

4.7 GEOLOGY AND SOILS

This section of the EIR evaluates potential impacts to geology and soils that could result from future development within the Hercules New Town Center (HNTC) planning area consistent with the proposed amendments to the General Plan and Zoning Ordinance and implementation of the Market Town project. The evaluation is based on information contained in the City of Hercules General Plan (General Plan), and geotechnical studies prepared by ENGEO Inc. and Treadwell and Rollo. These studies include:

- ENGEO, Inc., *Geotechnical Exploration, Proposed Parking Lot and Bus Facility, Parcel C1, Hercules, California, June 14, 2007*
- Treadwell & Rollo, *Preliminary Geotechnical Investigation, Geotechnical Due Diligence, Hercules New Town Center, PNR Parcel, Hercules, California, July 23, 2007*

4.7.1 ENVIRONMENTAL SETTING

REGIONAL GEOLOGY

The HNTC planning area is situated in the Coast Range geomorphic province of California, which is characterized by a series of parallel, northwesterly trending, folded and faulted mountain ranges and valleys. The rounded foothills along the perimeters of the planning area consist of Miocene marine sedimentary rocks (ENGEO, 2007). Geology in the region consists of alluvial (stream-related) deposits of Quaternary age (less than two million years old) on the floor of the Refugio Valley, surrounded by marine sedimentary rocks of Miocene age (between five and 23 million years old) in adjacent uplands. Alluvium in the Refugio Valley varies from about 12 feet in thickness in the southeast portion of the valley to about 80 feet in thickness near the valley mouth. Much of the older valley floor deposits are covered by loose, artificial fill. Clear Lake Clay lies on top of the alluvial deposits on the valley floor. The clay is a poorly drained soil with low erosion potential, low strength, high shrink-swell potential, and high corrosivity. Soils in the upland areas primarily consist of Tierra Loam, a moderately-well drained soil with moderate to high erosion potential, low strength, high shrink-swell potential, and high corrosivity. Other soils in the upland areas consist of Los Osos Clay Loam and Sehorn Clay, both of which are well-drained soils with moderate to high erosion potential, low strength, high shrink-swell potential, and high corrosivity. Soils at the individual parcels within the planning area generally consist of one or more of these soil types (City of Hercules, 1998).

SITE GEOLOGY

Relatively recent site-specific studies have been performed for two of the seven HNTC Parcels: the PNR parcel and C1 parcel. Reviewing United States Geological Survey Data, a 2005 Phase I Environmental Site Assessment conducted by AllWest concluded that the PNR parcel is underlain by undivided Holocene- and Pleistocene-aged surficial deposits, Miocene-aged lower sandstone and siltstone and siltstone member of the Briones formation, Miocene-aged Rodeo shale consisting of a brown siliceous shale with carbonate concretions, and Miocene-aged Hambre sandstone. The Pleistocene-aged alluvial fan and fluvial deposits consist of brown dense gravel and clayed sand or clayed gravel that fines

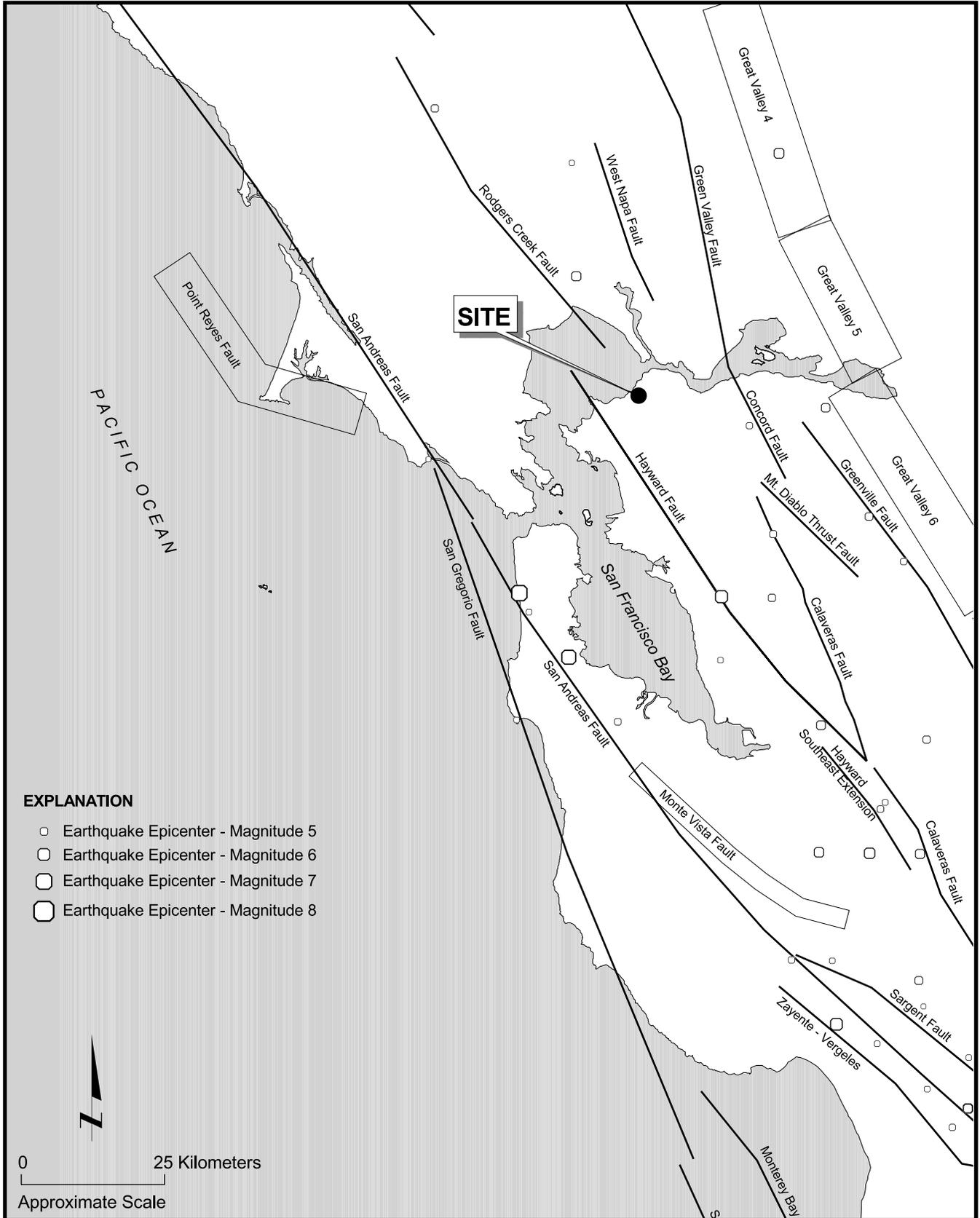
upward to sandy clay. Some portions of the PNR parcel contain artificial fill (Allwest, 2005). A 2007 geotechnical investigation conducted by Treadwell & Rollo at the PNR parcel found the upper layer of the site to be generally blanketed by high plasticity, medium stiff to stiff clay, and silt with varying amounts of sand and sedimentary rock fragments. This upper material, which appears to be fill, extends to depths between 3.5 and 15.5 feet below ground surface (bgs). Beneath depths of 3.5 to 15.5 feet, the investigation encountered medium stiff to very stiff, moderate plasticity clay with varying sand content to the maximum explored depths of 31.5 to 36.5 feet bgs, with the exception of medium dense silty sand between the depths of 12 and 16 feet bgs encountered in one boring. The upper portion of the native clay deposit contained decomposed organic matter. Groundwater was only encountered in one boring, at a depth of 9.25 feet, but as it was not allowed to stabilize, true depth to groundwater is unclear (Treadwell & Rollo, 2007).

At the C1 parcel, a 2007 geotechnical investigation conducted by ENGEO, Inc. stated that rocks are mapped as sandstone, siltstone, shale, and mudstone beds that generally strike in a northwest direction and dip at 25 to 50 degrees towards the north. Near-surface soils consist of undocumented fill materials, ranging from 15 to >23 feet deep, comprised primarily of stiff to very stiff clays, although soft fills also are present in some areas. The fills contain varying amounts of gravel, layered with occasional beds of medium dense sands. Underlying the fill materials are native silty clays and silts, underlain by claystone and siltstone bedrock. Materials were generally of a cohesive nature with minor discontinuous layers of cohesionless material within onsite fills. Groundwater was not encountered in borings that extended to a maximum depth of approximately 26.5 feet bgs (ENGEO, 2007).

POTENTIAL GEOLOGIC HAZARDS

Seismic-Related Hazards

The Hercules area, as part of the San Francisco Bay Area, is in one of the most seismically active regions in the United States. The major active faults in the area are the Hayward, Rodgers Creek, Calaveras, San Andreas, and San Gregorio Faults. These and other faults in the region are shown in Figure 4.7-1 (Map of Major Faults and Earthquake Epicenters in the San Francisco Bay Area). The U.S. Geological Survey (USGS) Working Group on California Earthquake Probabilities has evaluated the probability of one or more earthquakes of Richter magnitude 6.7 or higher occurring in the San Francisco Bay Area. The result of the evaluation indicated a 62 percent likelihood that such an earthquake event will occur in the Bay Area between the three-decade interval from 2003 - 2032 (USGS, 2003, 2007). California Environmental Quality Act (CEQA) significance criteria list several main types of potential hazards stemming from seismic activity:



Source: Treadwell & Rollo, 2007

Hercules New Town Center EIR

Map of Major Faults and Earthquake Epicenters in the San Francisco Bay Area

Figure 4-7.1

This page intentionally left blank.

Surface Fault Rupture. Displacement along surface faults can cause damage to structures on or near faults, especially during major earthquakes. No known active faults traverse the subject parcels, and no portion of Hercules, including the subject parcels, are located within a state-designated Alquist-Priolo Earthquake Fault Zone. As the parcels are in a seismically active area, the remote possibility exists for future faulting in areas where no faults previously existed. However, the site-specific geotechnical studies for the PNR parcel and C1 parcel concluded ground rupture is unlikely to occur (Treadwell & Rollo, 2007; ENGEO, 2007).

Ground Shaking. Ground shaking, rather than surface fault rupture, is the cause of the most damage during earthquakes, and can cause severe damage to structures located both close to and relatively long distances away from faults. The HNTC planning area could be affected by ground shaking due to movement along any of the active faults in the region, and a large magnitude earthquake has the potential to cause significant ground shaking at the subject parcels. The intensity of ground shaking felt at the site from future earthquakes would depend on several factors, including the distance of the site to the earthquake epicenter, the magnitude and duration of the earthquake, and the response of the underlying soil and/or bedrock. In general, the greater the distance to the earthquake epicenter, the lesser the intensity of the ground shaking that is anticipated. Thick, loose soils, such as uncompacted alluvium and artificial fill, tend to amplify and prolong ground shaking, while bedrock is less susceptible.

An earthquake of moderate magnitude generated within the San Francisco Bay Region, similar to those which have occurred in the past, could cause ground shaking at the subject parcels, and a large earthquake would cause strong to very strong ground shaking. The Hayward fault is closest to the planning area and considered capable of causing the strongest ground shaking at the subject parcels. Distances from the planning area and estimated mean characteristic moment magnitude are summarized in Table 4.6-1, Regional Faults and Seismicity.¹

**Table 4.7-1
Regional Faults and Seismicity**

Fault Segment	Approximate Distance from Planning Area (miles)	Direction from Planning Area	Mean Characteristic Moment Magnitude
North Hayward	4.5	West	6.5
Total Hayward	4.5	West	6.9
Total Hayward-Rodgers Creek	4.5	West	7.3
Rodgers Creek	10	West	7.0
West Napa	10	North	6.5
Concord/Green Valley	10	East	6.7
South Hayward	13	South	6.7
Mt. Diablo	15	Southeast	6.7
Total Calaveras	20	Southeast	6.9

¹ Moment magnitude is an energy-based scale and provides a physically meaningful measure of the size of a faulting event. Moment magnitude is directly related to average slip and fault rupture area.

**Table 4.7-1
Regional Faults and Seismicity**

Fault Segment	Approximate Distance from Planning Area (miles)	Direction from Planning Area	Mean Characteristic Moment Magnitude
San Andreas – 1906 Rupture	22	West	7.9
San Andreas – North Coast South	22	West	7.5
San Andreas - Peninsula	23	Southwest	7.2
Northern San Gregorio	25	Southwest	7.2
Total San Gregorio	25	Southwest	7.4
Greenville	25	East	6.9
Great Valley 6	26	East	6.7
Great Valley 5	27	East	6.5
Great Valley 4	29	Northeast	6.6
Hunting Creek-Berryessa	30	North	6.9
Point Reyes	31	West	6.8
Monte Vista-Shannon	39	South	6.8
Hayward – South East Extension	43	Southeast	6.4
Maacama-Garberville	45	Northwest	6.9
Great Valley 7	45	East	6.7
Great Valley 3	47	Northeast	6.8
Collayomi	57	Northwest	6.5
San Andreas – Santa Cruz Mtns.	60	Southeast	7.0

Source: *Preliminary Geotechnical Investigation: Geotechnical Due Diligence Hercules New Town Center PNR Parcel, Hercules, California*, (2007), Treadwell and Rollo.

Liquefaction. Liquefaction is a phenomenon in which saturated, cohesionless soil experiences a temporary loss of strength due to the buildup of excess pore water pressure, especially during cyclic loading such as that induced by earthquakes. Soil most susceptible to liquefaction is loose, clean, saturated, uniformly graded, fine-grained sand and silt of low plasticity that is relatively free of clay.

The geotechnical investigation at the PNR parcel stated that in general, the soil encountered in the upper 31.5 to 36.5 feet was cohesive and not prone to liquefaction, with the exception of a silty sand layer encountered between depths of 12 and 16 feet in one boring in the center of the parcel. The investigation concluded that this silty sand layer may liquefy during a major seismic event on one of the nearby faults, and that liquefaction-induced ground settlement from this layer would be about 3/4 inch (Treadwell & Rollo, 2007). The geotechnical investigation at C1 parcel concluded that due to the cohesive nature of site soils, material density, and lack of groundwater, the potential for ground failure due to liquefaction is low to negligible (ENGEO, 2007).

Landslides. Earthquakes can trigger landslides, particularly upon steep slopes where previous slide activity has occurred. Landslides can pose great risks to all site structures, including completely dislodging structures. The topography at all of the subject parcels is relatively flat, with the exception of portions of the Loop and Ramp parcels, where the freeway exit from Interstate 80 (I-80) created slopes greater than 30 percent (City of

Hercules, 1995). Based on topographic and lithologic (i.e., rock character) data, landsliding risks at the C1 parcel were considered to be low to negligible by ENGEO (ENGEO, 2007).

Soil Erosion

Unprotected soils are subject to erosion. The Tierra Loam, Los Osos Clay Loam, and Sehorn Clay soils in the vicinity are classified as highly erosive. Unless properly designed and implemented, construction activities can cause soils to erode (e.g., by removing ground cover holding soil in place, or by causing water to carry soils away).

Unstable Geology and Soils

CEQA significance criteria list geologic and soil instability as a separate category, although some of the following sources of instability are caused by seismic events.

Lateral Spreading. Lateral spreading is a type of ground instability that occurs when liquefaction of soils at depth causes insufficient strength for lateral stability, and subsequently results in the displacement of a soil mass. Based on such factors as terrain, site soils and the low potential for liquefaction, the potential for lateral spreading at PNR and C1 parcels is low (Treadwell & Rollo, 2007; ENGEO, 2007).

Subsidence/Densification. Cyclic densification is a phenomenon in which non-saturated, cohesionless sand, and/or gravel is densified by earthquake vibrations, causing ground surface settlement. The geotechnical study at the PNR parcel concluded that as cohesionless sand or gravel above the water table was not encountered, the potential for settlement from cyclic densification is low (Treadwell & Rollo, 2007). The geotechnical study for the C1 parcel concluded that the parcel contains heterogeneous fills comprised of both stiff and soft materials. Heterogeneous fills can result in an increased risk of settlement (e.g., due to the potential presence of compressible soils (ENGEO, 2007)).

Ground Lurching. Ground lurching is a result of the rolling motion imparted to the ground surface during energy released by an earthquake. Such rolling motion can cause ground cracks to form. The potential for the formation of these cracks is greater at contacts between deep alluvium and bedrock. Regarding the C1 parcel, the ENGEO study concluded that such an occurrence is possible at that site, as in other geologically similar locations in the Bay Area, but the offset or strain is expected to be low (ENGEO, 2007).

Expansive Soils

Expansive soils (also known as soils with high shrink-swell potential) undergo changes in volume with changes in moisture content (i.e., they shrink when dried and swell when wetted), which can damage structures built on such soils. At the PNR parcel, the near-surface clay and silt soils were considered to have moderate to high expansion potential. (Treadwell & Rollo, 2007.) The clayey soils at the C1 parcel were characterized as moderate to high in plasticity and, therefore, as having a high expansive potential (ENGEO, 2007).

4.7.2 REGULATORY SETTING

STATE FRAMEWORK

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act requires the state to identify zones around active faults (those having evidence of surface displacement within about the last 11,000 years). Earthquake Fault Zones (EFZs) have been delineated by the California Survey around all known active faults throughout the state. The land within EFZs is believed to have an elevated potential for experiencing surface rupture due to faulting. Property owners within these zones can be required to demonstrate that new structures are not located on top of a trace on an active fault.

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act was developed to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and from other hazards caused by earthquakes. The Act requires the State Geologist to delineate various seismic hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones. Before a development permit is granted for a site within a seismic hazard zone, a geotechnical investigation of the site must be conducted and appropriate mitigation measures incorporated into the project design.

California Building Code

The California Building Code is contained in the California Code of Regulations, Title 24, Part 2. Title 24 is assigned to the California Building Standards Commission, which is responsible for coordinating building standards. The California Building Code incorporates by reference the national Uniform Building Code, with California-specific amendments, including provisions dealing with earthquake conditions.

LOCAL FRAMEWORK

City of Hercules General Plan

The Safety Element of the Hercules General Plan contains several goals and policies with respect to geologic hazards, including the following:

Safety Element

Policy 2D The administration of subdivision and grading ordinances should allow for flexibility in the review and approval of construction plans to permit sound engineering design in the solution of specific geological problems. Site-specific geotechnical investigations shall be required for every new development.

Policy 2D

Program 2D.1

Applications for subdivision and development projects shall include site specific geotechnical investigations prepared by a California certified engineering geologist documenting the geotechnical suitability of the site for the proposed development based on soil and underlying substrate conditions, and the measures required to ensure public safety and the protection of property. The following shall be implemented through adoption as conditions of approval for the project.

1. Loose or improperly compacted existing fills and backfills should be excavated from areas to be filled.
2. All areas to be graded should be stripped of vegetation and the top few inches of highly organic topsoil.
3. Organic topsoil should be stripped and stockpiled and used for landscaping.
4. Lower valley areas where bay mud deposits are exposed or are blanketed by shallow thicknesses of poorly compacted fill will require detailed studies prior to site grading.
5. Side hill "sliver" cuts and fills should be avoided.
6. Special consideration should be given to slope stability in the steep hillside areas. Site new structures away from steep hillsides and the toes of existing landslide surfaces, reducing the potential for damage from landslide movement or burial.
7. Steep sideslopes should be left in their natural condition where possible.
8. Minimize the potential for creating new landslides or reactivating old ones. Set backs should be determined based on detailed soils investigations in individual cases opposite landslide prone slopes to reduce the potential for slide damage to improvements.
9. Expansive soils should be considered in the design of the road pavement sections.
10. Site planning should consider the potential of differential settlement where compressible soils exist, and employ appropriate approaches to reducing the hazard to an acceptable level of risk.
11. Areas underlain by soft bay mud will require further detailed soils investigations.
12. Slopes should be planted as soon as possible after completion of construction to develop a protective organic mat.
13. Dense pockets of brush and trees located on steep slopes should be left intact where possible to prevent potential landslides.
14. The sides of the stream channel in portions of Refugio Valley should be improved to protect erosion – induced slumping. Care should be taken to maintain the natural appearance of the water-course in the open space areas.
15. Development of the site shall minimize the amount of native soils compacted by construction vehicles and structures, as well as the amount of soil disturbed through grading and excavation. As much as possible, native soils shall be left undisturbed and used for open space and landscaping purposes.

16. Development of the sites shall also maximize the use of pervious materials, including fill, and incorporate proper drainage structures capable of handling anticipated increases in surface runoff.
17. Minimize amount of grading when building on hillsides. No grading shall occur on slopes steeper than 30 percent, and cut slope angles no greater than 33 percent shall be maintained.

Policy 2D Program 2D.2

Applications for subdivision and development projects shall include site specific erosion control and hillside drainage plans, which shall address the following standards. These standards shall be implemented through adoption as conditions of approval for the project.

1. The use of silt fencing, sediment trapping basins, runoff diversion devices and hydroseeding of barren slopes shall be required to minimize or prevent erosion impacts.
2. Grading in the City shall occur with no increase in discharge of sediments to wetlands, Refugio Creek, or San Pablo Bay.

4.7.3 ENVIRONMENTAL ANALYSIS

THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the *CEQA Guidelines*, the proposed project would have a significant impact on geology and soils if it would:

- Expose people or structures to potentially substantial adverse effects, including the risk of loss, injury, or death involving 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, strong seismic ground shaking, seismic-related ground failure (including liquefaction), or landslides
- Result in substantial soil erosion or the loss of topsoil
- Be located on a geologic formation 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 landslides, lateral spreading, subsidence, liquefaction, or collapse
- 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
- 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

Areas of No Project Impact

The following impact either are not applicable to the project or are not reasonably foreseeable:

- 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 septic tanks or alternative wastewater disposal systems where sewers are not available are planned as part of the proposed project; thus, there would be no impact.

POTENTIAL IMPACTS AND MITIGATION MEASURES: GENERAL PLAN AND ZONING ORDINANCE AMENDMENTS

Seismicity Impacts

- ◆ ***DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT COULD EXPOSE PEOPLE OR STRUCTURES TO POTENTIALLY SUBSTANTIAL ADVERSE EFFECTS, INCLUDING THE RISK OF LOSS, INJURY, OR DEATH INVOLVING STRONG SEISMIC GROUND SHAKING OR SEISMIC-RELATED GROUND FAILURE (INCLUDING LIQUEFACTION) OR LANDSLIDES.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: Future development within the HNTC planning area would involve construction of facilities in a seismically active zone. As described earlier, surface rupture from a known fault is unlikely to occur at the subject parcels. However, ground shaking would occur at all of the parcels when future seismic events of high, and possibly, moderate magnitude take place, posing potential threats to structures placed on the sites and the persons present at the time of seismic events. Liquefaction was found not to be a risk on the C1 parcel and the potential for liquefaction at other parcels is unknown (excluding the PNR parcel, which is addressed in the Market Town impact analysis, below). Landslides are a possibility in portions of the Loop and Ramp parcels.

Earthquakes and groundshaking in the San Francisco Bay Area are inevitable but unpredictable and will occur at some point prior to, during, and/or after the completion of development at the project sites. Although some structural damage typically is not avoidable, building codes and local construction requirements have been established to protect against building collapse and to minimize injury during seismic events. Compliance with applicable regulations, such as Building Code requirements, and conformance with the Hercules General Plan Safety Element policies listed above, are part of the project. Using standard construction techniques, chosen in accordance with the results of site-specific geotechnical investigations and in compliance with codes and requirements, structures can be designed and built to withstand the geologic hazards listed above. Furthermore, the following mitigation measure requiring project-specific geotechnical studies would reduce potential seismic impacts to less than significant.

Mitigation Measure:

- GS1 Prior to issuance of grading permits for parcels within the HNTC planning area, final geotechnical investigations, including additional subsurface exploration and laboratory testing, shall be performed. The recommendations of these investigations shall include final building footprints, building loads, estimated site grades, and allowable settlement tolerances to be implemented in the final project design.

Level of Significance After Mitigation: Less Than Significant Impact.

Soils Impacts

- ◆ **DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT COULD RESULT IN SUBSTANTIAL SOIL EROSION OR THE LOSS OF TOPSOIL.**

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Site soils within the planning area consist of highly erodible soil types and, thus, erosion could result from project construction, when stabilizing vegetation would be removed and soils exposed to construction equipment and the elements, especially wind and rain. Erosion can be controlled using standard construction practices, based on the site-specific geotechnical studies that would be performed as per Mitigation Measure GS1. In addition, implementation of Mitigation Measures WQ1 through WQ6, set out in Section 4.9 (Hydrology and Water Quality) would also ensure that impacts associated with construction-related soil erosion would be less than significant.

Development at the sites would cover currently pervious ground surfaces with impervious materials. This could increase stormwater runoff, which would have the potential to erode soils. Methods to reduce stormwater runoff impacts to less-than-significant levels are described in Section 4.9.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

- ◆ **DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT COULD BE LOCATED ON A GEOLOGIC FORMATION UNIT OR SOIL THAT IS UNSTABLE, OR THAT WOULD BECOME UNSTABLE AS A RESULT OF THE PROJECT, AND POTENTIALLY RESULT IN SUBSIDENCE.**

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Specific soil conditions on all the parcels within the planning area are currently unknown. However, the C1 parcel has heterogeneous fills comprised of both stiff and soft materials, creating a risk of settlement. This may be true of other parcels as well. Settlement could damage structures and endanger persons in the vicinity. Mitigation

contained in the Mitigated Negative Declaration adopted for the proposed interim development of the C1 parcel with the BART Replacement Parking Facility would require removal, replacement, and recompaction of undocumented fill on the site to reduce risk of settlement. Future development within the planning area consistent with the HNTC land use designation and zoning district would require preparation of site-specific geotechnical investigations pursuant to Mitigation Measure GS1. Implementation of recommendations contained in these investigations would ensure that impacts associated with unstable soil would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

- ◆ **DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT COULD 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.**

Level of Significance Before Mitigation: Potentially Significant Impact.

Impacts Analysis: Soils within the planning area may have a moderate to high expansive potential. Expansion and contraction of soils could create severe structural damage and endanger occupants and visitors to site structures. Implementation of Mitigation Measure GS2 would reduce impacts associated with expansive soils to less than significant.

Mitigation Measure:

- GS2 Plans submitted for building permits for future development of parcels within the HNTC planning area shall include requirements for the construction contractor to moisture condition any expansive soil below slabs, placing non-expansive fill below slabs as well as supporting foundations (below the zone of severe moisture change), and/or design foundations to resist the movement associated with the volume changes. Methods of moisture conditioning include mixing and turning (aerating) the soil to naturally dry the soil and lower the moisture content to an acceptable level. Other stabilization alternatives include overexcavating and placing drier material in its place, and/or treating the soil with lime.

Level of Significance After Mitigation: Less Than Significant Impact.

POTENTIAL IMPACTS AND MITIGATION MEASURES: MARKET TOWN PROJECT

Seismicity Impacts

- ◆ **THE PROPOSED MARKET TOWN PROJECT COULD EXPOSE PEOPLE OR STRUCTURES TO POTENTIALLY SUBSTANTIAL ADVERSE EFFECTS, INCLUDING THE RISK OF LOSS, INJURY, OR DEATH**

INVOLVING STRONG SEISMIC GROUND SHAKING OR SEISMIC-RELATED GROUND FAILURE (INCLUDING LIQUEFACTION) OR LANDSLIDES.

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: The mixed-use development proposed for the Market Town project (PNR parcel) would involve construction in a seismically active zone. The 2007 Treadwell & Rollo preliminary geotechnical study for the PNR parcel found that ground shaking at the site was likely to be strong depending on the characteristics of the generating fault, distance of the project to the earthquake epicenter, and magnitude and duration of the earthquake. With the exception of one location, all borings taken at the site during the preliminary soils investigation concluded that the upper 31.5 to 36.5 feet of soil was of cohesive composition and not prone to liquefaction. However, one boring revealed a silty sand layer at a depth of 12-16 feet deep. This silty sand layer has the potential to liquefy during a seismic event potentially inducing settlement of about $\frac{3}{4}$ of an inch. However, because this layer is not continuous the potential for lateral spreading is considered low. Implementation of Mitigation Measure GS3 would reduce potential seismic impacts to less than significant.

Mitigation Measure: Implement Mitigation Measure GS1.

Level of Significance After Mitigation: Less Than Significant Impact.

Soils Impacts

- ◆ ***THE PROPOSED MARKET TOWN PROJECT COULD RESULT IN SUBSTANTIAL SOIL EROSION OR THE LOSS OF TOPSOIL.***

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Site soils at the PNR parcel consist of erodible soil types and, thus, erosion could result from project construction, when stabilizing vegetation would be removed and soils exposed to construction equipment and the elements, especially wind and rain. Erosion can be controlled using standard construction practices, based on the follow-up site-specific geotechnical studies that would be performed at the site as required per Mitigation Measure GS1. In addition, implementation of Mitigation Measures WQ1 through WQ5, set out in Section 4.9 (Hydrology and Water Quality) would also ensure that impacts associated with construction-related soil erosion would be less than significant.

Development of the PNR parcel would cover currently pervious ground surfaces with impervious materials. This could increase stormwater runoff, which would have the potential to erode soils. Methods to reduce stormwater runoff impacts to less-than-significant levels are described in Section 4.9.

Mitigation Measures: No additional mitigation required.

Level of Significance After Mitigation: Less Than Significant Impact.

- ◆ ***THE PROPOSED MARKET TOWN PROJECT COULD BE LOCATED ON A GEOLOGIC FORMATION UNIT OR SOIL THAT IS UNSTABLE, OR THAT WOULD BECOME UNSTABLE AS A RESULT OF THE PROJECT, AND POTENTIALLY RESULT IN SUBSIDENCE***

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: As discussed previously in this section, the PNR parcel was found to have a low risk of settlement during the preliminary site geotechnical investigation. Therefore, potential impacts associated with unstable soil would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

- ◆ ***THE PROPOSED MARKET TOWN PROJECT COULD 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.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: Soils at the PNR parcel consist of moderately to highly expansive silt and clay and, therefore, have a moderate to high expansion potential according to the preliminary site geotechnical investigation. These expansive soils near the ground surface are subject to high volume changes during seasonal fluctuations in moisture content. Such fluctuations could potentially cause cracking to the foundation and floor slabs as well as weaken the integrity of the structure over time. This expansion and contraction of soils could create severe structural damage and endanger occupants and visitors to site structures. Implementation of Mitigation Measure GS2 would limit the potential for soil expansion beneath the proposed structures by moisture conditioning the expansive soil beneath the slabs, placing non-expansive fill below the slabs, supporting foundations below the zone of severe moisture change, and/or designing foundations to resist the movement associated with the volume changes. Therefore, a less than significant impact would result.

Mitigation Measure: Implement Mitigation Measure GS2.

Level of Significance After Mitigation: Less Than Significant Impact.

4.8 HAZARDS AND HAZARDOUS MATERIALS

This section of the EIR evaluates potential hazards and hazardous materials impacts that could result from future development within the Hercules New Town Center (HNTC) planning area consistent with the proposed amendments to the General Plan and Zoning Ordinance and implementation of the Market Town project. The evaluation includes site conditions relating to hazards and hazardous materials, and potential risks to human health and the environment.

4.8.1 ENVIRONMENTAL SETTING

Hazardous materials are substances with certain physical properties that could pose a substantial present or future hazard to human health or the environment when improperly handled, disposed of, or otherwise managed. Hazardous materials are grouped into four categories, based on their properties: toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), and reactive (causes explosions or generates toxic gases). Hazardous materials are commonly used in commercial, agricultural, and industrial applications, as well as in residential areas to a limited extent. A hazardous waste is any hazardous material that is discarded, abandoned, disposed, or is to be recycled. The same criteria that render a material hazardous also make a waste hazardous.

EXISTING CONDITIONS

The location and topography of the project site have been described previously in this EIR (refer to Chapter 3, Project Description). Potential and actual locations of hazardous substances at or in the vicinity of the planning area were identified in several Phase I Environmental Site Assessments (ESAs) or their equivalents, dated February 12, 2002, December 2004, December 16, 2005, and May 29, 2007; and one Phase II ESA dated July 18, 2007. Findings are summarized below.

Phase I Environmental Site Assessments

LFR Levine Fricke, February 12, 2002

LFR Levine Fricke prepared a site evaluation for the property that is designated in this EIR as C1 parcel (LFR, 2002). During a site visit on February 6, 2002, the site was found to be vacant and undeveloped, and no evidence of any releases of petroleum products or other chemicals was observed. In aerial photographs taken over a span of several decades, starting in 1939, the site was vacant and did not appear to have been graded or used for agricultural purposes. The site was not listed in any agency databases of leaking underground storage tanks (USTs) or aboveground storage tanks (ASTs), hazardous waste sites, or abandoned sites, nor were any such sites identified within close proximity or hydraulically upgradient from the property.

The agency lists appended to the LFR report listed the occupants of two of the other parcels that are the subject of this EIR:

Carone Brothers, 1350 Bayberry Way (later known as Willow Avenue), Carone and WC Drilling parcels. The property was listed as being a leaking underground fuel tank site and as being on the Cortese List.¹ The substance leaked was regular gasoline; the remediation status was listed as “closed.” This site is discussed in more detail below, in the summary of the findings of the Geocon, Inc. report.

Geocon, Inc., December 2004

Geocon, Inc. (Geocon, 2004) prepared an ESA for the proposed Ramp Relocation project. Although the locations of the various alternatives examined for the project did not directly include the parcels that are the subject of this current EIR, one of the alternatives (“Alternative 1”) borders three of the parcels that are the subject of this current EIR (C1 parcel, Caltrans parcel and a corner of WC Drilling parcel) to the north and east.

The purpose of the ESA was to identify “recognized environmental conditions” as defined by the American Society for Testing and Materials (ASTM) Designation E 1527-00. ASTM defines recognized environmental conditions as the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term is not intended to include de minimis conditions that generally do not present a material risk of harm to public health or the environment. Geocon conducted a site visit and searched various databases (principally fire insurance maps, and federal, state, and local agency records) to ascertain whether any recognized environmental conditions existed on or near the various alternative properties where the Ramp Relocation project would take place.

Geocon found three recognized environmental conditions potentially affecting the Ramp Relocation project’s Alternative 1, all of which are relevant to this EIR:

Caltrans Maintenance Station, 1369 Willow Avenue (Caltrans parcel): During a site visit on November 2, 2004, Geocon observed an AST on this property. A 7,500-gallon gasoline UST and a 2,000-gallon diesel UST were removed on June 26, 1997. Total Petroleum Hydrocarbons as diesel (TPHd; 448 mg/kg [milligrams/kilogram; equivalent to parts per million]) and as gasoline (TPHg; 102 mg/kg) were reported in soil samples, and 5.5 mg/l TPHg (equivalent to parts per million) and 0.21 ug/l (micrograms/liter; equivalent to parts per billion) methyl tertiary-butyl ether (MTBE) were reported in a groundwater sample, collected at the time of the removals.

In 1999, three monitoring wells were installed downgradient of the former tank pit. Up to 143 ug/kg MTBE in soils, and 180 ug/l MTBE and 0.7 ug/l chloromethane were found in groundwater. The San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) issued a Case Closure letter on September 26, 2002, determining the property to be a low-risk site. Geocon, Inc. concluded that the facility had the ability to adversely affect Alternative 1 of the ramp relocation project, due to the known residual impact to

¹ This refers to the Hazardous Waste and Substances Site List, a list of hazardous materials sites compiled pursuant to California Government Code Section 65962.5.

groundwater at the site, the shallow groundwater, and the presence of an unnamed intermittent stream. Depth to groundwater at this property was reported as being between approximately 2 - 5 feet below ground surface (bgs).

Carone Brothers, 1350 Willow Avenue (Carone and WC Drilling parcels)²: During its November 2, 2004 site visit, Geocon observed active and apparently inactive ASTs and stockpiled soils at this property. A 4,000-gallon diesel UST, 4,000-gasoline UST and a 280-gallon³ oil UST were removed in March 1992. Up to 59 mg/kg TPHd, 1.4 mg/kg TPHg, and 270 mg/kg Total Oil and Grease were detected in soil samples, and 450 ug/l TPHd and 300 ug/l TPHd were detected in groundwater samples, collected at the time of the removals. Depth to groundwater at this property was reported as being between approximately 5 - 12 feet bgs.

In March 2000, three temporary wells and three borings were drilled at the site. The soil borings contained up to 5.6 mg/kg TPHd, and groundwater samples contained up to 8,600 ug/l TPHd and 4.1 ug/l MTBE. Residual contamination was determined to be limited to the area of the former UST pit. The SFBRWQCB issued a Case Closure letter on August 21, 2000, as the contamination was deemed unlikely to migrate and the facility was deemed to be of low risk to groundwater. Geocon, Inc. concluded that the facility had the ability to adversely affect Alternative 1 of the Ramp Relocation project, due to the level of residual contamination present, and the site's proximity to the unnamed intermittent stream.

Aerially-Deposited Lead: Geocon made a general observation that aerially-deposited lead (ADL) exists along major freeway routes, such as State Route 4 (SR 4), due to past emissions from vehicles powered by leaded gasoline. Lead concentrations in soil adjacent to freeways have typically ranged between 50 and 3,000 mg/kg. ADL is generally limited to the upper 0.6 meter of soil material. Geocon concluded that due to the age of SR 4 and the unpaved nature of the area that was the subject of its ESA, it was likely that that area is impacted with ADL. Geocon recommended that an ADL investigation be performed to characterize the soil for potential reuse or disposal.⁴

AllWest, December 16, 2005

AllWest conducted an ESA at the Hercules Transit Center (PNR parcel) and an adjacent undeveloped lot in accordance with ASTM E 1527-00 (AllWest, 2005). During a site visit on December 5, 2005, no hazardous materials were noted at the site, although it noted evidence of a ConocoPhillips high pressure petroleum pipeline running through the property.

³ Actually 250 gallons, according to site records.

⁴ Geocon recommended that if Alternative 1 were chosen, and excavations deeper than two feet were made in the vicinity of the Caltrans, WC Drilling parcels, soil and grab-groundwater samples be collected. However, the 2007 RBF ESA (see elsewhere in this section) concluded that such an investigation is unnecessary, based on the case closure letters issued by the SFBRWQCB. For each site, the closure letters stated "Based upon the available information, including the land use, and with the provision that information provided to the agency was accurate and representative of site conditions, no further action related to the underground storage tank release is required."

According to a City of Hercules (City) representative, the property was owned by the Hercules Powder Company (HPC) from the 1800s to the 1960s. HPC manufactured gunpowder, dynamite, and fertilizers in the vicinity of the property. Areas of trinitrotoluene (TNT) contamination have been identified in various areas of the former HPC facility where storage bunkers were located, but no storage bunkers have been identified on the subject property. A review of historical documents indicated that the site was unoccupied from at least 1953 to 1994. Fill material of unknown origin was identified on the property.

A search of agency databases found no listing of the subject property, and no recorded sites that may have impacted the subject property based on hydraulic gradient, site distance, regulatory status, or contamination magnitude.⁵ AllWest concluded that the current and surrounding land use of the property had a low potential to impact the property's soil and groundwater resources.

Based on the historical ownership of the property and the presence of the pipeline, AllWest recommended subsurface investigations to determine the route of the pipeline and whether releases had occurred, evaluate whether HPC operations impacted the property, and evaluate the chemical composition of the fill material.

RBF, May 2007

RBF Consulting conducted a Phase I ESA at the following parcels: C1, Loop, Ramp, Caltrans, Carone, and WC Drilling, using similar methodology employed in the December 2004 Geocon ESA (RBF, 2007a). A representative made a site visit on May 1, 2007. Observations included:⁶

- Power lines with transformers were visible on-site to the north of, and parallel to, Willow Avenue.
- An AST was visible on the Caltrans parcel. Secondary concrete containment was noted. Minor staining of the containment was visible. Multiple 55-gallon metal drums were also noted on the Caltrans parcel. Multiple 5-gallon plastic buckets were also noted on the Caltrans parcel and multiple metal storage containers were visible. The contents of these containers were unknown at the time of the ESA.
- Miscellaneous debris (i.e., large automobiles and equipment associated with roadway services) was visible on the Caltrans parcel and sub-drains located on concrete were noted throughout the parcel.
- Demolition debris piles were visible throughout the C1 parcel. Debris piles appeared to consist of concrete, asphalt, and soil. The majority of the debris piles are permitted. However, some were illegally dumped by unknown sources. The contents of these debris piles are unknown.

⁵ Hercules, Inc. is listed at being at San Pablo Avenue/Sycamore Avenue, which is at the southwest corner of Parcel 1. However, according to the AllWest report, the Hercules, Inc. site actually is about 400 feet southwest and downgradient of Parcel 1, which would place it on the other side of San Pablo Avenue from the parcel. The same conclusion applies to Gelsar, another listed property at this intersection.

⁶ RBF was unable to conduct on-site observations of Parcels 6 and 7.

