
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2276	709	174	2824	0				1139	0	508
V/C Ratio(X)	0.00	0.38	0.67	0.59	0.46	0.00				0.30	0.00	0.84
Avail Cap(c_a), veh/h	0	2462	766	343	3258	0				2374	0	1059
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	12.6	14.9	32.3	9.0	0.0				17.6	0.0	21.8
Incr Delay (d2), s/veh	0.0	0.1	2.0	3.2	0.1	0.0				0.1	0.0	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.6	7.5	1.0	4.8	0.0				2.5	0.0	8.1
LnGrp Delay(d),s/veh	0.0	12.7	16.9	35.4	9.1	0.0				17.8	0.0	25.6
LnGrp LOS		B	B	D	A					B		C
Approach Vol, veh/h		1331			1388						774	
Approach Delay, s/veh		14.2			11.1						22.1	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			7.6	35.4		26.6		43.0
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			7.0	34.0		47.0		45.0
Max Q Clear Time (g_c+I1), s			4.1	18.4		19.6		12.5
Green Ext Time (p_c), s			0.1	13.0		3.0		23.5

Intersection Summary	
HCM 2010 Ctrl Delay	14.7
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
8: Jefferey Way /SR 4 EB On-Ramps & Lone Tree Way

10/26/2015

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	0	962	166	8	3	852	311	429	19	138	0	0
Number	7	4	14		3	8	18	5	2	12		
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00		
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	0	1845	1845		1845	1845	1845	1845	1845	1845		
Adj Flow Rate, veh/h	0	1046	90		3	926	338	481	0	147		
Adj No. of Lanes	0	3	1		1	3	1	2	0	1		
Peak Hour Factor	0.92	0.92	0.92		0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	0	3	3		3	3	3	3	3	3		
Cap, veh/h	0	2776	864		6	3188	993	737	0	329		
Arrive On Green	0.00	0.55	0.55		0.00	0.63	0.63	0.21	0.00	0.21		
Sat Flow, veh/h	0	5202	1568		1757	5036	1568	3514	0	1568		
Grp Volume(v), veh/h	0	1046	90		3	926	338	481	0	147		
Grp Sat Flow(s),veh/h/ln	0	1679	1568		1757	1679	1568	1757	0	1568		
Q Serve(g_s), s	0.0	6.0	1.4		0.1	4.2	5.1	6.4	0.0	4.2		
Cycle Q Clear(g_c), s	0.0	6.0	1.4		0.1	4.2	5.1	6.4	0.0	4.2		
Prop In Lane	0.00		1.00		1.00		1.00	1.00		1.00		
Lane Grp Cap(c), veh/h	0	2776	864		6	3188	993	737	0	329		
V/C Ratio(X)	0.00	0.38	0.10		0.52	0.29	0.34	0.65	0.00	0.45		
Avail Cap(c_a), veh/h	0	4152	1293		207	5141	1601	2759	0	1231		
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	0.0	6.5	5.4		25.3	4.2	4.4	18.4	0.0	17.5		
Incr Delay (d2), s/veh	0.0	0.1	0.1		58.5	0.0	0.2	1.0	0.0	1.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	2.7	0.6		0.1	1.9	2.2	3.2	0.0	1.9		
LnGrp Delay(d),s/veh	0.0	6.6	5.5		83.8	4.3	4.6	19.4	0.0	18.5		
LnGrp LOS		A	A		F	A	A	B		B		
Approach Vol, veh/h		1136				1267			628			
Approach Delay, s/veh		6.5				4.5			19.2			
Approach LOS		A				A			B			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		14.7	4.2	32.1				36.2
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		40.0	6.0	42.0				52.0
Max Q Clear Time (g_c+I1), s		8.4	2.1	8.0				7.1
Green Ext Time (p_c), s		2.3	0.0	20.1				23.3

Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
8: Jefferey Way /SR 4 EB On-Ramps & Lone Tree Way

10/26/2015

Movement	SBR
Lane Configurations	
Volume (veh/h)	0
Number	
Initial Q (Qb), veh	
Ped-Bike Adj(A_pbT)	
Parking Bus, Adj	
Adj Sat Flow, veh/h/ln	
Adj Flow Rate, veh/h	
Adj No. of Lanes	
Peak Hour Factor	
Percent Heavy Veh, %	
Cap, veh/h	
Arrive On Green	
Sat Flow, veh/h	
Grp Volume(v), veh/h	
Grp Sat Flow(s),veh/h/ln	
Q Serve(g_s), s	
Cycle Q Clear(g_c), s	
Prop In Lane	
Lane Grp Cap(c), veh/h	
V/C Ratio(X)	
Avail Cap(c_a), veh/h	
HCM Platoon Ratio	
Upstream Filter(I)	
Uniform Delay (d), s/veh	
Incr Delay (d2), s/veh	
Initial Q Delay(d3),s/veh	
%ile BackOfQ(50%),veh/ln	
LnGrp Delay(d),s/veh	
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer

User approved ignoring U-Turning movement.

HCM 2010 Signalized Intersection Summary
9: Empire Avenue & Lone Tree Way

10/26/2015

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (veh/h)	43	131	476	41	61	612	92	15	107	88	47	25
Number		7	4	14	3	8	18		5	2	12	
Initial Q (Qb), veh		0	0	0	0	0	0		0	0	0	
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00		1.00		1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln		1845	1845	1845	1845	1845	1845		1845	1845	1845	
Adj Flow Rate, veh/h		142	517	23	66	665	52		116	96	26	
Adj No. of Lanes		1	3	1	1	3	1		2	1	1	
Peak Hour Factor		0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92	
Percent Heavy Veh, %		3	3	3	3	3	3		3	3	3	
Cap, veh/h		190	1859	579	87	1566	488		230	295	251	
Arrive On Green		0.11	0.37	0.37	0.05	0.31	0.31		0.07	0.16	0.16	
Sat Flow, veh/h		1757	5036	1568	1757	5036	1568		3408	1845	1568	
Grp Volume(v), veh/h		142	517	23	66	665	52		116	96	26	
Grp Sat Flow(s),veh/h/ln		1757	1679	1568	1757	1679	1568		1704	1845	1568	
Q Serve(g_s), s		3.6	3.3	0.4	1.7	4.8	1.1		1.5	2.1	0.6	
Cycle Q Clear(g_c), s		3.6	3.3	0.4	1.7	4.8	1.1		1.5	2.1	0.6	
Prop In Lane		1.00		1.00	1.00		1.00		1.00		1.00	
Lane Grp Cap(c), veh/h		190	1859	579	87	1566	488		230	295	251	
V/C Ratio(X)		0.75	0.28	0.04	0.76	0.42	0.11		0.50	0.32	0.10	
Avail Cap(c_a), veh/h		961	4189	1304	462	2756	858		746	888	755	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Uniform Delay (d), s/veh		19.8	10.1	9.2	21.4	12.5	11.2		20.6	17.0	16.4	
Incr Delay (d2), s/veh		5.8	0.1	0.0	12.4	0.2	0.1		1.7	0.6	0.2	
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln		2.0	1.5	0.2	1.1	2.2	0.5		0.8	1.1	0.3	
LnGrp Delay(d),s/veh		25.6	10.2	9.3	33.9	12.7	11.3		22.3	17.6	16.6	
LnGrp LOS		C	B	A	C	B	B		C	B	B	
Approach Vol, veh/h			682			783				238		
Approach Delay, s/veh			13.4			14.4				19.8		
Approach LOS			B			B				B		

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.2	11.3	6.3	20.9	7.1	11.5	8.9	18.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	12.0	22.0	12.0	38.0	10.0	24.0	25.0	25.0
Max Q Clear Time (g_c+I1), s	3.7	4.1	3.7	5.3	3.5	5.5	5.6	6.8
Green Ext Time (p_c), s	0.2	2.0	0.1	9.2	0.2	2.0	0.3	7.4

Intersection Summary	
HCM 2010 Ctrl Delay	15.7
HCM 2010 LOS	B

Notes

User approved ignoring U-Turning movement.

HCM 2010 Signalized Intersection Summary
9: Empire Avenue & Lone Tree Way

10/26/2015

Movement	SBL	SBT	SBR
Lane Configurations			
Volume (veh/h)	120	126	119
Number	1	6	16
Initial Q (Qb), veh	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900
Adj Flow Rate, veh/h	130	137	129
Adj No. of Lanes	2	2	0
Peak Hour Factor	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3
Cap, veh/h	241	291	253
Arrive On Green	0.07	0.16	0.16
Sat Flow, veh/h	3408	1778	1546
Grp Volume(v), veh/h	130	135	131
Grp Sat Flow(s),veh/h/ln	1704	1752	1572
Q Serve(g_s), s	1.7	3.2	3.5
Cycle Q Clear(g_c), s	1.7	3.2	3.5
Prop In Lane	1.00		0.98
Lane Grp Cap(c), veh/h	241	286	257
V/C Ratio(X)	0.54	0.47	0.51
Avail Cap(c_a), veh/h	895	921	826
HCM Platoon Ratio	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.5	17.3	17.4
Incr Delay (d2), s/veh	1.9	1.2	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.6	1.6
LnGrp Delay(d),s/veh	22.4	18.5	19.0
LnGrp LOS	C	B	B
Approach Vol, veh/h		396	
Approach Delay, s/veh		19.9	
Approach LOS		B	

Timer

HCM 2010 Signalized Intersection Summary
10: Laurel Road & Country Hills Road

10/26/2015

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	9	714	690	27	79	11
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1900	1845	1845
Adj Flow Rate, veh/h	10	776	750	29	86	12
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	19	2495	2035	79	121	108
Arrive On Green	0.01	0.71	0.59	0.59	0.07	0.07
Sat Flow, veh/h	1757	3597	3533	133	1757	1568
Grp Volume(v), veh/h	10	776	382	397	86	12
Grp Sat Flow(s),veh/h/ln	1757	1752	1752	1821	1757	1568
Q Serve(g_s), s	0.2	3.0	4.2	4.2	1.7	0.3
Cycle Q Clear(g_c), s	0.2	3.0	4.2	4.2	1.7	0.3
Prop In Lane	1.00			0.07	1.00	1.00
Lane Grp Cap(c), veh/h	19	2495	1037	1077	121	108
V/C Ratio(X)	0.54	0.31	0.37	0.37	0.71	0.11
Avail Cap(c_a), veh/h	385	6530	2689	2795	1155	1031
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.0	1.9	3.9	3.9	16.6	15.9
Incr Delay (d2), s/veh	22.1	0.1	0.2	0.2	7.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	1.4	2.0	2.0	1.1	0.2
LnGrp Delay(d),s/veh	40.1	2.0	4.1	4.1	24.0	16.4
LnGrp LOS	D	A	A	A	C	B
Approach Vol, veh/h		786	779		98	
Approach Delay, s/veh		2.5	4.1		23.1	
Approach LOS		A	A		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				30.0		6.5	4.4	25.6
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				68.0		24.0	8.0	56.0
Max Q Clear Time (g_c+I1), s				5.0		3.7	2.2	6.2
Green Ext Time (p_c), s				16.1		0.2	0.0	15.4

Intersection Summary	
HCM 2010 Ctrl Delay	4.5
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
1: Hillcrest Ave & SR4 WB Ramps