Additional findings beyond those presented in the Geocon Phase I ESA included:

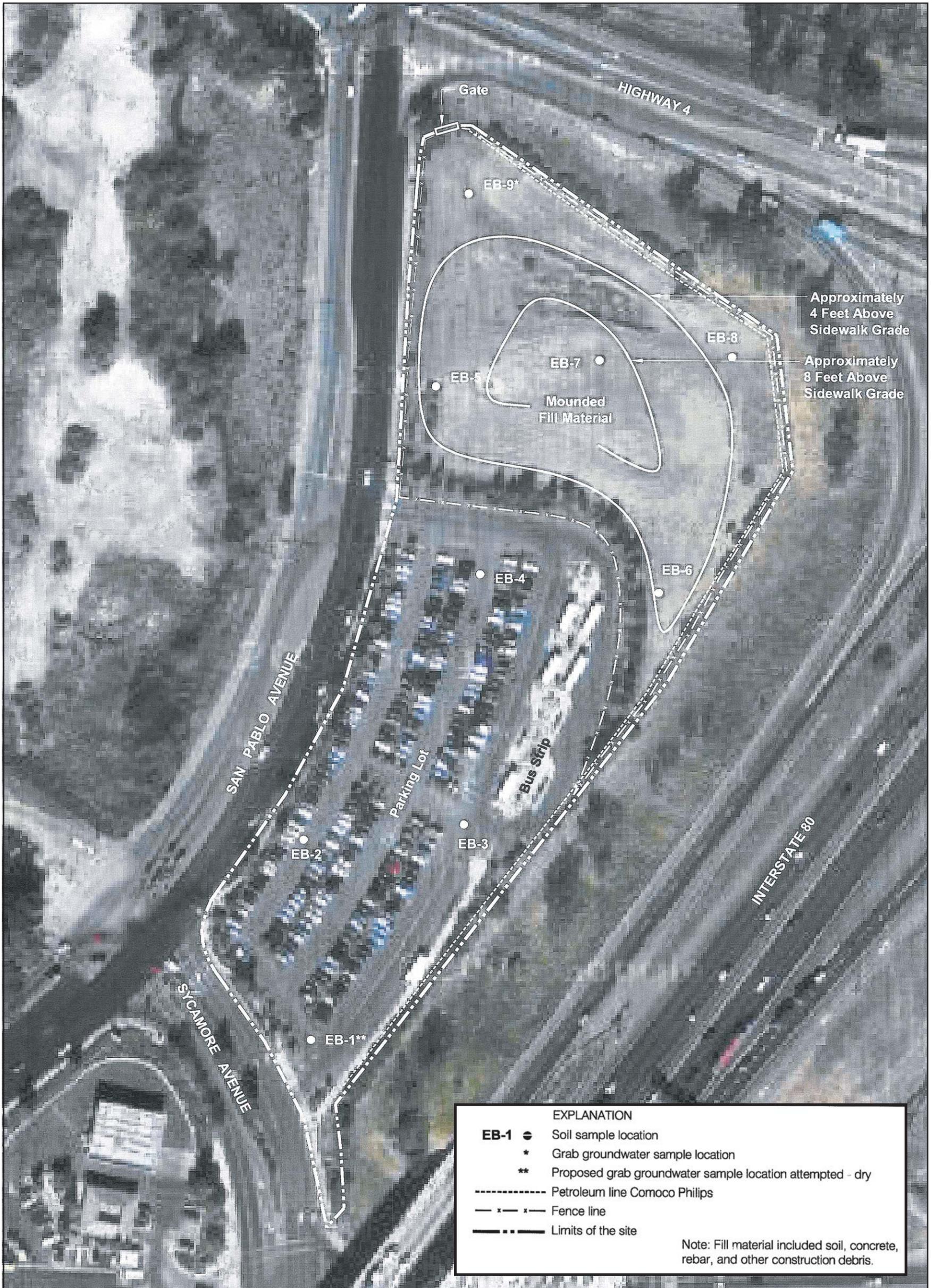
- A notice of violation was issued for the Caltrans parcel in March 2007 for hazardous waste containers and equipment shops. The nature of the violations did not indicate that contamination to soil or groundwater had occurred as a result,⁷ and the violations were found to be corrected on May 4, 2007.
- Based upon the year that the on-site structures were built at the Caltrans, and WC Drilling parcels (prior to 1978), the potential for asbestos containing materials (ACMs) to be found on-site is considered likely. Additionally, the age of on-site temporary structures is unknown; therefore, ACMs may be present within those structures as well.
- Similarly, based on the age of the on-site structures at the Caltrans, WC Drilling parcels, the potential for lead-based paints (LBPs) to be found on-site is considered likely, and LBPs may be present on the temporary structures as well.
- No staining or leakage was noted with respect to on-site transformers and other utilities at the Caltrans, Loop, C1, Carone and WC Drilling parcels. However, site access to the Carone, and WC Drilling parcels was restricted and only limited visual inspection was possible.
- Fifteen off-site properties located within a one-mile radius of the planning area were listed on regulatory agency lists. None was considered to require further investigation prior to construction activities at the parcels that are the subject of the current EIR, due to the groundwater flow direction from the these off site properties, distance from proposed project, and/or their regulatory status.

Phase II Environmental Site Assessment

Treadwell & Rollo, July 18, 2007

Treadwell & Rollo conducted a Phase II ESA for the PNR parcel (Treadwell & Rollo, 2007). A total of nine borings were made, four in the southern portion and five in the northern portion of the site, refer to Figure 4.8-1 (Soil Sample Boring Locations) for locations of borings. Soil samples were collected from each boring at various intervals. Seventeen such samples were submitted to Torrent Laboratories, a California-certified analytical laboratory, for the following analyses: Total Petroleum Hydrocarbons (TPH) quantified as gasoline (TPH-g), diesel fuel (TPH-d), and motor oil (TPH-mo) by EPA 8015M; Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX), Methyl tert-Butyl Ether (MTBE), and Halogenated Volatile Organic Compounds (HVOCs) by EPA Method 8260B; and Leaking

⁷ "Containers holding a hazardous waste should be closed during transfer and storage except when it is necessary to add or remove waste," and "Failed to test and maintain all emergency systems, fire protection, spill control, or decontamination equipment."



Underground Storage Tank Metals (cadmium, chromium, lead, nickel, and zinc; LUFT 5 Metals) by EPA Method 6010B. A groundwater sample was collected from one of the northern borings and analyzed for TPH-g, TPH-d, and TPH-mo, BTEX, MTBE, and HVOCs.

Treadwell & Rollo compared analytical results with chemical-specific 2005 SFRWQCB Environmental Screening Level (ESLs) for residential land use for both shallow soils and deep soils where groundwater is not a current or potential source of drinking water. Metals were further compared to hazardous waste criteria in California Code of Regulations Title 22 (22 CCR), Section 66261.20 through .24 (22CCR66261.20-.24).

The only chemical detected in groundwater was xylene, at a concentration below the ESL criteria for groundwater, which is not a current or potential source of groundwater. Petroleum hydrocarbons (TPH-d and TPH-mo) were detected in several soil samples, and one HVOC (chlorobenzene) was detected in one soil sample. All concentrations were either below laboratory reporting limits or below their respective ESLs. BTEX and MTBE were not detected in any samples. Cadmium, chromium, nickel, and zinc were all within background concentrations.

Lead was detected above background concentrations in some soil samples, but all concentrations were below the residential ESL for lead in shallow soil. However, one soil sample, taken at a depth of 9.5 to 10.0 feet bgs from a boring made in the east-central portion of the parcel had a lead concentration of 50 mg/kg in soil. Treadwell & Rollo concluded that although this concentration does not represent a human health risk (based on the ESL of 150 mg/kg), it may still qualify as a California hazardous waste if the soluble component of lead in the soil sample exceeds the Soluble Threshold Limit Concentration (STLC). To evaluate if the soluble lead component of this sample exceeds the STLC for lead, it would need to be additionally analyzed by the Waste Extraction Test (WET). Until a WET test is performed, soil excavated from this area may qualify as a California Hazardous Waste.

Other

Two Chevron underground petroleum pipelines -- an active product line, and the Old Valley Pipeline -- are located south of the planning area, at distances varying from approximately 400 feet from the PNR parcel to less than 100 feet from the Carone parcel. The pipelines are both cross-gradient and upgradient from the planning area. The Old Valley Pipeline, which carried heavy crude oil and Bunker C fuel oil from oil fields in Kern County to Bay Area refineries, was installed in 1902 and decommissioned in the 1970s, with the majority of the pipeline removed. No leaks have been reported from the active pipeline. Leaks from the Old Valley Pipeline occurred at various locations along the hundreds of miles that this pipeline transited. According to Chevron, analytical soil sampling results have consistently indicated that residual crude-oil affected soil poses no risk to human health or the environment. One crude oil release to soil from the Old Valley Pipeline is known to have occurred, to the southwest of the planning area. The leak, which occurred in 1975, was remediated. No data has been collected in the immediate vicinity of the planning area (Mansholt, 2007; RBF, 2007b).

WILDLAND FIRES

The HNTC planning area is located in a developed area adjacent to SR 4 and Interstate 80 (I-80). Although portions of the planning area are located on grassland, and a small number of trees are present, the area is not subject to wildland fire risks.

4.8.2 REGULATORY SETTING

FEDERAL, STATE, AND LOCAL FRAMEWORK

Hazardous materials and waste in California are regulated by numerous federal, state and local agencies, and the regulatory framework is complex. At the federal level, the EPA is the principal regulatory agency, while at the state level, the Department of Toxic Substances Control is the primary agency governing the storage, transportation and disposal of hazardous wastes. The Federal Occupational Safety and Health Administration (OSHA) and the state Cal-OSHA regulate many aspects of worker safety. The State Water Resources Control Board and Regional Water Quality Control Boards (the relevant Regional Board for the planning area being SFBRWQCB) have jurisdiction over discharges into waters of the state, and over leaking underground fuel tanks. The California Highway Patrol and Caltrans are the state agencies with primary responsibility in regulating the transportation of hazardous materials and hazardous waste. Local regulatory agencies enforce many federal and state regulatory programs through the Certified Unified Program Agency (CUPA) program.

In the geographic area of the planning area, the Contra Costa Health Services Department is the CUPA agency. Contra Costa Health Services Hazardous Materials Programs are responsible for responding to emergencies and monitoring hazardous materials. This includes the safe and legal handling, storage, and disposal of hazardous waste; administering the California Accidental Release Prevention (CalARP) Program and Industrial Safety Ordinances (ISO); and protecting the public health from exposure to hazardous materials stored in USTs, including the protection of groundwater from contamination.

City of Hercules General Plan

The City of Hercules General Plan contains a Hazardous Waste Management Plan (Plan) as one of its Elements (City of Hercules, 1990). The Plan is oriented towards hazardous waste generators. As part of this plan the City has established the following goals:

1. To achieve the safe and effective management of hazardous waste within the City of Hercules.
2. To protect the health and safety of the public and the environment.

The following General Plan objectives are relevant to the proposed project. Among other objectives, the City will:

- Accept responsibility and develop appropriate planning for the safe and responsible treatment and transfer or disposal of wastes within the City jurisdiction or in coordination with other jurisdictions.
- Designate prevention of deterioration of public health or the environment caused by hazardous waste as a primary goal of the City government.
- Adopt policies and targets which restrict further increases in and seek reductions in the volume and toxicity of hazardous waste committed to land disposal.
- Oppose increases of hazardous waste treatment, storage or disposal within the City limits unless such activities are consistent with this Plan, and laws and ordinances of the City of Hercules.
- Encourage as a first priority, waste minimization and source reduction of existing waste generation facilities.
- Encourage recycling, reuse and on-site treatment as second priorities for hazardous waste management techniques.
- Provide strong direction and support to actively enforce laws, regulations and ordinances concerning issuance of permits, inspection, compliance and data availability concerning the generation, storage, transportation, treatment and disposal of hazardous waste or the generation, storage and transportation of hazardous materials.
- Develop effective programs for waste management within the appropriate City agencies to achieve a coordinated strategy to deal with citywide waste management issues.

4.8.3 ENVIRONMENTAL ANALYSIS

THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the *CEQA Guidelines*, the proposed project would have a significant impact related to hazards and hazardous materials if it would do any of the following.

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials
- 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
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school
- Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment

- 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, result in a safety hazard for people residing or working in the project area
- For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan
- 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

Areas of No Project Impact

The following impacts either are not applicable to the project or are not reasonably foreseeable:

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

The land uses that would be permitted within the planning area would be residential, office, and retail uses. Although the residents and tenants would use small quantities of hazardous materials (e.g., cleaning products), this would not create a significant hazard to the public or the environment under reasonably foreseeable conditions. Household hazardous waste can be handled and disposed through local programs.

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

No existing or proposed school is within 0.25 mile of the planning area (Riley, 2007). The closest existing school, Ohlone Elementary School, is about 0.4 mile to the southwest.

- 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, could create a significant hazard to the public or the environment.

The PNR parcel is not included on a list of hazardous materials sites compiled pursuant to government code section 65962.5 and, therefore, development of the parcel would not result in a significant hazard to the public or the environment.

- 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, result in a safety hazard for people residing or working in the project area

The planning area is not within two miles of a public airport or public use airport.

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

The planning area is not within the vicinity of a private airstrip.

- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan

The project would not impair or interfere with an adopted emergency response plan or emergency evacuation plan.

- 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

The proposed project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires because the planning area is not located in wildland area.

POTENTIAL IMPACTS AND MITIGATION MEASURES: GENERAL PLAN AND ZONING ORDINANCE AMENDMENTS

Release of Hazardous Materials Impacts

- ◆ ***DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT COULD 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.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: As described above, the Phase I ESA's conducted for the C-1, Loop, Ramp, Caltrans, Carone, and WC Drilling parcels established the varying presence of potentially hazardous materials throughout the HNTC planning area. Specifically, the RBF Consulting Phase I ESA identified the potential for ACMs and LBPs to be present on or in structures on the Caltrans and WC Drilling parcels. The Geocon Phase I ESA identified the presence of contaminated groundwater at the Caltrans parcel. Both the RBF Consulting and Geocon Phase I ESA's identified the potential for ADL to be present through-out the planning area due to their proximity to SR 4. The RBF Consulting Phase I ESA also identified debris piles of both known and unknown origin on the C1 parcel. As a result of the unknown origin of some of the material in the debris piles, there is a potential for the piles to contain hazardous materials. Finally, RBF Consulting determined that there is a potential for contamination from the off-site, but nearby Old Valley Pipeline to affect the Caltrans and Carone parcels⁸. These parcels were not physically accessible at the time of the Phase I ESA, thus further environmental assessment of the parcels is recommended prior to development of those parcels.

⁸ RBF Consulting, Technical Memorandum, October 1, 2007b.

Excavation, grading, and other construction activities at the C1, Loop, Ramp, Carone, and WC Drilling parcels could expose workers to a variety of hazardous materials as a result of their varying presence throughout the HNTC planning area. Upon occupancy of buildings and structures associated with future development within the planning area, residents and workers could also be exposed to hazardous materials. Depending upon their concentrations and how people are exposed to them, these hazardous materials could pose health risks. Contaminated soil or groundwater could be dispersed as a result of construction, with potential impacts to other non-construction personnel and to wildlife.

Railroad tracks are on the southern boundaries of the Carone and WC Drilling parcels. Active and inactive railroad beds frequently have concentrations of petroleum products and lead elevated above natural background conditions. Petroleum product concentrations and lead concentrations are derived from drippings from rail vehicles and flaked paint, respectively. Wooden railroad ties may contain preservatives (i.e., creosote), some of which may contain hazardous constituents. Track switch locations often have elevated levels of petroleum hydrocarbons. Inorganic and organic herbicides, along with diesel fuel, may have been used for vegetation control. Due to the railroad alignment, the presence of gasoline, diesel, and/or creosote within soil surrounding the railroad alignment is likely. Any construction in which the soil around the railway alignment is to be disturbed shall be conducted under the purview of the local regulatory agency to identify proper handling procedures. Once the adjacent area has been removed, a visual inspection of the areas beneath and around the removed area shall be performed. Any stained soils observed underneath the adjacent area shall be sampled. Results of the sampling (if necessary) would indicate the level of remediation efforts that may be required.

Implementation of the following Mitigation Measures HM1 through HM 12 would reduce potential impacts from hazardous materials releases to less than significant levels. These measures would be completed prior to occupancy of the residential, office, and retail structures that would be erected on the project sites.

Mitigation Measures:

As applicable, the following Mitigation Measures shall be performed by qualified professionals (e.g., for soil sampling activities, consultants with Phase II and Phase III ESA experience), using state-certified laboratories where analytical methods are called for, and licensed contractors to dispose of contaminated soils and groundwater. Qualified professionals shall also determine the number and locations of soil and groundwater samples, and which analytical methods shall be utilized. Sample collection, excavation, and other project activities shall be undertaken in conformance with applicable worker safety regulations (e.g., use of personal protective equipment where there is reason to believe that hazardous materials are present.)

Pre-Construction Activities

- HM1 The interior of individual on-site structures within the Caltrans and WC Drilling parcels shall be visually inspected prior to demolition or renovation activities. Should hazardous materials be encountered with any on-site structure, the materials shall be tested and properly disposed of in accordance with state and

federal regulatory requirements. Any stained soils or surfaces underneath the removed materials shall be sampled. Results of the sampling would indicate the appropriate level of remediation efforts that may be required.

- HM2 The exact age of the temporary structures on the Caltrans parcel shall be confirmed prior to removal. Should the temporary structures on the Caltrans parcel be removed off-site, they shall be properly disposed of at an approved landfill facility. Once removed, a visual inspection of the areas beneath the removed materials shall be performed. Any stained soils observed underneath the removed materials shall be sampled. Results of the sampling (if necessary) would indicate the level of remediation efforts that may be required.
- HM3 Areas of exposed soils on the C1, Loop, Ramp, Caltrans, Carone, and WC Drilling parcels, which would be disturbed during excavation/grading activities, shall be sampled and tested for lead prior to the issuance of Plans, Specifications, and Estimates (PS&E) for the project(s), so that any special handling, treatment, or disposal provisions associated with aerially deposited lead may be included in construction documents (if aerially deposited lead is present).

Construction Activities

- HM4 Due to the age of on-site structures on the Caltrans and WC Drilling parcels, LBPs may be present and must be disposed of to an appropriate permitted disposal facility should renovation or demolition occur.
- HM5 Pursuant to Bay Area Air Quality Management District (BAAQMD) regulations, an asbestos survey shall be conducted by an Asbestos Hazard Emergency Response Act and Cal OSHA certified building inspector to determine the levels of asbestos in structures on the Caltrans and WC Drilling parcels should renovation or demolition occur. Compliance with BAAQMD Regulation 11, Rule 2 (Asbestos Demolition, Renovation, and Manufacturing) would be required for any demolition or renovation work involving asbestos containing material.
- HM6 Any transformers to be relocated during site construction/demolitions shall be conducted under the purview of the local utility purveyor to identify proper handling procedures regarding potential PCBs.
- HM7 The on-site AST on the Caltrans parcel shall be removed and properly disposed of at an approved landfill facility. Once the AST is removed, a visual inspection of the areas beneath and around the removed AST shall be performed. Any stained soils observed underneath the AST shall be sampled. Results of the sampling (if necessary) would indicate the level of remediation efforts that may be required.
- HM8 Due to the unknown origin of the undocumented debris piles, the piles shall be sampled and tested for hazardous materials. Results of the sampling (if necessary) would indicate the level of remediation efforts that may be required.

- HM9 All miscellaneous debris on the C1 parcel shall be removed off-site and properly disposed of at an approved landfill facility. Once removed, a visual inspection of the areas beneath the removed materials shall be performed. Any stained soils observed underneath the removed materials shall be sampled. Results of the sampling (if necessary) would indicate the level of remediation efforts that may be required.
- HM10 The interior of the on-site storage unit(s) on the Caltrans, and WC Drilling parcels shall be visually inspected prior to removal. The storage unit(s) shall be removed off-site and properly disposed of at an approved landfill facility. Once removed, a visual inspection of the areas beneath the removed materials shall be performed. Any stained soils observed underneath the removed materials shall be sampled. Results of the sampling (if necessary) would indicate the level of remediation efforts that may be required.
- HM11 Prior to ground disturbance on the Caltrans and Carone parcels, soil samples shall be collected and analyzed to determine if the Chevron pipeline has released contamination and compromised the project site. Results of sampling would indicate the level of remediation effort that may be required.
- HM12 If unknown wastes or suspect materials are discovered during construction by the contractor which he/she believes may involve hazardous waste/materials, the contractor shall:
- Immediately stop work in the vicinity of the suspected contaminant, removing workers and the public from the area
 - Notify the Project Engineer of the implementing agency
 - Secure the areas as directed by the Project Engineer
 - Notify the implementing agency's Hazardous Waste/Materials Coordinator

◆ ***DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT COULD CREATE A SIGNIFICANT HAZARD TO THE PUBLIC OR ENVIRONMENT BECAUSE THE PLANNING AREA CONTAINS A SITE WHICH IS INCLUDED ON A LIST OF HAZARDOUS MATERIALS SITES COMPILED PURSUANT TO GOVERNMENT CODE SECTION 65962.5 AND, AS A RESULT, COULD CREATE A SIGNIFICANT HAZARD TO THE PUBLIC OR THE ENVIRONMENT.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: Phase I ESAs were conducted at all the parcels proposed for the HNTC General Plan Amendment and Zoning Ordinance Amendment. The Phase I ESA conducted at the Carone and Caltrans parcels reported various contaminants, principally diesel and gasoline hydrocarbons and MTBE, at soils and/or groundwater. The Carone parcel is listed on the Cortese List due to the historical presence of three USTs at the site. As part of the

Phase I investigation, files at the Contra Costa County Health Services Department (CCDHS), and SFRWQCB were reviewed to obtain an accurate history of documented contaminants at the Carone parcel. Both the CCDHS and SFRWQCB files indicate that three USTs were located on the parcel at one time, however, all USTs were removed in 1992. The SFBRWQCB issued a Case Closure letter on August 21, 2000, for the site. At this time the SFBRWQCB determined the contamination was unlikely to migrate and the facility was deemed to be of low risk to groundwater.

In addition to the Carone parcel, the Caltrans parcel is listed with the RCRA-SQC, FINDS, HAZNET, LUST, SWEEPS UST, and HIST UST databases. Multiple USTs were reported to have been located on the parcel in the past. In addition, an AST is currently located on the parcel. As with the Carone parcel, available files from the RWQCB and CCHSD were reviewed indicating that the USTs were removed from the parcel in 1997. The SFBRWQCB issued a Case Closure letter on September 26, 2002, and determined the property to be a low-risk site. However, groundwater contamination persists at the site and could present a potential hazard to workers during site construction.

As discussed above, excavation, grading, and other construction activities could expose workers to hazardous materials as a result of possible contaminants resulting from past and potentially present storage of hazardous materials at the Carone and Caltrans sites. These various actual and potential contaminants could pose risks to human health. In addition, contaminated soil or groundwater could be dispersed as a result of construction, with potential impacts to other non-construction personnel and to wildlife.

Implementation of Mitigation Measures HM7, HM11 and HM12 would reduce potential impacts from hazardous materials releases to less than significant levels. These measures would be completed prior to occupancy of the residential, office, and retail structures that would be erected on the project sites.

Mitigation Measures: Implement Mitigation Measures HM7, HM11 and HM12.

Level of Significance After Mitigation: Less Than Significant Impact.

POTENTIAL IMPACTS AND MITIGATION MEASURES: MARKET TOWN PROJECT

Release of Hazardous Materials Impacts

- ◆ ***THE PROPOSED MARKET TOWN PROJECT COULD CREATE A SIGNIFICANT HAZARD TO THE PUBLIC OR THE ENVIRONMENT THROUGH REASONABLY FORESEEABLE UPSET AND ACCIDENTAL CONDITIONS INVOLVING THE RELEASE OF HAZARDOUS MATERIALS INTO THE ENVIRONMENT.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: As discussed in the summary of the Phase I study conducted by AllWest in December 2005 for the PNR parcel, the site was previously owned by the Hercules Powder Company. The Hercules Powder Company manufactured gunpowder, dynamite, and fertilizers in the vicinity of the property. In addition, substantial amounts of undocumented fill at the site and the presence of a Conoco Phillips High Pressure Pipeline indicate an elevated risk for the potential of hazardous materials to occur at the site. In light of these potential hazards, a Phase II ESA was conducted by Treadwell and Rollo for the PNR parcel in July 2007. The Phase II ESA focused on testing the site soils and groundwater for potentially hazardous materials. Tests of soils borings taken from the site showed that although concentrations of petroleum hydrocarbons and selected VOCs were detected in the soil, the levels were below the threshold of environmental significance according to residential soils standard, where groundwater is not a current or potential source of drinking water. Given that the soils and groundwater analysis did not show environmentally significant levels of petroleum hydrocarbons, or VOCs it is unlikely the Conoco Phillips High Pressure Petroleum Pipeline has leaked.

While the majority of the site does not present the potential for exposure to hazardous materials, one boring taken at the site, EB-6, did reveal an elevated concentration of lead.

Although the majority of the PNR parcel is unlikely to expose workers and the public to potentially hazardous materials during excavation, grading, and other construction activities, the following mitigation measures have been developed as precautionary measures to further ensure that impacts associated with exposure to hazardous materials are less than significant.

Mitigation Measures:

As applicable, the mitigation measures shall be performed by qualified professionals (e.g., for soil sampling activities, consultants with Phase II and Phase III ESA experience), using state-certified laboratories where analytical methods are called for, and licensed contractors to dispose of contaminated soils and groundwater. Qualified professionals shall also determine the number and locations of soil and groundwater samples, and which analytical methods shall be utilized. Sample collection, excavation, and other project activities shall be undertaken in conformance with applicable worker safety regulations (e.g., use of personal protective equipment where there is reason to believe that hazardous materials are present.)

Pre-construction Activities

- HM13 A soil management plan shall be prepared to properly handle soil that will be excavated in the vicinity of Treadwell & Rollo boring EB-6.
- HM14 Prior to ground disturbance on the PNR parcel, soil samples shall be collected and analyzed to determine if the Chevron pipeline has released contamination and compromised the project site. Results of sampling would indicate the level of remediation effort that may be required.
- HM15 The exact location of the historical petroleum pipeline on the PNR parcel shall be defined prior to the commencement of construction. Any activities occurring within the petroleum pipeline easement shall be conducted pursuant to applicable guidelines and regulations.

Construction Activities

- HM16 The soil management plan (see HM-134, above) shall be implemented during excavation in the vicinity of Treadwell & Rollo boring EB-6.
- HM17 If unknown wastes or suspect materials are discovered during construction by the contractor which he/she believes may involve hazardous waste/materials, the contractor shall:
- Immediately stop work in the vicinity of the suspected contaminant, removing workers and the public from the area
 - Notify the Project Engineer of the implementing agency
 - Secure the areas as directed by the Project Engineer
 - Notify the implementing agency's Hazardous Waste/Materials Coordinator

Level of Significance After Mitigation: Less Than Significant Impact.

4.9 HYDROLOGY AND WATER QUALITY

This section evaluates the impacts that would result from future development within the Hercules New Town Center (HTNC) planning area and implementation of the proposed Market Town project on hydrology and water quality. The discussion of hydrology and water quality impacts presented in this section is based on assumptions, calculations and analysis contained in the project description and preliminary design plans. This section also contains analysis based on consultation with the following affected public providers:

- City of Hercules Development Services Department
- Contra Costa County Flood Control and Water Conservation District (Flood Control Engineering Division)

These departments and agencies provided relevant information through the provision of on-line reference materials, as well as through telephone communications and/or written correspondence. Other resources, references and documents used to prepare this section of the EIR are identified, both in the text of this section and in the corresponding footnotes.

4.9.1 ENVIRONMENTAL SETTING

CLIMATE AND TOPOGRAPHY

The HTNC planning area is located in the City of Hercules (City) in western Contra Costa County. The City's climate characteristics reflect the Mediterranean climate of central coastal region of California, with cool, wet winters and hot, dry summers. The rainy season generally occurs from the beginning of October through the end of April. Mean annual precipitation is approximately 22 inches per year within the City. Actual rainfall totals vary as a result of regional and global weather patterns such as periods of drought and the El Nino Southern Oscillation. The planning area is located near San Pablo Bay. The Bay creates a cooling effect and summer fog formation, resulting in a period from April to October when average evapotranspiration exceeds precipitation.

The planning area is located approximately one mile from the southeast shore of San Pablo Bay and lies in an area relatively flat terrain. Some of the parcels within the planning area are developed with urban uses while undeveloped parcels contain a combination of ruderal habitat, baccharis scrub, seasonal wetlands, freshwater marsh and roadside ditches.

SOILS

Site-specific geotechnical studies have been prepared for the PNR and C1 parcels (Parcels 1 and 2). A 2007 geotechnical investigation conducted by Treadwell & Rollo for the PNR parcel found that the upper layer of the site to be generally blanketed by high plasticity, medium stiff to stiff clay and silt with varying amounts of sand and sedimentary rock fragments. The upper material appears to be fill and extends to depths between 3.5 and 15.5 feet below ground surface (bgs).

At the C1 parcel, a 2007 geotechnical investigation conducted by ENGEO, Inc. found near-surface soils consist of undocumented fill materials, ranging from 15 to >23 feet deep,

comprised primarily of stiff to very still clays, although soft fills also are present in some areas.

Near-surface soils throughout HNTC planning area are generally medium to stiff clay silt or clayed gravel. This type of soil is known to have a medium low runoff characteristic, as well as a medium erosion hazard. For more information on the project site's geologic and soil conditions, refer to Section 5.6 (Geology and Soils) of this EIR.

SITE HYDROLOGY

PNR Parcel

The southern two-thirds of the approximately 6.6-acre PNR parcel is developed with the existing Hercules Transit Center. Thus, the site has been previously graded and an on-site stormwater drainage system has been implemented. The system currently collects and conveys stormwater surface flow to an asphalt ditch along the western edge of the site. This ditch turns into a culvert under the entrance driveway on San Pablo Avenue and then empties into an approximately 0.79-acre swale located in the vacant portion of the site, north of the Hercules Transit Center. The earth swale gently slopes from north to south towards an existing headwall where the runoff empties into a drainage pipe that connects to the existing stormwater system in the public right-of-way.

HNTC Planning Area

The C1, Loop and Ramp parcels (Parcels 2, 3 and 4) of the HTNC planning area are mostly undeveloped. These parcels slope from south to north towards the east branch of Refugio Creek that runs along the northern edge of the HNTC planning area. The creek has been undergrounded in Parcels 2 and 4 and daylighted into a wetland area in Parcel 3, where again the creek is undergrounded and directed under Interstate 80 (I-80). Stormwater runoff on Parcel 2 sheet flows in a northerly direction and is collected in a vegetated drainage swale on the eastern portion of the site which discharges into a 66-inch concrete pipe at the northern edge of the parcel. The pipe conveys water in a westerly direction, under the State Route 4 (SR 4) off- and on-ramps, and is discharged into a major drainage swale on Parcel 3. The western portion of the site flows to an earthen-lined swale on the Caltrans right of way, just north of the project site. This surface run-off is collected in storm drain inlets that connect to a storm system that crosses under the SR4 ramps to the swale/wetland area on Parcel 3. Stormwater collected in Parcel 3 is directed towards the wetland area located in the northern half of the property. In addition, a small stream and associated riparian habitat are located in Parcel 2.

The Caltrans, Carone and WC Drilling parcels (Parcels 5, 6 and 7) are currently developed and it is not known if the sites contain on-site stormwater drainage systems. Given the age of the developments, it is most likely that stormwater surface flows are not collected and allowed to dissipate off-site.

GROUNDWATER

Soil borings were conducted by Treadwell & Rollo on the PNR parcel (September 2004). Groundwater was encountered in one boring at a depth of 9.25 feet but it was not allowed to

stabilize, therefore, true groundwater depth is unclear. Soil borings were also conducted on the C1 parcel by ENGEO Inc. Groundwater was not encountered in borings, which extended to a maximum depth of approximately 26.5 feet bgs. (Engeo, 2007.)

Groundwater levels within the planning area are expected to fluctuate depending on weather conditions and seasonal rainfall, local irrigation and water levels in creeks. Groundwater recharge is likely to be limited given the prevalence of low permeability and high shrink-swell soils.

FLOODING

Flood insurance rate maps (Community-Panel Numbers 0604340008B and 0604340009B) produced by the Federal Emergency Management Agency (FEMA) for the HNTC planning area and surrounding region indicate that the some portions of the planning area (Parcels 2, 3 and 4) are within FEMA-delineated 100-year flood hazard zones.

4.9.2 REGULATORY SETTING

FEDERAL FRAMEWORK

Clean Water Act

In 1972, the Federal Water Pollution Control Act (later referred to as the Clean Water Act [CWA]) was amended to require National Pollutant Discharge Elimination System (NPDES) permits for the discharge of pollutants to waters of the U.S. from any point source. In 1987, the CWA was amended to require that the U.S. Environmental Protection Agency (EPA) establish regulations for permitting of municipal and industrial stormwater discharges under the NPDES permit program. The EPA published final regulations regarding stormwater discharges on November 16, 1990. The regulations require that municipal storm sewer system (MS4) discharges to surface waters be regulated by a NPDES permit. The NPDES stormwater program is described below.

In addition, the CWA requires states to adopt water quality standards for receiving water bodies and to have those standards approved by the EPA. Water quality standards consist of designating beneficial uses for a particular receiving water body (e.g., wildlife habitat, agricultural supply and fishing), along with water quality criteria necessary to support those uses. Water quality criteria are prescribed concentrations or levels of constituents, such as lead, suspended sediment, and fecal coliform bacteria, or narrative statements which represent the quality of water that supports a particular use. Given that California had not established a complete list of acceptable water quality criteria, EPA established numeric water quality criteria for certain toxic constituents in receiving waters with human health or aquatic life designated uses in the form of the California Toxics Rule.

Clean Water Act Section 303(d) – Total Maximum Daily Loads

When designated beneficial uses of a particular receiving water body are being compromised by water quality below CWA standards, Section 303(d) of the CWA requires identifying and listing that water body as “impaired.” Once a water body has been deemed impaired, a Total Maximum Daily Load (TMDL) must be developed for the impairing pollutant(s). A TMDL is

an estimate of the total load of pollutants from point, non-point, and natural sources that a water body may receive without exceeding applicable water quality standards (with a “factor of safety” included). Once established, the TMDL allocates the loads among current and future pollutant sources to the water body.

STATE FRAMEWORK

California Porter-Cologne Act

California’s primary statute governing water quality and water pollution issues with respect to both surface waters and groundwater is the Porter-Cologne Water Quality Control Act of 1970 (Porter-Cologne Act). The Porter-Cologne Act grants the State Water Resources Control Board (SWRCB) and each of the nine Regional Water Quality Control Boards (RWQCBs) power to protect water quality, and is the primary vehicle for implementation of California’s responsibilities under the CWA. For the HTNC planning area, the applicable RWQCB is the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB). Under the Porter-Cologne Act, the SWRCB and RWQCBs have the authority and responsibility to adopt plans and policies, regulate discharges to surface and groundwater, regulate waste disposal sites, and require cleanup of discharges of hazardous materials and other pollutants. The Porter-Cologne Act also establishes reporting requirements for unintended discharges of any hazardous substances, sewage, or oil or petroleum products.

Each RWQCB must formulate and adopt a water quality plan (Basin Plan) for its region. The regional plans must conform to the policies set forth in the Porter-Cologne Act and established by the SWRCB in its state water policy. The Porter-Cologne Act also provides that a RWQCB may include within its regional plan water discharge prohibitions applicable to particular conditions, areas, or types of waste.

National Pollution Discharge Elimination System – General Construction Activities Stormwater Permit Requirements

Future Development within the HNTC planning area would be required to comply with the statewide General Construction Activities Stormwater Permit. In California, the NPDES Stormwater Program is administered by the RWQCB. Pursuant to the Phase I NPDES Stormwater Program and Phase II Final Rule, dated December 8, 1999, discharges of stormwater associated with construction activities that result in the disturbance of equal to or greater than one acre of land must apply for coverage under the statewide General Construction Activities Stormwater Permit (General Permit). Construction activities include, but are not limited to clearing, grading, demolition, excavation, construction of new structures, and reconstruction of existing facilities involving removal and replacement that results in soil disturbance. Landowners can obtain coverage under the General Permit by filing a Notice of Intent (NOI) with the SWRCB’s Division of Water Quality Stormwater Permit Unit. Generally, a site is considered to be covered by the General Permit upon filing the NOI and submitting the appropriate annual fee. The NOI must be submitted, and the permit obtained, before construction starts.

In addition to submitting an NOI, the discharger must develop and implement a Stormwater Pollution Prevention Plan (SWPPP) and develop and implement a monitoring and reporting plan. The SWPPP should be developed to meet the following objectives:

- Identify pollutant sources that may affect the quality of discharges of stormwater associated with construction activity from the construction site
- Identify, construct, implement and maintain best management practices (BMPs) to reduce or eliminate pollutants in stormwater discharges from the construction site during construction
- Develop a maintenance schedule for BMPs installed during construction designed to reduce or eliminate pollutants after construction is completed (post-construction BMPs)

In February 2003, the RWQCBs for the San Francisco Bay Region and the Central Valley Region revised Provision C.3 in the NPDES general permit governing discharges from the municipal storm drain systems of Contra Costa County and cities within the County.

The new C.3 requirements are separate from, and in addition to, requirements for erosion and sediment control and for pollution prevention measures during construction. Project site designs must minimize the area of new roofs and paving. Where feasible, pervious surfaces should be used instead of paving so that runoff can percolate to the underlying soil. Runoff from impervious areas must be captured and treated. The new C.3 requirements apply to projects resulting in 10,000 square feet or more of impervious surface.

LOCAL FRAMEWORK

Contra Costa Clean Water Program

To comply with the Clean Water Act, Contra Costa County, 19 of its incorporated cities (including the City of Hercules) and the Contra Costa County Flood Control and Water Conservation District together formed the Contra Costa Clean Water Program. The Contra Costa Clean Water Program initially obtained a Joint Municipal NPDES Permit from the SFBRWQCB in September 1993 and January 1994, respectively. This permit, was valid only for a five-year period, was reissued in 1999 (SFBRWQCB Permit No. CAS0029912) and was subsequently amended in 2003, 2004 and 2006. A new Joint Municipal NPDES permit is currently being drafted by the SFBRWQCB and will provide coverage for the greater Bay Area. The new NPDES permit will expire in 2012. The permit will include a comprehensive plan to reduce the discharge of pollutants to the “maximum extent practicable.”

The Contra Costa Clean Water Program provides guidance and training on the following:

- Adopting legal ordinances.
- Conducting public education programs such as stenciling informational signs like “No Dumping Drains to Bay” on storm drain covers.
- Instituting or enhancing programs such as street sweeping, storm drain maintenance.
- Performing erosion control practices.
- Identifying illicit pollutant discharges to the storm drain system, and requiring new development and industrial discharge controls. Typical stormwater protection measures are described below.

Best Management Practices

Contributors to non-point source pollution may establish BMPs to minimize the potential for pollution. A BMPs program document may be prepared. Typical elements of such a program may include addressing the possibility of substituting less toxic compounds in various manufacturing or other operations, proper handling of those toxic compounds used, and proper storage of toxic compounds.

Source Control

Industrial and commercial entities may be required to demonstrate that the hazardous materials used on their sites cannot be easily mobilized and carried off by stormwater runoff. This involves confining some operations to roofed/covered areas and preventing on-site runoff from flowing through these areas. Hazardous material storage in uncovered areas requires the capability for full containment of the material during periods of rain. Uncovered parking areas are required to conduct street sweeping periodically to remove pollutants, oils and greases before they are mobilized.

Hercules General Plan

The Hercules General Plan (General Plan) contains several goals, policies and regarding hydrology and water quality that are applicable to the project site:

Policy 1A Seismic, geologic, flood and fire safety policies will be integrated into other mandatory elements of the General Plan. Administration and enforcement of municipal regulations provide positive measures for implementing safety policies.

Program 1A.1 Planning Review

1. Planned development plans must be prepared and adopted for all new development projects. Safety measures will be incorporated into these planned development plans to provide adequate protection from seismic, geologic, flood and fire hazards.
2. The review and approval of zoning application, tentative maps and planned development plans shall include consideration of safety policies and standards contained in the General Plan and other area plans.

Program 2D.2 Applications for subdivision and development projects shall include site specific erosion control and hillside drainage plans, which shall address the following standards. These standards shall be implemented through adoption as conditions of approval for the project.

1. The use of silt fencing, sediment trapping basins, runoff diversions devices and hydroseeding of barren slopes shall be minimized or prevent erosion impacts.

2. Grading in the City shall occur with no increase in discharge of sediments to wetlands, Refugio Creek, or San Pablo Bay.

- Program 2D.3 Further investigations of possible fault traces should be made in the vicinity of the Pinole Traces and Pinole Ridge. Setbacks from located fault traces should be based on geological engineering recommendations.
- Policy 4A Refugio Creek Channel should be improved to provide adequate capacity for expected flood flows.
- Program 4A.1 Development projects along the stream channel shall include plans to improve drainage flows consistent with protection of riparian habitats and wetlands as approved by California Department of Fish and Game and the US Army Corps of Engineers.
- Policy 4B New developments shall be located and designed to minimize generation and exposure to flood hazards.
- Program 4B.1 Subdivision and planned development plan applications shall include measures to promote flood safety. These measures shall be evaluated during application review and implemented through adoption as conditions of approval for the project.
1. Review of any significant project proposals for areas which are not presently in flood zones should include an evaluation of increased downstream flows resulting from the project.
 2. Finished floor elevation of all developments must be one foot above the 100-year flood elevations prescribed on the Flood Insurance Rate Maps.
 3. In order to protect lives and property, intensive development should not be permitted in reclaimed areas unless flood protection in such areas is constructed to the standards of the Flood Disaster Protection Act of 1973.
- Policy 9A Develop a Master Water Quality Control Plan for the City, including measures to clean up existing contaminated water resources in various parcels, to identify and enforce the mitigation of existing sources of pollution, and to develop ways to preventing further pollution such as specific water treatment policies for industries and retention basins for surface runoff suspected of carrying roadway pollutants.
- Program 9A.1 The Master Water Quality Control Plan shall be prepared by the City to meet NPDES standards, be approved by the City Engineer, and reviewed by the Regional Water Quality Control Board and State Department of Water Resources for correctness and thoroughness, prior to implementation.
- Program 8A.2 As part of the Master Water Quality Control Plan implementation, develop a set of best management practices (BMPs) for developers to follow. Such practices may include, but are not limited to:

- i) Use of stormwater retention or detention structures:
- ii) The use of oil and water separators; and
- iii) The use of sediment traps.