10/26/2015

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	0	648	558	880	141
Number			5	2	6	16
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)			1.00			1.00
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1845	1845	1845	1900
Adj Flow Rate, veh/h			704	607	957	0
Adj No. of Lanes			2	1	2	0
Peak Hour Factor			0.92	0.92	0.92	0.92
Percent Heavy Veh, %			3	3	3	3
Cap, veh/h			976	1687	1904	0
Arrive On Green			0.29	0.91	0.54	0.00
Sat Flow, veh/h			3408	1845	3689	0
Grp Volume(v), veh/h			704	607	957	0
Grp Sat Flow(s),veh/h/ln			1704	1845	1752	0
Q Serve(g_s), s			8.7	2.0	8.0	0.0
Cycle Q Clear(g_c), s			8.7	2.0	8.0	0.0
Prop In Lane			1.00			0.00
Lane Grp Cap(c), veh/h			976	1687	1904	0
V/C Ratio(X)			0.72	0.36	0.50	0.00
Avail Cap(c_a), veh/h			2690	3777	4112	0
HCM Platoon Ratio			1.00	1.00	1.00	1.00
Upstream Filter(I)			1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			15.1	0.3	6.7	0.0
Incr Delay (d2), s/veh			1.0	0.1	0.2	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			4.1	0.9	3.9	0.0
LnGrp Delay(d),s/veh			16.1	0.4	6.9	0.0
LnGrp LOS			B	A	A	
Approach Vol, veh/h				1311	957	
Approach Delay, s/veh				8.8	6.9	
Approach LOS				A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2			5	6		
Phs Duration (G+Y+Rc), s		46.9			17.4	29.5		
Change Period (Y+Rc), s		4.0			4.0	4.0		
Max Green Setting (Gmax), s		96.0			37.0	55.0		
Max Q Clear Time (g_c+I1), s		4.0			10.7	10.0		
Green Ext Time (p_c), s		17.2			2.7	15.4		

Intersection Summary	
HCM 2010 Ctrl Delay	8.0
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
2: Hillcrest Ave & SR 4 EB Ramps

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	122	0	730	0	0	0	0	1086	398	182	692	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1845	1845				0	1845	1900	1845	1845	0
Adj Flow Rate, veh/h	128	0	768				0	1143	419	192	728	0
Adj No. of Lanes	0	1	2				0	3	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3				0	3	3	3	3	0
Cap, veh/h	533	0	837				0	1558	571	231	2123	0
Arrive On Green	0.30	0.00	0.30				0.00	0.43	0.43	0.13	0.61	0.00
Sat Flow, veh/h	1757	0	2760				0	3801	1332	1757	3597	0
Grp Volume(v), veh/h	128	0	768				0	1056	506	192	728	0
Grp Sat Flow(s),veh/h/ln	1757	0	1380				0	1679	1610	1757	1752	0
Q Serve(g_s), s	4.8	0.0	23.6				0.0	23.0	23.0	9.4	9.1	0.0
Cycle Q Clear(g_c), s	4.8	0.0	23.6				0.0	23.0	23.0	9.4	9.1	0.0
Prop In Lane	1.00		1.00				0.00		0.83	1.00		0.00
Lane Grp Cap(c), veh/h	533	0	837				0	1439	690	231	2123	0
V/C Ratio(X)	0.24	0.00	0.92				0.00	0.73	0.73	0.83	0.34	0.00
Avail Cap(c_a), veh/h	560	0	880				0	1567	751	380	2553	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.0	0.0	29.5				0.0	20.9	20.9	37.2	8.6	0.0
Incr Delay (d2), s/veh	0.2	0.0	14.0				0.0	1.7	3.4	7.8	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	10.6				0.0	10.9	10.8	5.0	4.4	0.0
LnGrp Delay(d),s/veh	23.2	0.0	43.5				0.0	22.6	24.3	45.0	8.7	0.0
LnGrp LOS	C		D					C	C	D	A	
Approach Vol, veh/h		896						1562			920	
Approach Delay, s/veh		40.6						23.1			16.3	
Approach LOS		D						C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.6	41.7		30.6		57.2		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	19.0	41.0		28.0		64.0		
Max Q Clear Time (g_c+I1), s	11.4	25.0		25.6		11.1		
Green Ext Time (p_c), s	0.3	12.6		1.0		28.8		

Intersection Summary	
HCM 2010 Ctrl Delay	25.9
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
3: Hillcrest Ave & Laurel Road

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	15	21	229	138	131	27	375	119	189	458	38
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	28	16	22	241	145	79	28	395	0	199	482	40
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	405	189	260	510	495	421	47	1041	0	266	1383	114
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.03	0.30	0.00	0.15	0.42	0.42
Sat Flow, veh/h	1141	705	969	1351	1845	1568	1757	3597	0	1757	3278	271
Grp Volume(v), veh/h	28	0	38	241	145	79	28	395	0	199	257	265
Grp Sat Flow(s),veh/h/ln	1141	0	1674	1351	1845	1568	1757	1752	0	1757	1752	1797
Q Serve(g_s), s	0.8	0.0	0.7	6.9	2.6	1.6	0.7	3.8	0.0	4.6	4.2	4.2
Cycle Q Clear(g_c), s	3.5	0.0	0.7	7.6	2.6	1.6	0.7	3.8	0.0	4.6	4.2	4.2
Prop In Lane	1.00		0.58	1.00		1.00	1.00		0.00	1.00		0.15
Lane Grp Cap(c), veh/h	405	0	449	510	495	421	47	1041	0	266	740	758
V/C Ratio(X)	0.07	0.00	0.08	0.47	0.29	0.19	0.60	0.38	0.00	0.75	0.35	0.35
Avail Cap(c_a), veh/h	690	0	868	848	957	813	414	3306	0	1077	2314	2373
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.7	0.0	11.6	14.5	12.3	11.9	20.4	11.8	0.0	17.2	8.3	8.3
Incr Delay (d2), s/veh	0.1	0.0	0.1	0.7	0.3	0.2	11.8	0.2	0.0	4.2	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.3	2.6	1.4	0.7	0.5	1.8	0.0	2.5	2.1	2.1
LnGrp Delay(d),s/veh	13.8	0.0	11.7	15.1	12.6	12.2	32.2	12.0	0.0	21.4	8.6	8.6
LnGrp LOS	B		B	B	B	B	C	B		C	A	A
Approach Vol, veh/h		66			465			423			721	
Approach Delay, s/veh		12.6			13.9			13.4			12.1	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.4	16.6		15.4	5.1	21.9		15.4
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	26.0	40.0		22.0	10.0	56.0		22.0
Max Q Clear Time (g_c+I1), s	6.6	5.8		5.5	2.7	6.2		9.6
Green Ext Time (p_c), s	0.5	6.8		2.0	0.0	7.1		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	12.9
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
4: Canada Valley Road & Laurel Road

10/26/2015

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	423	48	203	600	102	219
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	460	52	221	652	111	120
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1223	138	298	2312	229	204
Arrive On Green	0.39	0.39	0.17	0.66	0.13	0.13
Sat Flow, veh/h	3269	358	1757	3597	1757	1568
Grp Volume(v), veh/h	253	259	221	652	111	120
Grp Sat Flow(s),veh/h/ln	1752	1782	1757	1752	1757	1568
Q Serve(g_s), s	3.9	4.0	4.5	3.0	2.2	2.7
Cycle Q Clear(g_c), s	3.9	4.0	4.5	3.0	2.2	2.7
Prop In Lane		0.20	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	675	686	298	2312	229	204
V/C Ratio(X)	0.37	0.38	0.74	0.28	0.49	0.59
Avail Cap(c_a), veh/h	1473	1498	1200	5710	1385	1236
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.4	8.4	15.0	2.7	15.4	15.6
Incr Delay (d2), s/veh	0.3	0.3	3.7	0.1	1.6	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	2.0	2.5	1.4	1.2	1.3
LnGrp Delay(d),s/veh	8.8	8.8	18.7	2.8	17.0	18.3
LnGrp LOS	A	A	B	A	B	B
Approach Vol, veh/h	512			873	231	
Approach Delay, s/veh	8.8			6.8	17.6	
Approach LOS	A			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		9.0	10.4	18.7				29.1
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		30.0	26.0	32.0				62.0
Max Q Clear Time (g_c+I1), s		4.7	6.5	6.0				5.0
Green Ext Time (p_c), s		0.7	0.6	8.7				10.2

Intersection Summary	
HCM 2010 Ctrl Delay	9.0
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
5: SR 4 EB On-Ramps/SR 4 EB Off-Ramps & Laurel Road

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	625	49	0	969	360	0	0	0	896	2	444
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1900				1845	1845	1845
Adj Flow Rate, veh/h	0	679	53	0	1053	0				975	0	483
Adj No. of Lanes	0	2	0	0	2	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	0	3	3				3	3	3
Cap, veh/h	0	1619	126	0	1722	0				1375	0	614
Arrive On Green	0.00	0.49	0.49	0.00	0.49	0.00				0.39	0.00	0.39
Sat Flow, veh/h	0	3387	257	0	3689	0				3514	0	1568
Grp Volume(v), veh/h	0	361	371	0	1053	0				975	0	483
Grp Sat Flow(s),veh/h/ln	0	1752	1799	0	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	9.0	9.0	0.0	14.9	0.0				16.0	0.0	18.5
Cycle Q Clear(g_c), s	0.0	9.0	9.0	0.0	14.9	0.0				16.0	0.0	18.5
Prop In Lane	0.00		0.14	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	861	884	0	1722	0				1375	0	614
V/C Ratio(X)	0.00	0.42	0.42	0.00	0.61	0.00				0.71	0.00	0.79
Avail Cap(c_a), veh/h	0	1284	1318	0	2568	0				2162	0	965
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	11.1	11.1	0.0	12.6	0.0				17.5	0.0	18.3
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.0	0.4	0.0				0.7	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.4	4.5	0.0	7.3	0.0				7.8	0.0	8.3
LnGrp Delay(d),s/veh	0.0	11.4	11.4	0.0	13.0	0.0				18.2	0.0	20.6
LnGrp LOS		B	B		B					B		C
Approach Vol, veh/h		732			1053						1458	
Approach Delay, s/veh		11.4			13.0						19.0	
Approach LOS		B			B						B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				37.5		30.7		37.5
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				50.0		42.0		50.0
Max Q Clear Time (g_c+I1), s				11.0		20.5		16.9
Green Ext Time (p_c), s				17.9		6.2		16.6

Intersection Summary	
HCM 2010 Ctrl Delay	15.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
6: SR 4 WB Off-Ramps/SR 4 WB On-Ramps & Laurel Road

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	114	1406	0	0	1276	465	140	0	497	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	124	1528	0	0	1387	0	152	0	540			
Adj No. of Lanes	1	2	0	0	2	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	146	1924	0	0	1488	666	646	0	577			
Arrive On Green	0.08	0.55	0.00	0.00	0.42	0.00	0.37	0.00	0.37			
Sat Flow, veh/h	1757	3597	0	0	3597	1568	1757	0	1568			
Grp Volume(v), veh/h	124	1528	0	0	1387	0	152	0	540			
Grp Sat Flow(s),veh/h/ln	1757	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	6.7	33.6	0.0	0.0	36.3	0.0	5.8	0.0	32.0			
Cycle Q Clear(g_c), s	6.7	33.6	0.0	0.0	36.3	0.0	5.8	0.0	32.0			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	146	1924	0	0	1488	666	646	0	577			
V/C Ratio(X)	0.85	0.79	0.00	0.00	0.93	0.00	0.24	0.00	0.94			
Avail Cap(c_a), veh/h	146	1927	0	0	1491	667	711	0	634			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	43.6	17.4	0.0	0.0	26.4	0.0	21.1	0.0	29.4			
Incr Delay (d2), s/veh	35.3	2.4	0.0	0.0	10.9	0.0	0.2	0.0	20.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.7	16.8	0.0	0.0	19.8	0.0	2.8	0.0	17.1			
LnGrp Delay(d),s/veh	78.9	19.7	0.0	0.0	37.3	0.0	21.3	0.0	49.8			
LnGrp LOS	E	B			D		C		D			
Approach Vol, veh/h		1652			1387			692				
Approach Delay, s/veh		24.2			37.3			43.6				
Approach LOS		C			D			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		39.5		56.9			12.0	44.9
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		39.0		53.0			8.0	41.0
Max Q Clear Time (g_c+I1), s		34.0		35.6			8.7	38.3
Green Ext Time (p_c), s		1.5		15.9			0.0	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	32.7
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
7: SR 4 EB On-ramps/SR 4 EB Off-Ramps & Lone Tree Way

10/26/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1420	497	120	1391	0	0	0	0	461	2	374
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1495	523	126	1464	0				486	0	394
Adj No. of Lanes	0	3	1	2	3	0				2	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	2469	769	200	3017	0				1056	0	471
Arrive On Green	0.00	0.49	0.49	0.06	0.60	0.00				0.30	0.00	0.30
Sat Flow, veh/h	0	5202	1568	3408	5202	0				3514	0	1568
Grp Volume(v), veh/h	0	1495	523	126	1464	0				486	0	394
Grp Sat Flow(s),veh/h/ln	0	1679	1568	1704	1679	0				1757	0	1568
Q Serve(g_s), s	0.0	17.1	20.3	2.9	13.1	0.0				8.9	0.0	18.7
Cycle Q Clear(g_c), s	0.0	17.1	20.3	2.9	13.1	0.0				8.9	0.0	18.7
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2469	769	200	3017	0				1056	0	471
V/C Ratio(X)	0.00	0.61	0.68	0.63	0.49	0.00				0.46	0.00	0.84
Avail Cap(c_a), veh/h	0	2529	788	342	3288	0				1765	0	788
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.7	15.5	36.6	9.0	0.0				22.6	0.0	26.0
Incr Delay (d2), s/veh	0.0	0.4	2.3	3.3	0.1	0.0				0.3	0.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.0	9.2	1.4	6.0	0.0				4.4	0.0	8.6
LnGrp Delay(d),s/veh	0.0	15.1	17.8	39.9	9.1	0.0				22.9	0.0	30.0
LnGrp LOS		B	B	D	A					C		C
Approach Vol, veh/h		2018			1590						880	
Approach Delay, s/veh		15.8			11.6						26.1	
Approach LOS		B			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			8.7	43.0		27.9		51.7
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			8.0	40.0		40.0		52.0
Max Q Clear Time (g_c+I1), s			4.9	22.3		20.7		15.1
Green Ext Time (p_c), s			0.1	16.6		3.2		32.6

Intersection Summary	
HCM 2010 Ctrl Delay	16.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
8: Jefferey Way /SR 4 WB On-Ramps & Lone Tree Way

10/26/2015

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	0	1616	285	20	5	990	384	539	29	189	0	0
Number	7	4	14		3	8	18	5	2	12		
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00		
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	0	1845	1845		1845	1845	1845	1845	1845	1845		
Adj Flow Rate, veh/h	0	1701	153		5	1042	404	589	0	197		
Adj No. of Lanes	0	3	1		1	3	1	2	0	1		
Peak Hour Factor	0.95	0.95	0.95		0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	0	3	3		3	3	3	3	3	3		
Cap, veh/h	0	3027	943		9	3338	1039	788	0	352		
Arrive On Green	0.00	0.60	0.60		0.01	0.66	0.66	0.22	0.00	0.22		
Sat Flow, veh/h	0	5202	1568		1757	5036	1568	3514	0	1568		
Grp Volume(v), veh/h	0	1701	153		5	1042	404	589	0	197		
Grp Sat Flow(s),veh/h/ln	0	1679	1568		1757	1679	1568	1757	0	1568		
Q Serve(g_s), s	0.0	14.4	3.1		0.2	6.2	8.3	11.1	0.0	7.9		
Cycle Q Clear(g_c), s	0.0	14.4	3.1		0.2	6.2	8.3	11.1	0.0	7.9		
Prop In Lane	0.00		1.00		1.00		1.00	1.00		1.00		
Lane Grp Cap(c), veh/h	0	3027	943		9	3338	1039	788	0	352		
V/C Ratio(X)	0.00	0.56	0.16		0.54	0.31	0.39	0.75	0.00	0.56		
Avail Cap(c_a), veh/h	0	3408	1061		149	4117	1282	1684	0	752		
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	0.0	8.5	6.3		35.2	5.1	5.4	25.6	0.0	24.4		
Incr Delay (d2), s/veh	0.0	0.2	0.1		40.7	0.1	0.2	1.4	0.0	1.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	6.7	1.3		0.2	2.9	3.5	5.5	0.0	3.5		
LnGrp Delay(d),s/veh	0.0	8.7	6.3		75.9	5.1	5.7	27.1	0.0	25.8		
LnGrp LOS		A	A		E	A	A	C		C		
Approach Vol, veh/h		1854				1451			786			
Approach Delay, s/veh		8.5				5.5			26.8			
Approach LOS		A				A			C			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		19.9	4.4	46.6				51.0
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		34.0	6.0	48.0				58.0
Max Q Clear Time (g_c+I1), s		13.1	2.2	16.4				10.3
Green Ext Time (p_c), s		2.8	0.0	26.2				36.5

Intersection Summary	
HCM 2010 Ctrl Delay	10.9
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
8: Jefferey Way /SR 4 WB On-Ramps & Lone Tree Way

10/26/2015

Movement	SBR
Lane Configurations	
Volume (veh/h)	0
Number	
Initial Q (Qb), veh	
Ped-Bike Adj(A_pbT)	
Parking Bus, Adj	
Adj Sat Flow, veh/h/ln	
Adj Flow Rate, veh/h	
Adj No. of Lanes	
Peak Hour Factor	
Percent Heavy Veh, %	
Cap, veh/h	
Arrive On Green	
Sat Flow, veh/h	
Grp Volume(v), veh/h	
Grp Sat Flow(s),veh/h/ln	
Q Serve(g_s), s	
Cycle Q Clear(g_c), s	
Prop In Lane	
Lane Grp Cap(c), veh/h	
V/C Ratio(X)	
Avail Cap(c_a), veh/h	
HCM Platoon Ratio	
Upstream Filter(I)	
Uniform Delay (d), s/veh	
Incr Delay (d2), s/veh	
Initial Q Delay(d3),s/veh	
%ile BackOfQ(50%),veh/ln	
LnGrp Delay(d),s/veh	
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer

User approved ignoring U-Turning movement.

HCM 2010 Signalized Intersection Summary
9: Empire Avenue & Lone Tree Way

10/26/2015

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (veh/h)	101	240	815	95	90	757	157	16	94	94	37	59
Number		7	4	14	3	8	18		5	2	12	
Initial Q (Qb), veh		0	0	0	0	0	0		0	0	0	
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00		1.00		1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln		1845	1845	1845	1845	1845	1845		1845	1845	1845	
Adj Flow Rate, veh/h		253	858	58	95	797	112		99	99	22	
Adj No. of Lanes		1	3	1	1	3	1		2	1	1	
Peak Hour Factor		0.95	0.95	0.95	0.95	0.95	0.95		0.95	0.95	0.95	
Percent Heavy Veh, %		3	3	3	3	3	3		3	3	3	
Cap, veh/h		318	2076	646	123	1517	472		189	236	201	
Arrive On Green		0.18	0.41	0.41	0.07	0.30	0.30		0.06	0.13	0.13	
Sat Flow, veh/h		1757	5036	1568	1757	5036	1568		3408	1845	1568	
Grp Volume(v), veh/h		253	858	58	95	797	112		99	99	22	
Grp Sat Flow(s),veh/h/ln		1757	1679	1568	1757	1679	1568		1704	1845	1568	
Q Serve(g_s), s		7.9	6.9	1.3	3.0	7.5	3.1		1.6	2.8	0.7	
Cycle Q Clear(g_c), s		7.9	6.9	1.3	3.0	7.5	3.1		1.6	2.8	0.7	
Prop In Lane		1.00		1.00	1.00		1.00		1.00		1.00	
Lane Grp Cap(c), veh/h		318	2076	646	123	1517	472		189	236	201	
V/C Ratio(X)		0.80	0.41	0.09	0.77	0.53	0.24		0.52	0.42	0.11	
Avail Cap(c_a), veh/h		950	3515	1094	368	1845	575		416	579	492	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Uniform Delay (d), s/veh		22.5	11.9	10.3	26.2	16.6	15.1		26.3	23.0	22.1	
Incr Delay (d2), s/veh		4.5	0.1	0.1	9.8	0.3	0.3		2.3	1.2	0.2	
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln		4.2	3.2	0.6	1.8	3.5	1.4		0.8	1.5	0.3	
LnGrp Delay(d),s/veh		27.0	12.1	10.3	36.0	16.9	15.3		28.6	24.2	22.3	
LnGrp LOS		C	B	B	D	B	B		C	C	C	
Approach Vol, veh/h			1169			1004				220		
Approach Delay, s/veh			15.2			18.5				26.0		
Approach LOS			B			B				C		

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	11.3	8.0	27.6	7.2	14.5	14.4	21.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	14.0	18.0	12.0	40.0	7.0	25.0	31.0	21.0
Max Q Clear Time (g_c+I1), s	6.0	4.8	5.0	8.9	3.6	8.0	9.9	9.5
Green Ext Time (p_c), s	0.5	2.3	0.1	14.3	0.1	2.5	0.7	7.7

Intersection Summary	
HCM 2010 Ctrl Delay	19.0
HCM 2010 LOS	B

Notes

User approved ignoring U-Turning movement.

HCM 2010 Signalized Intersection Summary
9: Empire Avenue & Lone Tree Way

10/26/2015

Movement	SBL	SBT	SBR
Lane Configurations			
Volume (veh/h)	234	194	155
Number	1	6	16
Initial Q (Qb), veh	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900
Adj Flow Rate, veh/h	246	204	163
Adj No. of Lanes	2	2	0
Peak Hour Factor	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3
Cap, veh/h	377	348	264
Arrive On Green	0.11	0.18	0.18
Sat Flow, veh/h	3408	1900	1443
Grp Volume(v), veh/h	246	187	180
Grp Sat Flow(s),veh/h/ln	1704	1752	1590
Q Serve(g_s), s	4.0	5.6	6.0
Cycle Q Clear(g_c), s	4.0	5.6	6.0
Prop In Lane	1.00		0.91
Lane Grp Cap(c), veh/h	377	321	291
V/C Ratio(X)	0.65	0.58	0.62
Avail Cap(c_a), veh/h	833	764	694
HCM Platoon Ratio	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.4	21.4	21.5
Incr Delay (d2), s/veh	1.9	1.7	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	2.9	2.8
LnGrp Delay(d),s/veh	26.4	23.1	23.7
LnGrp LOS	C	C	C
Approach Vol, veh/h		613	
Approach Delay, s/veh		24.6	
Approach LOS		C	

Timer

HCM 2010 Signalized Intersection Summary
10: Laurel Road & Country Hills Road

10/26/2015

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	24	619	1191	94	55	7
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1900	1845	1845
Adj Flow Rate, veh/h	26	673	1295	102	60	8
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	42	2822	2330	183	83	74
Arrive On Green	0.02	0.81	0.71	0.71	0.05	0.05
Sat Flow, veh/h	1757	3597	3385	259	1757	1568
Grp Volume(v), veh/h	26	673	688	709	60	8
Grp Sat Flow(s),veh/h/ln	1757	1752	1752	1799	1757	1568
Q Serve(g_s), s	0.8	2.5	10.2	10.3	1.8	0.3
Cycle Q Clear(g_c), s	0.8	2.5	10.2	10.3	1.8	0.3
Prop In Lane	1.00			0.14	1.00	1.00
Lane Grp Cap(c), veh/h	42	2822	1240	1273	83	74
V/C Ratio(X)	0.62	0.24	0.55	0.56	0.72	0.11
Avail Cap(c_a), veh/h	227	4974	2132	2188	486	433
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.2	1.3	3.8	3.8	25.5	24.8
Incr Delay (d2), s/veh	13.9	0.0	0.4	0.4	11.2	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.1	4.9	5.1	1.1	0.2
LnGrp Delay(d),s/veh	40.2	1.3	4.2	4.2	36.7	25.4
LnGrp LOS	D	A	A	A	D	C
Approach Vol, veh/h		699	1397		68	
Approach Delay, s/veh		2.8	4.2		35.4	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				47.7		6.6	5.3	42.4
Change Period (Y+Rc), s				4.0		4.0	4.0	4.0
Max Green Setting (Gmax), s				77.0		15.0	7.0	66.0
Max Q Clear Time (g_c+I1), s				4.5		3.8	2.8	12.3
Green Ext Time (p_c), s				29.2		0.1	0.0	26.1