Program 10A.1 Ensure that adequate drainage facilities and pollution prevention and control infrastructure are built accommodate the increase in runoff from newly developed areas.

Program 10A.2 For each proposed development project, runoff increase calculations for the parcel at full build-out shall be measured against estimates of existing runoff to ensure that no flooding will result.

4.8.3 ENVIRONMENTAL ANALYSIS

THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the *CEQA Guidelines*, the proposed project would have a significant hydrology and water quality impact if it would:

- Violate any water quality standards or waste discharge requirements
- 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 preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)
- 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
- 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 that would result in flooding on- or off-site
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff
- Otherwise substantially degrade water quality
- 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
- Place within a 100-year flood hazard area structures which could impede or redirect flood flows
- Expose people or structures to a significant risk of loss, injury or death involving flooding, including as a result of the failure of a levee or dam
- Inundation by seiche, tsunami, or mudflow

Areas of No Impact

The following impacts either are not applicable to the project or are not reasonably foreseeable:

- Otherwise substantially degrade water quality

The eventual development of the HNTC planning area and implementation of the Market Town project would not otherwise degrade water quality beyond the impacts discussed in this section. Therefore, no further water quality impacts would result from project implementation.

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

The HTNC planning area, including the PNR parcel, is not located in an area that would be subject to flooding in the event of dam and/or levee failure. As such, no impact would result.

- Inundation by seiche, tsunami, or mudflow

According to the City's GP/Redevelopment Plan EIR, the City is highly unlikely to be impacted by seiche, tsunami or mudflow. There would be no impact.

- Place housing within a 100-year flood hazard area, or place within a 100-year flood hazard area structures which could impede or redirect flood flows

Flood insurance rate maps prepared by FEMA (Community-Panel Number 0604340008B) indicate that the Market Town project site is not located within either a 100-year or 500-year flood hazard area. Therefore, the development of the mixed-use project would not impede or redirect flood flows. There would be not impact. Flood related impacts for the future development of the HTNC planning area are discussed below.

POTENTIAL IMPACTS AND MITIGATION MEASURES: GENERAL PLAN AND ZONING ORDINANCE AMENDMENTS

Water Quality/ Waste Discharge Impacts

- ◆ ***DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT WOULD NOT VIOLATE WATER QUALITY STANDARDS OR WASTE DISCHARGE REQUIREMENTS.***

Level of Significance Before Mitigation: Less Than Significant Impact.

Construction

Impact Analysis: Construction-related erosion could result from alterations in the HNTC planning area drainage patterns and grading activities, and could increase sedimentation in receiving waters. Development of the HNTC planning area would include earthwork and grading activities that would occur over the majority of the planning area. Construction

activities would result in the removal of vegetative cover, which acts to stabilize the soil, or the exposure of previously developed land. Therefore, future development within the HNTC planning area would present a threat of soil erosion from soil disturbance by subjecting unpaved and unvegetated areas to the erosional forces of runoff during construction.

Given that the smallest parcel included in the proposed planning area is 1.77 acres, potential projects would most likely result in a disturbance of over one acre of land. As such, future project sponsors would be required to obtain coverage under the General Permit by filing an NOI with the SWRCB Division of Water Quality. The filing would describe erosion control and stormwater treatment BMPs to be implemented during and following construction and provide a schedule for monitoring performance. These BMPs would serve to control point and non-point source pollutants in stormwater and would be part of a project's SWPPP for construction activities.

Compliance with the General Permit and implementation of the SWPPP's BMPs would reduce potential water quality or waste discharge impacts in the HNTC planning area to less than significant.

Post-Construction

Impact Analysis: The eventual development of the HNTC planning area could result in new or increased amounts of non-point source pollutants, which would be the primary contributors to potential water quality degradation. Non-point source pollutants would be washed by rainwater from rooftops and landscaped areas into on-site and local drainage networks. Impacts from potential projects would be reduced to a less than significant level given the implementation of the required Stormwater Management Plan, which would incorporate all aspects of the RWQCB's C.3. Guidelines. A Stormwater Management Plan that would recommend a stormwater collection, treatment and disposal system for all proposed projects located in the HNTC planning area would be required, and would ensure that the proposed projects comply with applicable water quality and waste discharge regulations.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

Groundwater Supply/Recharge Impacts

- ◆ ***DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT WOULD NOT 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 PREEXISTING NEARBY WELLS WOULD DROP TO A LEVEL THAT WOULD NOT SUPPORT EXISTING LAND USES OR PLANNED USES FOR WHICH PERMITS HAVE BEEN GRANTED).***

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Land uses described in the proposed NTC land use designation and zoning district would not include projects that would involve the extraction of groundwater. However, future development within the HNTC planning area would result in the conversion of permeable surface to impermeable surface, therefore, resulting in a net increase of impermeable surface. However, the amount of permeable surface conversion would be minor given that approximately 50 percent of the HNTC planning area is already developed with impermeable surface. Parcels 2 and 3 are the only parcels in the proposed HNTC planning area that are currently undeveloped. Development of these sites could result in the urbanization of approximately 14.94 acres of previously undeveloped land. The soils underlying the HNTC planning area are designated as Hydrologic Soil Group (HSG) Class D, indicating very low infiltration potential and, therefore, have a very low potential for groundwater recharge. Potential impacts would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

Erosion/Siltation impacts

- ◆ ***DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT WOULD NOT 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.***

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Future development within the HNTC planning area would not result in a significant modification of the area's drainage pattern because approximately 50 percent of the area is already developed with impermeable surfaces. However, Parcel 3 contains an exposed portion of the east branch of Refugio Creek, and development of the HNTC planning area would result in construction activities that could result in erosion and siltation impacts to the creek.

As described above, the project's over one acre in size would be required to obtain coverage under the General Permit issued by the SWRCB for stormwater discharge associated with construction activities. Compliance with the General Permit would require the preparation of a SWPPP which would include BMPs that would reduce potential erosion and/or siltation impacts to less than significant.

Operational impacts associated with the build-out of the HNTC planning area (projects impacting over 10,000 square feet) would be less than significant with implementation of the required Stormwater Management Plan, which would recommend a collection, treatment and disposal system for the proposed project. Integrated Management Practices (IMPs) would be incorporated into the site design as part of the project's Stormwater Management Plan. These IMPs could include flow through planter boxes and planter beds, which capture and treat roof runoff, and vegetated swales to capture and treat road drainage. IMPs would

reduce stormwater runoff and result in less soil erosion or siltation being directed in to the City's stormwater drainage system and eventually into San Pablo Bay. Impacts would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

On- or Off-Site Flooding Impacts

- ◆ ***DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT COULD 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 THAT WOULD RESULT IN FLOODING ON- OR OFF-SITE.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: Implementation of the proposed project would increase the existing surface flow rate and/or amount of surface flow, above the flow and rate that is already produced in the area. In addition, Parcel 3 in the HNTC planning area contains an exposed portion of the east branch of Refugio Creek. However, potential on- or off-site impacts would be less than significant given that build-out of the HNTC planning area would require projects proposing 10,000 square feet or more of development to prepare a Stormwater Management Plan. The Stormwater Management Plan would include treatment and flow control measures (e.g., vegetated swales and detention ponds) that would impede and/or reduce the amount of stormwater exiting the project site and potentially entering the east branch of Refugio Creek. In addition, Mitigation Measure WQ1 would require all projects within the HNTC planning area to submit a hydrology report and stormwater drainage plan to the City for review and approval. Mitigation Measure WQ1 would also require proposed projects to show no net increase in stormwater flow into the City's existing stormwater drainage system.

Mitigation Measure:

- WQ1 Prior to issuance of grading or building permits, whichever occurs first, the project sponsor shall submit a hydrology report (using the Hydro-6 model) that details the performance of pre- and post-project stormwater runoff from the project site to the City's drainage system for review and approval by the City's Engineering and Public Works Department. In addition, plans for the project's stormwater drainage system shall also be submitted for review and approval by the City's Engineering and Public Works Department. The stormwater drainage system shall be developed in accordance with the site specific Stormwater Control Plan for the project, and shall not result in a net increase in stormwater flow to the City's stormwater drainage system.

Level of Significance After Mitigation: Less Than Significant Impact.

Stormwater Drainage System Impacts

- ◆ ***DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT COULD EXCEED THE CAPACITY OF EXISTING OR PLANNED STORMWATER DRAINAGE SYSTEMS OR PROVIDE SUBSTANTIAL ADDITIONAL SOURCES OF POLLUTED RUNOFF.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Drainage System Capacity

Impact Analysis: The proposed NTC land use designation and eventual development of the HNTC planning area would not result in a significant increase of runoff to the City's stormwater drainage system given that half of the planning area is already developed and currently serviced by the City's existing stormwater drainage system. Nevertheless, implementation of the proposed project would still result in an increase in runoff, which could exceed the City's existing stormwater drainage system's capacity. Mitigation measures that would reduce impacts to the City's stormwater drainage system would be required to reduce potential impacts to less than significant.

Polluted Runoff

Impact Analysis: The development of the HNTC planning area would introduce new or/ increased amounts of non-point source pollutants typical of urban settings associated with automobiles (rubber residue from tires, oil, grease, gasoline, and other automotive fuels), herbicides, pesticides and fertilizers. However, compliance with C.3. Guidelines through the preparation of a Stormwater Management Plan would reduce potential impacts from the addition of polluted runoff from automotive and landscaping sources to a less than significant level.

Mitigation Measure: Implement Mitigation Measure WQ1.

Level of Significance After Mitigation: Less Than Significant Impact.

Flood Hazard Impacts

- ◆ ***DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT COULD PLACE HOUSING WITHIN A 100-YEAR FLOOD HAZARD AREA, OR PLACE WITHIN A 100-YEAR FLOOD HAZARD AREA STRUCTURES WHICH COULD IMPEDE OR REDIRECT FLOOD FLOWS.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: Flood insurance rate maps prepared by FEMA (Community-Panel Numbers 0604340008B and 0604340009B) indicate that portions of the HTNC planning area (Parcels 2, 3 and 4) are located within a 100-year flood hazard area. However, since the

development of FEMA mapping (September, 30 1982) for the project area, modifications have been made to the east branch of Refugio Creek. These modifications include the undergrounding of the creek within Parcels 2 and 4. The modifications made to the creek have removed the parcels from the 100-year flood hazard area, and therefore no impacts are anticipated. Parcels 5, 6 and 7 are not located in a 100-year flood hazard area.

Parcel 3 contains portions of the east branch of Refugio Creek that is mapped as a 100-year flood hazard area. The creek is exposed in Parcel 3 and, therefore, impacts associated with the eventual development of the parcel could be significant. Mitigation would be required to delineate the current boundaries of the 100-year flood hazard area on the parcel, and to ensure that the finished floor elevation of the development would be one foot above the 100-year flood elevation. Implementation of Mitigation Measures WQ2 and WQ3 would reduce potential impacts to a less than significant level.

Mitigation Measures:

- WQ2 Prior to issuance of grading or building permits for projects located on Parcel 3, project sponsors shall submit a hydrology report delineating the current 100-year flood hazard area on the site for review and approval by the City's Engineering and Public Works Department.
- WQ3 Prior to issuance of grading or building permits for projects located on Parcel 3, project sponsors shall submit development plans that have been designed to minimize generation and exposure to flood hazards, as well as showing finished floor elevations 1 foot above the 100-year flood hazard elevation.

Level of Significance After Mitigation: Less Than Significant Impact.

POTENTIAL IMPACTS AND MITIGATION MEASURES: MARKET TOWN PROJECT

Water Quality/Waste Discharge Impacts

- ◆ ***THE PROPOSED MARKET TOWN PROJECT COULD VIOLATE WATER QUALITY STANDARDS OR WASTE DISCHARGE REQUIREMENTS.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Construction

Impact Analysis: Construction-related erosion from development of the Market Town project could result from alterations in drainage patterns and grading activities, and could increase sedimentation in receiving waters. Sedimentation can lead to a reduction of water quality because sediment can carry nitrogen, phosphorus and trace metals. Sediment can also accumulate at the entrance of downstream storm drain system inlets and reduce capacity.

Earthwork and grading activities would occur over the majority of the project site. Given that two-thirds of the project site is currently developed with the existing Hercules Transit Center, the removal of vegetative cover, which acts to stabilize the soil, would be minimal.

Nevertheless, grading would disturb the portion of the site that is essentially undeveloped and the removal of the existing Hercules Transit Center would expose previously unexposed land. Therefore, the proposed project would present a threat of soil erosion from soil disturbance by subjecting unpaved and unvegetated areas to the erosional forces of runoff during construction.

Since the project would result in a disturbance of over one acre of land, the project sponsor must obtain coverage under the General Permit by filing an NOI with the SWRCB Division of Water Quality. The filing would describe erosion control and stormwater treatment BMPs to be implemented during and following construction and provide a schedule for monitoring performance. These BMPs would serve to control point and non-point source pollutants in stormwater and are a component of the project's SWPPP for construction activities. The SWPPP would include BMPs for preventing the discharge of other non-point source pollutants besides sediment (such as paint, concrete, etc.) to downstream waters. The Market Town project's compliance with the General Permit and implementation of a SWPPP would reduce construction-related water quality impacts to less than significant.

Post-Construction

Impact Analysis: After construction, and during the life of the project, non-point source pollutants would be the primary contributors to potential water quality degradation. Non-point source pollutants would be washed by rainwater from rooftops and landscaped areas into on-site and local drainage networks. Potential non-point source pollutants include products used in landscaping (e.g., pesticides, herbicides and fertilizers), oil, grease and heavy metals from automobiles, and petroleum hydrocarbons from fuels. Impacts would be reduced with implementation of a Stormwater Management Plan, which would incorporate all aspects of the RWQCB's revised C.3. Guidelines. The Stormwater Management Plan is based on a hierarchical approach (Levels I, II and III) as described below:

- Level I of the Stormwater Management Plan includes the incorporation of appropriate design elements that enhance the project's potential to limit water quality impacts and limit the amount of directly connected impervious areas.
- Level II of the Stormwater Management Plan focuses on source control. Source control capitalizes on the fact that it is generally more effective, in terms of both impact and cost, to prevent or limit the release of pollutants than it is to remove them from the environment.
- Level III of the Stormwater Management Plan incorporates treatment control features that are designed to reduce constituents of concern once they have been introduced into stormwater runoff. Treatment control is generally considered necessary as a final element of water quality protection even when design elements and source control BMPs are maximized. The RWQCB requires 80 percent of average annual runoff be treated prior to discharge in receiving waters.

A Stormwater Management Plan that would recommend a collection, treatment and disposal system for the proposed project has not yet been developed. Therefore, a mitigation measure would be required to ensure the preparation of a Stormwater Management Plan, and that the proposed project's treatment and disposal system meets applicable C.3 Guidelines.

Implementation of Mitigation Measure WQ4 would reduce potential impacts to less than significant.

Mitigation Measures:

- WQ4 Prior to issuance of grading or building permits for the Market Town project, whichever occurs first, the project sponsor shall submit to the Public Works Division Manager a Stormwater Management Plan for the proposed project that meets applicable C.3. Guidelines.

Level of Significance After Mitigation: Less Than Significant Impact.

Groundwater Supply/Recharge Impacts

- ◆ **THE PROPOSED MARKET TOWN PROJECT WOULD NOT 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 PREEXISTING NEARBY WELLS WOULD DROP TO A LEVEL THAT WOULD NOT SUPPORT EXISTING LAND USES OR PLANNED USES FOR WHICH PERMITS HAVE BEEN GRANTED).**

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: The proposed project would not involve any extraction of groundwater. In addition, the soils underlying the project site are designated as Hydrologic Soil Group (HSG) Class D, indicating very low infiltration potential and, therefore, have a very low potential for groundwater recharge. Therefore, the proposed project's impact on groundwater would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

Erosion/Siltation Impacts

- ◆ **THE PROPOSED MARKET TOWN PROJECT COULD 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.**

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: The proposed project would not result in the alteration of a stream course or river. In addition, implementation of the proposed project would not result in a significant modification of the project site's existing drainage pattern because the site is mostly developed. However, project construction would involve grading, earth excavation, and the

construction of buildings and associated on-site improvements. These activities would increase the potential for erosion and/or siltation.

As described above, the proposed project would be required to obtain coverage under the General Permit issued by the SWRCB for stormwater discharge associated with construction activities. Compliance with the General Permit would require the preparation of a SWPPP which would include BMPs that would reduce potential erosion and/or siltation impacts to less than significant.

Impacts associated with the operational phase of the project would be less than significant with implementation of Mitigation Measure WQ4 (Stormwater Management Plan), which would recommend a collection, treatment and disposal system for the proposed project. Integrated Management Practices (IMPs) would be incorporated into the site design as part of the project's Stormwater Management Plan. These IMPs could include flow through planter boxes and planter beds, which capture and treat roof runoff, and vegetated swales to capture and treat road drainage. IMPs would reduce stormwater runoff and result in less soil erosion or siltation being directed in to the City's stormwater drainage system and eventually into San Pablo Bay.

Mitigation Measures: Implement Mitigation Measure WQ4.

Level of Significance After Mitigation: Less Than Significant Impact.

On- or Off-Site Flooding Impacts

- ◆ ***THE PROPOSED MARKET TOWN PROJECT COULD 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 THAT WOULD RESULT IN FLOODING ON- OR OFF-SITE.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: The proposed project would not result in the alteration of a stream course or river. However, development of the project site would result in an increase in rate and/or surface flow. The increase in rate and/or flow would not be substantial given that the site is currently mostly developed.

Stormwater drainage for the project site would generally consist of the collection and conveyance of surface runoff from areas adjacent to the proposed buildings and within parking areas. The proposed stormwater drainage collection and conveyance system would consist of vegetated swales and standard drain inlets and gravity flow pipes that would connect to the existing public stormwater drainage system in San Pablo and Sycamore Avenues.

As previously stated, the proposed project would not result in a significant increase of runoff to the City's existing stormwater drainage system. Nevertheless, implementation of the proposed project would result in a minor increase of impermeable surface, which may result

in an increase in runoff. The project sponsor has not submitted a hydrology report or detailed stormwater drainage plan for the proposed project. Therefore, it cannot be definitively stated whether or not the proposed project would create or contribute runoff water that would result in on- or off-site flooding. To mitigate this potential impact to a less-than-significant level, Mitigation Measure WQ1 would require the project sponsor to submit a hydrologic analysis utilizing Contra Costa County Flood Control District's Hydro-6 model to simulate the performance of pre- and post-project stormwater runoff from the project site to the City's drainage system.

The results of the modeling would be utilized in the design of the project's stormwater drainage system and Stormwater Management Plan in order to reduce potential on- or off-site flooding. Approval of the proposed project's hydrologic analysis and stormwater drainage plans by the City's Engineering Division would reduce on- or off-site flooding related impacts to less than significant.

Mitigation Measures: Implement Mitigation Measure WQ1.

Level of Significance After Mitigation: Less Than Significant Impact.

Stormwater Drainage System Impacts

- ◆ **THE PROPOSED MARKET TOWN PROJECT COULD CREATE OR CONTRIBUTE RUNOFF WATER THAT WOULD EXCEED THE CAPACITY OF EXISTING OR PLANNED STORMWATER DRAINAGE SYSTEMS OR PROVIDE SUBSTANTIAL ADDITIONAL SOURCES OF POLLUTED RUNOFF.**

Level of Significance Before Mitigation: Potentially Significant Impact.

Drainage System Capacity

Impact Analysis: As discussed above, the proposed project would not result in a significant increase of runoff to the City's existing stormwater drainage system. Nevertheless, implementation of the proposed project would result in a minor increase of impermeable surface, which may result in an increase in runoff. The project sponsor has not submitted a hydrology report or detailed stormwater drainage plans for the proposed project that shows compatibility with the City's existing stormwater drainage system. Therefore, it cannot be definitively stated whether or not the proposed project would create or contribute runoff water that would exceed the capacity of the existing or planned stormwater drainage systems.

However, Mitigation Measure WQ1 would require the project sponsor to submit a hydrology report that would utilize Contra Costa County Flood Control District's Hydro-6 model to simulate the performance of pre- and post-project stormwater runoff from the project site to the City's drainage system. The results of the modeling would be utilized in the design of the project's stormwater drainage system, which would also need approval from the City. Mitigation Measure WQ1 would reduce the project's stormwater flow rate and volume to a level that would not significantly impact the capacity of the City's stormwater drainage system.

Polluted Runoff

Impact Analysis: The proposed project would introduce non-point source pollutants typical of urban settings associated with automobiles (rubber residue from tires, oil, grease, gasoline, and other automotive fuels), herbicides, pesticides and fertilizers. Implementation of the project's Stormwater Management Plan (Mitigation Measure WQ4) prepared for the project would reduce the impact from the addition of polluted runoff from automotive and landscaping sources to a less than significant level.

Mitigation Measure: Implement Mitigation Measures WQ1 and WQ4.

Level of Significance After Mitigation: Less Than Significant Impact.

4.10 NOISE

This section of the EIR evaluates potential noise impacts that could result from future development within the Hercules New Town Center (HNTC) planning area consistent with the proposed amendments to the General Plan and Zoning Ordinance and implementation of the Market Town Project. Information in this section is based on the City of Hercules General Plan (General Plan) and traffic information contained in the Transportation/Traffic section of this EIR prepared by Fehr & Peers. Refer to Appendix D (Noise Data) for the assumptions utilized in this analysis.

4.10.1 ENVIRONMENTAL SETTING

NOISE SCALES AND DEFINITIONS

Human response to sound is highly individualized. Annoyance is the most common issue regarding community noise. The percentage of people claiming to be annoyed by noise will generally increase with the environmental sound level. However, many factors will also influence people's response to noise. The factors can include the character of the noise, the variability of the sound level, the presence of tones or impulses and the time of day of the occurrence. Additionally, non-acoustical factors, such as the person's opinion of the noise source, the ability to adapt to the noise, the attitude towards the source and those associated with it, and the predictability of the noise, will influence people's response. As such, response to noise varies widely from one person to another and with any particular noise, individual responses will range from "highly annoyed" to "not annoyed."

When the noise level of an activity rises above 70 dBA, the chance of receiving a complaint is possible, and as the noise level rises, dissatisfaction among the public steadily increases. However, an individual's reaction to a particular noise depends on many factors, such as the source of the sound, its loudness relative to the background noise, and the time of day. The reaction to noise can also be highly subjective; the perceived effect of a particular noise can vary widely among individuals in a community.

Sound is described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is judged to be twice as loud, 20 dBA higher is four times as loud and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Examples of various sound levels in different environments are illustrated on Figure 4.10-1 (Sound Levels and Human Response).

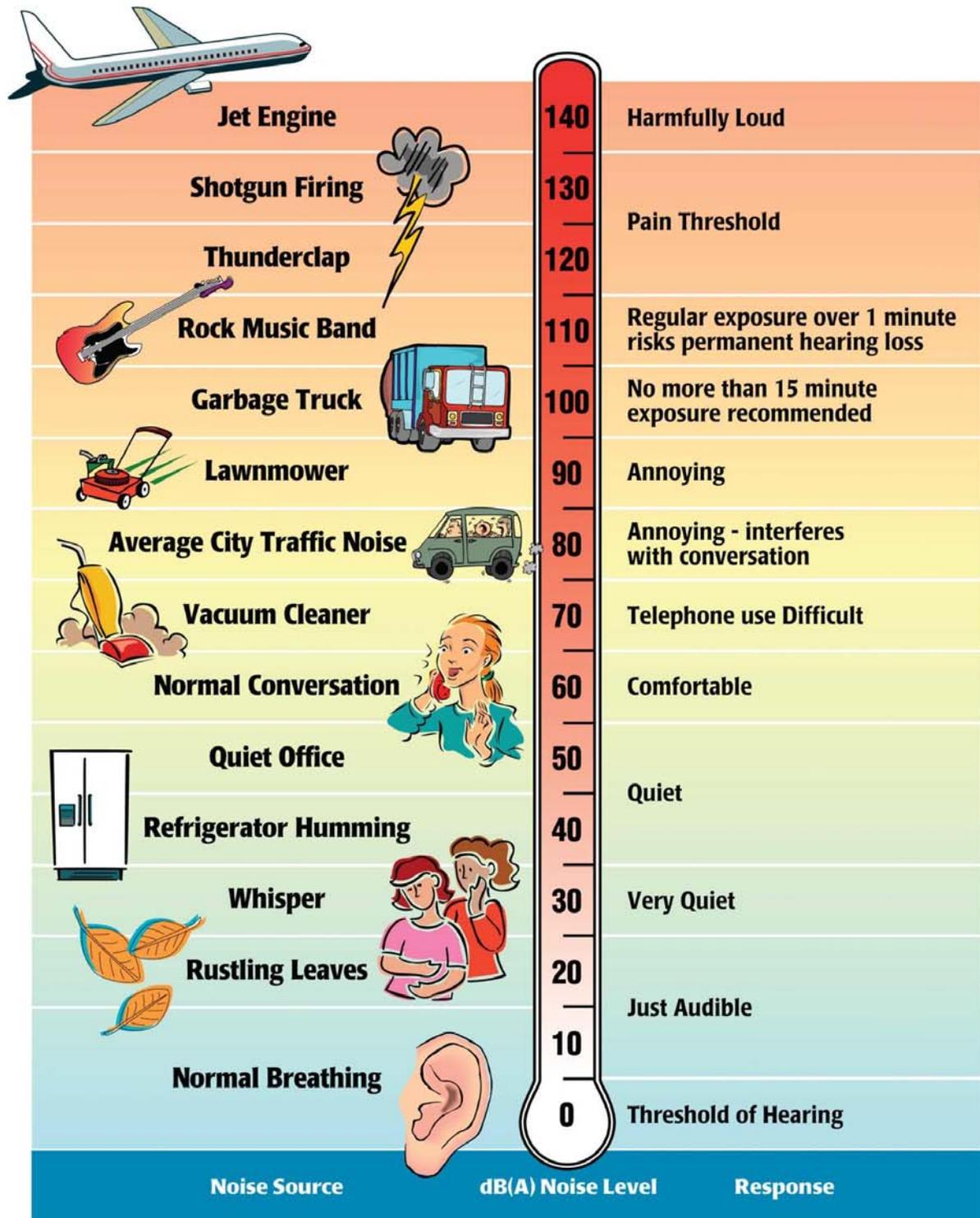
Many methods have been developed for evaluating community noise to account for, among other things:

- The variation of noise levels over time
- The influence of periodic individual loud events
- The community response to changes in the community noise environment

Numerous methods have been developed to measure sound over a period of time. Table 4.10-1 (Noise Descriptors) provides a listing of methods to measure sound.

**Table 4.10-1
Noise Descriptors**

Term	Definition
Decibel (dB)	The unit for measuring the volume of sound equal to 10 times the logarithm (base 10) of the ratio of the pressure of a measured sound to a reference pressure (20 micropascals).
A-Weighted Decibel (dBA)	A sound measurement scale that adjusts the pressure of individual frequencies according to human sensitivities. The scale accounts for the fact that the region of highest sensitivity for the human ear is between 2,000 and 4,000 cycles per second (hertz).
Equivalent Sound Level (L_{eq})	The sound level containing the same total energy as a time varying signal over a given time period. The L_{eq} is the value that expresses the time averaged total energy of a fluctuating sound level.
Maximum Sound Level (L_{max})	The highest individual sound level (dBA) occurring over a given time period.
Minimum Sound Level (L_{min})	The lowest individual sound level (dBA) occurring over a given time period.
Community Noise Equivalent Level (CNEL)	A rating of community noise exposure to all sources of sound that differentiates between daytime, evening and nighttime noise exposure. These adjustments are +5 dBA for the evening (7:00 PM to 10:00 PM) and +10 dBA for the night (10:00 PM to 7:00 AM).
Day/Night Average (L_{dn})	The L_{dn} is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period called the L_{eq} . The L_{dn} is calculated by averaging the L_{eq} 's for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10:00 PM to 7:00 AM), by 10 dBA to account for the increased sensitivity of people to noises that occur at night.
L_{01} , L_{10} , L_{50} , L_{90}	The fast A-weighted noise levels equaled or exceeded by a fluctuating sound level for 1 percent, 10 percent, 50 percent and 90 percent of a stated time period.
Source: Cyril M. Harris, <i>Handbook of Noise Control</i> , 1979.	



Source:

Melville C. Branch and R. Dale Beland, *Outdoor Noise in the Metropolitan Environment*, 1970.

Environmental Protection Agency, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004)*, March 1974.

This page intentionally left blank.

HEALTH EFFECTS OF NOISE

The effects of noise are often only transitory, but adverse effects can be cumulative with prolonged or repeated exposure. The effects of noise on the community can be organized into six broad categories:

- Noise-Induced Hearing Loss
- Interference with Communication
- Effects of Noise on Sleep
- Effects on Performance and Behavior
- Extra-Auditory Health Effects
- Annoyance

Although it often causes discomfort and sometimes pain, noise-induced hearing loss usually takes years to develop. Noise-induced hearing loss can impair the quality of life through a reduction in the ability to hear important sounds and to communicate with family and friends. Hearing loss is one of the most obvious and easily quantified effects of excessive exposure to noise. While the loss may be temporary at first, it could become permanent after continued exposure. When combined with hearing loss associated with aging, the amount of hearing loss directly caused by the environment is difficult to quantify. Although the major cause of noise-induced hearing loss is occupational, substantial damage can be caused by non-occupational sources.

According to the United States (U.S.) Public Health Service, nearly ten million of the estimated 21 million Americans with hearing impairments owe their losses to noise exposure. Noise can mask important sounds and disrupt communication between individuals in a variety of settings. This process can cause anything from a slight irritation to a serious safety hazard, depending on the circumstance. Noise can disrupt face-to-face communication and telephone communication, and the enjoyment of music and television in the home. It can also disrupt effective communication between teachers and pupils in schools, and can cause fatigue and vocal strain in those who need to communicate in spite of the noise.

Interference with communication has proved to be one of the most important components of noise-related annoyance. Noise-induced sleep interference is one of the critical components of community annoyance. Sound level, frequency distribution, duration, repetition, and variability can make it difficult to fall asleep and may cause momentary shifts in the natural sleep pattern, or level of sleep. It can produce short-term adverse effects on mood changes and job performance, with the possibility of more serious effects on health if it continues over long periods. Noise can cause adverse effects on task performance and behavior at work, and non-occupational and social settings. These effects are the subject of some controversy, since the presence and degree of effects depends on a variety of intervening variables. Most research in this area has focused mainly on occupational settings, where noise levels must be sufficiently high and the task sufficiently complex for effects on performance to occur.

Recent research indicates that more moderate noise levels can produce disruptive after-effects, commonly manifested as a reduced tolerance for frustration, increased anxiety, decreased incidence of “helping” behavior, and increased incidence of “hostile” behavior.

Noise has been implicated in the development or exacerbation of a variety of health problems, ranging from hypertension to psychosis. As with other categories, quantifying these effects is difficult due to the amount of variables that need to be considered in each situation. As a biological stressor, noise can influence the entire physiological system. Most effects seem to be transitory, but with continued exposure some effects have been shown to be chronic in laboratory animals.

Annoyance can be viewed as the expression of negative feelings resulting from interference with activities, as well as the disruption of one's peace of mind and the enjoyment of one's environment. Field evaluations of community annoyance are useful for predicting the consequences of planned actions involving highways, airports, road traffic, railroads, or other noise sources. The consequences of noise-induced annoyance are privately held dissatisfaction, publicly expressed complaints to authorities, and potential adverse health effects, as discussed above. In a study conducted by the U.S. Department of Transportation, the effects of annoyance to the community were quantified. In areas where noise levels were consistently above 60 dBA CNEL, approximately nine percent of the community is highly annoyed. When levels exceed 65 dBA CNEL, that percentage rises to 15 percent. Although evidence for the various effects of noise have differing levels of certainty, it is clear that noise can affect human health. Most of the effects are, to a varying degree, stress related.

GROUND-BORNE VIBRATION

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity or acceleration. The peak particle velocity (PPV) or the root mean square (RMS) velocity is usually used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak or vibration signal, while RMS is defined as the square root of the average of the squared amplitude of the signal. PPV is typically used for evaluating potential building damage, whereas RMS is typically more suitable for evaluating human response. Typically, ground-borne vibration, generated by man-made activities attenuates rapidly with distance from the source of vibration. Man-made vibration issues are, therefore, usually confined to short distances (i.e., 500 feet or less) from the source.

Both construction and operation of development projects can generate ground-borne vibration. In general, demolition of structures preceding construction generates the highest vibrations. Construction equipment such as vibratory compactors or rollers, pile drivers and pavement breakers can generate perceptible vibration during construction activities. Heavy trucks can also generate ground-borne vibrations that vary depending on vehicle type, weight and pavement conditions.

EXISTING NOISE ENVIRONMENT

Ambient Noise Measurements

In order to quantify existing ambient noise levels in the HNTC planning area, RBF Consulting conducted noise measurements on May 2, 2007 (refer to Table 4.10-2, Noise Measurements for the location of the measurements). Noise monitoring equipment used for the ambient noise survey consisted of a Brüel & Kjær Hand-held Analyzer Type 2250 equipped with a 4189 pre-polarized freefield microphone. The monitoring equipment

complies with applicable requirements of the American National Standards Institute for Type I (precision) sound level meters.

The noise measurement sites indicated in Table 4.10-2 are representative of typical existing noise exposure within and immediately adjacent to the planning area. Ten-minute measurements were taken at five sites, between 10:00 AM and 12:00 PM. Meteorological conditions were typical, with light wind speeds (0 to 5 miles per hour), low humidity, and clear skies. The results of the field measurements are indicated in Appendix D (Noise Data). Existing measured noise levels within the planning area range from approximately 54.3 Leq to 67.7 Leq. The highest on-site noise level measurement (67.7 dBA) was taken at the northeastern portion of the PNR parcel.

**Table 4.10-2
Noise Measurements**

Site No.	Location	Leq (dBA)	Time
1	Northeast corner of the existing Hercules Transit Center Parking Lot (PNR parcel).	67.7	10:00 AM
2	Center of the Loop parcel	57.7	10:35 AM
3	Western edge of the Caltrans Parcel, within the C1 parcel	56.2	10:49 AM
4	Parking lot at the terminus of Sycamore Avenue, adjacent to Caltrans parcel	54.3	11:19 AM
5	Northern edge of the Caltrans parcel, along SR 4	54.3	11:46 AM

Source: Noise Monitoring Survey conducted by RBF Consulting, May 2, 2007.

Vehicular Noise

The HNTC planning area is located in an urban setting and is comprised of vacant land, equipment storage areas, a maintenance yard, and a park and ride lot for commuters. Vehicles using Interstate 80 (I-80), State Route 4 (SR 4) and local roadways generate the majority of noise in the planning area. To assess the potential for project-generated noise impacts, it is necessary to quantify the existing traffic-generated noise. Noise models were run using the Federal Highway Administration’s Highway Noise Prediction Model (FHWA RD-77-108) together with several roadway and site parameters. These parameters determine the projected impact of vehicular traffic noise and include the roadway cross-section (e.g., number of lanes), roadway width, average daily traffic (ADT), vehicle travel speed, percentages of auto and truck traffic, roadway grade, angle-of-view and site conditions (“hard” or “soft”). The model does not account for ambient noise levels (i.e., noise from adjacent land uses) or topographical differences between the roadway and adjacent land uses. Noise projections are based on modeled vehicular traffic as derived from the Transportation/Traffic Section of this EIR, prepared by Fehr & Peers.

A 25 to 45 mile per hour (mph) average vehicle speed was assumed for existing conditions based on empirical observations and posted maximum speeds along the adjacent roadways. Existing modeled traffic noise levels can be found in Table 4.10-3 (Existing and Baseline Conditions Traffic Noise Levels). The “Existing” conditions scenario represents “No Project” conditions based on traffic counts collected in 2006/2007. The “Baseline” conditions scenario includes relocation of the existing Hercules Transit Center to the C1 parcel, but the existing SR 4 hook ramps would not be relocated. Additionally, traffic distribution is based

on the Transit Center’s new location. The “Baseline” scenario assumes that there would be no land use development within the Hercules planning area.

**Table 4.10-3
Existing and Baseline Conditions Traffic Noise Levels**

Roadway Segment	Existing		Baseline Conditions		Difference in dBA @ 100 feet from Roadway
	ADT	dBA @ 100 Feet from Roadway Centerline	ADT	dBA @ 100 Feet from Roadway Centerline	
San Pablo Avenue					
South of Sycamore Avenue	23,150	65.1	23,470	65.2	0.1
Between Sycamore Avenue and John Muir Parkway	28,000	65.9	27,850	65.9	0
Between John Muir Parkway and Linus Pauling Drive	12,000	62.2	12,410	62.4	0.2
Interstate 80					
South of John Muir Parkway	200,000	78.3	200,000	78.3	0
North of John Muir Parkway	133,000	76.5	133,000	76.5	0
John Muir Parkway					
Between San Pablo Avenue and Interstate 80	23,640	69.0	22,770	68.8	-0.2
Between Interstate 80 and Willow Avenue	38,000	71.1	38,000	71.1	0
Willow Avenue/Bayberry Avenue					
Between Interstate 80 and I-80 SB Ramp/SR-4 EB Ramp	10,700	61.8	14,720	63.2	1.4
Between I-80 SB Ramp/SR-4 EB Ramp and Palm Avenue	5,130	58.6	6,710	59.4	0.8
Between Palm Avenue and SR-4	8,640	60.9	9,820	61.5	0.6
Sycamore Avenue					
West of San Pablo Avenue	2,690	55.8	3,020	56.3	1.0
ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level					
Traffic modeling is based upon data provided by Fehr and Peers, February 2008.					

Railroad Noise

The HNTC planning area is located in close proximity to the Union Pacific Railroad (UPRR) right-of-way. Train pass-by events constitute the major noise sources in this area. Diesel freight trains utilize this line, running at any time of the day or night, as necessitated by market demand. These freight trains travel at average speeds of approximately 45 mph. Typically, noise levels generated by rail activities are approximately 70 to 77 dB at 100 feet from the railway centerline.¹

Stationary Noise Sources

The primary sources of stationary noise in the vicinity of the planning area are urban-related and rural related activities (i.e., mechanical equipment, loading and unloading areas, parking lots, landscape maintenance, conversations [normal to loud], farming equipment, and recreational areas) and residential activities (i.e., air conditioners, pool and spa equipment, landscape maintenance, and conversations). Noise associated with these sources may represent a single event noise occurrence, short-term, or long-term/continuous noise.

¹ Pacific Gas and Electric Company, *Richmond to Pittsburg Pipeline Environmental Review*, January 14, 2006.

Sensitive Receptors

Human response to noise varies widely depending on the type of noise, time of day, and sensitivity of the receptor. The effects of noise on humans can range from temporary or permanent hearing loss to mild stress and annoyance due to such things as speech interference and sleep deprivation. Prolonged stress, regardless of the cause, is known to contribute to a variety of health disorders. Noise, or the lack of it, is a factor in the aesthetic perception of some settings, particularly those with religious or cultural significance. Certain land uses are particularly sensitive to noise, including schools, hospitals, rest homes, long-term medical and mental care facilities, and parks and recreation areas. Residential areas are also considered noise sensitive, especially during the nighttime hours. The planning area is immediately surrounded by vacant land and commercial uses, while residential uses are located north of SR 4, west of San Pablo Avenue, and south of the railroad right-of-way. Table 4.10-4 (Sensitive Receptors) describes the location of the sensitive receptors closest to the planning area.

4.10.2 REGULATORY SETTING

It is difficult to specify noise levels that are generally acceptable to everyone; what is annoying to one person may be unnoticed by another. Standards may be based on documented complaints in response to documented noise levels, or based on studies of the ability of people to sleep, talk, or work under various noise conditions. All such studies, however, recognize that individual responses vary considerably. Standards usually address the needs of most of the general population.

This section summarizes the laws, ordinances, regulations and standards that are applicable to the proposed project. Regulatory requirements related to environmental noise are typically promulgated at the local level. However, federal and state agencies provide standards and guidelines to the local jurisdictions.

**Table 4.10-4
Sensitive Receptors**

Receptor	Location
Schools	
Hercules High School	1900 Refugio Valley Road, 4,276 feet to the southeast
Ohlone Elementary School	1616 Pheasant Drive, 2,006 feet to the south
Lupine Hills Elementary School	1919 Lupine Road, 1,953 feet to the southeast
Institutional	
Valley Bible Church	1477 Willow Avenue, 369 feet to the north
St. Patrick's Catholic Church	825 7 th Street, 1 mile to the north
Parks	
Foxboro Park	1025 Canterbury Avenue, 1,161.6 feet to the north
Refugio Valley Park	Corner of Refugio Valley Road and Pheasant Drive, 1,372 feet to the south
Ohlone Park	190 Turquoise Drive, 1.07 miles to the south
Woodfield Park	1991 Lupine Road, 2,376 feet to the east
Residential	
Senior Housing	111 Civic Drive, 380 feet to the south

Receptor	Location
Single Family Residential	Across SR-4, approximately 1,500 feet to the north
Single Family Residential	Approximately 780 feet west of the PNR Parcel, across San Pablo Avenue
Single Family Residential	Approximate 250 to the south, across the railroad tracks

Source: Google, maps.google.com, January 2008.
City of Hercules: Local Parks, <http://www.ci.hercules.ca.us/New/Rec/parks.htm>

STATE FRAMEWORK

California Environmental Quality Act

CEQA was enacted in 1970 and requires that all known environmental effects of a project be analyzed, including environmental noise impacts. Under CEQA, a project has a potentially significant impact if the project exposes people to noise levels in excess of standards established in the local general plan or noise ordinance. Additionally, under CEQA, a project has a potentially significant impact if the project creates a substantial increase in the ambient noise levels in the project vicinity above levels existing without the project. If a project has a potentially significant impact, mitigation measures must be considered. If mitigation measures to reduce the impact to less than significant are not feasible due to economic, social, environmental, legal or other conditions, the most feasible mitigation measures must be considered.

California Government Code

California Government Code Section 65302(f) mandates that the legislative body of each county and city adopt a noise element as part of their comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services.

LOCAL FRAMEWORK

City of Hercules General Plan

The General Plan uses an Ldn of 60 dBA as the maximum acceptable outdoor noise level in residential areas. Table 4.10-5 (City of Hercules Land Use Compatibility) shows the land use compatibility matrix for community noise environments in the City. Table 4.10-6 (Maximum Acceptable Noise Exposure to Stationary Noise Sources [Measured at the Property Line of the Receiving Land Use]) shows the maximum acceptable noise exposure to stationary noise sources as measured at the property line of the receiving land use.

**Table 4.10-5
City of Hercules Land Use Compatibility**

Land Use Category	Exterior Noise Exposure Ldn or CNEL (dB)
Residential, Hotels, and Motels	50 to 60 dBA = Normally Acceptable 60 to 75 dBA = Conditionally Acceptable 75 to 85 dBA = Unacceptable
Outdoor Sports and Recreation, Neighborhood Parks, and Playgrounds	50 to 65 dBA = Normally Acceptable 65 to 80 dBA = Conditionally Acceptable 80 to 85 dBA = Unacceptable
Schools, Libraries, Museums, Hospitals, Personal Care, Meeting Halls, Churches	50 to 60 dBA = Normally Acceptable 60 to 75 dBA = Conditionally Acceptable 75 to 85 dBA = Unacceptable
Office Buildings, Business Commercial, and Professional	50 to 70 dBA = Normally Acceptable 70 to 80 dBA = Conditionally Acceptable 80 to 85 dBA = Unacceptable
Auditoriums, Concert Halls, Amphitheaters	50 to 70 dBA = Conditionally Acceptable 70 to 85 dBA = Unacceptable
Industrial, Manufacturing, Utilities, and Agriculture	50 to 70 dBA = Normally Acceptable 70 to 85 dBA = Conditionally Acceptable

Source: City of Hercules, *City of Hercules General Plan*, 1998.

**Table 4.10-6
Maximum Acceptable Noise Exposure to Stationary Noise Sources
(Measured at the Property Line of the Receiving Land Use)**

	Daytime (7:00 AM to 10:00 PM)	Nighttime (10:00 PM to 7:00 AM)
Hourly Leq, dBA	50	45
Maximum Level, dBA	70	65
Maximum Level, dBA – Impulsive Noise	65	60

Source: City of Hercules, *City of Hercules General Plan*, 1998.

4.10.3 ENVIRONMENTAL ANALYSIS

THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the *CEQA Guidelines*, the proposed project would have a significant noise impact if it would:

- Expose persons to, or generate, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
- Expose persons to or generate excessive ground borne vibration or ground borne noise levels
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project

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

Significance of Changes in Ambient Noise Levels

A project is considered to have a significant noise impact when it causes an adopted noise standard to be exceeded for the project site or for adjacent sensitive receptors. In addition to concerns regarding the absolute increase in noise level that might occur when a new source is introduced into an area, it is also important to consider the existing ambient noise environment.

If the ambient noise environment is quiet and the new noise source greatly increases the noise exposure, an impact may occur even though a criterion level might not be exceeded. Lacking adopted standards for evaluating such impacts, a general standard for community noise environments is that an increase of over 5 dBA, regardless of the ambient noise level without the project, is readily noticeable and is, therefore, considered a significant impact. Refer to Table 4.10-7 (Significance of Changes in Cumulative Noise Exposure).

**Table 4.10-7
Significance of Changes in Cumulative Noise Exposure**

Ambient Noise Level Without Project (Ldn or CNEL)	Significant Impact Is Assumed To Occur if the Project Increases Ambient Noise Levels by:
< 60 dBA	5.0 dBA or more
60 - 65 dBA	3.0 dBA or more
> 65 dBA	1.5 dBA or more
dBA = A-weighted decibel; CNEL = community noise equivalent level; Ldn = day/night average noise level.	
Source: U.S. Environmental Protection Agency Office of Noise Abatement and Control, <i>Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise</i> , October 1979 (revised July 1981).	

Based on acoustical industry standards and guidelines provided by the California Department of Transportation (Caltrans), in areas where the ambient noise level without a project is 60 dBA to 65 dBA, some individuals may notice an increase in the ambient noise level of greater than 3 dBA and any such increase would be a potentially significant impact. In areas where the ambient noise level is greater than 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a potentially significant impact because the increase would contribute to an existing noise deficiency. A cumulative significant impact would only result where the levels in Table 4.10-7 and the City’s exterior noise limits (Table 4.10-5) are both exceeded.

Stationary noise associated with the operation of any facility within a project area is considered significant if it would create, maintain, cause or allow the sound level, when measured on any other property, to exceed the allowable sound levels outlined in Table 4.10-7. Additionally, stationary noise associated with the operation of any facility within a project area is considered significant if it would create, maintain, cause or allow the sound level,

when measured on any other property, to exceed the allowable sound levels presented in Table 4.10-6.

Vibration Impacts

The City has not adopted policies or guidelines relative to ground-borne vibration. With respect to ground-borne vibration from construction activities, the Federal Transit Administration has adopted guidelines/recommendations to limit ground-borne vibration based on the age and/or condition of the structures that are located in close proximity to construction activity.

A technical discussion of construction activity-related vibration is provided in the Federal Transit Administration publication titled *Transit Noise and Vibration Impacts Assessment* (May 2006). As described therein, a ground-borne vibration level of 0.2 inch-per-second peak particle velocity (PPV) should be considered as damage threshold criterion for structures deemed “fragile,” and a ground-borne vibration level of 0.12 inch-per-second PPV should be considered as damage criterion for structures deemed “extremely fragile,” such as historic buildings. With respect to structures that are considered “well engineered,” a ground-borne vibration level of 2.0 inch-per-second PPV should be considered as damage threshold criterion. The analysis has assumed a conservative threshold of 0.2 inch-per-second PPV.

POTENTIAL IMPACTS AND MITIGATION MEASURES: GENERAL PLAN AND ZONING ORDINANCE AMENDMENTS

Short-Term Construction Noise Impacts

- ◆ ***DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT COULD RESULT IN TEMPORARY NOISE AND/OR VIBRATION IMPACTS TO NEARBY NOISE SENSITIVE RECEIVERS.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: Although there are no specific development proposals at this time, the noise analysis is based on a conceptual plan (refer to Figure 3-2, Planning Area Map). Numerous projects are proposed throughout the planning area with a buildout or horizon year of 2035. This program-level analysis presents a screening-level determination for areas of potential noise impacts based on the proximity of sensitive receptors, typical noise levels associated with construction equipment, and the potential for construction noise levels to interfere with daytime and nighttime activities.

The final construction scheduling of specific projects within the HNTC planning area could lead to combined or collective impacts resulting from construction of more than one facility at a time. Another factor considered in assessing whether a noise impact is significant is the frequency with which noise levels associated with project construction might exceed the established standards. If exceedance of a noise standard may occur only very rarely and/or briefly, this may not constitute a significant impact. However, this factor of noise frequency is not considered as part of this program-level impact analysis since there is currently no project specific information about the construction scenarios for individual development proposals. This factor would be considered as part of a separate project-level impact analysis

to be conducted, as appropriate, on a site-specific development within the planning area. Based on more detailed information about project construction activities and schedule, and site-specific information on the proximity of sensitive receptors, the project-level analysis may determine that impacts considered to be potentially significant and unavoidable at this program-level of review are instead significant but can be mitigated to less than significant at the project-level.

On-Site Construction Activities

Ground-borne noise and other types of construction-related noise impacts would typically occur during the initial site preparation, which can create the highest levels of noise but is also generally the shortest of all construction phases. High ground-borne noise levels and other miscellaneous noise levels can be created by the operation of heavy-duty trucks, backhoes, bulldozers, excavators, front-end loaders, compactors, scrapers, and other heavy-duty construction equipment. Table 4.10-8 (Maximum Noise Levels Generated By Construction Equipment) indicates the anticipated equipment noise levels during the construction period. Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be due to random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts).

**Table 4.10-8
Maximum Noise Levels Generated By Construction Equipment**

Type of Equipment	Sound Levels at Maximum Engine Power with Mufflers at Indicated Distance (dBA)			
	25 Feet	50 Feet	100 Feet	200 Feet
Air Compressor	87	81	75	69
Backhoe	91	85	79	73
Concrete Mixer	91	85	79	73
Crane, Mobile	89	83	77	71
Dozer	86	80	74	68
Grader	91	85	79	73
Jack Hammer	94	88	82	76
Loader	85	79	73	67
Paver	95	89	83	77
Pneumatic Tool	91	85	79	73
Pump	82	76	70	64
Roller	80	74	68	62
Saw	84	78	72	66
Scraper	94	88	82	76
Truck	97	91	85	79
Impact Pile Driver (peak)	107	101	95	89
Source: Bolt, Beranek, and Newman, <i>Noise Control for Buildings and Manufacturing Plants</i> , 1987.				
Note: Assumes a drop-off rate of 6 dBA per doubling of distance, which is appropriate for use in characterizing point-source (such as construction equipment) sound attenuation over a hard surface propagation path.				

Table 4.10-9 (Estimated Construction Noise in the Planning Area) provides a description of construction noise levels during specific construction stages. The average noise levels presented in Table 4.10-9 are based on the quantity, type, and usage factors for each type of equipment that would be used during each construction stage. A reasonable worst-case assumption is that the three loudest pieces of equipment would operate simultaneously and continuously over at least one hour within a focused area of 15 yards of each other.

As shown in Table 4.10-9, the average construction period noise level is expected to range from 83 dBA to 92 dBA at a reference distance of 25 feet. For noise levels throughout the duration of construction activity, these conservative worst-case noise levels would be reduced to account for the percentage of time that the equipment actually operates on the construction site. Based on a standard noise attenuation rate of 6 dBA per doubling of distance for point sources, the worst-case construction-period noise level of 86 dBA at a distance of 50 feet would be approximately 80 dBA at 100 feet, and 74 dBA at 200 feet. Noise source control is the most effective method of controlling construction noise. Source controls, which limit noise, are the easiest to oversee on a construction project. Mitigation at the source reduces the problem everywhere, not just along one single path or for one receiver. The specification of equipment noise limits forces the use of modern equipment having improved engine insulation and mufflers.

**Table 4.10-9
Estimated Construction Noise in the HNTC Area**

Construction Stage	Sound Level in dBA (L _{eq}) at Indicated Distance				
	25 Feet	50 Feet	100 Feet	150 Feet	200 Feet
Demolition	88	82	76	72	70
Grading/Excavation	92	86	80	76	74
Building (Foundations, Structural, Finishing)	83	77	71	67	65
Source:	Environmental Protection Agency, <i>Noise from Construction Equipment and Operations, Building Equipment and Home Appliances</i> , PB 206717, 1971.				
Note:	Assumes a hard surface propagation path drop-off rate of 6 dBA per doubling of distance, which is appropriate for use in characterizing point-source (such as construction equipment) sound attenuation.				

As stated above, noise sensitive receptors near the construction site would, at times, experience excessive noise levels from construction activities; however, excessive construction-related noise levels generally would occur in the daytime hours only. Implementation of Mitigation Measure NOI1 (i.e., engine muffling, placement of construction equipment, and strategic stockpiling and staging of construction vehicles), and compliance with City requirements, would serve to further reduce exposure to significant noise levels.

For construction noise, a “substantial” noise increase can be defined as interference with activities during the day. One indicator that construction noise could interfere with daytime activities would be speech interference. This analysis uses the following criteria to define the significance of potential noise impacts:

- *Speech Interference.* Speech interference is an indicator of impact on typical daytime and evening activities. A speech interference criterion, in the context of impact duration and time of day, is used to identify substantial increases in noise from

temporary construction activities. Noise peaks generated by construction equipment could result in speech interference in adjacent buildings if the noise level in the interior of the building exceeds 45 to 60 dBA. A typical building can reduce noise levels by 20 dBA with the windows closed. This noise reduction could be maintained only on a temporary basis in some cases, since it assumes windows must remain closed at all times. Assuming a 20-dBA reduction with the windows closed, an exterior noise level of 70 dBA (Leq) at receptors would maintain an acceptable interior noise environment of 50 dBA. It should be noted that such noise levels would be sporadic rather than continuous in nature, because different types of construction equipment would be used throughout the construction process.

In general, most construction noise would exceed the speech interference criterion when heavy equipment is operated within approximately 500 feet of a sensitive receptor (distance ranges between 150 and 500 feet depending on the type of equipment operated). Based on the combined noise level in Table 4.10-9, the combined sound level of three of the loudest pieces of equipment (scraper, bulldozer and heavy truck) is 92 dBA measured at 25 feet from the noise source. Using the speech criteria of 70 dBA any sensitive receptors located within 320 feet of construction activities would be exposed to noise levels exceeding the 70 dBA threshold. Implementation of Mitigation Measure NOI1 would reduce impacts to a less than significant level for construction activities that occur within 320 feet of sensitive receptors.

At this stage of program planning, proposed construction hours and specific activities have not been determined for each project in the HNTC planning area, and it is possible that construction activities and construction noise associated with any project in this area could extend beyond the typical daytime hours (i.e., could occur during the evening or nighttime hours on weekends as well as weekdays). However, when construction hours and activities are defined for each project, separate, project-level CEQA review would be conducted to determine potential construction noise impacts for specific facility locations and whether impacts could be mitigated to a less-than-significant level.

Mitigation Measure:

NOI1 Prior to issuance of grading and/or building permits, whichever occurs first, the project sponsor(s) shall demonstrate, to the satisfaction of the City Planning Department, that projects located within 320 feet of any noise-sensitive receptors (e.g., residences, schools, childcare centers, churches, hospitals, and nursing homes) will implement appropriate noise controls to reduce daytime construction noise levels to meet the 70-dBA daytime speech interference criterion to the extent feasible. Such controls shall include any of the following, as appropriate:

- Best available noise control techniques (including mufflers, intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) shall be used for all equipment and trucks in order to minimize construction noise impacts.
- If impact equipment (e.g., jack hammers, pavement breakers, and rock drills) is used during project construction, hydraulically or electric-powered equipment shall be used wherever feasible to avoid the noise associated with compressed-air exhaust from pneumatically powered tools. However,

where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust shall be used (a muffler can lower noise levels from the exhaust by up to about 10 dBA).

- Stationary noise sources shall be located as far from sensitive receptors as feasible. If they must be located near receptors, adequate muffling (with enclosures where feasible and appropriate) shall be used to ensure local noise ordinance limits are met to the extent feasible. Enclosure opening or venting shall face away from sensitive receptors. If any stationary equipment (e.g., ventilation fans, generators, dewatering pumps) is operated beyond the time limits specified by the pertinent noise ordinance, this equipment shall conform to the affected jurisdiction's pertinent day and night noise limits to the extent feasible.
- Material stockpiles as well as maintenance/equipment staging and parking areas shall be located as far as feasible from residential and school receptors.
- A designated project liaison shall be responsible for responding to noise complaints during the construction phases. The name and phone number of the liaison shall be conspicuously posted at construction areas and on all advanced notifications. This person shall take steps to resolve complaints, including periodic noise monitoring, if necessary. Results of noise monitoring shall be presented at regular project meetings with the project contractor, and the liaison shall coordinate with the contractor to modify any construction activities that generated excessive noise levels to the extent feasible.

Level of Significance After Mitigation: Less Than Significant Impact.

Construction-Related Vibration Impacts

- ◆ ***DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT COULD RESULT IN TEMPORARY VIBRATION IMPACTS TO NEARBY NOISE SENSITIVE RECEPTORS.***

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Project construction can generate varying degrees of ground-borne vibration, depending on the construction procedure and the construction equipment used. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Ground-borne vibrations from construction activities rarely reach levels that damage structures. The Federal Transit Administration has published standard vibration velocities for construction equipment operations. The peak particle velocities for construction equipment anticipated to be used during project construction are listed in Table 4.10-10 (Typical Vibration Levels for Construction Equipment).

As indicated in Table 4.10-10, based on the Federal Transit Administration data, vibration velocities from typical heavy construction equipment operations that would be used during project construction range from 0.003 to 0.644 inch-per-second peak particle velocity (PPV) at 25 feet from the source of activity. At 75 feet from the source of activity, vibration velocities range from 0.001 to 0.124 inch-per-second PPV. Ground-borne vibration would be generated primarily during site clearing and grading activities on-site and by off-site haul-truck travel. The PPV from bulldozer and heavy truck operations is shown to be 0.089 inch-per-second PPV and 0.076 inch-per-second PPV, respectively, at a distance of 25 feet. As each of these values is below the 0.2 inch-per-second PPV significance threshold, vibration impacts associated with construction would be less than significant and no mitigation measures are required.

**Table 4.10-10
Typical Vibration Levels for Construction Equipment**

Equipment	Approximate peak particle velocity at 25 feet (inches/second)	Approximate peak particle velocity at 75 feet (inches/second)
Impact Pile Driver	0.644	0.124
Sonic Pile Driver	0.170	0.033
Large Bulldozer	0.089	0.017
Caisson Drilling	0.089	0.017
Loaded trucks	0.076	0.015
Jackhammer	0.035	0.007
Small Bulldozer	0.003	0.001

Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

Off-Site Long-Term Mobile Source Noise Impacts

- ◆ ***TRAFFIC GENERATED BY DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT COULD RESULT IN A LONG-TERM OFF-SITE TRAFFIC NOISE IMPACT.***

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Future development of projects consistent with the NTC land use designation and zoning district would result in additional traffic on adjacent roadways, thereby increasing vehicular noise in the vicinity of existing and proposed land uses. To determine noise impacts from off-site mobile sources that would result from build-out of the HNTC planning area, traffic analysis for the “2035 No Project” conditions (2035 conditions plus cumulative projects without development of the proposed project) and “2035 Plus Program” were compared.

As indicated in Table 4.10-11 (2035 No Project and 2035 Plus Program) under the “2035 No Project” scenario noise levels at a distance of 100 feet from the centerline would range from approximately 57.9 dBA to 79.8 dBA. The highest noise levels under “2035 No Project”

conditions would occur along I-80 (south of John Muir Parkway [SR 4]). Similar to the “2035 No Project” scenario, under the “2035 Plus Program” scenario noise levels at a distance of 100 feet from the centerline would range from approximately 58.7 dBA to 79.9 dBA. The highest noise levels under future with project conditions would occur along the same roadway segments as the “2035 No Project” scenario.

**Table 4.10-11
2035 No Project and 2035 Plus Program Noise Scenarios**

Roadway Segment	2035 No Project		2035 Plus Program		Difference in dBA @ 100 feet from Roadway
	ADT	dBA @ 100 Feet from Roadway Centerline	ADT	dBA @ 100 Feet from Roadway Centerline	
San Pablo Avenue					
South of Sycamore Avenue	34,600	66.8	35,800	67.0	0.2
Between Sycamore Avenue and John Muir Parkway	39,900	67.5	41,100	67.6	0.1
Between John Muir Parkway and Linus Pauling Drive	20,300	64.5	20,400	64.5	0
Interstate 80					
South of John Muir Parkway	288,000	79.8	290,000	79.9	0.1
North of John Muir Parkway	193,000	78.1	194,000	78.1	0
John Muir Parkway					
Between San Pablo Avenue and I-80	36,500	70.9	37,300	71.0	0.1
Between I-80 and Willow Avenue	65,000	73.4	66,000	73.5	0.1
Willow Avenue/Bayberry Avenue					
Between I-80 and I-80 SB Ramp/SR-4 EB Ramp	17,300	63.9	19,700	64.5	0.6
Between I-80 SB Ramp/SR 4 EB Ramp and Palm Avenue	16,000	63.6	17,100	63.9	0.3
Between Palm Avenue and SR 4	25,900	65.7	27,000	65.8	0.1
Sycamore Avenue					
West of San Pablo Avenue	4,292	57.9	5,243	58.7	0.8
ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level					
Traffic modeling is based upon data provided by Fehr and Peers, February 2008.					

Table 4.10-11 also compares the “2035 No Project” scenario to the “2035 Plus Program” scenario. Build-out of the project within the HNTC planning area would increase noise levels on the surrounding roadways by a maximum of 0.8 dBA along roadways with noise levels below 60 dBA. Thus, as stated under the Thresholds of Significance, when the baseline noise level is 60 dBA or below, an increase in noise levels of less than 5.0 dBA is considered less than significant. Therefore, noise levels resulting from development within the planning area would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

On-Site Mobile Source Noise Impacts

- ◆ ***DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT COULD RESULT IN ON-SITE NOISE LEVELS IN EXCESS OF THE CITY OF HERCULES NOISE STANDARDS.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: The 65 dBA noise contour lines under with project and no project scenarios would extend beyond the planning area boundaries along several roadways such as I-80, John Muir Parkway (SR 4), and San Pablo Avenue. Thus, future residential uses introduced along the aforementioned roadways could be exposed to mobile source noise levels that exceed the City's established maximum acceptable exterior noise level of 60 dBA for residential uses (refer to Table 4.10-5, City Land Use Compatibility).

As the analysis is being conducted at a program-level, no site plans are available to determine specific noise impacts to future residential uses. Mitigation has been recommended requiring subsequent noise studies to demonstrate that noise levels have been properly accounted for and attenuated in accordance with established City standards. The analysis would verify that residences are adequately shielded and/or located at an adequate distance from mobile noise sources. In addition, proper noise attenuation such as Title 24 (Noise Insulation Standards), sound walls, and proper building orientation would help meet the interior and exterior noise standards. With implementation of Mitigation Measures NOI2, operational noise impacts would be considered less than significant.

Railroad Noise

As discussed above, railroad noise levels along the Union Pacific Railroad are approximately 70 dBA to 77 dBA at 100 feet from the railway centerline. Prior to approval of building permits for developments located near the Union Pacific Railroad, an acoustical analysis should be prepared to fully analyze and develop standards to ensure that the exterior and interior noise levels would be attenuated. With implementation of Mitigation Measure NOI3, railroad noise impacts would be considered less than significant.

Mitigation Measures:

NOI2 Prior to issuance of building permits for on-site residential development within the HNTC planning area along I-80 and John Muir Parkway (SR 4), an acoustical noise analysis shall be prepared to ensure that exterior and interior noise levels meet the City of Hercules Land Use Compatibility Standards at all residential, recreational, and other sensitive land uses. Residential buildings or structures shall prepare an acoustical analysis showing that the building has been designed to limit intruding noise to the level prescribed (interior CNEL of 45 dB). Individual developments shall, to the extent feasible, implement site-planning techniques such as the following:

- Increasing the distance between the noise source and the receiver.
- Using non-noise sensitive structures such as garages to shield noise-sensitive areas.
- Orienting buildings to shield outdoor spaces from a noise source.
- Incorporating architectural design strategies, which reduce the exposure of noise-sensitive spaces to stationary noise sources (i.e., placing bedrooms or balconies on the side of the house facing away from noise sources). These design strategies shall be implemented

based on recommendations of acoustical analysis for individual developments.

- Incorporating noise barriers, walls, or other sound attenuation techniques, based on recommendations of acoustical analysis for individual developments, between the development and the existing highway.
- Modifying elements of building construction (i.e., walls, roof, ceiling, windows, and other penetrations), as necessary to provide sound attenuation. This may include sealing windows, installing thicker or double-glazed windows, locating doors on the opposite side of a building from the noise source, or installing solid-core doors equipped with appropriate acoustical gaskets.

NOI3 Prior to issuance of building permits for development within the HNTC planning area located adjacent to the Union Pacific Railroad, an acoustical analysis shall be prepared to fully analyze and develop standards to ensure that the exterior and interior noise levels would be attenuated to comply with the City of Hercules Land Use Compatibility Standards.

Level of Significance After Mitigation: Less Than Significant Impact.

Long-Term Stationary Noise Impacts

- ◆ ***DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT COULD RESULT IN AN INCREASE IN AMBIENT NOISE LEVELS DUE TO THE GENERATION OF ON-SITE STATIONARY NOISE SOURCES.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: As shown in Table 3-1 (Hercules New Town Center Maximum Development Program) a total of approximately 320,000 square feet of retail uses, 196,250 square feet of office uses, and 1,650 residential dwelling units are anticipated. Implementation of future development could result in an increase in ambient noise levels due to the generation of on-site noise associated with commercial uses.

Types of Stationary Noise

The NTC land use designation and zoning district would allow development of mixed-use projects in areas where noise levels may be appropriate for commercial uses but either “conditionally acceptable” or “normally unacceptable” for residential uses. However, compliance with City’s noise standards set forth in the General Plan would reduce the potential for noise compatibility conflicts in the mixed-use developments to a less than significant level.

Residential Areas

Residential land uses would be located on each parcel within the HNTC planning area. Noise that is typical of residential areas includes children playing, pet noise, amplified music, car

repair, pool and spa equipment, woodworking, and home repair. Noise from residential stationary sources would primarily occur during the “daytime” activity hours of 7:00 AM to 10:00 PM. Furthermore, the residences would be required to comply with the noise standards set forth in the General Plan.

Mechanical Equipment

Mechanical equipment (heating, ventilation, and air conditioning [HVAC] units) would be located throughout the HNTC area in residential, industrial, institutional, and commercial land uses. These units typically generate 55 dBA at 50 feet from the source. In consideration of this noise estimate and the location of the proposed noise sensitive receptors (i.e., residential uses), noise generated by mechanical equipment within the planning area could exceed the City’s noise standard unless mitigated. Compliance with the noise standards set forth in the General Plan would reduce impacts from mechanical equipment. Noise levels from mechanical equipment would be further reduced with implementation of Mitigation Measure NOI4 requiring orientation of equipment away from any sensitive receptors, proper selection of equipment, and installation of equipment with proper acoustical shielding, would reduce impacts to less than significant.

Slow-Moving Trucks (Deliveries) and Loading Docks

Noise sources at loading areas may include maneuvering and idling trucks, truck refrigeration units, fork lifts, banging and clanging of equipment (i.e., hand carts and roll-up doors), noise from public address systems, and voices of truck drivers and employees. The maximum noise level associated with loading docks is typically 73 dBA at 75 feet.

The final location of loading docks has not been determined within the planning area. Loading docks would be designed per the final end users, and configurations may vary. To mitigate noise levels resulting from activities at loading docks, loading docks constructed within 250 feet of a residential use should be designed to have either a depressed (i.e., below grade) loading dock area; an internal bay; or a wall to break the line of sight between residential land uses and other noise sensitive uses, and loading operations. Prior to issuance of building permits, an acoustical analysis should be performed to demonstrate that operation of potential loading docks does not result in noise levels that exceed City standards at exterior on-site residences’ living areas or off-site sensitive uses. Implementation of Mitigation Measure NOI5 would reduce impacts to less than significant.

Parking Areas

Traffic associated with parking lots and structures is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the CNEL scale. However, the instantaneous maximum sound levels generated by a car door slamming, engine starting up, and car pass-bys may be an annoyance to adjacent noise-sensitive receptors. Estimates of the maximum noise levels associated with some parking lot activities are presented in Table 4.10-12 (Maximum Noise Levels Generated by Parking Lots). Conversations in parking areas may also be an annoyance to adjacent sensitive receptors. Sound levels of speech typically range from 33 dBA at 48 feet for normal speech to 50 dBA at 50 feet for very loud speech.

**Table 4.10-12
Maximum Noise Levels Generated by Parking Lots**

Noise Source	Maximum Noise Levels @ 50 feet from Source
Car door slamming	63 dBA
Car engine starting	60 dBA
Car accelerating	55 dBA
People shouting, laughing	65 dBA
Car engine idling	61 dBA
dBA = A-weighted decibel.	
Source: Weiland Associates, 2002.	

Parking lot noise levels at the property line of nearby sensitive receptors could exceed the City’s 60 dBA noise standard. Mitigation is recommended requiring that subsequent noise analysis be prepared for future uses, as determined necessary by the City, which demonstrates that all feasible sound attenuation has been incorporated into proposed parking areas (e.g., landscaping and brushed driving surfaces), so that noise from the parking areas is minimized to the greatest extent practicable. Implementation of Mitigation Measure NOI2 would ensure that noise generated by parking lots would not exceed the 60 dBA noise standard and impacts would be less than significant.

Landscape Maintenance

Development of the proposed uses would introduce new landscaping requiring periodic maintenance. Noise generated by a gasoline-powered lawnmower is estimated to be approximately 70 dBA at a distance of five feet. Maintenance activities would operate during daytime hours for brief periods of time and would increase ambient noise levels in the vicinity of the planning area; however, gas lawnmower noise levels at the nearest residential property line typically would not exceed the City’s 60-dBA to 70-dBA (depending on land use category) noise standard. Impacts would be less than significant.

Mitigation Measures:

- NOI4 Prior to issuance of building permits, project sponsor(s) shall demonstrate, to the satisfaction of the City of Hercules Planning Department, that noise impacts from electrical and mechanical equipment (i.e., ventilation and air conditioning units) are located away from receptor areas. Additionally, the following considerations shall be given prior to installation: proper selection and sizing of equipment, installation of equipment with proper acoustical shielding, and incorporating the use of parapets into the building design.

- NOI5 Loading docks constructed within 250 feet of a residential use shall be designed to have either a depressed (i.e., below grade) loading dock area; an internal bay; or a wall to break the line of sight between residential land uses and other noise sensitive uses, and loading operations. Prior to issuance of building permits, an acoustical analysis shall be performed to demonstrate that operation of potential loading docks does not result in noise levels that exceed City standards at exterior on-site residences’ living areas or off-site sensitive uses.

Level of Significance After Mitigation: Less Than Significant Impact.

POTENTIAL IMPACTS AND MITIGATION MEASURES: MARKET TOWN PROJECT

Short-Term Construction Noise Impacts

- ◆ ***DEVELOPMENT OF THE MARKET TOWN PROJECT COULD RESULT IN TEMPORARY NOISE AND/OR VIBRATION IMPACTS TO NEARBY NOISE SENSITIVE RECEIVERS.***

Level of Significance Before Mitigation: Potentially Significant Impact

Impact Analysis: Construction related noise impacts for the Market Town project are anticipated to occur over a relatively short period. Construction-related noise activities have the potential to temporarily exceed noise standards. The nearest existing noise-sensitive receptors to future construction activity are the residences situated to the east and the south. By assuming a distance of 800 feet for the residents to the nearest point of construction within the Market Town project site, noise levels would be approximately 61.9 dBA.

As noted above in the HNTC program discussion, construction activities throughout the Market Town project site would be generated by three primary sources: demolition activities, grading and excavation activities, and noise related to construction itself. As noted in Table 4.10-9, the combined sound level of three of the loudest pieces of equipment (scraper, bulldozer and heavy truck) is 92 dBA measured at 25 feet from the noise source. The grading/excavation work phase category includes earth-moving equipment, usually includes excavation machinery (backfillers, bulldozers, draglines, front loaders, etc.).

Adherence to Mitigation Measure NOI1 would lessen construction-related noise impacts. Additionally, the estimated construction noise levels do not take into account any noise attenuation due to existing walls, berms, intervening structures or topography. Overall, adherence to the City's requirements and implementation of the recommended mitigation measures would reduce the intensity of the short-term construction noise impacts to less than significant.

Mitigation Measure: Implement Mitigation Measure NOI1.

Level of Significance After Mitigation: Less Than Significant Impact

Construction-Related Vibration Impacts

- ◆ ***THE PROPOSED MARKET TOWN PROJECT COULD RESULT IN TEMPORARY VIBRATION IMPACTS TO NEARBY NOISE SENSITIVE RECEPTORS.***

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Ground-borne vibration associated with the Market Town project would be generated primarily during site clearing and grading activities on-site and by off-site haul-

truck travel. The PPV from bulldozer and heavy truck operations would be 0.089 inch-per-second PPV and 0.076 inch-per-second PPV, respectively, at a distance of 25 feet. The closest structures to the PNR parcel are approximately 200 feet from the construction activity areas. Additionally, as indicated above in Table 4.10-10 each of the values is below the 0.2 inch-per-second PPV significance threshold. Therefore, vibration impacts associated with construction would be less than significant and no mitigation measures are required.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

Off-Site Long-Term Mobile Source Noise Impacts

- ◆ ***TRAFFIC GENERATED BY DEVELOPMENT OF THE MARKET TOWN PROJECT COULD RESULT IN LONG-TERM OFF-SITE TRAFFIC NOISE IMPACTS.***

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Development of the Market Town project would result in additional traffic on adjacent roadways, thereby increasing vehicular noise in the vicinity of existing and proposed land uses. To determine noise impacts from off-site mobile sources traffic analysis for the “2013 No Project No Ramp Relocation” conditions (2013 conditions plus cumulative projects without development of the proposed project or proposed ramp relocation) and “2013 Plus Project No Ramp Relocation” were compared. Additionally the “2013 No Project No Ramp Relocation” condition was compared to the “2013 Plus Project With Ramp Relocation” condition. An increase of 50 dBA or greater in noise levels occurring from project-related activities would be significant when the “No Project” noise level is below 60 dBA. An increase of 30 dBA or greater in noise levels occurring from project-related activities would be significant when the “No Project” noise level is between 60 to 65 dBA. Finally, an increase of 1.5 dBA or greater would be significant if the “No Project” noise level is above 65 dBA.

As indicated in Table 4.10-13 (2013 No Project No Ramp Relocation and Plus Project No Ramp Relocation) under the “2013 No Project No Ramp Relocation” scenario, noise levels at a distance of 100 feet from the centerline would range from approximately 56.5 dBA to 78.6 dBA. The highest noise levels under “2013 No Project No Ramp Relocation” conditions would occur along I-80 (south of John Muir Parkway [SR 4]). Similar to the “2013 No Project No Ramp Relocation” scenario, under the “2013 Plus Project No Ramp Relocation” scenario noise levels at a distance of 100 feet from the centerline would range from approximately 57.4 dBA to 78.6 dBA. The highest noise levels under future with project conditions would occur along the same roadway segments as the “2013 No Project No Ramp Relocation” scenario.

**Table 4.10-13
2013 No Project No Ramp Relocation and Plus Project No Ramp Relocation**

Roadway Segment	2013 No Project No Ramp Relocation		2013 Plus Project No Ramp Relocation		Difference in dBA @ 100 feet from Roadway
	ADT	dBA @ 100 Feet from Roadway Centerline	ADT	dBA @ 100 Feet from Roadway Centerline	
San Pablo Avenue					
South of Sycamore Avenue	24,640	65.4	25,100	65.4	0
Between Sycamore Avenue and John Muir Parkway	29,240	66.1	31,090	66.4	0.3
Between John Muir Parkway and Linus Pauling Drive	13,030	62.6	13,720	62.8	0.2
Interstate 80					
South of John Muir Parkway	216,000	78.6	217,000	78.6	0
North of John Muir Parkway	144,000	76.8	145,000	76.9	0.1
John Muir Parkway					
Between San Pablo Avenue and Interstate 80	23,910	69.0	25,020	69.2	0.2
Between Interstate 80 and Willow Avenue	42,500	71.5	43,000	71.6	0.1
Willow Avenue/Bayberry Avenue					
Between Interstate 80 and I-80 SB Ramp/SR-4 EB Ramp	15,450	63.4	16,210	63.6	0.1
Between I-80 SB Ramp/SR-4 EB Ramp and Palm Avenue	7,050	60.0	7,180	60.1	0.1
Between Palm Avenue and SR-4	10,310	61.7	10,310	61.7	0
Sycamore Avenue					
West of San Pablo Avenue	3,170	56.5	3,860	57.4	0.9
ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level					
Traffic modeling is based upon data provided by Fehr and Peers, February 2008.					

Table 4.10-13 also compares the “2013 No Project No Ramp Relocation” scenario to the “2013 Plus Project No Ramp Relocation” scenario. The proposed project would increase noise levels on the surrounding roadways by a maximum of 0.9 dBA along roadways with noise levels below 60 dBA. Thus, as stated under the Thresholds of Significance, when the baseline noise level is less than 60 dBA, an increase in noise levels of less than 5.0 dBA is considered less than significant. Therefore, noise levels resulting from the proposed project would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

On-Site Mobile Source Noise Impacts

- ◆ **THE PROPOSED MARKET TOWN PROJECT COULD RESULT IN ON-SITE NOISE LEVELS IN EXCESS OF THE CITY OF HERCULES NOISE STANDARDS.**

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: As shown in Table 4.10-14 (On-Site Noise Levels), the 60 dBA noise contour lines under Existing and 2013 With Project Conditions would extend beyond the property line along all of the roadways surrounding the Market Town project site except for

Sycamore Avenue. Thus, future residential uses introduced along the aforementioned roadways could be exposed to mobile source noise levels that exceed the City’s established maximum acceptable exterior noise level of 60 dBA for residential uses. As a result, residential units facing I-80, John Muir Parkway (SR 4), and San Pablo Avenue would require upgraded windows and mechanical ventilation to reduce interior noise to a less than significant level. Implementation of Mitigation Measures NOI2 and NOI3 would ensure that interior noise levels are reduced to a less than significant level.

**Table 4.10-14
On-Site Noise Levels**

Roadway Segment	ADT	Exterior Noise Level	Interior Noise Level
2013 PLUS PROJECT WITH RAMP RELOCATION			
San Pablo Avenue: Between Sycamore and John Muir Parkway	30,260	67.5	47.5
Interstate 80: South of John Muir Parkway	217,000	71.2	51.2
John Muir Parkway: Between San Pablo Avenue and I-80	25,020	66.9	46.9
Sycamore Avenue: West of San Pablo Avenue	3,860	58.7	37.7
CUMULATIVE (2035) WITH PROGRAM			
San Pablo Avenue: Between Sycamore Avenue and John Muir Parkway	41,000	68.9	48.9
Interstate 80: South of John Muir Parkway	29,000	72.4	52.4
John Muir Parkway: Between San Pablo Avenue and I-80	37,300	68.6	48.6
Sycamore Avenue: West of San Pablo Avenue	5,243	60.0	40.0
ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level			
Notes:			
1. A 20 dBA noise attenuation rate was utilized to determine the interior noise standards. The proposed project would use heating ventilation and air conditioning to ensure a “closed window” condition is satisfied.			
Source: Noise modeling is based upon <i>Traffic Data</i> provided by Fehr & Peers, February 2008.			

Railroad Noise

As discussed above, railroad noise levels along the Union Pacific railroad are approximately 70 dBA to 77 dBA at 100 feet from the railway centerline. The Market Town project proposes residential dwelling units approximately 450 feet from the railway centerline. As a result, noise along the project frontage would result in noise levels ranging from 57 dBA to 64 dBA at the nearest receivers. Noise levels would exceed the City’s standard of 60 dBA for residential uses at approximately 750 feet from the railway centerline. Therefore, all residential units proposed within 750 feet of the railway centerline would be required to have architectural acoustical mitigation to reduce noise levels to a less than significant level. With implementation of Mitigation Measures NOI6 and NOI7, railroad noise impacts would be considered less than significant.

Mitigation Measures:

- NOI6 Prior to approval of final construction documents, the project engineer shall develop the sound transmission class specifications for building construction. The sound transmission class shall be adjusted when the final exterior surface

area as a percent of room floor area is determined. The specifications shall be submitted to the City of Hercules prior to the issuance of building permits.

NOI7 Residential units located along I-80, John Muir Parkway (SR 4), and San Pablo Avenue require mechanical ventilation which shall be shown on plans submitted for building permits. The mechanical ventilation shall be installed to ensure noise levels will be below 45 dBA CNEL with the windows and doors closed. As specified in the Uniform Building Code (UBC), 1997 edition, Section 12.03.3, mechanical ventilation units shall be designed to supply two air changes per hour in guest rooms, dormitories, habitable rooms, and public corridors with a minimum of 15 cubic feet per minute (7L/s) of outside air per occupant during such time as the building is occupied.

Level of Significance After Mitigation: Less Than Significant Impact.

Long-Term Stationary Noise Impacts

- ◆ ***THE PROPOSED MARKET TOWN PROJECT COULD RESULT IN AN INCREASE IN AMBIENT NOISE LEVELS DUE TO THE GENERATION OF ON-SITE STATIONARY NOISE SOURCES.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: Implementation of the Market Town project could result in an increase in ambient noise levels due to the generation of on-site noise associated with commercial uses.

Types of Stationary Noise

Development of the Market Town project would allow development of mixed-use projects in areas where noise levels may be appropriate for commercial uses but either “conditionally acceptable” or “normally unacceptable” for residential uses. However, compliance with City’s noise standards set forth in the General Plan would reduce the potential for noise compatibility conflicts in the mixed-use developments to a less than significant level.

Residential Areas

Development of the Market Town project would include residential land uses. Noise that is typical of residential areas includes children playing, pet noise, amplified music, car repair, pool and spa equipment, woodworking, and home repair. Noise from residential stationary sources would primarily occur during the “daytime” activity hours of 7:00 AM to 10:00 PM. Furthermore, the residences would be required to comply with the noise standards set forth in the General Plan.