Intersection Summary	
HCM 2010 Ctrl Delay	4.7
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary
2: Hillcrest Ave & SR 4 EB Ramps

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	0	137	0	0	0	0	1806	503	294	569	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845				0	1845	1900	1845	1845	0
Adj Flow Rate, veh/h	35	0	149				0	1963	547	320	618	0
Adj No. of Lanes	2	0	2				0	3	0	2	2	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3				0	3	3	3	3	0
Cap, veh/h	259	0	231				0	2636	702	406	2915	0
Arrive On Green	0.07	0.00	0.07				0.00	0.67	0.67	0.12	0.83	0.00
Sat Flow, veh/h	3514	0	3136				0	4127	1055	3408	3597	0
Grp Volume(v), veh/h	35	0	149				0	1650	860	320	618	0
Grp Sat Flow(s),veh/h/ln	1757	0	1568				0	1679	1659	1704	1752	0
Q Serve(g_s), s	0.8	0.0	3.9				0.0	27.4	30.5	7.7	3.0	0.0
Cycle Q Clear(g_c), s	0.8	0.0	3.9				0.0	27.4	30.5	7.7	3.0	0.0
Prop In Lane	1.00		1.00				0.00		0.64	1.00		0.00
Lane Grp Cap(c), veh/h	259	0	231				0	2234	1104	406	2915	0
V/C Ratio(X)	0.14	0.00	0.64				0.00	0.74	0.78	0.79	0.21	0.00
Avail Cap(c_a), veh/h	664	0	593				0	2339	1156	523	3146	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	36.7	0.0	38.1				0.0	9.3	9.8	36.3	1.5	0.0
Incr Delay (d2), s/veh	0.2	0.0	3.0				0.0	1.2	3.3	6.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	1.8				0.0	12.8	14.6	4.0	1.5	0.0
LnGrp Delay(d),s/veh	36.9	0.0	41.1				0.0	10.5	13.2	42.3	1.5	0.0
LnGrp LOS	D		D					B	B	D	A	
Approach Vol, veh/h		184						2510			938	
Approach Delay, s/veh		40.3						11.4			15.4	
Approach LOS		D						B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	14.1	60.3		10.2		74.4		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	13.0	59.0		16.0		76.0		
Max Q Clear Time (g_c+I1), s	9.7	32.5		5.9		5.0		
Green Ext Time (p_c), s	0.4	23.8		0.4		54.9		

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
3: Hillcrest Ave & Laurel Road

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	121	90	85	366	80	252	98	1191	531	436	1094	145
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	132	98	92	398	87	138	107	1295	0	474	1189	158
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	354	248	232	299	521	443	134	1419	0	337	1619	214
Arrive On Green	0.28	0.28	0.28	0.28	0.28	0.28	0.08	0.40	0.00	0.19	0.52	0.52
Sat Flow, veh/h	1140	877	823	1177	1845	1568	1757	3597	0	1757	3112	412
Grp Volume(v), veh/h	132	0	190	398	87	138	107	1295	0	474	668	679
Grp Sat Flow(s),veh/h/ln	1140	0	1699	1177	1845	1568	1757	1752	0	1757	1752	1772
Q Serve(g_s), s	9.8	0.0	9.0	19.0	3.5	6.9	5.9	34.6	0.0	19.0	29.3	29.6
Cycle Q Clear(g_c), s	13.3	0.0	9.0	28.0	3.5	6.9	5.9	34.6	0.0	19.0	29.3	29.6
Prop In Lane	1.00		0.48	1.00		1.00	1.00		0.00	1.00		0.23
Lane Grp Cap(c), veh/h	354	0	480	299	521	443	134	1419	0	337	912	922
V/C Ratio(X)	0.37	0.00	0.40	1.33	0.17	0.31	0.80	0.91	0.00	1.41	0.73	0.74
Avail Cap(c_a), veh/h	354	0	480	299	521	443	160	1450	0	337	912	922
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.8	0.0	28.7	42.4	26.8	28.0	45.0	27.8	0.0	40.1	18.4	18.5
Incr Delay (d2), s/veh	0.7	0.0	0.5	170.6	0.1	0.4	21.1	9.0	0.0	200.3	3.1	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	4.3	22.3	1.8	3.0	3.7	18.3	0.0	27.9	14.9	15.1
LnGrp Delay(d),s/veh	32.4	0.0	29.3	212.9	26.9	28.4	66.2	36.9	0.0	240.3	21.5	21.6
LnGrp LOS	C		C	F	C	C	E	D		F	C	C
Approach Vol, veh/h		322			623			1402			1821	
Approach Delay, s/veh		30.6			146.1			39.1			78.5	
Approach LOS		C			F			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	23.0	44.1		32.0	11.5	55.6		32.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	19.0	41.0		28.0	9.0	51.0		28.0
Max Q Clear Time (g_c+I1), s	21.0	36.6		15.3	7.9	31.6		30.0
Green Ext Time (p_c), s	0.0	3.5		3.7	0.0	16.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	71.6
HCM 2010 LOS	E

HCM 2010 Signalized Intersection Summary
4: Canada Valley Road & Laurel Road

10/27/2015

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	1041	117	314	782	154	369
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	1132	127	341	850	167	201
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	1488	167	389	2594	280	250
Arrive On Green	0.47	0.47	0.22	0.74	0.16	0.16
Sat Flow, veh/h	3271	356	1757	3597	1757	1568
Grp Volume(v), veh/h	623	636	341	850	167	201
Grp Sat Flow(s),veh/h/ln	1752	1782	1757	1752	1757	1568
Q Serve(g_s), s	23.3	23.4	14.9	6.6	7.0	9.8
Cycle Q Clear(g_c), s	23.3	23.4	14.9	6.6	7.0	9.8
Prop In Lane		0.20	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	820	834	389	2594	280	250
V/C Ratio(X)	0.76	0.76	0.88	0.33	0.60	0.81
Avail Cap(c_a), veh/h	904	920	575	3133	464	415
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.4	17.5	29.9	3.5	31.0	32.2
Incr Delay (d2), s/veh	3.4	3.5	10.0	0.1	2.0	6.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.0	12.3	8.3	3.2	3.5	4.6
LnGrp Delay(d),s/veh	20.9	20.9	39.9	3.6	33.1	38.2
LnGrp LOS	C	C	D	A	C	D
Approach Vol, veh/h	1259			1191	368	
Approach Delay, s/veh	20.9			14.0	35.9	
Approach LOS	C			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		16.6	21.6	41.2				62.8
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		21.0	26.0	41.0				71.0
Max Q Clear Time (g_c+I1), s		11.8	16.9	25.4				8.6
Green Ext Time (p_c), s		0.8	0.7	11.8				27.5

Intersection Summary	
HCM 2010 Ctrl Delay	19.9
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
5: SR 4 EB On-Ramps/SR 4 EB Off-Ramps & Laurel Road

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1363	122	0	575	100	0	0	0	830	0	342
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1900				1845	1845	1845
Adj Flow Rate, veh/h	0	1482	133	0	625	0				902	0	372
Adj No. of Lanes	0	2	0	0	2	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	0	3	3				3	3	3
Cap, veh/h	0	1888	168	0	2033	0				1129	0	504
Arrive On Green	0.00	0.58	0.58	0.00	0.58	0.00				0.32	0.00	0.32
Sat Flow, veh/h	0	3348	290	0	3689	0				3514	0	1568
Grp Volume(v), veh/h	0	793	822	0	625	0				902	0	372
Grp Sat Flow(s),veh/h/ln	0	1752	1793	0	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	28.2	28.8	0.0	7.4	0.0				19.0	0.0	17.1
Cycle Q Clear(g_c), s	0.0	28.2	28.8	0.0	7.4	0.0				19.0	0.0	17.1
Prop In Lane	0.00		0.16	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1016	1040	0	2033	0				1129	0	504
V/C Ratio(X)	0.00	0.78	0.79	0.00	0.31	0.00				0.80	0.00	0.74
Avail Cap(c_a), veh/h	0	1124	1150	0	2248	0				1733	0	774
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	13.1	13.2	0.0	8.7	0.0				25.1	0.0	24.5
Incr Delay (d2), s/veh	0.0	3.3	3.5	0.0	0.1	0.0				1.5	0.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	14.4	15.2	0.0	3.6	0.0				9.4	0.0	7.6
LnGrp Delay(d),s/veh	0.0	16.4	16.7	0.0	8.8	0.0				26.7	0.0	26.6
LnGrp LOS		B	B		A					C		C
Approach Vol, veh/h		1615			625						1274	
Approach Delay, s/veh		16.5			8.8						26.6	
Approach LOS		B			A						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				51.0		30.1		51.0
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				52.0		40.0		52.0
Max Q Clear Time (g_c+I1), s				30.8		21.0		9.4
Green Ext Time (p_c), s				16.2		5.1		26.6

Intersection Summary	
HCM 2010 Ctrl Delay	18.8
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
6: SR 4 WB Off-Ramps/SR 4 WB On-Ramps & Laurel Road

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	654	1475	0	0	728	310	38	0	109	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	711	1603	0	0	791	0	41	0	118			
Adj No. of Lanes	1	2	0	0	2	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	766	2806	0	0	1103	494	175	0	156			
Arrive On Green	0.44	0.80	0.00	0.00	0.31	0.00	0.10	0.00	0.10			
Sat Flow, veh/h	1757	3597	0	0	3597	1568	1757	0	1568			
Grp Volume(v), veh/h	711	1603	0	0	791	0	41	0	118			
Grp Sat Flow(s),veh/h/ln	1757	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	30.7	13.5	0.0	0.0	16.0	0.0	1.7	0.0	5.9			
Cycle Q Clear(g_c), s	30.7	13.5	0.0	0.0	16.0	0.0	1.7	0.0	5.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	766	2806	0	0	1103	494	175	0	156			
V/C Ratio(X)	0.93	0.57	0.00	0.00	0.72	0.00	0.23	0.00	0.76			
Avail Cap(c_a), veh/h	987	3281	0	0	1137	509	373	0	333			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	21.4	2.9	0.0	0.0	24.3	0.0	33.3	0.0	35.1			
Incr Delay (d2), s/veh	12.4	0.2	0.0	0.0	2.1	0.0	0.7	0.0	7.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	17.4	6.3	0.0	0.0	8.0	0.0	0.9	0.0	2.8			
LnGrp Delay(d),s/veh	33.8	3.1	0.0	0.0	26.4	0.0	33.9	0.0	42.4			
LnGrp LOS	C	A			C		C		D			
Approach Vol, veh/h		2314			791			159				
Approach Delay, s/veh		12.5			26.4			40.2				
Approach LOS		B			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		12.0		68.1			38.9	29.2
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		17.0		75.0			45.0	26.0
Max Q Clear Time (g_c+I1), s		7.9		15.5			32.7	18.0
Green Ext Time (p_c), s		0.3		36.5			2.2	7.2

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B

HCM 2010 Signalized Intersection Summary
7: SR 4 EB On-ramps/SR 4 EB Off-Ramps & Lone Tree Way