Mechanical Equipment

Mechanical equipment (heating, ventilation, and air conditioning [HVAC] units) would be constructed as part of the Market Town project as part of the residential, industrial, institutional, and commercial land uses. These units typically generate 55 dBA at 50 feet

from the source. In consideration of this noise estimate and the location of the proposed noise sensitive receptors (i.e., residential uses), noise generated by mechanical equipment within the Market Town project area could exceed the City's noise standard unless mitigated. Compliance with the noise standards set forth in the General Plan would reduce impacts from mechanical equipment. Noise levels from mechanical equipment would be further reduced with implementation of Mitigation Measure NOI4 requiring orientation of equipment away from any sensitive receptors, proper selection of equipment, and installation of equipment with proper acoustical shielding, would reduce impacts to less than significant.

Slow-Moving Trucks (Deliveries) and Loading Docks

Noise sources at loading areas may include maneuvering and idling trucks, truck refrigeration units, fork lifts, banging and clanging of equipment (i.e., hand carts and roll-up doors), noise from public address systems, and voices of truck drivers and employees. The maximum noise level associated with loading docks is typically 73 dBA at 75 feet.

The final location of loading docks has not been determined within the Market Town project area. Loading docks would be designed per the final end users, and configurations may vary. To mitigate noise levels resulting from activities at loading docks, loading docks constructed within 250 feet of a residential use should be designed to have either a depressed (i.e., below grade) loading dock area; an internal bay; or a wall to break the line of sight between residential land uses and other noise sensitive uses, and loading operations. Prior to issuance of building permits, an acoustical analysis should be performed to demonstrate that operation of potential loading docks does not result in noise levels that exceed City standards at exterior on-site residences' living areas or off-site sensitive uses. Implementation of Mitigation Measure NOI5 would reduce impacts to less than significant.

Parking Areas

Traffic associated with parking lots and structures is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the CNEL scale. However, the instantaneous maximum sound levels generated by a car door slamming, engine starting up, and car pass-bys may be an annoyance to adjacent noise-sensitive receptors. Estimates of the maximum noise levels associated with some parking lot activities are presented in Table 4.10-12. Conversations in parking areas may also be an annoyance to adjacent sensitive receptors. Sound levels of speech typically range from 33 dBA at 48 feet for normal speech to 50 dBA at 50 feet for very loud speech.

Parking lot noise levels at the property line of nearby sensitive receptors could exceed the City's 60 dBA noise standard. Mitigation is recommended requiring that subsequent noise analysis be prepared for future uses, as determined necessary by the City, which demonstrates that all feasible sound attenuation has been incorporated into proposed parking areas (e.g., landscaping and brushed driving surfaces), so that noise from the parking areas is minimized to the greatest extent practicable. Following implementation of the proposed Mitigation Measure NOI2, noise generated by parking lots is not expected to exceed the 60 dBA noise standard and impacts would be less than significant.

Landscape Maintenance

Development of the proposed uses would introduce new landscaping requiring periodic maintenance. Noise generated by a gasoline-powered lawnmower is estimated to be approximately 70 dBA at a distance of five feet. Maintenance activities would operate during daytime hours for brief periods of time and would increase ambient noise levels in the vicinity of the planning area; however, gas lawnmower noise levels at the nearest residential property line typically would not exceed the City's 60 dBA to 70 dBA (depending on land use category) noise standard. Impacts would be less than significant.

Mitigation Measures: Implement Mitigation Measures NOI2, NOI4 and NOI5.

Level of Significance After Mitigation: Less Than Significant Impact.

CUMULATIVE IMPACTS

Cumulative Construction Noise Impacts

- ◆ **DEVELOPMENT ASSOCIATED WITH THE PROPOSED PROJECT AND OTHER RELATED CUMULATIVE PROJECTS COULD RESULT IN CUMULATIVELY CONSIDERABLE SHORT-TERM NOISE IMPACTS.**

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: The timing or sequencing of related projects is difficult to determine, and as such, any quantitative analysis to ascertain the daily construction emissions that assumes multiple, concurrent construction would be speculative. Construction-related noise for the proposed project and each of the related cumulative projects would be localized. In addition, it is likely that each of the related projects would have to comply with the local noise ordinance, as well as mitigation measures that may be prescribed pursuant to CEQA provisions that require significant impacts to be reduced to the extent feasible. Therefore, construction of the proposed project and the related cumulative projects would not result in cumulative construction noise impacts.

Mitigation Measure: Implement Mitigation Measure NOI1.

Level of Significance After Mitigation: Less Than Significant Impact.

Cumulative Operational Noise Impacts

- ◆ **DEVELOPMENT ASSOCIATED WITH THE PROPOSED PROJECT AND OTHER RELATED CUMULATIVE PROJECTS COULD RESULT IN CUMULATIVELY CONSIDERABLE LONG-TERM NOISE IMPACTS.**

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: The proposed project would introduce the use of stationary equipment that would increase noise levels within the area. Based on the long-term stationary noise analysis, impacts would be less than significant. Additionally, based on the fact that noise

dissipates as it travels away from its source, noise impacts from on-site activities and other stationary sources would be limited to the project site and vicinity. As such, noise impacts from related projects, in conjunction with project-specific noise impacts, would not have the potential to result in cumulatively considerable adverse effects.

The proposed project would not result in stationary long-term equipment that would significantly affect surrounding sensitive receptors. Furthermore, future development proposals within the City would require separate discretionary approval and CEQA assessment, which would address potential noise impacts and identify necessary attenuation measures, where appropriate. Thus, cumulative stationary noise exposure would be considered a less than significant impact.

Cumulative Mobile Noise

Table 4.10-15 (Cumulative Noise Scenario) compares the existing weekday traffic noise levels with estimated 2035 noise levels, which include the proposed project and related cumulative projects. Changes in traffic noise levels in excess of the thresholds established in Table 4.10-15 are indicated in bold. As indicated in Table 4.10-15, a potentially significant increase in noise would occur along ten roadway segments. Of these ten segments, nine segments would also exceed the City’s 60 dBA noise standard. Therefore, the cumulative mobile source noise levels along these segments would result in a significant and unavoidable impact.

**Table 4.10-15
Cumulative Noise Scenario**

Roadway Segment	Existing		Cumulative (2035) With Program		Difference in dBA @ 100 feet from Roadway
	ADT	dBA @ 100 Feet from Roadway Centerline	ADT	dBA @ 100 Feet from Roadway Centerline	
San Pablo Avenue					
South of Sycamore Avenue	23,150	65.1	35,800	67.0	1.9
Between Sycamore Avenue and John Muir Parkway	28,000	65.9	41,100	67.6	1.7
Between John Muir Parkway and Linus Pauling Drive	12,000	62.2	20,400	64.5	2.3
Interstate 80					
South of John Muir Parkway	200,000	78.3	290,000	79.9	1.6
North of John Muir Parkway	133,000	76.5	194,000	78.1	1.6
John Muir Parkway					
Between San Pablo Avenue and Interstate 80	23,640	69.0	37,300	71.0	2
Between Interstate 80 and Willow Avenue	38,000	71.1	66,000	73.5	2.4
Willow Avenue/Bayberry Avenue					
Between Interstate 80 and I-80 SB Ramp/SR-4 EB Ramp	10,700	61.8	19,700	64.5	2.7
Between I-80 SB Ramp/SR-4 EB Ramp and Palm Avenue	5,130	58.6	17,100	63.9	5.3
Between Palm Avenue and SR-4	8,640	60.9	27,000	65.8	4.9
Sycamore Avenue					
West of San Pablo Avenue	2,690	55.8	5,243	58.7	2.9
ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level					
Traffic modeling is based upon data provided by Fehr and Peers, February 2008.					

Mitigation Measures: No feasible mitigation is available.

Level of Significance After Mitigation: Significant and Unavoidable Impact.

4.11 POPULATION AND HOUSING

This section describes the existing population and housing conditions in the City of Hercules (City) and evaluates potential impacts that could result from future development within the Hercules New Town Center (HNTC) planning area consistent with the proposed amendments to the General Plan and Zoning Ordinance and implementation of the Market Town project. This section contains analysis based on information from the City of Hercules General Plan (General Plan) Housing Element and Land Use Element. Other resources, references and documents used to prepare this section of the EIR are identified, both in text and in the corresponding footnotes.

4.11.1 ENVIRONMENTAL SETTING

POPULATION

The City was originally built as a California Powder Works company town in 1881 and grew to a population of 250 residents by 1970. The plant closed in 1977 but the City's population continued to grow 146 percent between the years 1980 and 1990 to a population of 16,839. This substantial growth was due to the City's location approximately 25 miles northeast of San Francisco and adjacency to Interstate 80 (I-80), the housing boom of the 1970s and 1980s, and the availability of inexpensive land. Between the years of 1990 and 2000, the City's population increased 16 percent from 16,839 residents to 19,550 residents. Over the next five years, the City continued to grow with a 19 percent increase to 23,975 residents in 2007.¹ Based on projections developed by the Association of Bay Area Governments (ABAG), this number is projected to increase to approximately 27,500 by the year 2020.² The General Plan projects that buildout will occur when the City's population grows to 29,927 residents.

The City's population is composed of several different ethnic and racial groups. Asian residents have the largest population with 42.4 percent. This is followed by Caucasians with 23.7 percent and African Americans with 18.3 percent. The average age of residents in the City was 36.7 years in 2000, an increase from 28.4 years in 1990. In 1990, residents in Hercules had an average household income of \$62,456, which increased by approximately 20.4 percent to \$75,196 in 2000.

According to the California Department of Finance (CDF), there are 2.11 persons per multi-family household in Hercules.³ This number will be used to estimate the increase in population that would result from implementation of the proposed project.

HOUSING

The U.S. Bureau of Census defines a household as all persons who occupy a housing unit, including families, single people, or unrelated persons. The City currently has approximately 8,165 housing units.⁴ In order to meet the City's housing needs, a total of 5,767 additional

¹ State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2007, with 2000 Benchmark*. Sacramento, California, May 2007.

² Association of Bay Area Governments (ABAG), *2000 Projections for Populations, Households and Jobs*, 2000.

³ California Department of Finance, Dan Shea, phone conversation with Kimberly Comacho, RBF Consulting, December 19, 2007.

⁴ CDF, May 2007.

housing units would need to be built by the year 2025.⁵ This amounts to a 71.9 percent increase in housing between the years of 2007 and 2025. Table 4.11-1 (Housing Stock in the City of Hercules [2007]), summarizes the housing stock in the City.

**Table 4.11-1
Housing Stock in the City of Hercules (2007)**

Unit Type	Single-Family Detached Residential Units	Single-Family Attached Residential Units	Multi-Family or Other Residential Units
Number of Units	5,460	1,631	1,074
Percent of Total	66%	20%	14%

Source: State of California, Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2007, with 2000 Benchmark. Sacramento, California, May 2007.*

Housing prices in Hercules tend to remain more affordable than other places in the Bay Area. The median value of an owner-occupied housing unit in the City in 1990 was \$224,700. This price increased by 7.3 percent to \$241,500 by the year 2000.

EMPLOYMENT

Hercules employment was slow to grow in the 1980s and did not keep pace with the residential growth. By 1990, Hercules had about 2,340 jobs. Over the next 17 years this number has increased by 36.4 percent to 3,192 jobs in 2007.⁶ This number is expected to increase by approximately 26.8 percent to 4,046 by the year 2014.⁷

Continued job growth in the City will create new opportunities for people to both live and work in the community. Currently, the City has a labor force of approximately 11,600 persons. Out of this labor force, approximately 3.37 percent were unemployed in 2006. This rate was considerably lower than Contra Costa County, which had an unemployment average of 4.9 percent in 2006.⁸

JOBS/HOUSING BALANCE

The jobs/housing balance is a ratio between the number of housing units and the number of jobs within a city. A jobs/housing ratio that is less than 1.0 indicates that the community has more homes than jobs. A jobs/housing ratio that is higher than 1.0 indicates that the community has more jobs than homes. Given that not every member of a household will work full- or part-time outside of the home, ABAG recommends using a ratio of 1.5 workers per household to calculate a municipality's jobs/housing ratio. Based on 8,165 housing units in Hercules in the year 2007, the estimate of workers in all households is approximately 12,248. ABAG estimates that 3,192 jobs were held within the City in 2007.⁹ This equates to a

⁵ Association of Bay Area Governments (ABAG), *2000 Projections for Populations, Households and Jobs*, 2000.

⁶ Association of Bay Area Governments (ABAG), *2007 Jobs/Housing Balance*, 2007.

⁷ ABAG, 2007.

⁸ California Employment Development Department (CEDD), *Labor Force Data for Sub-County Areas*, 2006.

⁹ ABAG, 2007.

current jobs/housing ratio of 0.39, which means that there are 0.39 jobs for each employed resident.

4.11.2 REGULATORY SETTING

LOCAL FRAMEWORK

City of Hercules General Plan

Housing Element

The Housing Element of the General Plan includes goals and policies to protect the quality of the City's residential neighborhoods while providing opportunities for new housing that meets community needs. New housing should be compatible with and complement the existing pattern of residential neighborhoods. In achieving the City's housing goals, Hercules must strike a balance between the need to provide affordable housing and preservation and enhancement of existing neighborhoods, maintenance of high development standards and protection of environmental resources. The following are goals set forth in the Housing Element:

Goal 1 **Housing Production and Affordability:** Provide a sufficient number of affordable housing units to meet the needs of Hercules residents and to meet Hercules' fair share of the region's housing needs, as established by the Association of Bay Area Governments.

Policy 1.1 – Regional Housing Needs Objectives (New Construction) – Support the development of housing units for persons of various household income levels.

Policy 1.2 – Adequate Sites – Continue to ensure adequate residential development sites at appropriate densities to meet the City's housing needs. When and where necessary, rezone properties to higher densities or rezone non-residential land for residential or mixed use to create adequate development opportunities.

Goal 2 **Housing Choice:** Provide a selection of housing by type, tenure and price.

Policy 2.1 – Diversity of Housing Types, Densities and Price Levels - Encourage the development of a variety of housing types, at various densities and price levels, providing a broader range of choice than is currently available, in keeping with community design goals and standards.

Policy 2.2 – Rental Housing Opportunities – Expand the number of rental units for those that cannot afford to purchase or who choose to rent.

Goal 3 **Special Needs:** Provide a sufficient number of housing units to meet the special needs of senior citizens, physically disabled, homeless, large families and female-headed households.

Goal 5 **Neighborhood Quality:** Maintain the quality of existing neighborhoods and encourage the development of attractive, viable new neighborhoods.

Policy 5.1 – Mixed Use – Where appropriate, encourage residential uses in commercial areas, and limited commercial uses in residential areas to promote access to services.

Land Use Element

Policy 2C Emphasize employment-generating development, which is lagging behind residential development.

Policy 4A Encourage local and regional commercial uses that can benefit from substantial traffic on I-80, Highway 4 freeway, and San Pablo Avenue.

Objective 5 Develop and maintain a pattern of residential land uses which provide for a variety and balance of densities and opportunities for a mix of dwelling and residential type.

4.11.3 ENVIRONMENTAL ANALYSIS

THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the *CEQA Guidelines*, the proposed project would have a significant impact on population and housing if it would:

- 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)
- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere
- Displace substantial numbers of people, necessitating the construction of replacement housing of replacement housing elsewhere

Areas of No Project Impact

The following impacts either are not applicable to the project or are not reasonably foreseeable:

- Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere

The HNTC planning area currently consists of undeveloped parcels, the existing Hercules Transit Center, storage lots, an off-ramp, and industrial uses. There are no current residential uses and no housing would be displaced with project implementation. Therefore, there would be no impact.

- Displace substantial numbers of people, necessitating the construction of replacement housing of replacement housing elsewhere

There are no existing residential units on the parcels that make up the HNTC planning area, including the PNR parcel, and, therefore, no people would be displaced. No impact would result.

POTENTIAL IMPACTS AND MITIGATION MEASURES: GENERAL PLAN AND ZONING ORDINANCE AMENDMENTS

Population Growth Impacts

- ◆ ***DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT WOULD DIRECTLY INDUCE POPULATION AND GROWTH IN THE CITY OF HERCULES BY PROVIDING 1,650 MULTI-FAMILY RESIDENTIAL UNITS.***

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Based on the General Plan, the City's population at buildout would be 29,927 residents. Development within the HNTC planning area would result in approximately 1,650 multi-family residential units and an increase in population of approximately 3,482 residents.¹⁰ The proposed amendments to the General Plan and Zoning Ordinance would result in an incremental increase in population and would be within the growth estimates identified in the General Plan. Therefore, the impact would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

Employment Impacts

- ◆ ***DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT WOULD INCREASE EMPLOYMENT OPPORTUNITIES IN THE CITY OF HERCULES BY PROVIDING APPROXIMATELY 1,425 NEW JOBS WITH THE DEVELOPMENT OF APPROXIMATELY 516,250 SQUARE FEET OF RETAIL AND OFFICE SPACE.***

Level of Significance Before Mitigation: Beneficial Impact.

Impact Analysis: Implementation of future development within the HNTC planning area would result in subsequent construction of approximately 320,000 square feet of retail space and 196,250 square feet of office space. Based on the calculation of one employee per 500

¹⁰ Calculation: 1,650 dwelling units x 2.11 persons per household = 3,482 residents.

square feet of retail and one employee per 250 square feet of office space, the project would generate approximately 1,425 new jobs.¹¹

Future development within the HNTC planning area would be consistent with Policies 2C and 4A of the General Plan Land Use Element, which encourage employment-generating development and promote business uses close to major transportation routes. Therefore, the project's impacts on local and regional employment would be considered beneficial to the City of Hercules.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

Jobs/Housing Balance Impacts

- ◆ **DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT WOULD INCREASE THE JOBS/HOUSING RATIO WITHIN THE CITY OF HERCULES.**

Level of Significance Before Mitigation: Beneficial Impact.

Impact Analysis: Future development within the HNTC planning area would provide approximately 1,650 new dwelling units and approximately 1,425 new jobs. This would result in approximately 0.94 jobs for each dwelling unit added. With respect to the City as a whole, the net increase of jobs over housing would increase the City's jobs/housing ratio from 0.39 to 0.47.¹² Therefore, future job growth within the planning area would improve the City's jobs/housing ratio and a beneficial impact would result.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

POTENTIAL IMPACTS AND MITIGATION MEASURES: MARKET TOWN PROJECT

Population Growth Impacts

- ◆ **THE PROPOSED MARKET TOWN PROJECT WOULD DIRECTLY INDUCE POPULATION GROWTH IN THE CITY OF HERCULES BY PROVIDING 400 RESIDENTIAL UNITS.**

Level of Significance Before Mitigation: Less Than Significant Impact.

¹¹ Calculation: 320,000 sq. ft. ÷ 500 sq. ft. per employee = 640 employees.

Calculation: 196,250 sq. ft. ÷ 250 sq. ft. per employee = 785 employees.

¹² Calculation: 3,192 current jobs + 1,425 additional jobs with project = 4,617 total jobs; 8,165 current housing units + 1,650 additional housing units with project = 9,815 total units; 4,617 total jobs ÷ 9,815 total units = 0.47 estimated jobs/housing balance with project.

Impact Analysis: Based on the General Plan, the City's population at buildout would be 29,927 residents. The Final Planned Development Plan (FPDP) for the PNR parcel would result in the development of approximately 320 multi-family residential units and increase the City's population by approximately 675 residents.¹³ However, for the purposes of this EIR, a conservative approach has been utilized to evaluate project impacts. Thus, based on the Initial Planned Development Plan (IPDP), which would allow up to 400 multi-family residential units on the PNR parcel, an increase in population of 844 residents would result from the Market Town project.¹⁴ The population growth generated by Market Town would be within the growth estimates identified in the General Plan. Therefore, the impact would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

Employment Impacts

- ◆ **THE PROPOSED MARKET TOWN PROJECT WOULD INCREASE EMPLOYMENT OPPORTUNITIES IN THE CITY OF HERCULES BY PROVIDING APPROXIMATELY 400 NEW JOBS WITH THE DEVELOPMENT OF APPROXIMATELY 140,000 SQUARE FEET OF RETAIL AND OFFICE SPACE.**

Level of Significance Before Mitigation: Beneficial Impact.

Impact Analysis: The FPDP for Market Town proposes to construct 56,000 square feet of retail space and 80,000 square feet of office space, while the IPDP would allow the construction of up to 60,000 square feet of retail space and 80,000 square feet of office space. Using the calculation of one employee per 500 square feet of retail space and one employee per 250 square feet of office space, the project would result in 432 new jobs for the FPDP and 440 new jobs for the IPDP.¹⁵

Development of the PNR parcel would be consistent with Policies 2C and 4A of the General Plan Land Use Element, which encourage employment-generating development and promote business uses close to major transportation routes. Therefore, the project's impacts on local and regional employment would be beneficial.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

Jobs/Housing Ratio Impacts

¹³ FPDP Calculation: 320 dwelling units x 2.11 persons per household = 675 residents.

¹⁴ IPDP Calculation: 400 dwelling units x 2.11 persons per household = 844 residents.

¹⁵ FPDP Calculation: 56,000 sq. ft. ÷ 500 sq. ft. per employee = 112 employees.

IPDP Calculation: 60,000 sq. ft. ÷ 500 sq. ft. per employee = 120 employees

FPDP & IPDP Calculation: 80,000 sq. ft. ÷ 250 sq. ft. per employee = 320 employees.

- ◆ **THE PROPOSED MARKET TOWN PROJECT WOULD NOT SIGNIFICANTLY ALTER THE JOBS/HOUSING RATIO WITHIN THE CITY OF HERCULES.**

Level of Significance Before Mitigation: Beneficial Impact.

Impact Analysis: The proposed Market Town project would provide approximately 400 new dwelling units and approximately 440 new jobs under the IPDP. This would result in one job for each dwelling unit added. With respect to the City as a whole, the net increase of jobs over housing would increase the City's jobs/housing ratio from 0.39 to 0.42.¹⁶ Under the FPDP approximately 320 new dwelling units and approximately 432 new jobs would be provided in Market Town. This would increase the City's jobs/housing ratio from 0.39 to 0.43.¹⁷ Therefore, the project would improve the City's jobs/housing ratio and a beneficial impact would result.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

¹⁶ Calculation: 3,192 current jobs + 440 additional jobs with project = 3,632 total jobs; 8,165 current housing units + 400 additional housing units with project = 8,565 total units; 3,632 total jobs ÷ 8,565 total units = 0.42 estimated jobs/housing balance with project.

¹⁷ Calculation: 3,192 current jobs + 432 additional jobs with project = 3,624 total jobs; 8,165 current housing units + 320 additional housing units with project = 8,485 total units; 3,624 total jobs ÷ 8,485 total units = 0.43 estimated jobs/housing balance with project.

4.12 PUBLIC SERVICES, UTILITIES AND SERVICE SYSTEMS

This section evaluates potential impacts to public services, utilities and service systems that could result from future development within the Hercules New Town Center (HNTC) planning area consistent with the proposed amendments to the General Plan and Zoning Ordinance and implementation of the Market Town project.

Potential impacts resulting from wildland fires on the project site are discussed in Section 4.8 (Hazards and Hazardous Materials). Project impacts on parks and recreation are discussed in Section 4.13 (Recreation). Impacts associated with stormwater runoff and drainage facilities are discussed in Section 4.9 (Hydrology and Water Quality).

The following governmental agencies provided the data used to prepare the analysis in this section:

- Rodeo-Hercules Fire District
- City of Hercules Police Department
- West Contra Costa Unified School District
- City of Hercules Public Works Department
- Richmond Sanitary Services
- East Bay Municipal Utility District

4.12.1 ENVIRONMENTAL SETTING

FIRE PROTECTION AND EMERGENCY SERVICES

The Rodeo-Hercules Fire District (RHFD) provides both fire protection and emergency medical services to the City of Hercules (City). The RHFD employs 21 personnel and approximately 16 reserves and maintains two fire stations. The two stations are Hercules Station 76 (1680 Refugio Valley Road) and Rodeo Station 75 (326 Third Street).

Station 76, which is approximately 0.85 miles from the HNTC planning area, would serve future development. Three personnel staff Station 76, 24 hours a day. Station 76 has a Type I engine, a Type III engine and a quint engine. Type I fire engines are designed to protect structures, with the ability to pump 1,250 gallons of water per minute (gpm). Type III fire engines are designed to fight wildfires, and carry 500 gallons of water and 30 gallons of wildland firefighting foam. The quint is equipped with a 75-foot aerial ladder and is able to pump 2,000 gpm. Station 76 is part of Battalion 7, which includes Rodeo Station 75, Pinole Stations 73 and 74, and Contra Costa Stations 69 and 70. All units within Battalion 7 are Advanced Life Support equipped with one paramedic on each unit.

The District's response time goal is five minutes for 90 percent of calls. According to Alan Biagi, Battalion Chief (personal communication, June 26, 2007), the RHFD meets that standard in the planning area, with an average of five minutes or less, depending on traffic.

Response delays occur at the intersection of San Pablo Avenue and Sycamore Avenue when there is traffic. First alarm fires in Hercules would bring four engines, a quint or ladder truck, and one Battalion Chief.

The Insurance Services Office (ISO) is an independent organization that analyzes approximately 46,000 fire districts in the United States and assigns a number from one to ten to each station based on the station's fire protection capabilities. In this classification system, the Public Protection Classification, Class 1 represents exemplary fire protection, and Class 10 indicates that the area's fire suppression program does not meet ISO's minimum criteria. According to Alan Biagi, Battalion Chief, the present ISO rating of Station 76 is Class 3. The ISO will remain the same for approximately ten years, unless the District requests a re-evaluation prior to that time.

POLICE PROTECTION

The City's Police Department is a full service criminal justice agency and contracts with the City of Pinole for Police Dispatching and use of temporary jail facilities. The City is generally a low-crime area with the most common crimes being larceny and burglaries.¹ The Police Department responded to 22,552 calls in 2006.

The City has one police station located at 111 Civic Drive, within City Hall. The Police Department has 36 sworn officers and two volunteers and is broken up into two beats. According to Commander Tom Dalby, with the Hercules Police Department (personal correspondence June 11, 2007), staffing consists of at least one officer on each beat, with two or more on many of the afternoon and night shifts. The HNTC planning area would be within the boundaries of Beat 2. The Police Department's current response time is approximately five to seven minutes for emergency and non-emergency calls (Dalby 2007).

SCHOOLS

The project site is within the West Contra Costa Unified School District. Ohlone Elementary School, Hercules Middle School and Hercules High School would serve the HNTC planning area. Ohlone Elementary School is located at 1616 Pheasant Drive, approximately 0.5 miles from the planning area. The school's current capacity is 459 students and its current enrollment is 480. Hercules Middle School is located at 1900 Refugio Valley Road, approximately 1.28 miles from the planning area. The school's current capacity is 690 students and its current enrollment is 764. Hercules Valley High School is also located at 140 Refugio Valley Road, approximately 1.28 miles from the planning area. The school's current capacity is 1,245 students and its current enrollment is 1,295.² All the schools are currently over their working capacity. In addition, according to the California Department of Education, Ohlone Elementary is on a school site which is too small in acreage for its current enrollment. Enrollments are expected to continue to increase at all schools in this area.

¹ <http://www.ci.hercules.ca.us/New/Police/stats.htm>, accessed on June 27, 2007.

² Cheryl King, Jack Schreder & Associates, on behalf Nina Hurley of the West Contra Costa Unified School District, Letter to RBF Consulting, September 17, 2007.

The West Contra Costa Unified School District student generation rates for multi-family and affordable housing units are presented below in Table 4.11-1, Student Generation Rates. Single-family homes are not proposed within the HNTC planning area.

**Table 4.12-1
Student Generation Rates**

Housing Type	Grades		
	K-6	7-8	9-12
Multi-Family	0.047	0.015	0.014
Affordable Housing	0.333	0.154	0.185

Source: Cheryl King, Jack Shreder & Associates, on behalf of Nina Hurley, West Contra Costa Unified School District, Letter to RBF Consulting, September 17, 2007.

WASTEWATER

The HNTC planning area is within the Pinole-Hercules Wastewater Treatment Plant (PHWTP) service boundary. The PHWTP is located in the City of Pinole, five miles southwest of the planning area. The facility collects, treats and disposes of wastewater for approximately 15,000 households in the cities of Pinole and Hercules. According to the PHWTP, the district’s current discharge permit allows an average dry weather flow rate of 4.06 million gallons per day (mgd) based on a secondary level of treatment. Both the cities of Pinole and Hercules are in the process of upgrading and planning for future capacity at the PHWTP.

The closest available sewer lines to the planning area lie just south of the PNR parcel in Sycamore Avenue and a 14-inch line that runs the length of Willow Avenue. .

WATER

Water is supplied to the City through the East Bay Municipal Utility District (EBMUD). The Mokelumne River is the primary source of water used to serve the 1.3 million people in EBMUD’s service area. The EBMUD water supply system consists of a network of reservoirs, aqueducts, treatment plants, and distribution facilities, and supplies water to approximately 1.3 million people within parts of Alameda and Contra Costa Counties. The system services 20 incorporated cities, including Hercules, and 15 unincorporated Bay Area communities. EBMUD’s customer demand in 2005 was approximately 241 mgd and its future water demand is projected to be 281 mgd by 2030.³

The residential development area is within the EBMUD ultimate service boundary and can be served by EBMUD’s Maloney Pressure Zone, which has a service elevation between 0 and 200 feet above sea level. Water main extensions from Willow Avenue would be required to provide water service to the planning area. In addition, off-site pipeline improvements may be required to meet domestic demands and fire flow requirements set by the RHFD.

³ East Bay Municipal Utility District, *Urban Water Management Plan 2005*, adopted November 22, 2005, Table 4-2.

SOLID WASTE

Richmond Sanitary Service manages solid waste disposal for the City. According to Shawn Moberg, General Manager (personal correspondence, July 10, 2007), solid waste services would be available for the HNTC planning area. Richmond Sanitary Service would provide trash, recycling, and green waste services to future development. All materials would be collected and taken to the Golden Bear Transfer Facility in Richmond, where they would be re-loaded into long-haul transfer vehicles and sent to Potrero Hills Landfill in Solano County.

Potrero Hills Landfill is a Class III facility that can only accept nonhazardous waste for disposal. As of September 2007, the Potrero Hills Landfill covered 320 acres of land with 190 acres permitted for disposal. The facility has a permitted capacity of 21.5 million cubic yards and can accept up to 4,330 tons of waste per day.⁴ The facility was originally permitted in 1996 and has used approximately 61.9 percent of its estimated capacity.

4.12.2 REGULATORY SETTING

STATE FRAMEWORK

Fire Protection

The Uniform Fire Code addresses general and specialized fire safety requirements for buildings. Topics addressed in the code include, but are not limited to, fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, fire and explosion hazards safety, hazardous materials storage and use, provisions to protect and assist first responders, and industrial processes.

Schools

Senate Bill (SB) 50 created various methods of generating revenue to pay for school construction and remodeling. These methods consist of state school bond funds, local school bonds, and developer fees. There are three levels of developer fees. Level I, Level II and Level III. Level I fees are set by law, but can be adjusted for inflation. Level II fees require that developers pay for the entire local share of construction costs, which is 50 percent of total construction costs. Level II fees may be imposed by a school district on a yearly basis, but only if certain conditions are met. Level III fees require developers to pay for 100 percent of construction costs, and are imposed if the state is no longer allocating bond funds.⁵

SB 50 stipulates that if a school district conducts a School Facilities Needs Analysis and meets certain other requirements, it may impose a statutory developer fee that may be significantly higher than the previously permitted Level I fees of \$2.63 per square-foot of residential development. On January 3, 2007, the West Contra Costa Unified School District Board of Education adopted Resolution No. 40-0607, which established school facility fees in accordance with the provisions of SB 50. Based on the School Facilities Needs Analysis

⁴ <http://www.ciwmb.ca.gov/Profiles/Facility/Landfill/LFProfile1.asp?COID=7&FACID=48-AA-0075>, accessed September 14, 2007.

⁵ California Builder, "Housing at the Cross Roads," September/October 2002.

Report, updated every January, the District can collect Level II Developer Fees of \$3.92 per square-foot of new residential construction.

Water Supply

Under California Assembly Bill (AB) 325, all developer installed landscaping must be accompanied by a landscape package that documents how water use efficiency would be achieved through design.

Solid Waste

The Integrated Waste Management Act (AB 939) mandates that communities reduce their solid waste. AB 939 requires local jurisdictions to divert 25 percent of their solid waste by 1995 and 50 percent by 2000, compared to a baseline of 1990. AB 939 also establishes an integrated framework for program implementation, solid waste planning, and solid waste facility and landfill compliance.

LOCAL FRAMEWORK

City of Hercules General Plan

The City of Hercules General Plan (General Plan) contains goals and policies regarding public services, utilities and services systems. The following General Plan policies are relevant to the proposed project:

Land Use Element

- Policy 3A Program 3A.3
Analyze the existing public facilities and services compared to those needed to be developed as provided for in this Element. Develop a plan to meet the public facility and service needs.
- Policy 9A Program 9A.3
Development applications shall be reviewed to determine if adequate solid waste disposal capacity exists to serve the project and that the project includes adequate recycling facilities.
- Policy 16A Refer applicants of new developments to the appropriate School Districts in order to pay the District's required developer impact fees prior to the building permit issuance for individual projects, as needed and justified, to maintain school performance standards.

Open Space and Conservation Plan

- Policy 7b Program 7b.1
Ensure that the new development pays its share of the costs associated with the provision of facilities to conform to EBMUD requirements for water

conservation by attaching project-specific mitigation requirements as conditions of approval.

Policy 8a Program 8a.1

The City shall ensure that new development pays its share of the incremental capacity costs associated with the provision of wastewater treatment facilities by attaching project-specific mitigation as conditions of approval.

4.12.3 ENVIRONMENTAL ANALYSIS

THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the *CEQA Guidelines*, the proposed project would have a significant impact to public services, utilities and service systems if it would result in:

- Substantial adverse physical impacts associated with the provision of, or the need for, new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services such as fire protection, police protection, schools, parks, or other services.
- Exceedance of wastewater treatment requirements of the applicable Regional Water Quality Control Board (RWQCB)
- Construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects
- Construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects (discussed in Section 4.7, Hydrology and Water Quality)
- Insufficient water supply available to serve the project from existing entitlements and resources, or require new or expanded water supply resources or entitlements
- A determination by the wastewater treatment provider that serves or may serve the project that it has inadequate capacity to provide the project's projected demand in addition to the provider's existing commitments
- Service by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs
- Inability to comply with federal, state and local statutes and regulations related to solid waste

POTENTIAL IMPACTS AND MITIGATION MEASURES: GENERAL PLAN AND ZONING ORDINANCE AMENDMENTS

Public Services Impacts

- ◆ ***THE PUBLIC SERVICE NEEDS OF FUTURE DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT WOULD NOT RESULT IN SUBSTANTIAL ADVERSE IMPACTS.***

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: The proposed amendments to the General Plan and Zoning Ordinance would allow future development within the HNTC planning area that would affect public services, utilities and service systems in the City. The following discusses how future development would affect these services.

Fire Protection and Emergency Services

The nearest fire station to the HNTC planning area is Station 76, which is less than one mile from the area and has a current response time of five minutes or less, dependent on traffic. According to Alan Biagi, Battalion Chief of the Rodeo-Hercules Fire District, response delays occur at the intersection of San Pablo Avenue and Sycamore Avenue when there is traffic. A minimum of six additional personnel and associated equipment would be needed to serve future projects in the planning area, as well as other approved and/or planned projects in the City to maintain the current level of response. No additional facilities would need to be built to accommodate growth within the planning area and the City; however, current facilities would need to be updated or modified to accommodate the additional personnel. The project sponsor would be required to pay the project's fair share contribution to off set impacts to fire protection and emergency services as determined by the City's development impact fee program, in effect at the time of building permit issuance.

Police Protection

Development of the HNTC planning area is anticipated to increase the number of calls to the Police Department by approximately 180 additional calls per year.⁶ At this time, the Police Department cannot determine to what level staff or facilities would be impacted by the proposed amendments to the General Plan and Zoning Ordinance; however, 180 additional calls would represent less than a one percent increase in service requests over 2006 levels. Future development within the planning area would not significantly change the current ratio of officers to City residents. Currently, the City provides 1.5 officers for every 1,000 residents and this would change to 1.25 officers for every 1,000 residents. Therefore, impacts to police services would be less than significant.

⁶ The planning area is approximately 35 acres, which is .008% of the total land area of the City. Based on .008% of 22,552 calls for service, the planning area would result in approximately 180 additional calls for service in a year.

Schools

The HNTC planning area would generate a total of 206 new students (112 elementary school students, 45 middle school students and 49 high school students), as outlined in Table 4.12-2 (Students Generated by the Development within HNTC Planning Area).

**Table 4.12-2
Students Generated by the Development within HNTC Planning Area**

Housing Type	Grades		
	K-6	7-8	9-12
Multi-Family	50	16	15
Affordable Housing	62	29	34
Total Students Generated	112	45	49

Source: Cheryl King, Jack Shreder & Associates, on behalf of Nina Hurley, West Contra Costa Unified School District, Letter to RBF Consulting, September 17, 2007.

Development within the HNTC planning area would be subject to the West Contra Costa Unified School District Board of Education adopted Resolution No. 40-0607, which established school facility fees in accordance with the provisions of SB 50. The fee set by Resolution No. 40-0607 is \$3.92 per square-foot of new residential construction. Pursuant to Section 65995(3)(h) of the California Government Code (SB 50), “the payment of statutory fees is deemed to be full and complete mitigation of the impacts of any legislative or adjudicative act, or both, involving, but not limited to, the planning, use or development of real property” Therefore, with payment of statutory fees, school impacts would be considered less than significant.

Solid Waste

According to Shawn Moberg, General Manager of Richmond Sanitary Service, development within the planning area would generate approximately 1,280 tons of solid waste per year. Additionally, according to Shawn Moberg, during construction of the future projects within the planning area approximately 40 to 80 yards of solid waste would be generated per week; however, much of this can be recycled as construction and demolition material. The generated solid waste would be taken to the Golden Bear Transfer Facility and then transported to Potrero Hills Landfill, which has sufficient capacity to accommodate these anticipated quantities. Therefore, there would be no need for additional facilities.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

Wastewater Impacts

- ◆ **DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT WOULD NOT EXCEED WASTEWATER TREATMENT RWQCB; NOR WOULD THE PROJECT RESULT IN A DETERMINATION BY THE WASTEWATER TREATMENT PROVIDER THAT SERVES OR MAY SERVE THE PROJECT THAT IT HAS INADEQUATE CAPACITY TO PROVIDE THE PROJECT'S PROJECTED DEMAND IN ADDITION TO THE PROVIDER'S EXISTING COMMITMENTS.**

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Wastewater generated by future development in the HNTC planning area would be treated at the Pinole-Hercules Wastewater Treatment Plant. Table 4.12-3 (HNTC Estimated Wastewater Generation) summarizes estimated wastewater that would be generated by future development in the planning area.

**Table 4.12-3
HNTC Estimated Wastewater Generation**

Land Use Type	Quantity	Capita	Wastewater Generation Rate	Wastewater Generation
Residential	1,650 units	3.0 persons / unit	70 gpd / person-unit	346,500 gpd
Office	196,250 ft ²	491 employees	16 gpd / employee	7,856 gpd
Retail	320,000 ft ²	1,067 employees	13 gpd / employee	13,871 gpd
Total =				368,227 gpd
<small>gpd = U.S. gallons per day Estimates are based on demand and generation factors from Metcalf & Eddy, Wastewater Engineering: Treatment, Disposal, and Reuse (3rd Edition). Source: RBF Consulting, 2008</small>				

According to the Erwin R. Blancaflor, Director of Public Works for the City of Hercules, sewer flow and capacity has been allocated to serve the planning area. In addition, the cities of Pinole and Hercules are in the process of upgrading and planning future capacity. Therefore, wastewater impacts would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

Water Supply Impacts

- ◆ **SUFFICIENT WATER SUPPLIES ARE AVAILABLE TO SERVE FUTURE DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT FROM EXISTING ENTITLEMENTS AND RESOURCES; NO NEW OR EXPANDED ENTITLEMENTS WOULD BE REQUIRED.**

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: EBMUD would serve the HNTC planning area through the Maloney Pressure Zone, which serves elevations between 0 to 200 feet ASL. EBMUD owns and operates two 8-inch mains located in Willow Avenue, which runs parallel to parcels six and seven in the planning area. These lines dead end as they approach the planning area from both the east and the west. Main extensions, at the project sponsor’s expense, would be required to serve parcels that do not have frontage on the main in Willow Avenue (C1 parcel and Ramp parcel). In addition, off-site pipeline improvements, also at the project sponsor’s expense, may be required to meet domestic demands and fire flow requirements set by the RHFD. Off-site pipeline improvements include, but are not limited to, replacement of existing water mains in the planning area. Table 4.12-4 (HNTC Projected Water Demand) presents projected water demands based upon future development within the HNTC planning area.