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1336	469	242	1648	0	0	0	0	762	12	473
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1452	510	263	1791	0				837	0	514
Adj No. of Lanes	0	2	2	2	3	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1560	1228	276	2854	0				1238	0	552
Arrive On Green	0.00	0.45	0.45	0.08	0.57	0.00				0.35	0.00	0.35
Sat Flow, veh/h	0	3597	2760	3408	5202	0				3514	0	1568
Grp Volume(v), veh/h	0	1452	510	263	1791	0				837	0	514
Grp Sat Flow(s),veh/h/ln	0	1752	1380	1704	1679	0				1757	0	1568
Q Serve(g_s), s	0.0	38.8	12.4	7.6	23.6	0.0				20.0	0.0	31.2
Cycle Q Clear(g_c), s	0.0	38.8	12.4	7.6	23.6	0.0				20.0	0.0	31.2
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1560	1228	276	2854	0				1238	0	552
V/C Ratio(X)	0.00	0.93	0.42	0.95	0.63	0.00				0.68	0.00	0.93
Avail Cap(c_a), veh/h	0	1562	1230	276	2856	0				1281	0	572
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	26.0	18.6	45.2	14.4	0.0				27.2	0.0	30.8
Incr Delay (d2), s/veh	0.0	10.3	0.2	41.3	0.4	0.0				1.4	0.0	21.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	20.8	4.7	5.1	10.9	0.0				9.9	0.0	16.7
LnGrp Delay(d),s/veh	0.0	36.3	18.9	86.5	14.8	0.0				28.6	0.0	52.5
LnGrp LOS		D	B	F	B					C		D
Approach Vol, veh/h		1962			2054						1351	
Approach Delay, s/veh		31.8			24.0						37.7	
Approach LOS		C			C						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			12.0	48.0		38.8		60.0
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			8.0	44.0		36.0		56.0
Max Q Clear Time (g_c+I1), s			9.6	40.8		33.2		25.6
Green Ext Time (p_c), s			0.0	3.2		1.6		28.5

Intersection Summary	
HCM 2010 Ctrl Delay	30.3
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1483	607	42	1531	356	355	27	322	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	1845	1845	1845	1845			
Adj Flow Rate, veh/h	0	1612	443	46	1664	387	407	0	323			
Adj No. of Lanes	0	3	1	1	3	1	2	0	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	3	3	3	3	3	3	3	3			
Cap, veh/h	0	2959	921	59	3382	1053	797	0	356			
Arrive On Green	0.00	0.59	0.59	0.03	0.67	0.67	0.23	0.00	0.23			
Sat Flow, veh/h	0	5202	1568	1757	5036	1568	3514	0	1568			
Grp Volume(v), veh/h	0	1612	443	46	1664	387	407	0	323			
Grp Sat Flow(s),veh/h/ln	0	1679	1568	1757	1679	1568	1757	0	1568			
Q Serve(g_s), s	0.0	15.3	12.8	2.0	12.8	8.5	8.0	0.0	15.8			
Cycle Q Clear(g_c), s	0.0	15.3	12.8	2.0	12.8	8.5	8.0	0.0	15.8			
Prop In Lane	0.00		1.00	1.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2959	921	59	3382	1053	797	0	356			
V/C Ratio(X)	0.00	0.54	0.48	0.79	0.49	0.37	0.51	0.00	0.91			
Avail Cap(c_a), veh/h	0	2959	921	825	4728	1472	802	0	358			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	9.9	9.3	37.8	6.3	5.6	26.6	0.0	29.7			
Incr Delay (d2), s/veh	0.0	0.2	0.4	20.1	0.1	0.2	0.5	0.0	26.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	7.1	5.6	1.3	5.9	3.7	3.9	0.0	9.4			
LnGrp Delay(d),s/veh	0.0	10.1	9.7	57.9	6.5	5.9	27.2	0.0	55.7			
LnGrp LOS		B	A	E	A	A	C		E			
Approach Vol, veh/h		2055			2097			730				
Approach Delay, s/veh		10.0			7.5			39.8				
Approach LOS		A			A			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		21.9	6.6	50.3				56.9
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		18.0	37.0	33.0				74.0
Max Q Clear Time (g_c+I1), s		17.8	4.0	17.3				14.8
Green Ext Time (p_c), s		0.1	0.1	15.0				38.2

Intersection Summary	
HCM 2010 Ctrl Delay	13.4
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
8: Jefferey Way /SR 4 WB On-Ramps & Lone Tree Way 10/27/2015

User approved ignoring U-Turning movement.

Laurel Ranch Traffic Impact Analysis Synchro 8 Report
AM Cumulative Plus Prj Cond Alt Access 1

HCM 2010 Signalized Intersection Summary
9: Empire Avenue & Lone Tree Way

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	120	1095	77	207	1511	144	164	92	128	37	81	87
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1845	1900
Adj Flow Rate, veh/h	130	1190	48	225	1642	117	178	100	114	40	88	95
Adj No. of Lanes	1	3	1	1	3	1	2	1	1	2	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	172	2012	627	279	2320	722	267	292	249	109	196	175
Arrive On Green	0.10	0.40	0.40	0.16	0.46	0.46	0.08	0.16	0.16	0.03	0.11	0.11
Sat Flow, veh/h	1757	5036	1568	1757	5036	1568	3408	1845	1568	3408	1752	1568
Grp Volume(v), veh/h	130	1190	48	225	1642	117	178	100	114	40	88	95
Grp Sat Flow(s),veh/h/ln	1757	1679	1568	1757	1679	1568	1704	1845	1568	1704	1752	1568
Q Serve(g_s), s	4.6	11.8	1.2	7.9	16.6	2.8	3.2	3.1	4.2	0.7	3.0	3.6
Cycle Q Clear(g_c), s	4.6	11.8	1.2	7.9	16.6	2.8	3.2	3.1	4.2	0.7	3.0	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	172	2012	627	279	2320	722	267	292	249	109	196	175
V/C Ratio(X)	0.76	0.59	0.08	0.81	0.71	0.16	0.67	0.34	0.46	0.37	0.45	0.54
Avail Cap(c_a), veh/h	1103	3240	1009	579	2320	722	267	521	443	214	467	418
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.0	15.0	11.8	25.9	13.8	10.0	28.5	23.9	24.3	30.2	26.5	26.7
Incr Delay (d2), s/veh	6.6	0.3	0.1	5.4	1.0	0.1	6.1	0.7	1.3	2.1	1.6	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	5.5	0.5	4.2	7.8	1.2	1.7	1.6	1.9	0.4	1.5	1.7
LnGrp Delay(d),s/veh	34.6	15.3	11.9	31.3	14.8	10.1	34.7	24.5	25.6	32.3	28.1	29.3
LnGrp LOS	C	B	B	C	B	B	C	C	C	C	C	C
Approach Vol, veh/h		1368			1984			392			223	
Approach Delay, s/veh		17.0			16.4			29.5			29.4	
Approach LOS		B			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	14.1	14.1	29.5	9.0	11.1	10.2	33.4
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.0	18.0	21.0	41.0	5.0	17.0	40.0	22.0
Max Q Clear Time (g_c+I1), s	2.7	6.2	9.9	13.8	5.2	5.6	6.6	18.6
Green Ext Time (p_c), s	0.0	1.5	0.4	11.6	0.0	1.5	0.3	3.2

Intersection Summary	
HCM 2010 Ctrl Delay	18.6
HCM 2010 LOS	B

Notes

User approved ignoring U-Turning movement.

HCM 2010 Signalized Intersection Summary
10: Country Hills Road & Laurel Road

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	7	905	420	127	843	29	160	0	330	84	0	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	8	984	457	138	916	32	174	0	359	91	0	9
Adj No. of Lanes	1	2	0	2	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	14	1073	489	202	1760	61	207	0	390	115	0	308
Arrive On Green	0.01	0.46	0.46	0.06	0.51	0.51	0.12	0.00	0.25	0.07	0.00	0.20
Sat Flow, veh/h	1757	2341	1068	3408	3455	121	1757	0	1568	1757	0	1568
Grp Volume(v), veh/h	8	732	709	138	465	483	174	0	359	91	0	9
Grp Sat Flow(s),veh/h/ln	1757	1752	1656	1704	1752	1823	1757	0	1568	1757	0	1568
Q Serve(g_s), s	0.4	37.0	38.6	3.8	16.8	16.8	9.2	0.0	21.2	4.9	0.0	0.4
Cycle Q Clear(g_c), s	0.4	37.0	38.6	3.8	16.8	16.8	9.2	0.0	21.2	4.9	0.0	0.4
Prop In Lane	1.00		0.64	1.00		0.07	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	14	803	759	202	893	929	207	0	390	115	0	308
V/C Ratio(X)	0.57	0.91	0.93	0.68	0.52	0.52	0.84	0.00	0.92	0.79	0.00	0.03
Avail Cap(c_a), veh/h	74	829	783	215	893	929	240	0	412	148	0	330
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.0	24.0	24.4	43.9	15.6	15.6	41.1	0.0	34.8	43.8	0.0	30.9
Incr Delay (d2), s/veh	31.3	14.0	17.8	8.0	0.5	0.5	20.5	0.0	25.2	19.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	20.8	21.3	2.0	8.3	8.6	5.7	0.0	11.9	3.0	0.0	0.2
LnGrp Delay(d),s/veh	78.4	38.0	42.2	51.9	16.1	16.1	61.6	0.0	60.0	63.0	0.0	30.9
LnGrp LOS	E	D	D	D	B	B	E		E	E		C
Approach Vol, veh/h		1449			1086			533			100	
Approach Delay, s/veh		40.3			20.7			60.5			60.1	
Approach LOS		D			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	27.7	9.6	47.6	15.2	22.7	4.8	52.5
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	8.0	25.0	6.0	45.0	13.0	20.0	4.0	47.0
Max Q Clear Time (g_c+I1), s	6.9	23.2	5.8	40.6	11.2	2.4	2.4	18.8
Green Ext Time (p_c), s	0.0	0.4	0.0	3.0	0.1	2.3	0.0	18.9

Intersection Summary	
HCM 2010 Ctrl Delay	37.6
HCM 2010 LOS	D

HCM 2010 Signalized Intersection Summary
11: Slatten Ranch Road & Laurel Road

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	188	1071	643	263	785	355	421	208	120	123	180	51
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	204	1164	356	286	853	386	458	226	130	134	196	55
Adj No. of Lanes	1	3	1	1	3	0	2	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	242	1713	533	327	1320	595	547	412	228	169	339	93
Arrive On Green	0.14	0.34	0.34	0.19	0.39	0.39	0.16	0.19	0.19	0.10	0.12	0.12
Sat Flow, veh/h	1757	5036	1568	1757	3399	1533	3408	2178	1206	1757	2721	744
Grp Volume(v), veh/h	204	1164	356	286	843	396	458	180	176	134	124	127
Grp Sat Flow(s),veh/h/ln	1757	1679	1568	1757	1679	1574	1704	1752	1632	1757	1752	1713
Q Serve(g_s), s	9.6	16.8	16.4	13.4	17.4	17.4	11.0	7.9	8.3	6.3	5.7	5.9
Cycle Q Clear(g_c), s	9.6	16.8	16.4	13.4	17.4	17.4	11.0	7.9	8.3	6.3	5.7	5.9
Prop In Lane	1.00		1.00	1.00		0.97	1.00		0.74	1.00		0.43
Lane Grp Cap(c), veh/h	242	1713	533	327	1303	611	547	331	308	169	218	214
V/C Ratio(X)	0.84	0.68	0.67	0.88	0.65	0.65	0.84	0.54	0.57	0.80	0.57	0.59
Avail Cap(c_a), veh/h	311	1784	555	415	1387	651	644	393	366	311	372	364
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.6	24.0	23.9	33.5	21.2	21.2	34.5	31.0	31.2	37.5	34.9	35.0
Incr Delay (d2), s/veh	15.1	1.0	2.9	15.5	1.0	2.1	8.4	1.4	1.7	8.2	2.3	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	7.9	7.5	7.9	8.1	8.0	5.9	3.9	3.9	3.4	2.9	3.0
LnGrp Delay(d),s/veh	50.7	25.0	26.8	49.0	22.1	23.3	42.9	32.4	32.9	45.7	37.3	37.7
LnGrp LOS	D	C	C	D	C	C	D	C	C	D	D	D
Approach Vol, veh/h		1724			1525			814			385	
Approach Delay, s/veh		28.4			27.5			38.4			40.3	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	20.0	19.8	32.8	17.6	14.6	15.7	36.9
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	15.0	19.0	20.0	30.0	16.0	18.0	15.0	35.0
Max Q Clear Time (g_c+I1), s	8.3	10.3	15.4	18.8	13.0	7.9	11.6	19.4
Green Ext Time (p_c), s	0.2	2.4	0.4	10.0	0.5	2.6	0.2	13.4