**Table 4.12-4
HNTC Projected Water Demand**

Land Use Type	Quantity	Capita	Water Demand Rate	Water Demand	
Residential	1,650 units	3.0 persons / unit	100 gpd / person-unit	495,000 gpd	554.5 AFY
Office	196,250 ft ²	491 employees	20 gpd / employee	9,820 gpd	11.0 AFY
Retail	320,000 ft ²	1067 employees	13 gpd / employee	13,871 gpd	15.5 AFY
				Total = 581.0 AFY	
<small>gpd = U.S. gallons per day; AFY = acre-feet per year Estimates are based on demand and generation factors from Metcalf & Eddy, Wastewater Engineering: Treatment, Disposal, and Reuse (3rd Edition). Source: RBF Consulting, 2008</small>					

Because the proposed amendments to the General Plan and Zoning Ordinance would not directly result in development within the planning area, future projects may be subject to the preparation of a Water Supply Assessment (WSA) pursuant to Senate Bill 610. A WSA would indicate whether the water demand associated with a proposed project has been considered in the City’s Water Management Plan and could be served by existing supplies. Water supply impacts associated with the Market Town project are discussed below.

The proposed project would be served by EBMUD, which has sufficient supply and existing entitlements to provide water during normal or wet years (Rehnstrom, 2007). However, according to EBMUD, all customers should plan for possible shortages in time of drought. To reduce water consumption during times of drought and unseasonably hot weather, EBMUD encourages existing and new customers to be more efficient through smart water practices, including the following:

- Improving irrigation efficiency through good design and maintenance
- Reducing run-off, over-spray, an over-watering through hardware upgrades and smart water management (to achieve a water budget)
- Lowering landscape water requirements through appropriate plant selection

In addition, future development within the planning area would be required to comply with AB 325, Model Water Efficient Landscape Ordinance (Division 2, Title 23, California Code of Regulations, Chapter 2.7, Sections 490 through 495). Sufficient water supplies exist to serve future development within the planning area and impacts would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

Solid Waste Impacts

- ◆ **THE LANDFILL THAT WOULD FUTURE DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT HAS SUFFICIENT PERMITTED CAPACITY TO ACCOMMODATE THE PROJECT'S SOLID WASTE DISPOSAL NEEDS. THE PROJECT WOULD COMPLY WITH FEDERAL, STATE AND LOCAL STATUES AND REGULATIONS RELATED TO SOLID WASTE.**

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: According to Shawn Moberg, the Potrero Hills Landfill has sufficient capacity to serve the HNTC planning area and no significant operational impacts are anticipated in providing solid waste management services. In addition, future development would comply with all federal, state and local solid waste regulations to reduce solid waste generated and divert recyclables and green waste from the solid waste stream. Therefore, impacts would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

POTENTIAL IMPACTS AND MITIGATION MEASURES: MARKET TOWN PROJECT

Public Services Impacts

- ◆ **THE PUBLIC SERVICE NEEDS OF THE PROPOSED MARKET TOWN PROJECT WOULD NOT RESULT IN SUBSTANSTIAL ADVERSE IMPACTS.**

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis:

Fire Protection and Emergency Services

The closest fire station to the Market Town site is Station 76, which is less than one mile from the project site. The current response time for this station is five minutes or less, dependent on traffic. According to Battalion Chief Biagi, response delays occur at the intersection of San Pablo Avenue and Sycamore Avenue when there is traffic. Chief Biagi anticipates more severe delays at this intersection due to project construction and increased traffic at the site. As stated above, additional personnel and associated equipment would be needed to serve future projects in the planning area, as well as other approved and/or planned projects in the City, and maintain the current level of response. However, Chief Biagi indicated that additional personnel would not be needed for the specific development of Market Town. Therefore, this would be a less than significant impact.

Police Protection

Market Town is anticipated to increase the number of calls to the Police Department by approximately 36 additional calls per year.⁷ This would be less than one percent of the total calls received by the Hercules Police Department in 2006. No new facilities would need to be built to accommodate Market Town and project implementation would result in a less than significant impact.

Schools

Market Town would generate a total of 66 new students (36 elementary school students, 14 middle school students and 16 high school students), as outlined in Table 4.12-3 (Students Generated by the Development within Market Town).

**Table 4.12-5
Students Generated by the Development within Market Town**

Housing Type	Grades		
	K-6	7-8	9-12
Multi-Family	16	5	5
Affordable Housing	20	9	11
Total Students Generated	36	14	16

Source: Cheryl King, Jack Shreder & Associates, on behalf of Nina Hurley, West Contra Costa Unified School District, Letter to RBF Consulting, September 17, 2007.

The proposed project would be subject to the WCCUSD Board of Education adopted Resolution No. 40-0607, which established school facility fees at \$3.92 per square-foot of new residential construction. Therefore, with payment of statutory fees, school impacts would be considered less than significant.

⁷ The planning area is approximately 7 acres, which is .0016% of the total land area of the City. Based on .0016% of 22,552 calls for service, the planning area would result in approximate 36 additional calls for service in a year.

Solid Waste

According to Shawn Moberg, Potrero Hills Landfill has sufficient capacity to accommodate waste generated by the proposed project. Therefore, no additional facilities would need to be constructed and impacts would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

Wastewater Impacts

- ◆ **THE PROPOSED MARKET TOWN PROJECT WOULD NOT EXCEED WASTEWATER TREATMENT REQUIREMENTS OF THE APPLICABLE RWQCB; NOR WOULD THE PROJECT RESULT IN A DETERMINATION BY THE WASTEWATER TREATMENT PROVIDER THAT SERVES OR MAY SERVE THE PROJECT THAT IT HAS INADEQUATE CAPACITY TO PROVIDE THE PROJECT'S PROJECTED DEMAND IN ADDITION TO THE PROVIDER'S EXISTING COMMITMENTS.**

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Wastewater generated by Market Town would be treated at the Pinole-Hercules Wastewater Treatment Plant. Table 4.12-6 (Market Town Estimated Wastewater Generation) summarizes estimated wastewater that would be generated by the development of Market Town.

**Table 4.12-6
Market Town Estimated Wastewater Generation**

Land Use Type	Quantity	Capita	Wastewater Generation Rate	Wastewater Generation
Residential	400 units	3.0 persons / unit	70 gpd / person-unit	84,000 gpd
Office	80,000 ft ²	200 employees	16 gpd / employee	3,200 gpd
Retail	60,000 ft ²	200 employees	13 gpd / employee	2,600 gpd
Total =				89,800 gpd
gpd = U.S. gallons per day Estimates are based on demand and generation factors from Metcalf & Eddy, Wastewater Engineering: Treatment, Disposal, and Reuse (3 rd Edition). Source: RBF Consulting, 2008				

According to the Erwin R. Blancaflor, sewer flow and capacity has been allocated to serve the PNR parcel. The cities of Pinole and Hercules are in the process of upgrading and planning future capacity. In addition, the project would have to comply with the City's Stormwater Management Plan BMPs, which are required for all new developments. Therefore, the City would be able to accommodate the increase in wastewater and impacts would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

Water Supply Impacts

- ◆ **SUFFICIENT WATER SUPPLIES ARE AVAILABLE TO SERVE THE PROPOSED MARKET TOWN PROJECT FROM EXISTING ENTITLEMENTS AND RESOURCES; NO NEW OR EXPANDED ENTITLEMENTS WOULD BE REQUIRED.**

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: The Maloney Pressure Zone would serve Market Town. Off-site pipeline improvements, at the project sponsor’s expense, may be required to meet domestic demands and fire flow requirements set by the local fire department. Off-site pipeline improvements include, but are not limited to, replacement of existing water mains to the project site. Table 4.12-7 (Market Town Projected Water Demand) presents projected water demands based upon the development of Market Town.

**Table 4.12-7
Market Town Projected Water Demand**

Land Use Type	Quantity	Capita	Water Demand Rate	Water Demand	
Residential	400 units	3.0 persons / unit	100 gpd / person-unit	120,000 gpd	134.4 AFY
Office	80,000 ft ²	200 employees	20 gpd / employee	4,000 gpd	4.5 AFY
Retail	60,000 ft ²	200 employees	13 gpd / employee	2,600 gpd	2.9 AFY
				Total = 141.8 AFY	
<small>gpd = U.S. gallons per day; AFY = acre-feet per year Estimates are based on demand and generation factors from Metcalf & Eddy, Wastewater Engineering: Treatment, Disposal, and Reuse (3rd Edition). Source: RBF Consulting, 2008</small>					

In a letter dated October 18, 2007, EBMUD determined that the proposed project does not require the preparation of a WSA because estimated water demand would be below the threshold established in the California Water Resources Code. In addition, according to EBMUD, when the development plans are finalized, the project sponsor would contact EBMUD’s New Business Office and request a water service estimate to determine the costs and conditions for providing water service to the proposed development. However, these are standard conditions of project approval.

The proposed project would be served by EBMUD, which has sufficient supply and existing entitlements to provide water during normal or wet years (Rehnstrom, 2007). However, according to EBMUD, all customers should plan for possible shortages in time of drought. To reduce water consumption during times of drought and unseasonably hot weather, EBMUD encourages existing and new customers to be more efficient through smart water practices

(described under HNTC planning area impacts). The proposed project would result in a less than significant impact.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

Solid Waste Impacts

- ◆ ***THE LANDFILL THAT WOULD SERVE THE PROPOSED MARKET TOWN PROJECT HAS SUFFICIENT PERMITTED CAPACITY TO ACCOMMODATE THE PROJECT'S SOLID WASTE DISPOSAL NEEDS. THE PROJECT WOULD COMPLY WITH FEDERAL, STATE AND LOCAL STATUTES AND REGULATIONS RELATED TO SOLID WASTE.***

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: According to Shawn Moberg, the Potrero Hills Landfill does have sufficient capacity to serve the proposed project and no significant operational impacts are anticipated in providing solid waste management services to the project site. In addition as previously stated, the project would comply with all federal, state and local solid waste regulations to reduce solid waste generated and divert recyclables and green waste from the solid waste stream. Therefore, a less than significant impact would result.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

4.13 RECREATION

This section evaluates potential recreation impacts that could result from future development within the Hercules New Town Center (HNTC) planning area consistent with the proposed amendments to the General Plan and Zoning Ordinance and implementation of the Market Town project. The recreation analysis examines the regional and local park facilities and identifies direct and indirect impacts related to the proposed project. This section contains analysis based on information from the City of Hercules General Plan (General Plan). Other resources, references and documents used to prepare this section of the EIR are identified, both in the text and in the corresponding footnotes.

4.13.1 ENVIRONMENTAL SETTING

EXISTING CONDITIONS

The City owns, operates and maintains 104.46 acres of parkland, most of which is used for active recreation. This includes 64.46 acres of community parks and 40 acres of neighborhood parks. Community parks consist of both landscaped and natural open space, playgrounds and playfields, parking, special facilities such as golf, boating and swimming, and a community center. Neighborhood parks are typically located adjacent to playgrounds, playfields and elementary schools. They may also contain a neighborhood recreation center. In addition to parkland, approximately 852 acres in Hercules are open space and trails. Most of the open space is located along Refugio Creek on both sides of the Interstate 80 (I-80) in the southwest portion of the City. Additional open space is found among the residential areas in Refugio Valley in the eastern portion of the City.¹

The following parks are owned and operated by the City and are located near the Hercules New Town Center (HNTC) planning area:

- Refugio Valley Park & Trail (Community Park, 53.26 acres), located at the corner of Refugio Valley Road and Pheasant Drive, provides 16 picnic tables, five BBQ pits, four tennis courts and sports fields, jogging path, lake, par course and children's tot lot
- Hanna Ranch Park & Soccer Field (Community Park, 11.20 acres), located at 2480 Refugio Valley Road, provides sports and multi-use fields, bleachers and jogging path
- Ohlone Park (Neighborhood Park, 13.70 acres), located at 190 Turquoise Road, provides eight picnic tables, 12 BBQ pits, open field, nature trail and amphitheater
- Woodfield Park (Neighborhood Park, 6 acres), located at 1991 Lupine Road, provides a children's tot lot, basketball courts and fields, multi-use field and two tennis courts
- Foxboro Park (Neighborhood Park, 3.5 acres), located at 1025 Canterbury Avenue, provides a recreation building, children's tot lot, two tennis courts and sports fields, multi-use field, picnic area, BBQ area and jogging path

In addition to the existing parks, a community park and neighborhood park are proposed for future development. A 26-acre community waterfront park and duck pond is proposed for

¹ City of Hercules, *Hercules General Plan, Open Space/Conservation Element*. September 22, 1998.

development at Sycamore Avenue and Willet Street. While a four-acre neighborhood park is proposed for the Forest Run neighborhood just west of the I-80.

The General Plan Growth Management Element contains the following minimum standards for parks and open space (per 1,000 residents): 3.25 acres of community parks, 1.5 acres of neighborhood parks, and 34 acres of open space. The City currently provides adequate open space and neighborhood parks, but does not provide adequate community parks.

4.13.2 REGULATORY SETTING

LOCAL FRAMEWORK

City of Hercules General Plan

The Open Space and Conservation Element of the General Plan addresses the City's existing and future requirements for parks, recreation and open space. It emphasizes providing both human and environmental needs in creating a natural environment compatible with urban development by the wise use and enhancement of natural resources within the City. The General Plan also provides a policy framework through which a diversity of recreation opportunities can be developed for the community. The following policies are applicable to the HNTC planning area:

- Policy 1a Expand the community's park, trail and open space system to meet the demands of future growth. The comprehensive park, trail and open space system shall provide linkages between developed and developing areas.

- Policy 1c The City shall ensure that new development funds its share of costs associated with the provision of park facilities by attaching project-specific mitigation as conditions of approval.

- Policy 1d The City may consider development agreements that will provide additional community parks and recreation facilities, such as ballfields and other areas for organized recreation, in exchange for allowing development at greater than the "typical" FAR, as specified in the proposed Land Use Element Update.

Park and Recreation Facilities Impact Fee

Ordinance No. 364 adds Chapter 18, entitled "Development Impact Fees" to Title 10 of the Hercules Municipal Code. Article 2, Park and Recreation Facilities Impact Fee, of this chapter requires that new development pay for the cost of new parks and recreation facilities and improvements to existing parks and recreation facilities. The purpose of this fee is to provide adequate park and recreation facilities to serve new development within the City. The amount of the fee is calculated based on the need for park facilities once development occurs and the per person cost for those facilities.

5.13.3 ENVIRONMENTAL ANALYSIS

THRESHOLDS OF SIGNIFICANCE

According to Appendix G of the *CEQA Guidelines*, the proposed project would have a significant impact on recreation if it would:

- 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
- Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment

POTENTIAL IMPACTS AND MITIGATION MEASURES: GENERAL PLAN AND ZONING ORDINANCE AMENDMENTS

Physical Deterioration to Recreational Facilities

- ◆ ***DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING DISTRICT WOULD INCREASE THE USE OF EXISTING NEIGHBORHOOD AND REGIONAL PARKS OR OTHER RECREATIONAL FACILITIES.***

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Currently, the City has a population of approximately 23,975 residents. Future development within the HNTC planning area would increase the City's population by approximately 3,482 people for a total population of approximately 27,457 residents. The City currently provides adequate open space and neighborhood parks, but does not provide adequate community parks.² To meet the General Plan Growth Management Element's requirement of 3.25 acres of community parks for every 1,000 residents and 1.5 acres of neighborhood parks for every 1,000 residents, the City proposes the future development of a 26-acre community park and four-acre neighborhood park. This would bring the City's total park acreage up to 94.46 acres for community parks and 44 acres for neighborhood parks. With the addition of these parks, the City would have adequate park space for the current population as well as future development within the HNTC planning area.

Residents would most likely utilize the Refugio Valley Park for their community park recreation needs. This park is located 0.3 miles from the planning area and provides 53.25 acres of recreational parkland. In addition, Ohlone Park, a neighborhood park, is located 0.35 miles away and could be used by the residents as well. The increase in use of these parks would be incremental and would not result in physical deterioration of the facilities. Furthermore, future development within the HNTC planning area would be required to pay park and recreation facilities impact fees to provide adequate park and recreation facilities to

² City currently provides 64.46 acres of community parkland for Hercules residents. The General Plan Growth Management Element specifies that the City should provide 3.25 acres for every 1,000 residents. The City would need to provide a total of 78 acres of community parkland to meet this requirement for the current population.

serve new development within the City. Therefore, the proposed amendments to the General Plan and Zoning Ordinance would not result in the deterioration of recreational facilities and impacts would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

Construction or Expansion of Recreational Facilities

- ◆ ***DEVELOPMENT CONSISTENT WITH THE NTC LAND USE DESIGNATION AND ZONING WOULD NOT INCLUDE RECREATIONAL FACILITIES OR REQUIRE THE CONSTRUCTION OR EXPANSION OF RECREATIONAL FACILITIES THAT MIGHT HAVE AN ADVERSE EFFECT ON THE ENVIRONMENT.***

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Future development within the HNTC planning area would not include new or expanded public recreational facilities. Each project within the planning area would be required to pay a park and recreation facilities impact fee, which would contribute toward the cost of new parks and recreation facilities and improvements to existing parks and recreation facilities. Impacts would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

POTENTIAL IMPACTS AND MITIGATION MEASURES: MARKET TOWN PROJECT

Physical Deterioration to Recreational Facilities

- ◆ ***THE PROPOSED MARKET TOWN PROJECT WOULD INCREASE THE USE OF EXISTING NEIGHBORHOOD AND REGIONAL PARKS OR OTHER RECREATIONAL FACILITIES.***

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: The development of Market Town would add approximately 844 residents to the City. As stated above under the HNTC program impacts, these residents would utilize Refugio Valley Park for their community park recreation needs and Ohlone Park for their neighborhood park recreation needs. The increase in use of these parks would be incremental and would not result in physical deterioration of the facilities. In addition, the project sponsor would be required to pay a park and recreation facilities impact fee. Therefore, the project would not result in the deterioration of recreational facilities and impacts would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

Construction or Expansion of Recreational Facilities

- ◆ **THE PROPOSED MARKET TOWN PROJECT WOULD NOT INCLUDE RECREATIONAL FACILITIES OR REQUIRE THE CONSTRUCTION OR EXPANSION OF RECREATIONAL FACILITIES THAT MIGHT HAVE AN ADVERSE EFFECT ON THE ENVIRONMENT.**

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: The Market Town project does not propose to build or expand any public recreational facilities. The project sponsor would be required to pay a park and recreation facilities impact fee, which would contribute toward the cost of new parks and recreation facilities and improvements to existing parks and recreation facilities. Therefore, the project would have a less than significant impact.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

4.14 TRANSPORTATION/TRAFFIC

This section of the EIR evaluates the potential transportation and traffic impacts that could result from implementation of the proposed Market Town project and General Plan and Zoning Ordinance Amendments for the 35-acre Hercules New Town Center (HNTC) planning area. (Throughout this section, the proposed Market Town project is referred to as the “project” and full buildout of the proposed General Plan and Zoning Ordinance Amendments is referred to as the “program.”) The section includes a quantitative analysis of the traffic impacts to the local and regional roadway systems, a qualitative discussion of multi-modal transportation impacts (transit, pedestrian and bicycle modes), and an analysis of the parking impacts. Where necessary, mitigation measures addressing potentially significant transportation and traffic impacts are recommended and evaluated.

To understand the transportation and traffic impacts that could occur to the local intersections and regional freeway facilities as a result of project and program implementation, analyses were conducted under several different scenarios. These are:

- **Existing Conditions With and Without the Market Town Project:** This analysis is for the Market Town project and represents the first phase of the overall vision for the Hercules New Town Center. As is presented in the Project Description (Section 3.5.2, Market Town Project), the Market Town project proposes a mixed-use development on the PNR parcel. The project’s transportation and traffic impacts are evaluated under existing traffic conditions, modified to reflect changes in traffic patterns associated with the relocation of the Hercules Transit Center.
- **Cumulative Near-Term (2013):** In order to understand the impacts of the project at the time that construction is complete, the Transportation/Traffic section also analyzes the traffic conditions in the year 2013, the expected time that the Market Town project would be complete and occupied. Growth from other projects in the City is also taken into consideration, thus, this analysis is considered a “cumulative” analysis. This near-term 2013 cumulative impact analysis was also prepared because it represents the time when the Ramp Relocation project might be complete. Thus, it provides a snapshot of what traffic conditions may be like when the Market Town project is complete and both before and after the State Route 4 (SR 4) ramp is relocated.
- **Cumulative (2035) Plus Project:** This analysis represents the full buildout of the proposed General Plan and Zoning Ordinance Amendments outlined in the Project Description (Section 3.5.1, Amendments to General Plan and Zoning Ordinance). The program’s transportation and traffic impacts are evaluated under future cumulative (2035) conditions, as this is the expected time horizon for full buildout of the entire HNTC planning area.

4.14.1 STUDY AREA

The study area includes the major intersections and freeway segments within the City that are in close proximity to the HNTC planning area. Figure 4.14-1 (Project Study Area) shows the study intersections in relation to the HNTC parcels and the two major regional freeways, Interstate 80 (I-80) and SR 4. Figure 4.14-2 (I-80/SR 4 Interchange – Existing Conditions) shows the ramp and freeway to freeway connector detail of the I-80/SR 4 interchange. The

number of lanes and existing volumes for all of the freeway facilities are also shown on Figure 4.14-2.

INTERSECTIONS

The study intersections listed below are included in the assessment of local transportation impacts. Ten existing intersections are included in the analysis:

1. Willow Avenue/Sycamore Avenue
2. San Pablo Avenue/Sycamore Avenue
3. San Pablo Avenue/John Muir Parkway
4. Willow Avenue/SR 4 Eastbound (EB) Hook Ramps
5. Willow Avenue/Palm Avenue
6. Willow Avenue/SR 4 Westbound (WB) On-Ramp
7. Willow Avenue/SR 4 WB Off-Ramp
8. Palm Avenue/Sycamore Avenue
9. Sycamore Avenue/SR 4 EB Hook Ramps
10. San Pablo Avenue/Transit Center (PNR) Driveway

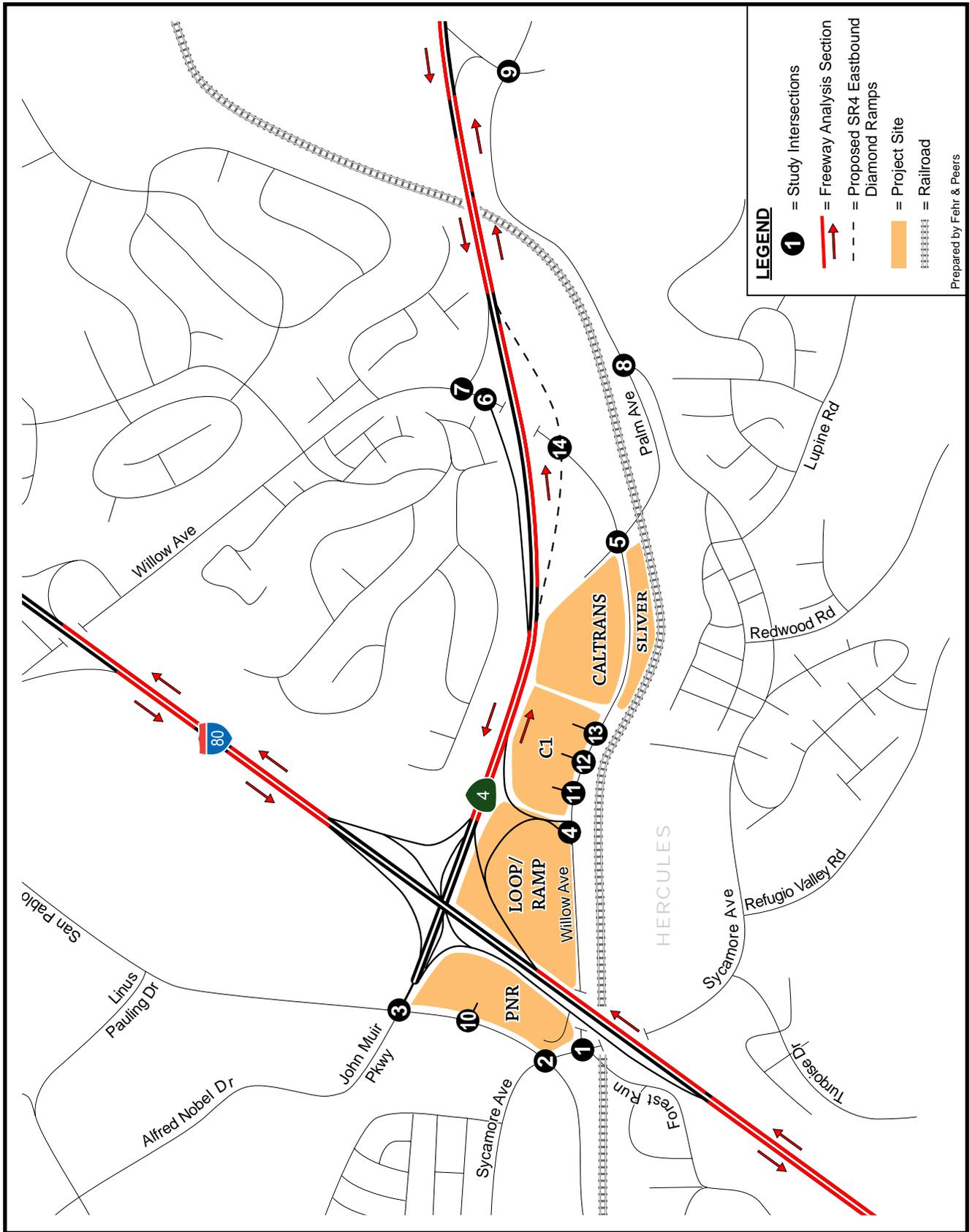
The following three intersections are assumed constructed and included in future analysis scenarios where the Hercules Transit Center is relocated from the PNR parcel to the C1 parcel:

11. Willow Avenue/Transit Center (TC) West Driveway
12. Willow Avenue/TC Bus-Only Driveway
13. Willow Avenue/TC East Driveway

The remaining study intersection, Willow Avenue/SR 4 EB Ramps (#14), is a future intersection that would serve a proposed new location for the ramps accessing eastbound SR 4 at Willow Avenue. This new intersection would replace the existing Willow Avenue/SR 4 EB Hook Ramps (#4) intersection, and is included in all future scenarios where the existing ramps are assumed relocated. More information on the configuration of these new ramps and how they are addressed in the analysis is provided in the following sections.

FREEWAY FACILITIES

Freeway facilities are typically divided into basic, ramp junction (merge/diverge influence area), and weaving sections for traffic analysis purposes. Basic segments are mainline sections of the freeway that are not influenced by ramp junctions or weaving. Ramp freeway junctions handle traffic entering the freeway from a ramp (merge) or exiting a freeway to a ramp (diverge). Weaving sections handle the crossing of two or more traffic streams on a significant length of freeway. Weaving sections are formed where a ramp merge area is closely followed by a diverge area, or where an on-ramp is closely followed by an off-ramp and the two are connected by an auxiliary lane.



Prepared by Fehr & Peers

The decision on how to divide freeways into analysis sections was based on freeway geometrics and the distance between facilities. The following freeway facilities are included in the assessment of regional transportation impacts:

I-80 Freeway Segments

1. I-80 WB on-ramp from Willow Avenue (merge)
2. I-80 WB off-ramp to John Muir Parkway (diverge)
3. I-80 WB from SR 4 on-ramp to Pinole Valley Road off-ramp (weave)
4. I-80 EB from Pinole Valley Road to EB SR 4 & Willow Avenue (basic)
5. I-80 EB off-ramp to EB SR 4 & Willow Avenue (diverge)
6. I-80 EB on-ramp from SR 4 (merge)
7. I-80 EB off-ramp to Willow Avenue (diverge)

SR 4 Freeway Segments

8. SR 4 WB east of Willow Avenue (basic)
9. SR 4 WB off-ramp to Willow Avenue (diverge)
10. SR 4 WB connector to I-80 EB & WB (basic)
11. SR 4 EB on-ramp from Willow Avenue (merge)
12. SR 4 EB from Willow Avenue to Sycamore Avenue (basic)
13. SR 4 EB off-ramp to Sycamore Avenue (diverge)

For Cumulative Near-Term (2013) and Cumulative (2035) scenarios where the EB SR 4 ramps are relocated, freeway analysis segments 11 and 12 are reclassified as:

11. SR 4 EB from I-80 connector to new Willow Avenue off-ramp (weave)
12. SR 4 EB new on-ramp from Willow Avenue (merge)

The *Draft Ramp Relocation PSR*¹ evaluates three different design alternatives for the EB SR 4 ramps under Cumulative Year (2035) conditions. The traffic forecasts in the *Draft Ramp Relocation PSR* assume full buildout of the HNTC program. The *Draft Ramp Relocation PSR* traffic study indicates that all of the EB SR 4 freeway segments would operate acceptably at level of service (LOS) D or better under Cumulative Year (2035) conditions. This meets Contra Costa County Transportation Authority (CCTA) LOS standards set for this section of SR 4. These results indicate that each of the design alternatives have sufficient capacity to serve a conservative “worst-case” estimate of future demand (including traffic from the HNTC).

The “preferred” alternative for the new EB SR 4 ramps includes constructing diagonal ramps at the Willow Avenue overcrossing to form a diamond interchange with the existing WB ramps. Assumptions regarding the number of lanes on the ramps, the ultimate sizing of the overcrossing, and traffic control at the ramp terminal intersections on Willow Avenue are discussed in greater detail in the analysis section below.

¹ Fehr & Peers, *Draft Traffic Operations Report for Willow Avenue Ramp Relocation Project Study Report (PSR)*, December 2007.

4.14.2 TRAFFIC OPERATIONS ANALYSIS METHODOLOGY

The following section presents the methodology and assumptions used to analyze the study intersections and freeway facilities.

INTERSECTION TRAFFIC OPERATIONS

Intersection operations analysis is typically performed using methodologies contained in the *Highway Capacity Manual (HCM)*². The HCM provides analysis methods and equations that estimate the average delay experienced by vehicles at signalized and unsignalized intersections. The HCM uses these delay measures to assign a qualitative rating, level of service (LOS), which describes overall intersection operating conditions. LOS ranges from LOS A, indicating free flow traffic conditions with little or no delay, to LOS F, representing over-saturated conditions where traffic flows exceed design capacity (resulting in excessive queuing and delays). At signalized intersections, LOS is based on the weighted average delay (measured in seconds per vehicle) for all movements. At side-street stop-controlled intersections, LOS is based on the delay for the worst movement at the minor street (controlled) approach. For all-way stop-controlled intersections, LOS is based on the weighted average delay of all movements. Table 4.14-1 (Intersection Level of Service Thresholds) presents the HCM delay thresholds for each LOS classification.

**Table 4.14-1
Intersection Level of Service Thresholds**

Level of Service (LOS)	Signalized Intersection Control Delay (sec/veh) ¹	Unsignalized Intersection Control Delay (sec/veh) ¹	General Description
A	0 – 10.0	0 – 10.0	Little to no congestion or delays.
B	10.1 – 20.0	10.1 – 15.0	Limited congestion. Short delays.
C	20.1 – 35.0	15.1 – 25.0	Some congestion with average delays.
D	35.1 – 55.0	25.1 – 35.0	Significant congestion and delays.
E	55.1 – 80.0	35.1 – 50.0	Severe congestion and delays.
F	> 80.0	> 50.0	Total breakdown with extreme delays.

Notes:
¹ HCM methodologies and delay thresholds based control delay, which includes initial deceleration delay, queue move-up time, stopped delay, and acceleration delay
 Source: *Highway Capacity Manual*, (2000), Chapter 16 – Signalized Intersections, Chapter 17 – Unsignalized Intersections.

HCM intersection methods were used to analyze traffic operations for the intersections to the east of the existing eastbound SR 4 ramps at Willow Avenue. However, the intersections along San Pablo, Sycamore and Willow Avenues west of the existing SR 4 ramps (#s 1, 2, 3 and 10) are closely spaced and part of a coordinated traffic control system. Therefore, traffic flow and queuing at each intersection influences the entire system.

² Transportation Research Board (TRB), *Highway Capacity Manual*, 2000.

For the study intersections along San Pablo, Sycamore and Willow Avenues, the microsimulation software program SimTraffic was used to determine intersection delay and LOS instead of HCM methodologies. The primary difference between SimTraffic and HCM is that HCM analyzes intersections in “isolation,” while SimTraffic analyzes intersections as a “system.” HCM methodologies do not account for the effects of congestion at upstream or downstream intersections.

SimTraffic is a stochastic model where different random “seed” numbers generate different driver behavior (i.e., accepting available gaps for turns, changing lanes, etc.) and system results. Therefore, the simulation should be run several times and the results averaged over these runs to capture different outcomes. This allows the model to capture: (1) the interaction of vehicle queues between intersections; (2) the effect of turn-pocket overflows and queue spillbacks; (3) the effects of signal timing and coordination plans; (3) different distributions of driver behaviors (i.e. passive to aggressive drivers); (4) different distributions of vehicle types (e.g., higher percentages of heavy vehicles); and (5) various levels of pedestrian activity at intersections.

SimTraffic provides several measures of effectiveness (MOEs), such as percent demand served and average travel speed, which can help the analyst calibrate the model to replicate real-world conditions. SimTraffic also provides delay by movement and for the intersection overall, which is generally consistent with the HCM. For this study, SimTraffic was used to calculate delay and LOS for the critical intersections along San Pablo, Sycamore and Willow Avenues. LOS was assigned by comparing the overall intersection delay to the HCM thresholds presented in Table 4.14-1.

FREEWAY FACILITIES

The HCM provides methods for analyzing freeway mainline and ramp junction (merge/diverge influence areas) segments by calculating the vehicle density (passenger cars/lane/mile) of the facility. Traffic volumes and roadway geometrics (number of lanes, distance between ramps, etc.) are used as inputs. These density calculations are then compared to thresholds in the HCM for determining LOS. Similar to the intersection analysis described above, freeway LOS ranges from LOS A (free-flow conditions) to LOS F (stop-and-go conditions). Table 4.14-2 (Freeway Mainline and Ramp Junction Level of Service Thresholds) presents the density thresholds for freeway mainline and ramp junction LOS.

**Table 4.14-2
Freeway Mainline and Ramp Junction Level of Service Thresholds**

Level of Service (LOS)	Freeway Mainline Maximum Density (cars/mile/lane)	Ramp Junction Maximum Density (cars/mile/lane)	General Description
A	11	10	Little to no congestion or delays.
B	18	20	Limited congestion. Short delays.
C	26	28	Some congestion with average delays.
D	35	35	Significant congestion and delays.
E	45	>35	Severe congestion and delays.
F	>45	Demand Exceeds Capacity	Total breakdown with extreme delays.

Source: *Highway Capacity Manual*, (2000), Chapters 23 through 25.

Weaving sections were evaluated using HCM methods and the Leisch Method, as recommended in Caltrans' *Highway Design Manual*³. Inputs to the Leisch Method include the length of the weaving section, the number of lanes, and peak hour volumes. LOS is determined by plotting these inputs on a graph with a series of curves. Similar to other HCM methods, LOS ranges from LOS A to F.

All freeway analysis includes mixed-flow lanes and traffic volumes only. HOV lanes and traffic volumes are ignored.

4.14.3 TRAVEL DEMAND FORECASTING

The traffic forecasts presented in this section were developed using the Hercules Model. The Hercules Model was developed by Fehr & Peers for the City of Hercules in 2007. The Hercules Model is a detailed citywide travel demand forecasting model that is derived from, and is consistent with, the CCTA Countywide travel demand forecasting model (Countywide Model). The Hercules Model uses the Countywide Model as a basis for regional trip generation, distribution, and modal split. However, it incorporates greater land use and roadway network detail within the City and runs trip assignment on a "windowed" subarea network that includes only the City and major regional gateways. This approach allows the Hercules Model to: (1) reflect changes in wider regional travel demand; and (2) respond to local changes in land use and roadway network detail.

A draft report detailing the model development and the base year validation was delivered to the City, Caltrans, and CCTA for review. Comments from these agencies were incorporated into a final version of the report, *Hercules Citywide Traffic Model Development and Validation Report* (Fehr & Peers, October 3, 2007). This report indicates that the Hercules Model meets most Caltrans and CCTA validation criteria, and has been approved for use on projects such as the *Draft Ramp Relocation PSR*. CCTA has also approved the Hercules Model for use on projects within the City for a period of five years (the time until the next major Decennial Update of the Countywide Model).

³ Caltrans, Figure 504.7A, *Highway Design Manual (HDM), 5th Edition*, 2004.

This section provides an overview of the Hercules Model's land use and roadway network assumptions, and describes the methodology used to develop traffic forecasts for the three forecast years: existing plus project; Cumulative Near-Term (2013); and Cumulative (2035).

HERCULES MODEL LAND USE ASSUMPTIONS

The Hercules Model refines the Countywide Model's zone structure within the City. The 36 traffic analysis zones (TAZs) representing the City in the Countywide Model were disaggregated into 53 TAZs, and five additional zones were added to represent areas north of the City in Rodeo. The final Hercules Model contains 58 zones.

The Hercules Model includes a base year (2005) and a future year (2035) scenario. For the traffic analysis zones within the Hercules Model, City staff reviewed and approved both the 2005 land use data and then developed detailed land use projections for the year 2035. The 2035 land use projections include all approved and pending projects within the City as well as a significant amount of speculative development that may occur over the next 30 years. Thus, the traffic model includes a very large amount of new development, some of which may never come to fruition. This conservative approach was done to ensure that the traffic model did not understate potential traffic problems in the city and to ensure that the city could adequately plan for the maximum potential physical modifications to the roadway system.

The Hercules Traffic Model includes a large number of approved, pending and speculative projects. Among the projects included in the model are:

- **Hercules Waterfront (Waterfront):** The Waterfront is a mixed-use transit-oriented development along San Pablo Bay within Hercules. It includes a transit village with a ferry terminal, train station, and a parking garage. The development also consists of 1,220 dwelling units, 81,000 square feet of office use, 134,000 square feet of live/work ("flex") space, and 41,000 square feet of retail use.
- **Hilltown:** The proposed Hilltown project is located at the northeast corner of the San Pablo Avenue/John Muir Parkway intersection and consists of 640 residential dwelling units.
- **Sycamore Crossing:** The proposed Sycamore Crossing project is located at the southwest corner of the San Pablo Avenue/Sycamore Avenue intersection and consists of 101,000 square feet of commercial mixed-use space.

Other development projects included in the traffic model are Sycamore North, expansion of the North Shore Business Park, a significant expansion of the Bio-Rad campus, and the redevelopment of the major shopping centers in the city (such as the Creekside Center).

Tables 1 and 2 in the traffic forecast report (*Hercules Citywide Traffic Model Development and Validation Report*) describe the land use characteristics in each of the 58 TAZs for 2005 and 2035, respectively. Within the 58 TAZs in the Hercules Model, residential units would increase from 9,480 units to 13,784 units, while jobs would increase from 3,966 jobs to 8,327 jobs. The Market Town project and NTC land use change represent only a fraction of the total growth expected in the City between 2005 and 2035. The Market Town project includes up to 400 new housing units or nine percent of the total new housing units expected in Hercules and 440 jobs which is ten percent of the total new jobs expected in Hercules. The

entire NTC District represents 1,650 new housing units (38 percent of the total) and 1,415 jobs (32 percent of the total). Thus, a significant amount of new vehicle trips are generated from projects other than the New Town Center.

HERCULES MODEL ROADWAY NETWORK ASSUMPTIONS

The Countywide Model served as the starting point for the development of the Hercules Model base year roadway network. Just as with the zone structure, additional detail was added to the local roadway network to reflect more detail at the City level. Roadways that were added include Linus Pauling Drive, Turquoise Drive, and Lupine Road. Centroid connectors were added and adjusted to reflect the greater TAZ detail and to ensure a more realistic loading of traffic onto the roadway network. Additional refinements were made to the base year network to more closely reflect the number of lanes and actual roadway alignments. This process is described in the *Hercules Citywide Traffic Model Development and Validation Report* (Fehr & Peers, October 3, 2007).

The 2035 roadway network is based on the Countywide Model's 2020 "financially constrained" network. This network includes HOV lanes on I-80 and some modest capacity increases on arterials within the City.

DEVELOPMENT OF CUMULATIVE NEAR-TERM (2013) TRAFFIC FORECASTS

Freeway and intersection turning movement forecasts for Cumulative Near-Term (2013) conditions were developed for each study location by interpolating between the existing traffic counts and the Cumulative (2035) forecasts described in the next section. For most facilities, the annual average growth rate is approximately 0.7 percent per year. While the growth was estimated based on a straight line analysis, the Market Town is further along in the project entitlement process than most of the other pending and envisioned projects in the City. Thus, the cumulative analysis for the year 2013 may overestimate the amount of development (and thus traffic) in the City.

Furthermore, the year 2013 was selected for the Cumulative Near-Term analysis because 2013 is the year that the I-80/SR 4 eastbound off-ramp may be relocated from its current location to Willow Avenue further to the east. This would result in a major shift in local and regional traffic movements in and around the City of Hercules. Conditions with and without the ramp relocation are analyzed in this EIR.

DEVELOPMENT OF CUMULATIVE (2035) TRAFFIC FORECASTS

Freeway and intersection turning movement forecasts were developed for Cumulative (2035) conditions using the methodology summarized below.

The raw travel demand forecasts from the Hercules Model were adjusted to correct for differences between the base year model and existing traffic counts. A typical adjustment method is the "difference method," which involves the following formula:

$$\text{Adjusted Forecast Volume} = \text{Base Year Count} + (\text{Model Forecast Volume} - \text{Model Base Year Volume})$$

The following two step process was used to develop the traffic forecasts:

Step 1 – The base year (2005) and future year (2035) models were run for each land use alternative. Intersection turning movement volumes were obtained for all of the study intersections, while link volumes were obtained for freeway and ramp facilities.

Step 2 – The travel demand volume output from Step 1 was adjusted using the “difference method”.