Intersection Summary	
HCM 2010 Ctrl Delay	30.9
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
2: Hillcrest Ave & SR 4 EB Ramps

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	312	0	1197	0	0	0	0	553	571	328	967	0
Number	7	4	14				5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845				0	1845	1900	1845	1845	0
Adj Flow Rate, veh/h	328	0	1260				0	582	601	345	1018	0
Adj No. of Lanes	2	0	2				0	3	0	2	2	0
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3				0	3	3	3	3	0
Cap, veh/h	1601	0	1429				0	966	451	422	1597	0
Arrive On Green	0.46	0.00	0.46				0.00	0.29	0.29	0.12	0.46	0.00
Sat Flow, veh/h	3514	0	3136				0	3523	1568	3408	3597	0
Grp Volume(v), veh/h	328	0	1260				0	582	601	345	1018	0
Grp Sat Flow(s),veh/h/ln	1757	0	1568				0	1679	1568	1704	1752	0
Q Serve(g_s), s	5.1	0.0	33.0				0.0	13.5	26.0	8.9	20.1	0.0
Cycle Q Clear(g_c), s	5.1	0.0	33.0				0.0	13.5	26.0	8.9	20.1	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	1601	0	1429				0	966	451	422	1597	0
V/C Ratio(X)	0.20	0.00	0.88				0.00	0.60	1.33	0.82	0.64	0.00
Avail Cap(c_a), veh/h	1905	0	1700				0	966	451	490	1668	0
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	14.8	0.0	22.4				0.0	27.7	32.2	38.6	18.9	0.0
Incr Delay (d2), s/veh	0.1	0.0	5.1				0.0	1.1	164.1	9.2	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	0.0	15.2				0.0	6.4	31.7	4.8	9.8	0.0
LnGrp Delay(d),s/veh	14.8	0.0	27.5				0.0	28.8	196.3	47.8	19.6	0.0
LnGrp LOS	B		C					C	F	D	B	
Approach Vol, veh/h		1588						1183			1363	
Approach Delay, s/veh		24.9						113.9			26.8	
Approach LOS		C						F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	15.2	30.0		45.2		45.2		
Change Period (Y+Rc), s	4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s	13.0	26.0		49.0		43.0		
Max Q Clear Time (g_c+I1), s	10.9	28.0		35.0		22.1		
Green Ext Time (p_c), s	0.3	0.0		6.1		15.3		

Intersection Summary	
HCM 2010 Ctrl Delay	51.0
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
3: Hillcrest Ave & Laurel Road

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	208	115	157	497	307	285	120	1405	418	327	1111	288
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	219	121	165	523	323	153	126	1479	0	344	1169	303
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	297	269	367	344	701	596	123	1332	0	211	1188	305
Arrive On Green	0.38	0.38	0.38	0.38	0.38	0.38	0.07	0.38	0.00	0.12	0.43	0.43
Sat Flow, veh/h	906	708	966	1078	1845	1568	1757	3597	0	1757	2764	708
Grp Volume(v), veh/h	219	0	286	523	323	153	126	1479	0	344	736	736
Grp Sat Flow(s),veh/h/ln	906	0	1674	1078	1845	1568	1757	1752	0	1757	1752	1720
Q Serve(g_s), s	24.0	0.0	12.8	25.2	13.2	6.7	7.0	38.0	0.0	12.0	41.3	42.6
Cycle Q Clear(g_c), s	37.1	0.0	12.8	38.0	13.2	6.7	7.0	38.0	0.0	12.0	41.3	42.6
Prop In Lane	1.00		0.58	1.00		1.00	1.00		0.00	1.00		0.41
Lane Grp Cap(c), veh/h	297	0	636	344	701	596	123	1332	0	211	754	739
V/C Ratio(X)	0.74	0.00	0.45	1.52	0.46	0.26	1.02	1.11	0.00	1.63	0.98	0.99
Avail Cap(c_a), veh/h	297	0	636	344	701	596	123	1332	0	211	754	739
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.3	0.0	23.2	40.0	23.3	21.3	46.5	31.0	0.0	44.0	28.0	28.4
Incr Delay (d2), s/veh	9.3	0.0	0.5	248.6	0.5	0.2	87.9	60.8	0.0	304.8	27.1	31.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.7	0.0	6.0	33.2	6.7	2.9	6.4	29.6	0.0	23.6	25.5	26.5
LnGrp Delay(d),s/veh	46.5	0.0	23.7	288.6	23.8	21.5	134.7	91.8	0.0	348.8	55.1	60.1
LnGrp LOS	D		C	F	C	C	F	F		F	E	E
Approach Vol, veh/h		505			999			1605			1816	
Approach Delay, s/veh		33.6			162.1			95.2			112.8	
Approach LOS		C			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.0	42.0		42.0	11.0	47.0		42.0
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	12.0	38.0		38.0	7.0	43.0		38.0
Max Q Clear Time (g_c+I1), s	14.0	40.0		39.1	9.0	44.6		40.0
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0

Intersection Summary			
HCM 2010 Ctrl Delay		108.9	
HCM 2010 LOS		F	

HCM 2010 Signalized Intersection Summary
4: Canada Valley Road & Laurel Road

10/27/2015

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	701	216	687	956	66	395
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1900	1845	1845	1845	1845
Adj Flow Rate, veh/h	762	235	747	1039	72	215
Adj No. of Lanes	2	0	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3
Cap, veh/h	752	232	768	2672	274	245
Arrive On Green	0.28	0.28	0.44	0.76	0.16	0.16
Sat Flow, veh/h	2732	814	1757	3597	1757	1568
Grp Volume(v), veh/h	506	491	747	1039	72	215
Grp Sat Flow(s),veh/h/ln	1752	1701	1757	1752	1757	1568
Q Serve(g_s), s	28.0	28.0	41.0	9.8	3.5	13.2
Cycle Q Clear(g_c), s	28.0	28.0	41.0	9.8	3.5	13.2
Prop In Lane		0.48	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	499	484	768	2672	274	245
V/C Ratio(X)	1.01	1.01	0.97	0.39	0.26	0.88
Avail Cap(c_a), veh/h	499	484	768	2673	304	271
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.2	35.2	27.1	3.9	36.5	40.6
Incr Delay (d2), s/veh	43.8	44.4	25.8	0.1	0.5	24.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.5	19.0	25.2	4.7	1.8	7.4
LnGrp Delay(d),s/veh	79.0	79.6	53.0	4.0	37.0	65.2
LnGrp LOS	F	F	D	A	D	E
Approach Vol, veh/h	997			1786	287	
Approach Delay, s/veh	79.3			24.5	58.1	
Approach LOS	E			C	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		19.4	47.0	32.0				79.0
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		17.0	43.0	28.0				75.0
Max Q Clear Time (g_c+I1), s		15.2	43.0	30.0				11.8
Green Ext Time (p_c), s		0.2	0.0	0.0				25.9

Intersection Summary			
HCM 2010 Ctrl Delay		45.4	
HCM 2010 LOS		D	

HCM 2010 Signalized Intersection Summary
5: SR 4 EB On-Ramps/SR 4 EB Off-Ramps & Laurel Road

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1312	64	0	1192	20	0	0	0	712	0	601
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1900	0	1845	1900				1845	1845	1845
Adj Flow Rate, veh/h	0	1426	70	0	1296	0				774	0	653
Adj No. of Lanes	0	2	0	0	2	0				2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	3	3	0	3	3				3	3	3
Cap, veh/h	0	1570	77	0	1618	0				1596	0	712
Arrive On Green	0.00	0.46	0.46	0.00	0.46	0.00				0.45	0.00	0.45
Sat Flow, veh/h	0	3493	167	0	3689	0				3514	0	1568
Grp Volume(v), veh/h	0	733	763	0	1296	0				774	0	653
Grp Sat Flow(s),veh/h/ln	0	1752	1815	0	1752	0				1757	0	1568
Q Serve(g_s), s	0.0	36.7	37.0	0.0	30.0	0.0				14.6	0.0	36.9
Cycle Q Clear(g_c), s	0.0	36.7	37.0	0.0	30.0	0.0				14.6	0.0	36.9
Prop In Lane	0.00		0.09	0.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	809	838	0	1618	0				1596	0	712
V/C Ratio(X)	0.00	0.91	0.91	0.00	0.80	0.00				0.49	0.00	0.92
Avail Cap(c_a), veh/h	0	813	842	0	1626	0				1779	0	794
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	23.6	23.7	0.0	21.8	0.0				18.1	0.0	24.2
Incr Delay (d2), s/veh	0.0	13.7	13.9	0.0	3.0	0.0				0.2	0.0	14.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	20.8	21.7	0.0	15.1	0.0				7.1	0.0	18.8
LnGrp Delay(d),s/veh	0.0	37.4	37.6	0.0	24.8	0.0				18.3	0.0	38.7
LnGrp LOS		D	D		C					B		D
Approach Vol, veh/h		1496			1296						1427	
Approach Delay, s/veh		37.5			24.8						27.7	
Approach LOS		D			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				47.8		47.1		47.8
Change Period (Y+Rc), s				4.0		4.0		4.0
Max Green Setting (Gmax), s				44.0		48.0		44.0
Max Q Clear Time (g_c+I1), s				39.0		38.9		32.0
Green Ext Time (p_c), s				4.7		4.1		11.0

Intersection Summary	
HCM 2010 Ctrl Delay	30.3
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
6: SR 4 WB Off-Ramps/SR 4 WB On-Ramps & Laurel Road

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	250	1474	0	0	1067	736	209	0	339	0	0	0
Number	7	4	14	3	8	18	5	2	12			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1845	1845	0	0	1845	1845	1900	1845	1845			
Adj Flow Rate, veh/h	272	1602	0	0	1160	0	227	0	368			
Adj No. of Lanes	1	2	0	0	2	1	0	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	3	3	0	0	3	3	3	3	3			
Cap, veh/h	311	2237	0	0	1457	652	475	0	424			
Arrive On Green	0.18	0.64	0.00	0.00	0.42	0.00	0.27	0.00	0.27			
Sat Flow, veh/h	1757	3597	0	0	3597	1568	1757	0	1568			
Grp Volume(v), veh/h	272	1602	0	0	1160	0	227	0	368			
Grp Sat Flow(s),veh/h/ln	1757	1752	0	0	1752	1568	1757	0	1568			
Q Serve(g_s), s	13.2	26.6	0.0	0.0	25.3	0.0	9.5	0.0	19.6			
Cycle Q Clear(g_c), s	13.2	26.6	0.0	0.0	25.3	0.0	9.5	0.0	19.6			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	311	2237	0	0	1457	652	475	0	424			
V/C Ratio(X)	0.88	0.72	0.00	0.00	0.80	0.00	0.48	0.00	0.87			
Avail Cap(c_a), veh/h	382	2406	0	0	1484	664	643	0	574			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	35.0	10.5	0.0	0.0	22.3	0.0	26.7	0.0	30.4			
Incr Delay (d2), s/veh	17.1	1.0	0.0	0.0	3.1	0.0	0.7	0.0	10.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	7.9	13.0	0.0	0.0	12.7	0.0	4.7	0.0	9.7			
LnGrp Delay(d),s/veh	52.2	11.5	0.0	0.0	25.4	0.0	27.5	0.0	40.8			
LnGrp LOS	D	B			C		C		D			
Approach Vol, veh/h		1874			1160			595				
Approach Delay, s/veh		17.4			25.4			35.7				
Approach LOS		B			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4			7	8
Phs Duration (G+Y+Rc), s		27.6		59.8			19.5	40.3
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0
Max Green Setting (Gmax), s		32.0		60.0			19.0	37.0
Max Q Clear Time (g_c+I1), s		21.6		28.6			15.2	27.3
Green Ext Time (p_c), s		2.1		26.2			0.3	9.1