4.14.4 HNTC TRIP GENERATION

TRIP GENERATION ESTIMATE

The vehicle trip generation for the seven HNTC project parcels was estimated using the land use totals presented in Section 3.5 (Project Characteristics), trip rates published by the Institute of Transportation Engineers (ITE)⁴, and reductions to account for trip internalization and pass-by/diverted/linked trips. Trip generation estimates typically use ITE trip rates with only a few adjustments. These rates are derived from isolated studies of single-use, low density, suburban-style developments. The ITE recommends applying these rates if the project fits their land use definition. However, if the site differs from the norm, then further adjustments are justified.

Mixed-use “transit-oriented developments” (TODs), such as the HNTC project, typically generate fewer auto trips per unit of land use than single-use suburban developments. TODs are higher density developments that feature a mixing of land use types (e.g., residential units adjacent to retail shopping) that are easily accessible by non-motorized travel modes (e.g., transit, walking, and bicycle). Placing complimentary land uses within a development allows users to satisfy multiple activities in one location, while adequate sidewalk and transit connectivity allows users to easily access multiple destinations without driving. These characteristics result in a greater “internalization” of trips within a project site. Higher trip internalization reduces the amount of project-related traffic on external roadways.

A trip internalization reduction of 25 percent was applied in the trip generation estimate for each HNTC parcel. The 25 percent is based on an internal capture model developed by Fehr & Peers and other researchers that relates a project’s internalization to its TOD and mixed-use characteristics. The model’s factors are based on the analysis of more than 300 recent studies of trip generation at mixed-use and TOD sites. The results of this model have been field-tested and validated via comparison with actual cordon traffic counts and travel surveys for these areas, including several locations in northern California.

Further reductions to the HNTC’s trip generation estimate were applied to address *pass-by*, *diverted*, and *diverted-linked* trips. Pass-by trips are intermediate stops at the project made by vehicles passing by the site for another purpose. Pass-by trips are new trips at the project’s access points, however, since they are already on adjacent roadways, care was taken to avoid double-counting. For example, pass-by trips would include people traveling along San Pablo Avenue that make a stop at Market Town on their way home from work.

⁴ Institute of Transportation Engineers (ITE), *Trip Generation, 7th Edition*, 2003.

Diverted and diverted-linked trips are trips attracted from roadways not immediately adjacent to the project site. These are trips that divert from their planned route of travel to access the project. These trips may also be linked to another trip to the area. Diverted and diverted-linked trips would include traffic along I-80 that exits the freeway to visit one of the HNTC parcels.

A reduction to account for pass-by, diverted, and diverted-linked trips is represented in the trip generation estimate. ITE research indicates that trip reductions of up to 50 percent are reasonable to account for these trips. The high traffic volumes on San Pablo Avenue and I-80 already traveling by the HNTC planning area justify an overall reduction of 45 percent.

Table 4.14-3 (ITE Trip Generation Rates) presents ITE average trip rates for the major land use categories included in the HNTC project description: multi-family residential, retail, and office. Tables 4.14-4 through 4.14-8 present the trip generation estimate for the seven HNTC project parcels: PNR parcel, C1 parcel, Loop parcel, Ramp parcel, Caltrans parcel, Carone parcel and WC Drilling parcel. The trip generation estimates for the HNTC parcels were organized in this way to match the TAZ structure of the Hercules Model. Land use totals, daily and peak hour trips, the internalization and pass-by/diverted/linked adjustments, and the final external trip generation estimates are shown.

**Table 4.14-3
ITE Trip Generation Rates**

ITE Code	Land Use Description	Units	Daily Trip Rate	AM Peak Hour Trip Rates			PM Peak Hour Trip Rates		
				In	Out	Total	In	Out	Total
220	Multi-Family	DU ¹	6.72	0.10	0.41	0.51	0.40	0.22	0.62
820	Retail	ksf ²	42.94	0.63	0.40	1.03	1.80	1.95	3.75
710	Office	ksf	11.01	1.36	0.19	1.55	0.25	1.24	1.49

Notes:
¹ DU = dwelling units
² ksf = thousand square feet
 Source: *Trip Generation, 7th Edition*, (2003); Fehr & Peers, (2007).

**Table 4.14-4
HNTC Trip Generation – PNR Parcel**

Land Use Description	Units	Quantity	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
				In	Out	Total	In	Out	Total
Multi-Family	DU ¹	400	2,690	41	163	204	161	87	248
Retail	ksf ²	60	2,580	38	24	62	108	117	225
Office	ksf	80	880	109	15	124	20	99	119
Sub-Total			6,150	188	202	390	289	303	592
<i>Internal Reduction (25%)</i>			(1,538)	(49)	(49)	(98)	(74)	(74)	(148)
<i>Pass-By/Diverted Linked Reduction (45%)</i>			-	-	-	-	(50)	(50)	(100)
Net New External Project Trips			4,613	139	154	293	165	179	344

Land Use Description	Units	Quantity	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
				In	Out	Total	In	Out	Total
Notes: ¹ DU = dwelling units ² ksf = thousand square feet Source: <i>Trip Generation, 7th Edition</i> , (2003); Fehr & Peers, (2007).									

**Table 4.14-5
HNTC Trip Generation – C1 Parcel**

Land Use Description	Units	Quantity	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
				In	Out	Total	In	Out	Total
Multi-Family	DU ¹	250	1,680	26	102	128	101	54	155
Retail	ksf ²	62.5	2,680	39	25	64	112	122	234
Office	ksf	31.25	340	42	6	48	8	39	47
Sub-Total			4,700	107	133	240	221	215	436
<i>Internal Reduction (25%)</i>			(1,175)	<i>(30)</i>	<i>(30)</i>	(60)	<i>(55)</i>	<i>(54)</i>	(109)
<i>Pass-By/Diverted/Linked Reduction (45%)</i>			-	-	-	-	<i>(52)</i>	<i>(52)</i>	(104)
Net New External Project Trips			3,525	77	103	180	114	109	223
Notes: ¹ DU = dwelling units ² ksf = thousand square feet Source: <i>Trip Generation, 7th Edition</i> , (2003); Fehr & Peers, (2007).									

**Table 4.14-6
HNTC Trip Generation – Loop and Ramp Parcels**

Land Use Description	Units	Quantity	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
				In	Out	Total	In	Out	Total
Multi-Family	DU ¹	550	3,700	56	225	281	222	119	341
Retail	ksf ²	187.5	8,050	118	75	193	337	366	703
Office	ksf	75	830	102	14	116	19	93	112
Sub-Total			12,240	276	314	590	578	578	1,156
<i>Internal Reduction (25%)</i>			(3,145)	<i>(74)</i>	<i>(74)</i>	(148)	<i>(145)</i>	<i>(144)</i>	(289)
<i>Pass-By/Diverted Linked Reduction (45%)</i>			-	-	-	-	<i>(158)</i>	<i>(158)</i>	(316)
Net New External Project Trips			9,435	202	241	443	275	276	551
Notes: ¹ DU = dwelling units ² ksf = thousand square feet Source: <i>Trip Generation, 7th Edition</i> , (2003); Fehr & Peers, (2007).									

**Table 4.14-7
HNTC Trip Generation – Caltrans Parcel**

Land Use Description	Units	Quantity	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
				In	Out	Total	In	Out	Total
Multi-Family	DU ¹	300	2,020	31	122	153	121	65	186
Retail	ksf ²	6.25	270	4	2	6	11	12	23
Office	ksf	6.25	70	9	1	10	2	7	9
Sub-Total			2,360	44	125	169	134	84	218
<i>Internal Reduction (25%)</i>			(590)	(21)	(21)	(42)	(27)	(28)	(55)
<i>Pass-By/Diverted/Linked Reduction (45%)</i>			-	-	-	-	(5)	(5)	(10)
Net New External Project Trips			1,770	23	104	127	102	52	154

Notes:
¹ DU = dwelling units
² ksf = thousand square feet
Source: *Trip Generation, 7th Edition*, (2003); Fehr & Peers, (2007).

**Table 4.14-8
HNTC Trip Generation – Carone and WC Drilling Parcels**

Land Use Description	Units	Quantity	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips		
				In	Out	Total	In	Out	Total
Multi-Family	DU ¹	150	1,010	15	62	77	60	33	93
Retail	ksf ²	3.75	110	2	2	4	7	7	14
Office	ksf	3.75	40	5	1	6	1	5	6
Sub-Total			1,160	22	64	86	65	43	108
<i>Internal Reduction (25%)</i>			(290)	(11)	(11)	(22)	(14)	(14)	(28)
<i>Pass-By/Diverted/ Linked Reduction (45%)</i>			-	-	-	-	(3)	(3)	(6)
Net New External Project Trips			870	11	54	65	51	28	79

Notes:
¹ DU = dwelling units
² ksf = thousand square feet
Source: *Trip Generation, 7th Edition*, (2003); Fehr & Peers, (2007).

In total, the seven parcels in the HNTC planning area are expected to generate approximately:

- 20,250 daily trips
- 1,110 AM peak hour trips
- 1,350 PM peak hour trips

Compared to the entire amount of new development in the City estimated in the Hercules Model, the trips generated by the HNTC parcels represent about one-third of daily and AM peak hour trips and about one-quarter of PM peak hour trips.

HNTC TRIP GENERATION ADJUSTMENT TO THE HERCULES MODEL

The AM and PM peak hour trip generation estimate for each HNTC project parcel was added to the corresponding TAZ in the Hercules Model. This ensures that the number of HNTC project trips in the model match the refined estimates provided in the tables above. The model still applies the same distribution for these project trips to local destinations and regional gateways that was estimated using the modeling procedure detailed in Section 4.14.3 (Travel Demand Forecasting).

4.14.5 ANALYSIS SCENARIOS

This section details the project, land use, and roadway network assumptions for each analysis scenario. The analysis scenarios span three time horizons: Existing Conditions, Cumulative Near-Term (2013) Conditions, and Cumulative (2035) Conditions. Detailed descriptions of the underlying assumptions for each time horizon and scenario are presented below.

EXISTING CONDITIONS

Three scenarios were analyzed for Existing Conditions: Existing, Baseline, and Baseline Plus Project.

Existing Conditions

This scenario documents the existing conditions for all travel modes (vehicular traffic, transit, pedestrian/bicycle) within the study area. The ten existing study intersections and eight freeway segments are included, while pedestrian/bicycle facilities are discussed qualitatively. Traffic counts and field observations at the study locations were conducted in November 2006 and February 2007. No significant changes to land uses, the roadway network, or sidewalks/bicycle lanes within the study area have occurred since the counts were collected.

Baseline Conditions

This scenario assumes that the Hercules Transit Center and park-and-ride lot are relocated from the PNR parcel to the C1 parcel. The site plan for the BART Replacement Parking Facility (developed by Kimley-Horn & Associates) specifies access at three driveways that intersect Willow Avenue just to the east of the existing SR 4 EB hook ramps. These intersections at the West Driveway, Bus-Only Driveway, and East Driveway are noted as #11, #12, and #13 in this analysis. The lane configurations and traffic control at these intersections were taken from the latest site plan.

The Baseline Conditions scenario assumes that the BART Replacement Parking Facility increases from 248 at the existing Hercules Transit Center to 422 parking spaces, and thus assumes higher peak hour traffic generation to and from the facility. No other development is assumed on the HNTC parcels or anywhere else within the City. This scenario also

assumes that the BART Replacement Parking Facility causes a redistribution of vehicular traffic and a rerouting of existing Western Contra Costa County Transit Authority (WestCAT) bus lines. No changes to the frequency or routing of transit buses were assumed. No other roadway improvements are assumed, thus, the existing EB SR 4 hook ramps remain at their current location. The Baseline Conditions assumptions match those presented in the *BART Replacement Parking Facility MND* traffic report.

Baseline Plus Project

This scenario assumes that the project (Market Town) is constructed and would generate the number of trips estimated in Table 4.14-4 (HNTC Trip Generation Estimate – PNR). All other assumptions regarding the relocation of the BART Replacement Parking Facility, the EB SR 4 ramps, and the redistribution of local traffic, match those presented in Baseline Conditions. Baseline Plus Project impacts are identified by comparing the traffic operations of this scenario to Baseline Conditions. This captures the transportation impacts associated with the project.

CUMULATIVE NEAR-TERM (2013) CONDITIONS

The Cumulative Near-Term (2013) scenarios were developed to identify the future traffic conditions in the City around the time that the Market Town project is constructed and occupied. The scenarios also analyze traffic conditions if the ramps are relocated and if they remain in their current configuration. The analysis is used to examine the potential relative contribution of the Market Town project on overall traffic conditions in the City of Hercules. Two ramp alternatives on Willow Avenue are considered: the existing location and the “preferred” diamond interchange alternative. Both alternatives were evaluated under Cumulative Near-Term (2013) conditions because the relocation of the ramps is still uncertain as the project has not yet been approved by Caltrans. The relocation of the ramps is not necessary for the construction of the project (Market Town). If approved, 2013 is a reasonable timeframe for the completion of the EB SR 4 Ramp Relocation project. Conditions both with and without the Ramp Relocation project are discussed below:

Near Term (2013) – No Ramp Relocation

The No Ramp Relocation scenario assumes that the existing SR 4 EB ramps at Willow Avenue remain at their current location. These scenarios assume that the BART Replacement Parking Facility is constructed, but no other changes to the local roadway network are in place. Regional freeway improvements assumed in the analysis include new HOV lanes from SR 4 to the Carquinez Bridge. The Near Term 2013 – No Ramp Relocation scenario assumes that the project (Market Town) is completed and that other development occurs in Hercules and the surrounding area. Project-related impacts were identified by calculating the percentage of total trips attributed to the Market Town project. In this way, the costs of physical improvements to the roadway system can be attributed to each potential project in the City.

2013 Plus Project – With Ramp Relocation

This scenario assumes that the “preferred” diamond alternative for the new EB SR 4 ramps is constructed. This alternative includes constructing diagonal ramps at the Willow Avenue

overcrossing to form a diamond interchange with the existing WB ramps. Improvements to the local road network include the signalized Willow Avenue/SR 4 EB Ramps (#14) intersection, widening the Willow Avenue overcrossing to five lanes, widening Willow Avenue between the EB SR 4 ramps and the Willow Avenue/Palm Avenue intersection, and making intersection improvements to the Willow Avenue/Palm Avenue intersection. The Near Term 2013 – With Ramp Relocation scenario assumes that the Project (Market Town) is completed and that other development occurs in Hercules and the surrounding area. Project-related impacts were identified by calculating the percentage of total trips attributed to the Market Town project. In this way, the costs of physical improvements to the roadway system can be attributed to each potential project in the City.

CUMULATIVE (2035) CONDITIONS

Cumulative (2035) analysis scenarios were developed to identify the long-term transportation impacts of the program (full buildout of all HNTC parcels). The year 2035 was deemed a reasonable time horizon for completion of the entire HNTC program. The two Cumulative (2035) scenarios developed for the impact assessment are detailed below.

Cumulative (2035) No Project

The Cumulative (2035) No Project scenario assumes that development occurs on the HNTC parcels according to land uses and densities set forth in the City’s existing General Plan. The General Plan permits commercial public land uses on the PNR parcel and general commercial land uses on the remaining HNTC parcels. Therefore, it is reasonable to assume that less dense commercial development would occur within the planning area if the HNTC does not develop.

To estimate the potential commercial traffic generated by these parcels, a separate Cumulative (2035) No Project trip generation estimate was developed. The trip generation for each HNTC parcel was developed using the retail trip rates presented in Table 4.14-3 (ITE Trip Generation Rates), the amount of developable land available on each parcel, and permitted land use densities contained in the General Plan. Retail trip rates were used because they provide the highest, most “conservative, trip generation estimate for commercial land uses. No internalization was assumed because less dense single-use retail developments do no result in trip chaining or higher transit and walking use. The same pass-by/diverted/linked assumption (45 percent) used in Section 4.14.4 (HNTC Trip Generation) were assumed for the Cumulative (2035) No Project trip generation estimate.

Table 4.14-9 (Cumulative (2035) No Project Trip Generation) presents each HNTC parcel’s retail square footage and daily and peak hour trips. These trips were added to the Hercules Model and distributed through the network of study intersections and freeway segments.

**Table 4.14-9
Cumulative (2035) No Project Trip Generation**

HNTC Parcel	Retail KSF ¹	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips ²		
			In	Out	Total	In	Out	Total
PNR	35	1,500	22	14	36	35	38	72

HNTC Parcel	Retail KSF ¹	Daily Trips	AM Peak Hour Trips			PM Peak Hour Trips ²		
			In	Out	Total	In	Out	Total
Loop/Ramp	81.675	3,510	51	33	84	78	90	168
C1	113.561	4,880	71	46	117	108	126	234
Caltrans	82.982	3,560	52	33	85	79	92	171
Sliver	49.789	2,140	31	20	51	48	55	103

Notes:

¹ ksf = thousand square feet

² All PM peak hour trips are external trips net pass-by

Source: *Trip Generation, 7th Edition*, (2003); City of Hercules, (2007); Fehr & Peers, (2007).

In total under a no project condition, the seven parcels are expected to generate approximately:

- 15,600 daily trips
- 370 AM peak hour trip
- 750 PM peak hour trips

Cumulative (2035) Plus Program

The Cumulative (2035) Plus Program scenario assumes full buildout of each HNTC parcel according to the land uses shown in Tables 4.14-4 to 4.14-8. All other background assumptions regarding land use and roadway network detail match the Cumulative (2035) No Project scenario.

Roadway Network Assumptions for Cumulative (2035) Conditions

The roadway network for Cumulative (2035) Conditions assumes some limited improvements within the City. Allowing the level of development summarized in Table 4.14-9 would require the City to make significant improvements to local roads over time. These improvements could be funded over time by developer fees as projects are constructed or by a Citywide fee program. The City is currently working to identify critical transportation infrastructure needs. These will be used as a basis for a Citywide fee program. This analysis assumes that developers and the City’s fee program will have sufficient resources to fully fund some basic level of transportation improvements.

Most of the improvements assumed in the Cumulative (2035) base roadway network are included in the City’s General Plan or other approved planning documents. The EB SR 4 ramps are assumed relocated under both No Project and Plus Program conditions because the relocation would have to occur to allow any significant development to occur in the NTC project area. Also, assuming ramp relocation under both scenarios allows for an “apples-to-apples” comparison of traffic operations results and impact assessment.

The set of roadway improvements assumed under Cumulative (2035) conditions are listed below:

- Relocate the EB SR 4 ramps (diamond interchange alternative)

- Widen Willow Avenue (four lanes) from Sycamore Avenue to the new SR 4 diamond interchange
- Extend John Muir Parkway from San Pablo Avenue to the Hercules Waterfront
- Provide site access improvements at project driveways (turn pockets, traffic signal upgrades, etc.)
- Construct HOV lanes on EB and WB I-80 from SR 4 to the Carquinez Bridge

4.14.6 THRESHOLDS OF SIGNIFICANCE

This section describes the thresholds used to identify significant project impacts under the California Environmental Quality Act (CEQA). CEQA states that a project would have a significant transportation/traffic impact if it causes an increase in traffic which is substantial in relation to the traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections), or change the condition of an existing street (i.e., street closures, changing direction of travel) in a manner that would substantially impact access or traffic load and capacity of the street system.

The City of Hercules as lead agency has the authority to establish operating standards and significance thresholds for local streets that they maintain and control. The City of Hercules General Plan (General Plan) Circulation Element was used to establish the City's LOS standards for study intersections on locally controlled roadways.

The CCTA, which is the designated Congestion Management Agency representing jurisdictions in Contra Costa County, has the authority to establish operating standards and significance thresholds for "routes of regional significance" that they maintain, plan, and help fund. A description of these regional routes and the LOS operating standards are contained in the CCTA's *Congestion Management Plan* (CMP)⁵. Within the study area, these routes include I-80, SR 4, and San Pablo Avenue.

Service standards and thresholds of significance for multi-modal transportation systems and parking are not clearly established in any adopted planning documents. Therefore, multi-modal and parking standards and thresholds were developed using accepted industry standards and the standards identified in Section 32.300 of the City of Hercules Zoning Ordinance.

The following criteria were used to determine whether or not the project results in significant impacts to the transportation system (intersections, freeways, and multi-modal facilities) under Existing, Cumulative Near-Term (2013), and Cumulative (2035) Conditions.

INTERSECTIONS

Within the study area, the intersections along San Pablo Avenue and Sycamore Avenue (#'s 1, 2, 3, and 10) are located along CCTA designated "routes of regional significance." CCTA has established a LOS E standard for these intersections.

⁵ CCTA, *2007 Update, Contra Costa County Congestion Management Program*, November 21, 2007.

The remaining study intersections are evaluated using standards established in the General Plan Circulation Element. The General Plan states that all intersections on local roadways within the City should operate at LOS D or better.

Using these LOS standards, a significant impact would occur at a study intersection if:

- The addition of project traffic causes a signalized intersection operating at an acceptable level (LOS D or E, depending on location) to degrade to an unacceptable level (LOS E or F, depending on location); or, the project causes an increase in delay at a signalized intersection already operating at an unacceptable level (LOS E or F, depending on location).
- The addition of project traffic causes an unsignalized intersection operating at an acceptable level (LOS D or E, depending on location) to degrade to an unacceptable level (LOS E or F, depending on location); AND the intersection meets the criteria for signalization based on Caltrans peak hour traffic signal warrant.

FREEWAYS

The CCTA CMP has established a LOS F standard for I-80 and SR 4 in the vicinity of the project. This LOS F standard recognizes that I-80 already experiences severe congestion, particularly at major regional bottlenecks (e.g., the Carquinez Bridge and the MacArthur maze in Oakland).

Because LOS F is the lowest rating on the LOS scale, the following conservative standard is applied:

A significant impact would occur on a study freeway facility if the addition of project traffic causes:

- One or more trips to be added to a freeway segment that is already operating at LOS F

MULTI-MODAL TRANSPORTATION SYSTEMS

The following are the thresholds of significance for the analysis of non-auto travel modes:

Transit

A significant transit impact would occur if the project:

- Disrupts existing transit services from traffic improvements proposed or resulting from the project
- Interferes with planned transit services or facilities
- Conflicts or creates inconsistencies with adopted transit system plans, guidelines, policies or standards

Pedestrians and Bicycles

A significant pedestrian or bicycle impact would occur if the project:

- Discourages use of bicycle or pedestrian facilities
- Results in unsafe conditions for bicyclists or pedestrians
- Has designs that do not meet industry standards and guidelines

PARKING

A significant parking impact would occur if the project results in:

An insufficient quantity of on-site parking for vehicles as defined by the parking standards identified in the Zoning Ordinance Section 32.300.

- Designs for on-site circulation, access and parking areas that fail to meet industry design guidelines

4.14.7 EXISTING CONDITIONS

This section documents the existing state of the transportation system in the study area.

PROJECT DATA COLLECTION

Peak period intersection counts were conducted during the morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) at the ten study intersections during a typical weekday (Tuesday through Thursday). All counts were conducted during 2006 except the San Pablo Avenue/Transit Center (PNR) Driveway intersection, where counts were taken in February 2007. The count data indicates that the AM peak hour occurs from 7:30 AM to 8:30 AM and the PM peak hour occurs from 5:00 PM to 6:00 PM.

During field reconnaissance, lane configurations, turning movement pocket lengths, speed limits, and signal timings were collected. Existing intersection lane configurations, traffic control, and peak hour volumes are shown on Figure 4.14-3 (Lane Configuration, Traffic Control, and Peak Hour Volumes – Existing Conditions). The peak hour volumes reflect minor adjustments to the raw traffic counts to ensure balanced vehicle trips between adjacent intersections.

Peak period traffic counts were conducted on the SR 4 eastbound onramp from I-80 and on mainline SR 4 west of this onramp during a typical weekday (Tuesday through Thursday) in November 2006. A traffic count on I-80 was not possible because an overcrossing does not exist within the project study area. However, hourly volumes for I-80 and all of the ramp and connectors in the study area were available for 2006 from Caltrans count stations. These counts were adjusted to ensure balancing of vehicle flows between facilities and were used in the operations analysis and traffic forecasting process.

Existing freeway volumes are presented on Figure 4.14-2 (I-80/SR 4 Interchange – Existing Conditions). The traffic volumes indicate that the predominant travel direction is westbound

on I-80 during the AM peak period and eastbound on I-80 during the PM peak period. Truck traffic on I-80 and SR-4 was obtained from the 2005 Annual Average Daily Truck Traffic on the California State Highway System prepared by Caltrans. These counts indicate that heavy vehicles make up about five percent of the total traffic on I-80 and six percent on SR 4.

High occupancy vehicle (HOV) lanes exist on I-80 in both directions of travel from just south of SR 4 to the Bay Bridge. Information on HOV volumes for both I-80 and SR 4 in the peak direction (westbound during the AM peak hour and eastbound during the PM peak hour) was obtained from studies published by Caltrans⁶. Table 4.14-10 (Existing HOV Information) presents the latest HOV percentages for both I-80 and SR 4 in the vicinity of the City. While no HOV lanes exist on SR 4, Caltrans still conducted counts of vehicles on SR 4 with more than one occupant. The percentages for SR 4 shown on Table 4.14-10 reflect these counts.

**Table 4.14-10
Existing HOV Information**

Location	Direction	Percentage of HOV Vehicles	
		AM Peak Hour	PM Peak Hour
I-80, South of SR 4	WB	23%	7%
	EB	4%	15%
SR 4, East of Study Area	WB	13%	6% ¹
	EB	2% ¹	13%
Notes: ¹ Estimated value Source: Caltrans, <i>2005 HOV Report</i> , (2005)			

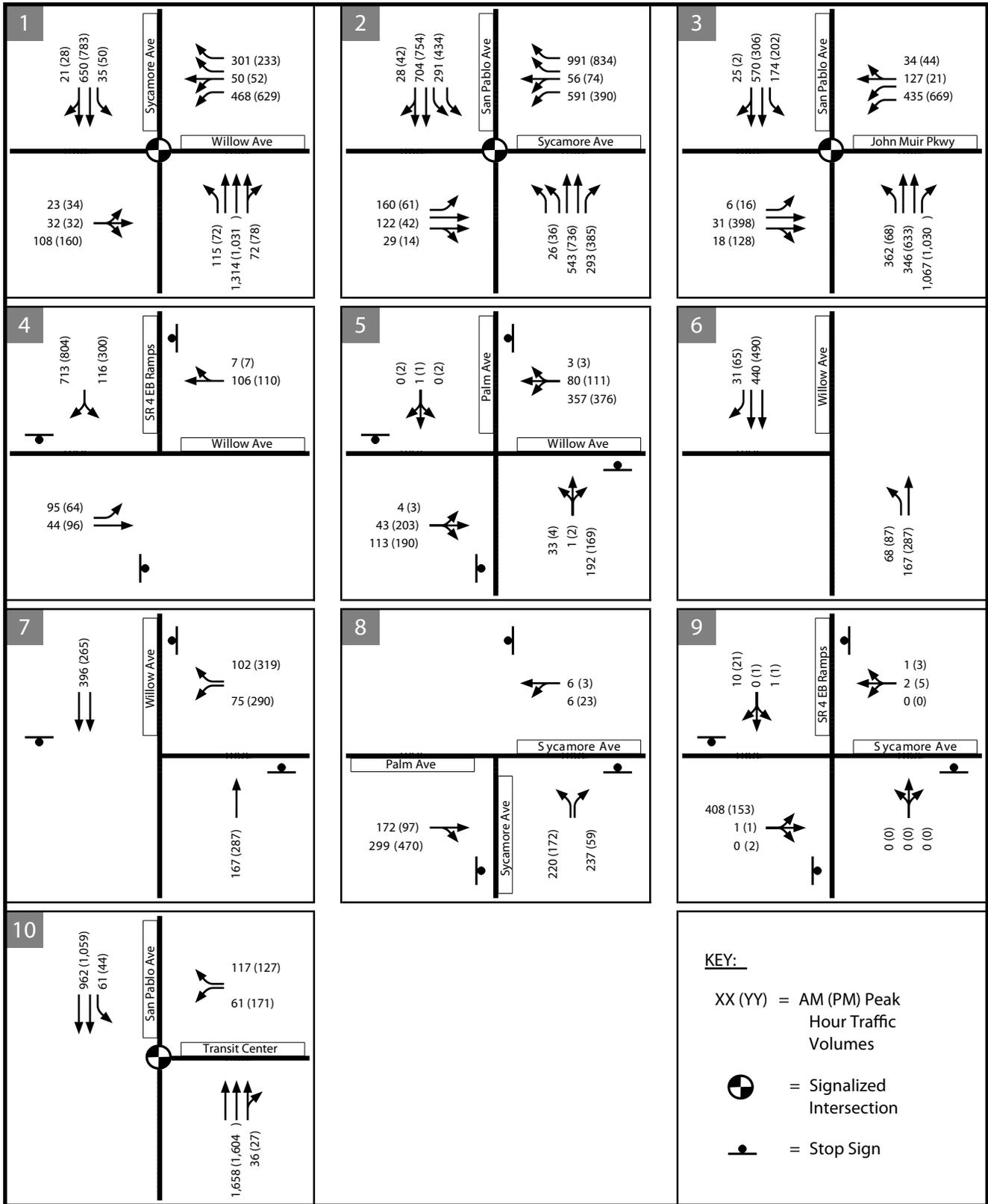
FIELD OBSERVATIONS

Field observations of traffic congestion and queues were conducted during the AM and PM peak periods in November 2006. These observations were used to calibrate the SimTraffic model and to verify the validity of the traffic operations analysis. The following summarizes the findings from the field observations.

The primary queues observed in the field on the local streets are summarized below.

- **San Pablo Avenue/John Muir Parkway**
 - AM and PM Peak – The westbound left-turn queue was observed to be 5-10 cars, with no queues extending out of the available turn pocket storage. The northbound right-turn queue was observed to be 15-20 cars, which often extended back to the San Pablo Avenue/Sycamore Avenue intersection. This affected traffic operations at this upstream intersection. The southbound left-turn queue was observed to be approximately 5-10 cars, occasionally overflowing the available storage.

⁶ Caltrans, *2005 Bay Area HOV Lanes*, 2006.



Hercules New Town Center EIR
**Lane Configurations, Traffic Control,
 And Peak Hour Volumes
 Existing Conditions**

This page intentionally left blank.

- AM Peak Only – The northbound left-turn queue was observed to exceed left-turn vehicle storage at times reaching 20 vehicles.
- PM Peak Only – The eastbound through approach was observed to have a queue length of 10-15 vehicles.
- **San Pablo Avenue/Sycamore Avenue**
 - AM and PM Peak – The northbound through movement queue was observed to be 10-12 cars. The southbound left-turn queue was observed to be 5-10 vehicles, which often extended back to the San Pablo Avenue/Transit Center (PNR) Driveway intersection. Queues at the westbound approach were observed to spill back to the Willow Avenue/Sycamore Avenue intersection. This affected traffic operations at this upstream intersection.
 - PM Peak Only – When downstream receiving lanes on Sycamore Avenue were blocked, the southbound left-turn queue was observed to grow between 5-10 vehicles. This occasionally exceeded the available left-turn pocket storage.
- **Willow Avenue/Sycamore Avenue**
 - AM and PM Peak – The northbound approach queue was observed to range between 10-15 vehicles at its maximum. The westbound left-turn queue was observed to range between 10-15 vehicles at its maximum, occasionally exceeding the available left-turn vehicle storage.
 - PM Peak Only – The southbound approach queue was observed to occasionally spill back through the upstream San Pablo Avenue/Sycamore Avenue intersection.

KEY ASSUMPTIONS

Existing data was used to establish the following analysis assumptions:

- A peak hour truck percentage of five percent and six percent were used for the I-80 and SR 4 mainlines, respectively. A peak hour truck percentage of two percent was used for all ramps.
- A free flow speed of 65 miles per hour (mph) was used for the freeway mainline and 45 mph for the ramps.
- A peak hour factor of 0.95 and 0.94 was used for the mainline and ramp junction AM and PM peak hour analysis, respectively.
- A peak hour factor of 0.95 and 0.94 was used for the local street AM and PM peak hour analysis, respectively.
- Free flow speed on the local streets was based on the posted speed limit.
- Analysis peak hours are from 7:30 AM to 8:30 AM and 5:00 PM to 6:00 PM.

TRAFFIC OPERATIONS MODEL DEVELOPMENT, CALIBRATION, AND VALIDATION

This section describes the development, calibration, and validation process for the SimTraffic model used to determine existing intersection operations at the study intersections along San

Pablo, Sycamore and Willow Avenues. Simulation was used for this section of the study area, rather than HCM methods, because of the close spacing between these intersections. This corridor is of particular concern because it is the primary connection between areas of Hercules on the west and east sides of the City. The specific intersections evaluated in the SimTraffic model include Willow Avenue/Sycamore Avenue, San Pablo Avenue/Sycamore Avenue, San Pablo Avenue/John Muir Parkway, and San Pablo Avenue/Transit Center Driveway.

Caltrans' simulation model guidelines⁷ were used to direct the model's development, calibration, and validation. The model development process is summarized below:

Traffic Operations Model Development

Two SimTraffic models were developed representing the existing AM peak hour and PM peak hour traffic conditions for the local streets. The Synchro models include the four study intersections and were coded with the peak hour volumes, posted speed limits, vehicle mix, and signal timings. Traffic signal-related information such as phasing and initial timings (minimum green, maximum green, gap, etc.) for the signalized intersections was obtained from Contra Costa County. Additional detail such as turn pocket lengths and intersection spacing was coded based on aerial photography and field measurements.

Calibration and Validation

An extensive calibration and validation process was followed to ensure that the modeled results were consistent with the observed conditions on the local streets. "Calibration" is an iterative process that includes making minor adjustments the model parameters in order to meet various "Validation" criteria. These criteria include:

- The model should serve (over 95 percent) of the observed traffic volumes
- Vehicle queues should match field observations

The AM and PM peak hour SimTraffic models were successfully calibrated to meet these validation criteria. Validated models serve as a basis for developing other models that can test different traffic volume and roadway network scenarios. These validated models were used to develop the traffic operations models for the various HNTC scenarios.

EXISTING CONDITIONS INTERSECTION OPERATIONS

Table 4.14-11 (Existing Conditions Intersection Operations) presents the intersection traffic operations results for Existing Conditions. Intersection assumptions and peak hour volumes used for the operations analysis were presented in Figure 4.14-3.

⁷ Caltrans, *Guidelines for Applying Traffic Micro simulation Modeling Software*, 2002.

**Table 4.14-11
Existing Conditions Intersection Operations**

Intersection	Traffic Control	Peak Hour	LOS ¹ / Delay (seconds/vehicle)
San Pablo/Sycamore/Willow Avenue Corridor (SimTraffic)			
1. Willow Ave/Sycamore Ave	Signal	AM PM	D / 43 D / 39
2. San Pablo Ave/Sycamore Ave	Signal	AM PM	C / 32 D / 44
3. San Pablo Ave/John Muir Pkwy	Signal	AM PM	C / 30 D / 36
4. Willow Ave/SR 4 EB Hook Ramps	AWSC ³	AM PM	A / 6 A / 8
10. San Pablo Ave/PNR Drwy	Signal	AM PM	B / 11 B / 18
Rest of the Study Area (HCM Methods)			
5. Willow Ave/Palm Avenue	AWSC	AM PM	A / 8 C / 17
6. Willow Ave/SR 4 WB On-Ramp	None	AM PM	A / 5 A / 7
7. Willow Ave/SR 4 WB Off-Ramp	AWSC	AM PM	A / 8 B / 11
8. Palm Ave/Sycamore Ave	AWSC	AM PM	A / 8 A / 8
9. Sycamore Ave/SR 4 EB Hook Ramps	AWSC	AM PM	B / 10 A / 7
Notes: ¹ LOS = level of service. Delay defined as seconds per vehicle ² AWSC = all-way stop-control Source: Fehr & Peers (2008)			

All of the intersections operate acceptably at LOS D or better during both the AM and PM peak hour. This meets or exceeds the LOS standards set forth in Section 4.14.6 (Thresholds of Significance).

EXISTING CONDITIONS FREEWAY OPERATIONS

Table 4.14-12 (Existing Conditions Freeway Operations) presents the freeway traffic operations results for Existing Conditions. Freeway assumptions and peak hour volumes used for the operations analysis were presented in Figure 4.14-2. Regional bottlenecks on I-80 to the north and south of Hercules affect traffic flow through the study area by metering the amount of traffic that actually reaches the City during the peak hour. This metering effect constrains the traffic observed on freeways in Hercules during the peak hour.

**Table 4.14-12
Existing Conditions Freeway Operations**

Freeway Facility	Facility Type	Peak Hour	LOS ¹ / Density (passenger cars/lane/mile)
I-80 Facilities			
1. I-80 WB on-ramp from Willow Ave	Merge	AM PM	D / 32 C / 24
2. I-80 WB off-ramp to John Muir Pkwy	Diverge	AM PM	E / 48 E / 34
3. I-80 WB from SR 4 to Pinole Valley Rd	Weave	AM PM	D D
4. I-80 EB from Pinole Valley Road to SR 4	Basic	AM PM	D / 26 E / 33
5. I-80 EB off-ramp to EB SR 4 & Willow Ave	Diverge	AM PM	B / 20 C / 25
6. I-80 EB on-ramp from SR 4	Merge	AM PM	C / 21 D / 31
7. I-80 EB off-ramp to Willow Ave	Diverge	AM PM	C / 24 E / 35
SR 4 Facilities			
8. SR 4 WB east of Willow Ave	Basic	AM PM	B / 14 C / 20
9. SR 4 WB off-ramp to Willow Ave	Diverge	AM PM	B / 19 C / 26
10. SR 4 WB connector to I-80 EB & WB	Basic	AM PM	A / 10 B / 12
11. SR 4 EB on-ramp from Willow Ave	Merge	AM PM	B / 13 B / 15
12. SR 4 EB from Willow Ave to Sycamore Ave	Basic	AM PM	B / 15 B / 17
13. SR 4 EB off-ramp to Sycamore Ave	Diverge	AM PM	B / 19 C / 22
Notes: ¹ LOS = level of service. Density defined as passenger cars per lane per mile. Source: Fehr & Peers (2008)			

All of the freeway segments operate at LOS E or better during the AM and PM peak hours.

4.14.8 BASELINE PLUS PROJECT IMPACT ASSESSMENT

This section documents the very near-term impacts of the project (Market Town) on the local and regional transportation system. No changes to the local roadway or regional freeway system are assumed. Potentially significant project impacts are identified by comparing Baseline Plus Project to Baseline Conditions.

POTENTIAL IMPACTS AND MITIGATION MEASURES: MARKET TOWN PROJECT

Intersection Impacts

- ◆ **DEVELOPMENT OF THE MARKET TOWN PROJECT WOULD INCREASE TRAFFIC THROUGH THE SYSTEM OF LOCAL INTERSECTIONS UNDER BASELINE PLUS PROJECT CONDITIONS.**

Level of Significance Before Mitigation: Less than Significant Impact.