Intersection Summary	
HCM 2010 Ctrl Delay	23.0
HCM 2010 LOS	C

HCM 2010 Signalized Intersection Summary
7: SR 4 EB On-ramps/SR 4 EB Off-Ramps & Lone Tree Way

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1563	851	282	1689	0	0	0	0	928	10	601
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1845	1845	1845	1845	0				1845	1845	1845
Adj Flow Rate, veh/h	0	1645	896	297	1778	0				985	0	633
Adj No. of Lanes	0	2	2	2	3	0				2	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95				0.95	0.95	0.95
Percent Heavy Veh, %	0	3	3	3	3	0				3	3	3
Cap, veh/h	0	1507	1187	307	2820	0				1265	0	564
Arrive On Green	0.00	0.43	0.43	0.09	0.56	0.00				0.36	0.00	0.36
Sat Flow, veh/h	0	3597	2760	3408	5202	0				3514	0	1568
Grp Volume(v), veh/h	0	1645	896	297	1778	0				985	0	633
Grp Sat Flow(s),veh/h/ln	0	1752	1380	1704	1679	0				1757	0	1568
Q Serve(g_s), s	0.0	43.0	27.4	8.7	24.0	0.0				24.9	0.0	36.0
Cycle Q Clear(g_c), s	0.0	43.0	27.4	8.7	24.0	0.0				24.9	0.0	36.0
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1507	1187	307	2820	0				1265	0	564
V/C Ratio(X)	0.00	1.09	0.76	0.97	0.63	0.00				0.78	0.00	1.12
Avail Cap(c_a), veh/h	0	1507	1187	307	2820	0				1265	0	564
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	28.5	24.1	45.4	15.0	0.0				28.5	0.0	32.0
Incr Delay (d2), s/veh	0.0	52.4	2.8	42.7	0.5	0.0				3.2	0.0	75.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	31.7	10.8	5.9	11.1	0.0				12.6	0.0	27.4
LnGrp Delay(d),s/veh	0.0	80.9	26.9	88.0	15.4	0.0				31.6	0.0	107.9
LnGrp LOS		F	C	F	B					C		F
Approach Vol, veh/h		2541			2075						1618	
Approach Delay, s/veh		61.8			25.8						61.4	
Approach LOS		E			C						E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			13.0	47.0		40.0		60.0
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0
Max Green Setting (Gmax), s			9.0	43.0		36.0		56.0
Max Q Clear Time (g_c+I1), s			10.7	45.0		38.0		26.0
Green Ext Time (p_c), s			0.0	0.0		0.0		29.0

Intersection Summary	
HCM 2010 Ctrl Delay	49.7
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
8: Jefferey Way /SR 4 WB On-Ramps & Lone Tree Way

10/27/2015

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (veh/h)	0	1997	566	20	38	1411	592	609	32	481	0	0
Number	7	4	14		3	8	18	5	2	12		
Initial Q (Qb), veh	0	0	0		0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00	1.00		1.00		
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	0	1845	1845		1845	1845	1845	1845	1845	1845		
Adj Flow Rate, veh/h	0	2102	385		40	1485	623	665	0	480		
Adj No. of Lanes	0	3	1		1	3	1	2	0	1		
Peak Hour Factor	0.95	0.95	0.95		0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	0	3	3		3	3	3	3	3	3		
Cap, veh/h	0	2527	787		50	2884	898	1202	0	537		
Arrive On Green	0.00	0.50	0.50		0.03	0.57	0.57	0.34	0.00	0.34		
Sat Flow, veh/h	0	5202	1568		1757	5036	1568	3514	0	1568		
Grp Volume(v), veh/h	0	2102	385		40	1485	623	665	0	480		
Grp Sat Flow(s),veh/h/ln	0	1679	1568		1757	1679	1568	1757	0	1568		
Q Serve(g_s), s	0.0	33.6	15.3		2.1	16.8	26.5	14.4	0.0	27.3		
Cycle Q Clear(g_c), s	0.0	33.6	15.3		2.1	16.8	26.5	14.4	0.0	27.3		
Prop In Lane	0.00		1.00		1.00		1.00	1.00		1.00		
Lane Grp Cap(c), veh/h	0	2527	787		50	2884	898	1202	0	537		
V/C Ratio(X)	0.00	0.83	0.49		0.80	0.51	0.69	0.55	0.00	0.89		
Avail Cap(c_a), veh/h	0	2527	787		75	2945	917	1382	0	617		
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.00	1.00	1.00		1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	0.0	20.0	15.5		45.4	12.2	14.2	25.1	0.0	29.3		
Incr Delay (d2), s/veh	0.0	2.5	0.5		29.4	0.1	2.2	0.4	0.0	14.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.0	16.0	6.6		1.4	7.7	12.0	7.1	0.0	13.8		
LnGrp Delay(d),s/veh	0.0	22.6	15.9		74.9	12.3	16.5	25.5	0.0	43.6		
LnGrp LOS		C	B		E	B	B	C		D		
Approach Vol, veh/h		2487				2148			1145			
Approach Delay, s/veh		21.5				14.7			33.1			
Approach LOS		C				B			C			

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		36.2	6.7	51.2				57.9
Change Period (Y+Rc), s		4.0	4.0	4.0				4.0
Max Green Setting (Gmax), s		37.0	4.0	47.0				55.0
Max Q Clear Time (g_c+I1), s		29.3	4.1	35.6				28.5
Green Ext Time (p_c), s		2.9	0.0	11.2				25.4

Intersection Summary	
HCM 2010 Ctrl Delay	21.3
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

HCM 2010 Signalized Intersection Summary
8: Jefferey Way /SR 4 WB On-Ramps & Lone Tree Way

10/27/2015



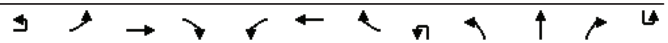
Movement	SBR
Lane Configurations	
Volume (veh/h)	0
Number	
Initial Q (Qb), veh	
Ped-Bike Adj(A_pbT)	
Parking Bus, Adj	
Adj Sat Flow, veh/h/ln	
Adj Flow Rate, veh/h	
Adj No. of Lanes	
Peak Hour Factor	
Percent Heavy Veh, %	
Cap, veh/h	
Arrive On Green	
Sat Flow, veh/h	
Grp Volume(v), veh/h	
Grp Sat Flow(s),veh/h/ln	
Q Serve(g_s), s	
Cycle Q Clear(g_c), s	
Prop In Lane	
Lane Grp Cap(c), veh/h	
V/C Ratio(X)	
Avail Cap(c_a), veh/h	
HCM Platoon Ratio	
Upstream Filter(I)	
Uniform Delay (d), s/veh	
Incr Delay (d2), s/veh	
Initial Q Delay(d3),s/veh	
%ile BackOfQ(50%),veh/ln	
LnGrp Delay(d),s/veh	
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer

User approved ignoring U-Turning movement.

HCM 2010 Signalized Intersection Summary
9: Empire Avenue & Lone Tree Way

10/27/2015



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU
Lane Configurations												
Volume (veh/h)	101	273	1726	131	226	1413	180	16	195	97	178	59
Number		7	4	14	3	8	18		5	2	12	
Initial Q (Qb), veh		0	0	0	0	0	0		0	0	0	
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00		1.00		1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln		1845	1845	1845	1845	1845	1845		1845	1845	1845	
Adj Flow Rate, veh/h		297	1876	120	246	1536	148		212	105	168	
Adj No. of Lanes		1	3	1	1	3	1		2	1	1	
Peak Hour Factor		0.92	0.92	0.92	0.92	0.92	0.92		0.92	0.92	0.92	
Percent Heavy Veh, %		3	3	3	3	3	3		3	3	3	
Cap, veh/h		336	2337	727	284	2188	681		285	295	251	
Arrive On Green		0.19	0.46	0.46	0.16	0.43	0.43		0.08	0.16	0.16	
Sat Flow, veh/h		1757	5036	1568	1757	5036	1568		3408	1845	1568	
Grp Volume(v), veh/h		297	1876	120	246	1536	148		212	105	168	
Grp Sat Flow(s),veh/h/ln		1757	1679	1568	1757	1679	1568		1704	1845	1568	
Q Serve(g_s), s		14.4	27.8	3.9	11.9	21.7	5.2		5.3	4.4	8.8	
Cycle Q Clear(g_c), s		14.4	27.8	3.9	11.9	21.7	5.2		5.3	4.4	8.8	
Prop In Lane		1.00		1.00	1.00		1.00		1.00		1.00	
Lane Grp Cap(c), veh/h		336	2337	727	284	2188	681		285	295	251	
V/C Ratio(X)		0.88	0.80	0.16	0.86	0.70	0.22		0.74	0.36	0.67	
Avail Cap(c_a), veh/h		422	2362	736	362	2190	682		312	443	377	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Upstream Filter(I)		1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Uniform Delay (d), s/veh		34.4	20.0	13.6	35.7	20.1	15.4		39.1	32.7	34.5	
Incr Delay (d2), s/veh		16.5	2.1	0.1	16.0	1.0	0.2		8.5	0.7	3.1	
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln		8.5	13.3	1.7	7.1	10.2	2.3		2.8	2.3	4.0	
LnGrp Delay(d),s/veh		50.8	22.1	13.7	51.7	21.1	15.6		47.6	33.4	37.6	
LnGrp LOS		D	C	B	D	C	B		D	C	D	
Approach Vol, veh/h			2293			1930				485		
Approach Delay, s/veh			25.4			24.6				41.1		
Approach LOS			C			C				D		

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	18.0	18.1	44.5	11.3	13.4	20.7	42.0
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	4.0	21.0	18.0	41.0	8.0	17.0	21.0	38.0
Max Q Clear Time (g_c+I1), s	3.2	10.8	13.9	29.8	7.3	7.7	16.4	23.7
Green Ext Time (p_c), s	0.0	1.8	0.3	10.7	0.0	1.7	0.4	13.6

Intersection Summary	
HCM 2010 Ctrl Delay	27.5
HCM 2010 LOS	C

Notes

User approved ignoring U-Turning movement.

HCM 2010 Signalized Intersection Summary
9: Empire Avenue & Lone Tree Way

10/27/2015

Movement	SBL	SBT	SBR
Lane Configurations			
Volume (veh/h)	43	149	60
Number	1	6	16
Initial Q (Qb), veh	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900
Adj Flow Rate, veh/h	47	162	65
Adj No. of Lanes	2	2	0
Peak Hour Factor	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3
Cap, veh/h	106	266	102
Arrive On Green	0.03	0.11	0.11
Sat Flow, veh/h	3408	2474	955
Grp Volume(v), veh/h	47	113	114
Grp Sat Flow(s),veh/h/ln	1704	1752	1676
Q Serve(g_s), s	1.2	5.4	5.7
Cycle Q Clear(g_c), s	1.2	5.4	5.7
Prop In Lane	1.00		0.57
Lane Grp Cap(c), veh/h	106	188	180
V/C Ratio(X)	0.44	0.60	0.63
Avail Cap(c_a), veh/h	156	341	326
HCM Platoon Ratio	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.6	37.2	37.4
Incr Delay (d2), s/veh	2.9	3.1	3.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.8	2.8
LnGrp Delay(d),s/veh	44.5	40.3	41.0
LnGrp LOS	D	D	D
Approach Vol, veh/h		274	
Approach Delay, s/veh		41.3	
Approach LOS		D	

Timer

HCM 2010 Signalized Intersection Summary
10: Country Hills Road & Laurel Road

10/27/2015

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	960	120	402	1371	100	90	0	170	59	0	5
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	20	1043	130	437	1490	109	98	0	185	64	0	5
Adj No. of Lanes	1	2	0	2	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	31	1434	179	535	1976	144	125	0	227	82	0	189
Arrive On Green	0.02	0.46	0.46	0.16	0.60	0.60	0.07	0.00	0.15	0.05	0.00	0.12
Sat Flow, veh/h	1757	3137	391	3408	3313	241	1757	0	1568	1757	0	1568
Grp Volume(v), veh/h	20	582	591	437	784	815	98	0	185	64	0	5
Grp Sat Flow(s),veh/h/ln	1757	1752	1776	1704	1752	1802	1757	0	1568	1757	0	1568
Q Serve(g_s), s	0.9	22.3	22.3	10.2	27.0	27.4	4.5	0.0	9.4	3.0	0.0	0.2
Cycle Q Clear(g_c), s	0.9	22.3	22.3	10.2	27.0	27.4	4.5	0.0	9.4	3.0	0.0	0.2
Prop In Lane	1.00		0.22	1.00		0.13	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	31	801	812	535	1045	1075	125	0	227	82	0	189
V/C Ratio(X)	0.64	0.73	0.73	0.82	0.75	0.76	0.78	0.00	0.81	0.78	0.00	0.03
Avail Cap(c_a), veh/h	85	851	862	703	1127	1159	213	0	342	192	0	323
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.2	18.2	18.2	33.6	12.2	12.3	37.6	0.0	34.1	38.9	0.0	32.0
Incr Delay (d2), s/veh	19.6	2.9	2.9	5.7	2.7	2.7	10.1	0.0	8.7	14.6	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	11.3	11.5	5.2	13.6	14.2	2.6	0.0	4.6	1.8	0.0	0.1
LnGrp Delay(d),s/veh	59.8	21.1	21.1	39.3	14.8	15.0	47.7	0.0	42.9	53.5	0.0	32.0
LnGrp LOS	E	C	C	D	B	B	D		D	D		C
Approach Vol, veh/h		1193			2036			283			69	
Approach Delay, s/veh		21.8			20.1			44.5			52.0	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.8	16.0	16.9	41.7	9.9	13.9	5.5	53.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	9.0	18.0	17.0	40.0	10.0	17.0	4.0	53.0
Max Q Clear Time (g_c+I1), s	5.0	11.4	12.2	24.3	6.5	2.2	2.9	29.4
Green Ext Time (p_c), s	0.0	0.5	0.7	13.4	0.1	0.9	0.0	18.9

Intersection Summary	
HCM 2010 Ctrl Delay	23.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	116	1381	297	260	1054	230	624	271	301	230	410	116
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1845	1845	1845	1900	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	126	1501	165	283	1146	250	678	295	327	250	446	126
Adj No. of Lanes	1	3	1	1	3	0	2	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	155	1511	470	299	1581	345	682	367	328	282	460	129
Arrive On Green	0.09	0.30	0.30	0.17	0.38	0.38	0.20	0.21	0.21	0.16	0.17	0.17
Sat Flow, veh/h	1757	5036	1568	1757	4140	903	3408	1752	1568	1757	2705	758
Grp Volume(v), veh/h	126	1501	165	283	929	467	678	295	327	250	288	284
Grp Sat Flow(s),veh/h/ln	1757	1679	1568	1757	1679	1685	1704	1752	1568	1757	1752	1711
Q Serve(g_s), s	7.0	29.7	8.2	15.9	23.7	23.7	19.9	16.0	20.8	13.9	16.3	16.5
Cycle Q Clear(g_c), s	7.0	29.7	8.2	15.9	23.7	23.7	19.9	16.0	20.8	13.9	16.3	16.5
Prop In Lane	1.00		1.00	1.00		0.54	1.00		1.00	1.00		0.44
Lane Grp Cap(c), veh/h	155	1511	470	299	1283	644	682	367	328	282	298	291
V/C Ratio(X)	0.82	0.99	0.35	0.95	0.72	0.72	0.99	0.80	1.00	0.89	0.97	0.98
Avail Cap(c_a), veh/h	176	1511	470	299	1283	644	682	367	328	316	298	291
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.8	34.9	27.4	41.1	26.4	26.4	39.9	37.6	39.5	41.1	41.2	41.3
Incr Delay (d2), s/veh	22.5	21.6	0.4	38.2	2.1	4.1	33.1	12.3	48.6	22.9	42.7	46.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	16.8	3.6	10.9	11.3	11.7	12.5	9.0	13.4	8.5	11.4	11.6
LnGrp Delay(d),s/veh	67.3	56.5	27.8	79.2	28.5	30.5	73.0	49.8	88.1	64.0	83.9	87.8
LnGrp LOS	E	E	C	E	C	C	E	D	F	E	F	F
Approach Vol, veh/h		1792			1679			1300			822	
Approach Delay, s/veh		54.6			37.6			71.5			79.2	
Approach LOS		D			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.1	24.9	21.0	34.0	24.0	21.0	12.8	42.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Max Green Setting (Gmax), s	18.0	19.0	17.0	30.0	20.0	17.0	10.0	37.0
Max Q Clear Time (g_c+I1), s	15.9	22.8	17.9	31.7	21.9	18.5	9.0	25.7
Green Ext Time (p_c), s	0.2	0.0	0.0	0.0	0.0	0.0	0.0	10.6

Intersection Summary	
HCM 2010 Ctrl Delay	57.0
HCM 2010 LOS	E

Appendix C

Project Driveway Queuing Calculations

Queuing and Blocking Report
AM Cumulative Conditions Alt Access 1 10/27/2015

Intersection: 10: Country Hills Road & Laurel Road

Movement	EB	EB	WB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	L	T	T	L	R
Maximum Queue (ft)	246	275	54	84	106	115	136	154
Average Queue (ft)	143	200	34	54	54	61	85	96
95th Queue (ft)	267	321	61	94	111	125	147	175
Link Distance (ft)	561	561			889	889		331
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			200	200			250	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Queuing and Blocking Report
PM Cumulative Conditions Alt Access 1 10/27/2015

Intersection: 10: Country Hills Road & Laurel Road

Movement	EB	EB	WB	WB	WB	WB	NB	NB
Directions Served	T	TR	L	L	T	T	L	R
Maximum Queue (ft)	151	166	92	116	116	109	72	76
Average Queue (ft)	91	107	62	86	71	53	49	50
95th Queue (ft)	160	181	116	127	144	116	81	87
Link Distance (ft)	561	561			889	889		331
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)			200	200			250	
Storage Blk Time (%)								
Queuing Penalty (veh)								

Queuing and Blocking Report
AM Cumulative Conditions Alt Access 1 10/27/2015

Intersection: 16: D Lane & Laurel Road

Movement	NB
Directions Served	R
Maximum Queue (ft)	85
Average Queue (ft)	45
95th Queue (ft)	88
Link Distance (ft)	212
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report
PM Cumulative Conditions Alt Access 1 10/27/2015

Intersection: 16: D Lane & Laurel Road

Movement	NB
Directions Served	R
Maximum Queue (ft)	40
Average Queue (ft)	25
95th Queue (ft)	52
Link Distance (ft)	212
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report
AM Cumulative Plus Prj Cond Alt Access 1 10/27/2015

Intersection: 10: Country Hills Road & Laurel Road

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	22	191	238	61	75	108	112	138	174	61	11
Average Queue (ft)	6	136	175	24	47	58	64	89	104	39	3
95th Queue (ft)	25	209	268	61	82	121	125	154	188	76	14
Link Distance (ft)		560	560			863	863		331		350
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	215			200	200			250		100	
Storage Blk Time (%)		0							0	0	
Queuing Penalty (veh)		0							0	0	

Queuing and Blocking Report
PM Cumulative + Prj Cond Alt Access 1 10/27/2015

Intersection: 10: Country Hills Road & Laurel Road

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	L	T	TR	L	TR	L	TR
Maximum Queue (ft)	20	183	203	95	128	159	168	79	103	56	15
Average Queue (ft)	9	109	128	59	96	90	91	54	64	29	3
95th Queue (ft)	28	201	229	106	165	191	187	96	116	64	15
Link Distance (ft)		560	560			863	863		331		350
Upstream Blk Time (%)											
Queuing Penalty (veh)											
Storage Bay Dist (ft)	215			200	200			250		100	
Storage Blk Time (%)		1				0				0	
Queuing Penalty (veh)		0				2				0	

Queuing and Blocking Report
AM Cumulative Plus Prj Cond Alt Access 1 10/27/2015

Intersection: 16: D Lane & Laurel Road

Movement	NB	SB
Directions Served	R	R
Maximum Queue (ft)	50	35
Average Queue (ft)	34	15
95th Queue (ft)	59	42
Link Distance (ft)	212	239
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report
PM Cumulative + Prj Cond Alt Access 1 10/27/2015

Intersection: 16: D Lane & Laurel Road

Movement	NB	SB
Directions Served	R	R
Maximum Queue (ft)	47	18
Average Queue (ft)	28	4
95th Queue (ft)	54	20
Link Distance (ft)	212	239
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Appendix D

Alternative Access Queuing Calculations

Queuing and Blocking Report
AM Cumulative Conditions Alt Access 2 10/27/2015

Intersection: 16: D Lane & Laurel Road

Movement	WB	NB
Directions Served	L	R
Maximum Queue (ft)	30	75
Average Queue (ft)	13	44
95th Queue (ft)	36	78
Link Distance (ft)		212
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	200	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report
PM Cumulative Conditions Alt Access 2 10/27/2015

Intersection: 16: D Lane & Laurel Road

Movement	WB	NB
Directions Served	L	R
Maximum Queue (ft)	71	44
Average Queue (ft)	36	32
95th Queue (ft)	75	51
Link Distance (ft)		212
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	200	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report
AM Cumulative Plus Prj Cond Alt Access 2 10/27/2015

Intersection: 16: D Lane & Laurel Road

Movement	WB	NB	SB
Directions Served	L	R	R
Maximum Queue (ft)	44	69	34
Average Queue (ft)	18	40	14
95th Queue (ft)	52	72	41
Link Distance (ft)		212	239
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	200		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Queuing and Blocking Report
PM Cumulative Plus Prj Cond Alt Access 2 10/27/2015

Intersection: 16: D Lane & Laurel Road

Movement	EB	WB	NB	SB
Directions Served	TR	L	R	R
Maximum Queue (ft)	8	56	45	18
Average Queue (ft)	2	29	27	7
95th Queue (ft)	11	68	53	27
Link Distance (ft)	1176		212	239
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		200		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Appendix E

Sight Distance



W-Trans, Inc
490 Mendocino Ave, Suite 201
Santa Rosa, CA
(707)542-9500 Fax (707)542-9590

Sight Distance Lines at D Lane

Laurel Ranch Subdivision

DRAWN: bkb	SCALE: NTS
DESIGN:	DATE: 10/28/15
SHEET 1 SHEETS	JOB NO. 1

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