Impact Analysis: Table 4.14-13 (Baseline Conditions Intersection Operations) presents intersection traffic operations for Baseline and Baseline Plus Project Conditions. Intersection geometrics, traffic control, and peak hour volumes used for Baseline and Baseline Plus Project Conditions are presented in Figures 4.14-4a, 4.14-4b (Lane Configuration, Traffic Control, and Peak Hour Volumes – Baseline Conditions) and 4.14-5a, 4.14-5b (Lane Configuration, Traffic Control, and Peak Hour Volumes – Baseline Plus Project Conditions), respectively. All of the study intersections operate within the acceptable operating thresholds established in Section 4.14.6. Therefore, the addition of project traffic does not result in any significant impacts to the study intersections.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

**Table 4.14-13
Baseline Conditions Intersection Operations**

Intersection	Traffic Control	Peak Hour	LOS ¹ / Delay (seconds/vehicle)		Significant Impact
			Baseline	Baseline Plus Project	
San Pablo/Sycamore/Willow Avenue Corridor (SimTraffic)					
1. Willow Ave/Sycamore Ave	Signal	AM PM	D / 52 D / 47	E / 57 D / 52	No
2. San Pablo Ave/Sycamore Ave	Signal	AM PM	D / 37 D / 36	D / 50 D / 48	No
3. San Pablo Ave/John Muir Pkwy	Signal	AM PM	C / 29 D / 37	C / 33 D / 45	No
4. Willow Ave/SR 4 EB Hook Ramps	AWSC ²	AM PM	A / 7 B / 11	A / 9 B / 14	No
10. San Pablo Ave/PNR Drwy	Signal	AM PM	n/a	C / 22 C / 17	No
Rest of the Study Area (HCM Methods)					
5. Willow Ave/Palm Avenue	AWSC	AM PM	A / 9 D / 31	A / 9 D / 28	No
6. Willow Ave/SR 4 WB On-Ramp	None	AM PM	A / 6 B / 11	A / 6 A / 8	No
7. Willow Ave/SR 4 WB Off-Ramp	AWSC	AM PM	A / 9 B / 12	A / 8 B / 11	No

Intersection	Traffic Control	Peak Hour	LOS ¹ / Delay (seconds/vehicle)		Significant Impact
			Baseline	Baseline Plus Project	
8. Palm Ave/Sycamore Ave	AWSC	AM PM	A / 8 A / 8	A / 8 A / 8	No
9. Sycamore Ave/SR 4 EB Hook Ramps	AWSC	AM PM	B / 10 A / 6	B / 10 A / 7	No
11. TC West Drwy/Willow Ave	SSSC ³	AM PM	A / 4 A / 8	A / 4 A / 7	No
12. TC Bus-Only Drwy/Willow Ave	SSSC	AM PM	A / 3 A / 3	A / 3 A / 3	No
13. TC East Drwy/Willow Ave	SSSC	AM PM	A / 9 B / 13	B / 12 C / 15	No

Notes:
¹ LOS = level of service. Delay defined as seconds per vehicle
² AWSC = all-way stop-control
³ SSSC = side-street stop-control
Source: Fehr & Peers (2008)

Freeway Facilities Impacts

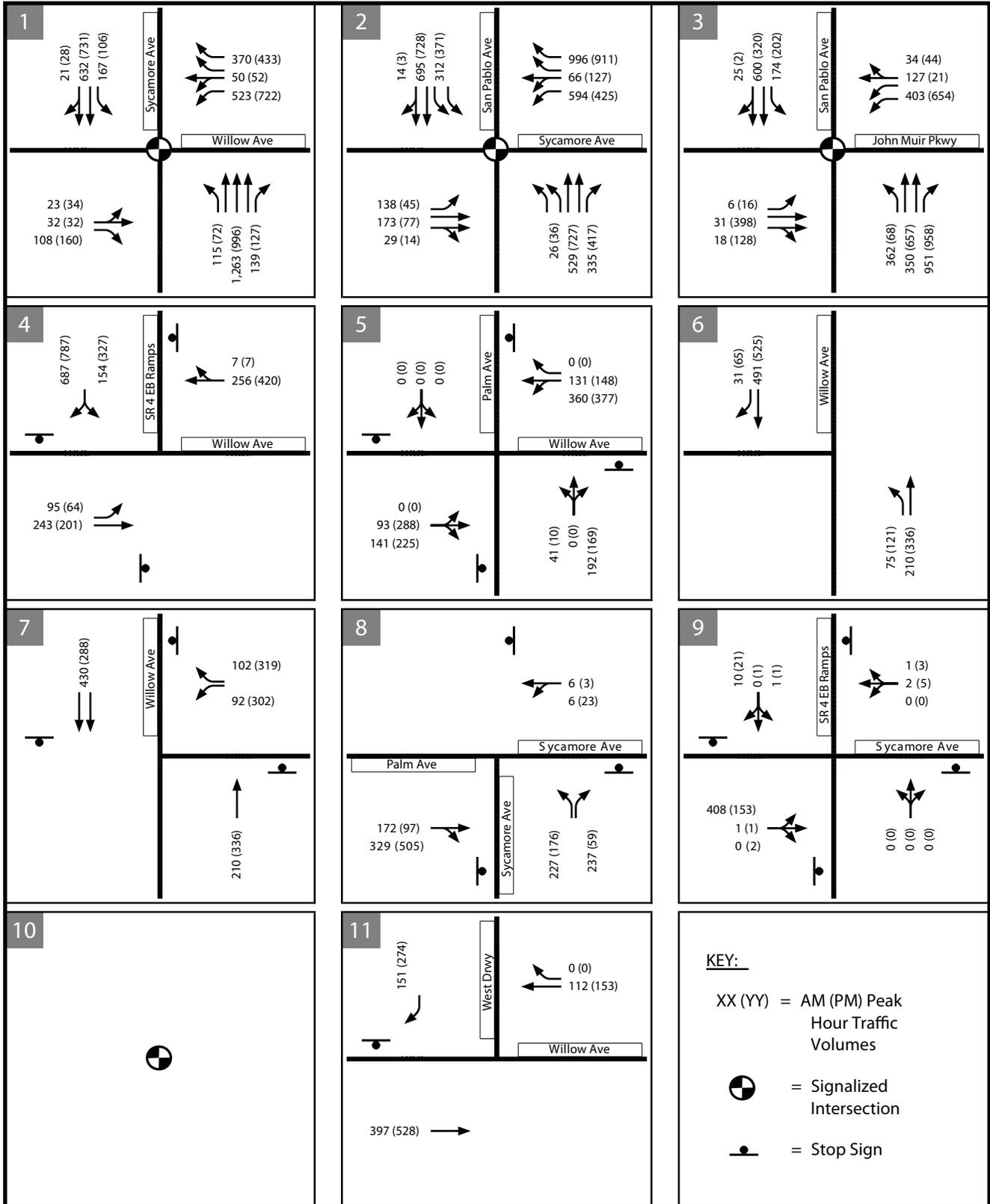
- ◆ ***DEVELOPMENT OF THE MARKET TOWN PROJECT WOULD INCREASE TRAFFIC ON REGIONAL FREEWAY FACILITIES UNDER BASELINE PLUS PROJECT CONDITIONS.***

Level of Significance Before Mitigation: Less Than Significant Impact

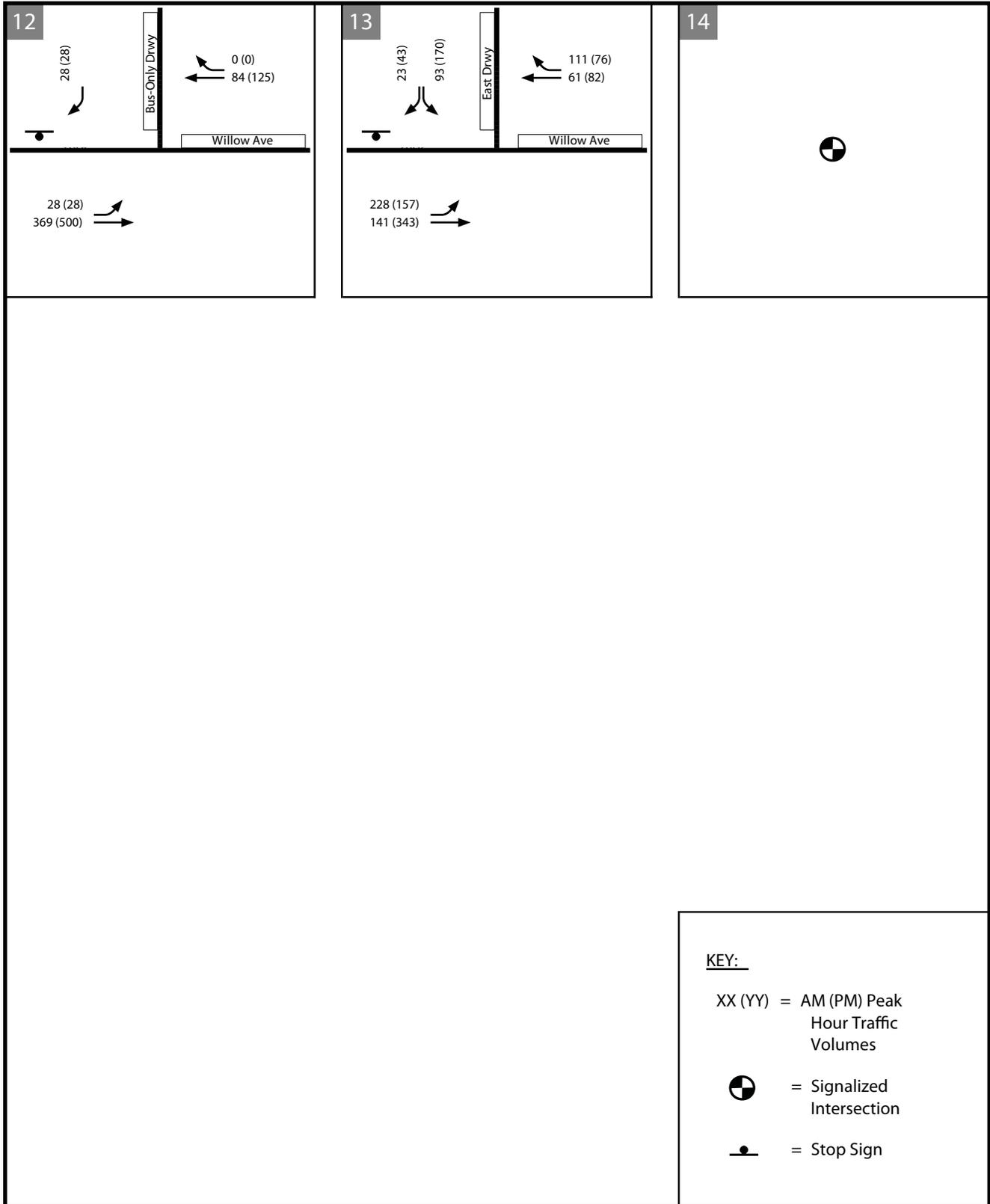
Impact Analysis: Table 4.14-14 (Baseline Conditions Freeway Operations) presents the freeway traffic operations for Baseline and Baseline Plus Project Conditions. Freeway lane assumptions and peak hour volumes for both scenarios are presented in Figure 4.14-6 (I-80/SR 4 Interchange – Baseline Conditions). All freeway segments operate within the acceptable operating thresholds established in Section 4.14.6. Therefore, the addition of project traffic does not result in any significant impacts to the study freeway facilities.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

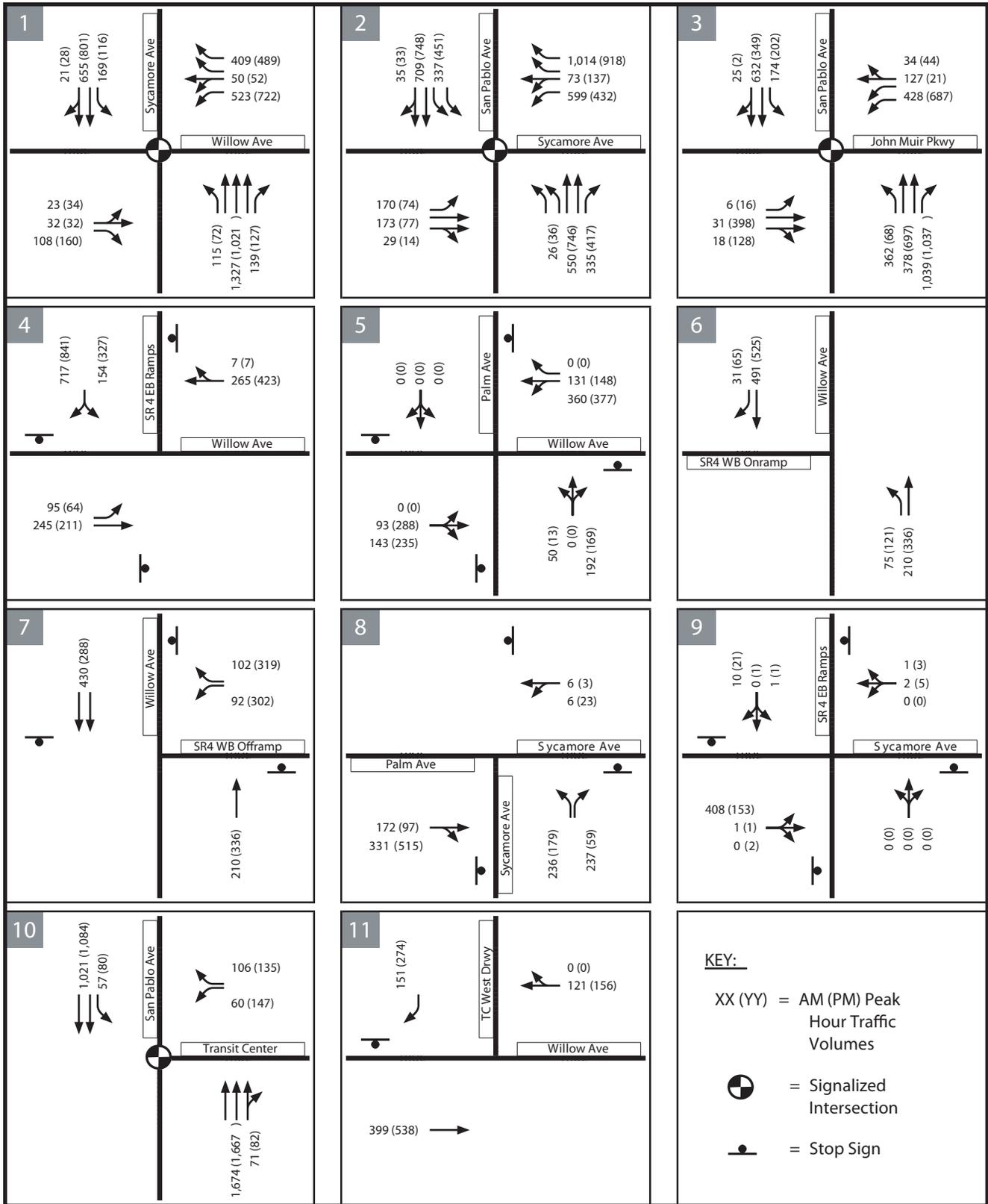


Hercules New Town Center EIR
**Lane Configurations, Traffic Control,
 And Peak Hour Volumes
 Baseline Turning Movement Volumes
 AM and PM Peak Hour**



Hercules New Town Center EIR

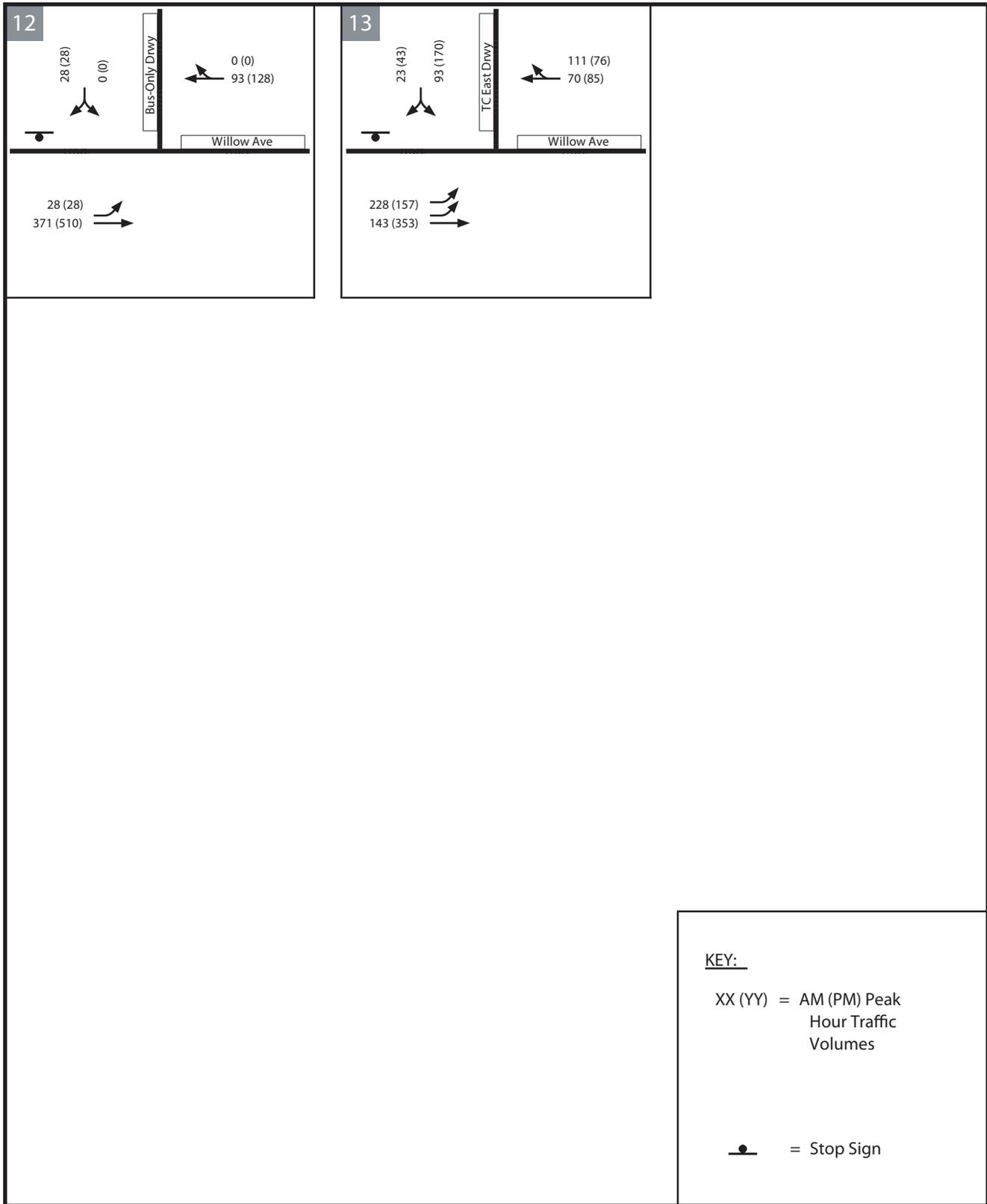
**Lane Configurations, Traffic Control,
And Peak Hour Volumes
Baseline Turning Movement Volumes
AM And PM Peak Hour**



Hercules New Town Center EIR

Lane Configurations, Traffic Control, And Peak Hour Volumes

Baseline Plus Project AM And PM Peak Hour



Hercules New Town Center EIR

**Lane Configurations, Traffic Control,
And Peak Hour Volumes**

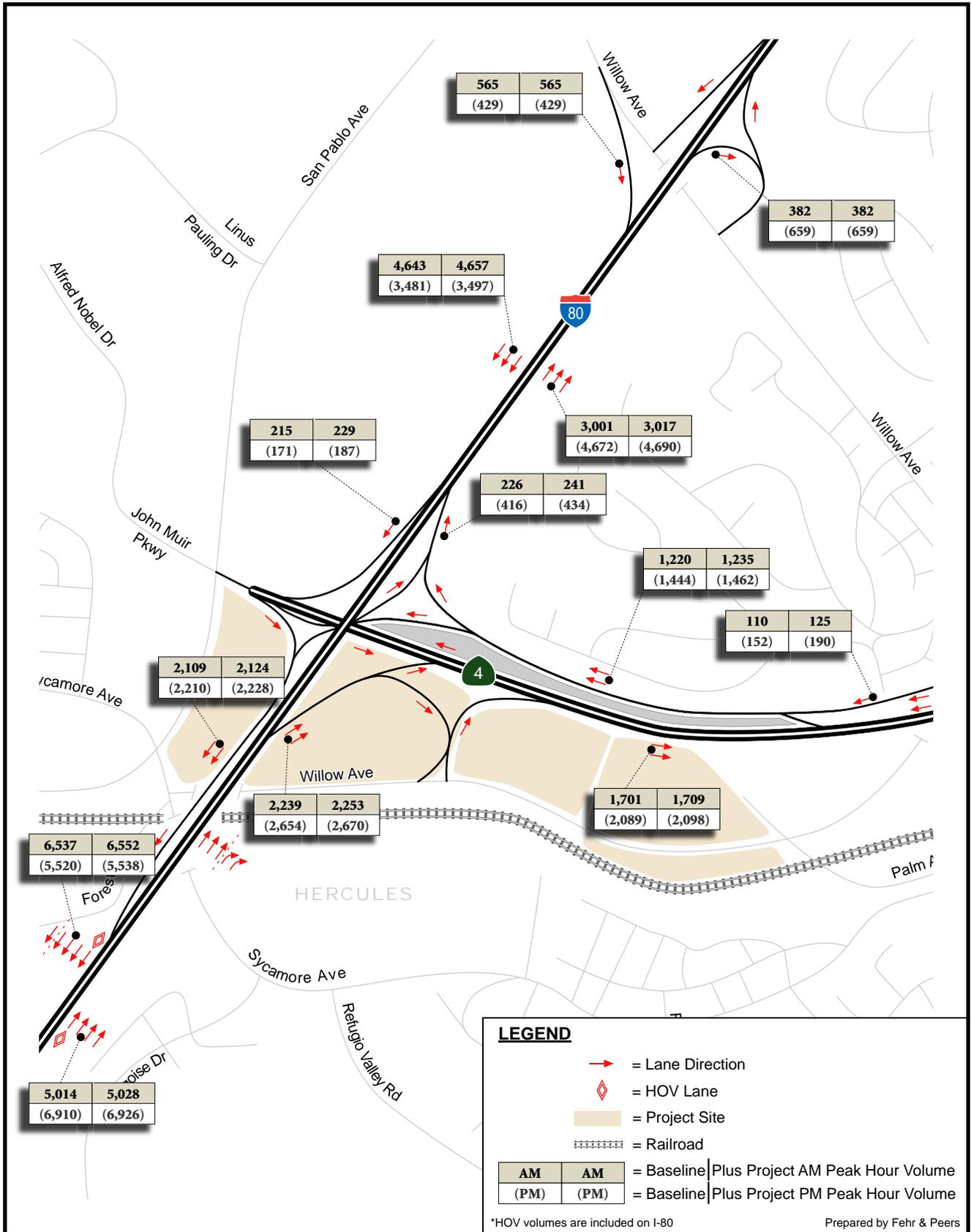
Baseline Plus Project AM And PM Peak Hour

**Table 4.14-14
Baseline Conditions Freeway Operations**

Freeway Facility	Facility Type	Peak Hour	LOS ¹ / Density (passenger cars/lane/mile)		Significant Impact
			Baseline	Baseline Plus Project	
I-80 Facilities					
1. I-80 WB on-ramp from Willow Ave	Merge	AM PM	D / 32 C / 24	D / 32 C / 24	No
2. I-80 WB off-ramp to John Muir Pkwy	Diverge	AM PM	E / 48 D / 35	E / 48 D / 35	No
3. I-80 WB from SR 4 to Pinole Valley Rd	Weave	AM PM	D D	D D	No
4. I-80 EB from Pinole Valley Road to SR 4	Basic	AM PM	D / 26 D / 34	D / 26 D / 34	No
5. I-80 EB off-ramp to EB SR 4 & Willow Ave	Diverge	AM PM	B / 20 C / 25	C / 20 C / 25	No
6. I-80 EB on-ramp from SR 4	Merge	AM PM	C / 21 D / 31	C / 21 D / 31	No
7. I-80 EB off-ramp to Willow Ave	Diverge	AM PM	C / 24 E / 35	C / 24 E / 36	No
SR 4 Facilities					
8. SR 4 WB east of Willow Ave	Basic	AM PM	B / 15 C / 20	B / 15 C / 21	No
9. SR 4 WB off-ramp to Willow Ave	Diverge	AM PM	B / 19 C / 26	B / 19 C / 26	No
10. SR 4 WB connector to I-80 EB & WB	Basic	AM PM	A / 10 B / 12	A / 11 B / 12	No
11. SR 4 EB on-ramp from Willow Ave	Merge	AM PM	B / 13 B / 15	B / 13 B / 15	No
12. SR 4 EB from Willow Ave to Sycamore Ave	Basic	AM PM	B / 15 B / 17	B / 15 B / 17	No
13. SR 4 EB off-ramp to Sycamore Ave	Diverge	AM PM	B / 19 C / 22	B / 19 C / 22	No
Notes: ¹ LOS = level of service. Density defined as passenger cars per lane per mile. Source: Fehr & Peers (2008)					

CUMULATIVE NEAR-TERM (2013) – NO RAMP RELOCATION IMPACT ASSESSMENT

This section documents the relative impacts of the project (Market Town) on the local and regional transportation system under Cumulative Near-Term (2013) – No Ramp Relocation Conditions. This scenario identifies the project’s impacts if the EB SR 4 ramps **ARE NOT** relocated. No changes to the local roadway system are assumed. Potentially significant transportation impacts are identified by examining the total growth in traffic in Hercules in 2013. Impacts attributed to the Market Town project are then identified based on trips generated by the project at each impacted intersection compared to those from all new development expected by 2013.



Hercules New Town Center EIR
I-80 / SR-4 Interchange
Baseline Conditions

POTENTIAL IMPACTS AND MITIGATION MEASURES: MARKET TOWN PROJECT

Intersection Impacts

- ◆ **TRAFFIC WOULD INCREASE THROUGH THE SYSTEM OF LOCAL INTERSECTIONS UNDER CUMULATIVE NEAR-TERM (2013) – NO RAMP RELOCATION CONDITIONS.**

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: Table 4.14-15 (Cumulative Near-Term (2013) – No Ramp Relocation Intersection Operations) presents the intersection traffic operations for Cumulative Near-Term (2013) – No Ramp Relocation Conditions. Intersection assumptions and peak hour volumes are presented in Figure 4.14-7a, 4.14-7b (Lane Configurations, Traffic Control, Peak Hour Volumes – Near-Term (2013) Plus Project-No Ramp Relocation AM and PM Peak Hour). As a result of growth in traffic in the City of Hercules and the region, LOS at four intersections would exceed the thresholds of significance established in Section 4.14.6. Each intersection impact, along with its mitigation, amount attributable to the Market Town project and significance statement, are listed below.

**Table 4.14-15
Near-Term (2013) – No Ramp Relocation Intersection Operations**

Intersection	Traffic Control	Peak Hour	LOS ¹ / Delay (seconds/vehicle)		Significant Impact / Mitigation Result ²
			Cumulative Near Term	With Mitigation	
San Pablo/Sycamore/Willow Avenue Corridor (SimTraffic)					
1. Willow Ave/Sycamore Ave	Signal	AM PM	F / 109 E / 67	D / 47 D / 53	Yes / LTS
2. San Pablo Ave/Sycamore Ave	Signal	AM PM	D / 49 F / 83	D / 41 D / 51	Yes / LTS
3. San Pablo Ave/John Muir Pkwy	Signal	AM PM	C / 34 D / 40		No
4. Willow Ave/SR 4 EB Hook Ramps	AWSC ³	AM PM	F / 153 F / >3 min	B / 14 C / 29	Yes / LTS
10. San Pablo Ave/PNR Drwy	Signal	AM PM	B / 11 B / 15		No
Rest of the Study Area (HCM Methods)					
5. Willow Ave/Palm Avenue	AWSC	AM PM	D / 29 E / 46	B / 16 C / 27	Yes / LTS
6. Willow Ave/SR 4 WB On-Ramp	None	AM PM	A / 9 A / 9		No
7. Willow Ave/SR 4 WB Off-Ramp	AWSC	AM PM	B / 11 C / 19		No
8. Palm Ave/Sycamore Ave	AWSC	AM PM	C / 17 C / 20		No
9. Sycamore Ave/SR 4 EB Hook Ramps	AWSC	AM PM	B / 12 A / 8		No
11. TC West Drwy/Willow Ave	SSSC ⁵	AM PM	A / 9 B / 11		No

Intersection	Traffic Control	Peak Hour	LOS ¹ / Delay (seconds/vehicle)		Significant Impact / Mitigation Result ²
			Cumulative Near Term	With Mitigation	
12. TC Bus-Only Drwy/Willow Ave	SSSC	AM PM	B / 11 B / 11		No
13. TC East Drwy/Willow Ave	SSSC	AM PM	C / 22 E / 37		No

Notes:
Bold font indicates unacceptable LOS
¹ LOS = level of service. Delay defined as seconds per vehicle
² "Mitigation Result" is the significance level after mitigation. LTS = "less than significant", SU = "significant and unavoidable".
³ AWSC = all-way stop-control
⁴ SSSC = side-street stop-control
 Source: Fehr & Peers (2008)

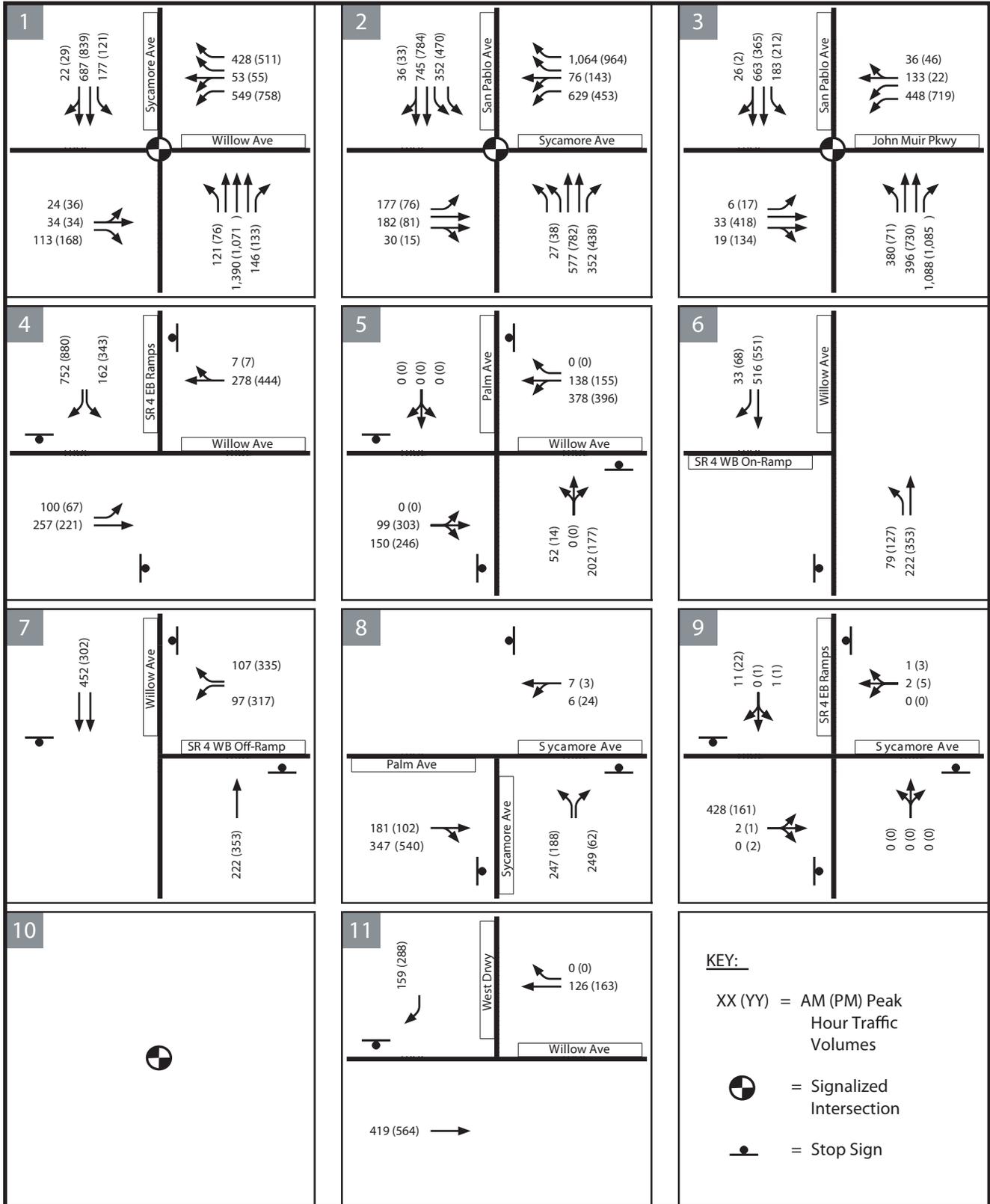
Impact, Mitigation, and Significance Statements: Each of the four significant intersection impacts are listed below from TR1 through TR4 ("TR" for Transportation/Traffic impact). All LOS comparisons are to Baseline Conditions (without the project). Mitigation measures addressing each impact are listed, as well as the effectiveness of the mitigation. Diagrams of the mitigation measures may be found in Figure 4.14-7b above.

Impact TR1: Willow Avenue/Sycamore Avenue intersection operations degrade from LOS E to LOS F during the AM peak hour under Cumulative Near-Term conditions. The Market Town project would contribute between three percent and four percent of total trips. This is considered a Potentially Significant Impact.

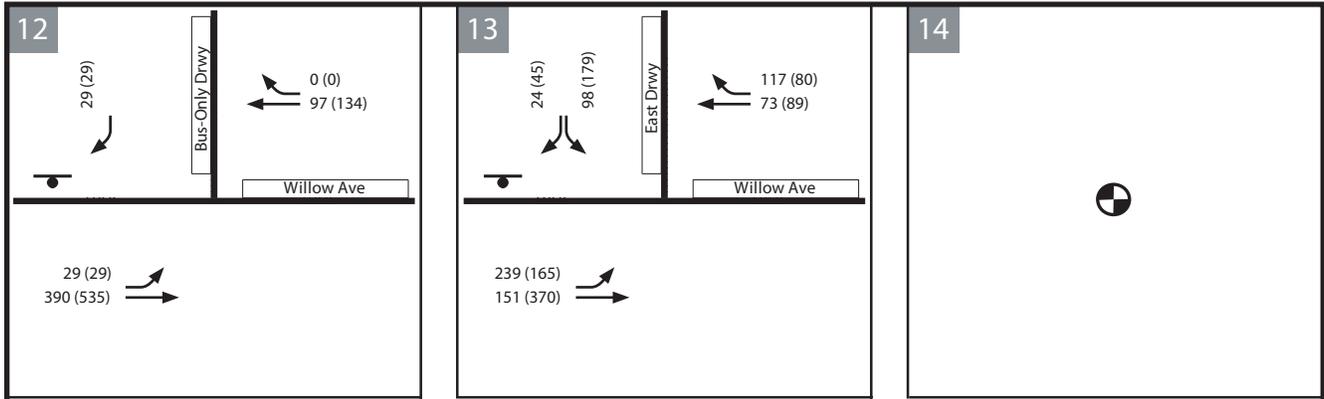
The table below shows the baseline traffic levels and then the estimated contribution of new traffic from both the Market Town project and all other projects expected in the Hercules area by 2013 (identified as "Other Cumulative Traffic" in the table). The percentage of total traffic and new traffic (i.e., traffic associated with the project and other cumulative development) using the intersection is shown in parentheses.

WILLOW AVENUE/SYCAMORE AVENUE: NEAR-TERM NO RAMP RELOCATION		
Source	AM Peak Hour	PM Peak Hour
Baseline Traffic (percent of total)	3,443 (92%)	3,493 (91%)
Other Cumulative Traffic (percent of total / percent of new)	173 (5% / 57%)	176 (5% / 52%)
Project Traffic (percent of total / percent of new)	128 (3% / 43%)	162 (4% / 48%)

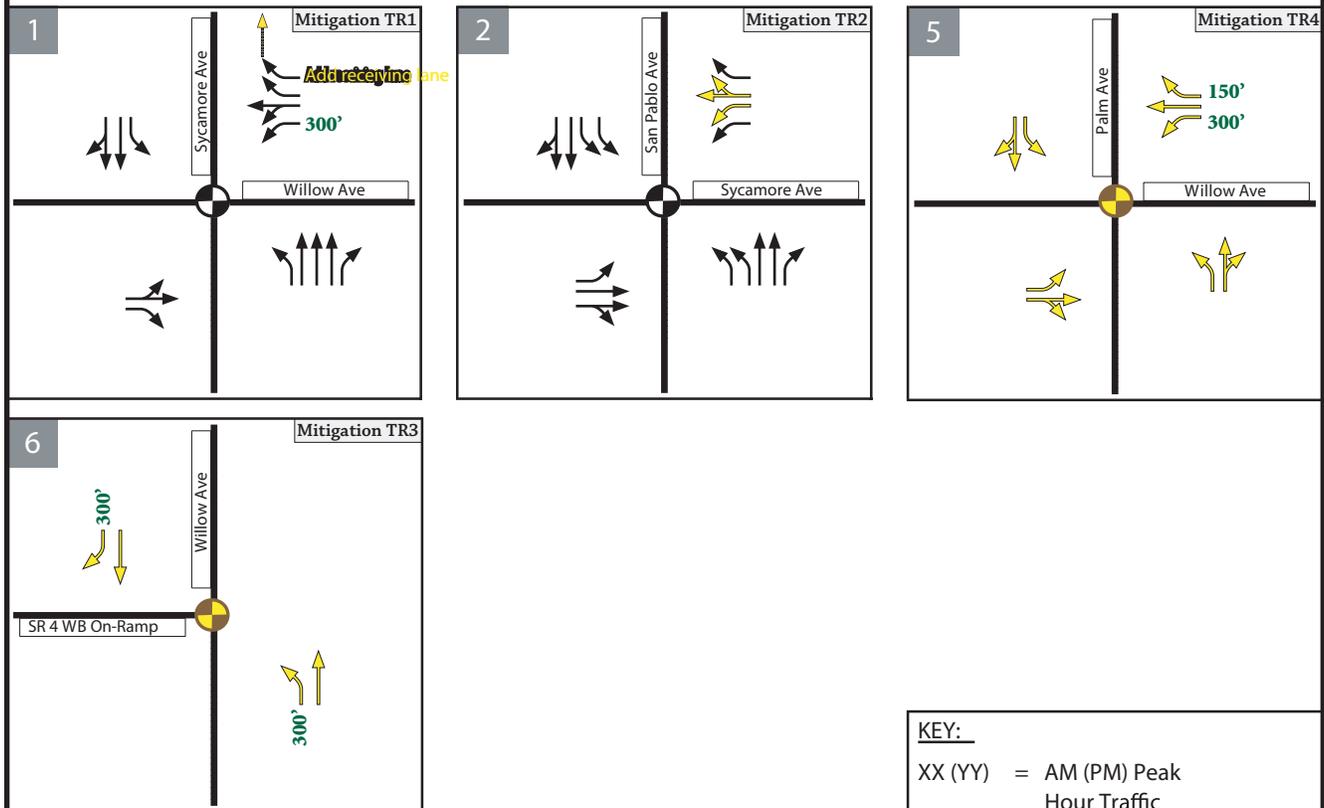
(Note: totals may not add to 100% due to rounding)



Hercules New Town Center EIR
**Lane Configurations, Traffic Control,
 And Peak Hour Volumes Near Term (2013)
 Cumulative-No Ramp Relocation
 AM And PM Peak Hour**



MITIGATION MEASURES



KEY:

- XX (YY) = AM (PM) Peak Hour Traffic Volumes
- = Signalized Intersection
- = Stop Sign
- = Mitigated Lane Geometry
- YYY'** = Turn Pocket Storage Length
- = Mitigated Traffic Signal

**Hercules New Town Center EIR
Lane Configurations, Traffic Control,
And Peak Hour Volumes Near Term (2013)
Cumulative-No Ramp Relocation
AM And PM Peak Hour**

Mitigation TR1: Sycamore Avenue between Willow Avenue and San Pablo Avenue shall be converted from a six-lane to a seven-lane cross-section by widening the PNR frontage on Sycamore Avenue by about 12 feet (the width of one travel lane). The resulting Sycamore Avenue cross-section north of the Willow Avenue/Sycamore Avenue intersection would include one full left-turn lane, one through lane, and one shared through/right-turn lane. In addition, the Willow Avenue WB left-turn storage shall be lengthened from 90 to 300 feet, the speed limit shall be reduced from 35 to 25 mph on Willow Avenue east of Sycamore Avenue, and the Willow Avenue/Sycamore Avenue/San Pablo Avenue traffic signal system shall be optimized. The additional Willow Avenue WB left-turn storage can be achieved by reconstructing the median on Willow Avenue.

The project sponsor shall be responsible for the fair share contribution toward the construction of the proposed mitigation measure as determined by the Development Impact Fee program in effect at the time building permits are issued. As part of the mitigation, the project sponsor shall dedicate sufficient right of way along the PNR site frontage along Sycamore Avenue for the addition of one travel lane (approximately 12 feet). This dedication of right of way shall be taken into consideration when determining fair share Development Impact Fees.

If the fee program is not sufficiently funded to construct the mitigation measure at the time the measure is needed to mitigate the selected project's impact, then the project sponsor shall construct the mitigation measure, and shall be reimbursed for the portion of costs in excess of its fair share contribution.

Level of Significance After Mitigation: Less Than Significant Impact.

Impact TR2: San Pablo Avenue/Sycamore Avenue intersection operations degrade from LOS D to LOS F during the PM peak hour under Cumulative Near-Term conditions. The Market Town project would contribute between three percent and five percent of total trips. This is considered a Potentially Significant Impact.

The table below shows the baseline traffic levels and then the estimated contribution of new traffic from both the Market Town project and all other projects expected in the Hercules area by 2013 (identified as "Other Cumulative Traffic" in the table). The percentage of total traffic and new traffic (i.e., traffic associated with the project and other cumulative development) using the intersection is shown in parentheses.

SYCAMORE AVENUE/SAN PABLO: NEAR-TERM NO RAMP RELOCATION		
Source	AM Peak Hour	PM Peak Hour
Baseline Traffic (percent of total)	3,907 (92%)	3,881 (91%)
Other Cumulative Traffic (percent of total / percent of new)	196 (5% / 58%)	194 (5% / 49%)
Project Traffic (percent of total / percent of new)	144 (3% / 42%)	202 (5% / 51%)
(Note: totals may not add to 100% due to rounding)		

Mitigation TR2: Implement Mitigation Measure TR1. The Sycamore Avenue cross-section at the San Pablo Avenue approach shall be reconfigured to include two left-turn lanes, one shared through/right-turn lane, and one right-turn lane.

The project sponsor shall be responsible for the fair share contribution toward the construction of the proposed mitigation measure as determined by the Development Impact Fee program in effect at the time building permits are issued. If the fee program is not sufficiently funded to construct the mitigation measure at the time the measure is needed to mitigate the selected project’s impact, then the project sponsor shall construct the mitigation measure, and shall be reimbursed for the portion of costs in excess of its fair share contribution.

Level of Significance After Mitigation: Less Than Significant Impact.

Impact TR3: Willow Avenue/SR 4 EB Hook Ramps intersection operations degrade from LOS B or better to LOS F during both the AM and PM peak hours under Cumulative Near-Term conditions. The Market Town project would contribute three percent of total trips. This is considered a Potentially Significant Impact.

The table below shows the baseline traffic levels and then the estimated contribution of new traffic from both the Market Town project and all other projects expected in the Hercules area by 2013 (identified as “Other Cumulative Traffic” in the table). The percentage of total traffic and new traffic (i.e., traffic associated with the project and other cumulative development) using the intersection is shown in parentheses.

WILLOW AVENUE/SR 4 EB HOOK RAMPS: NEAR-TERM NO RAMP RELOCATION		
Source	AM Peak Hour	PM Peak Hour
Baseline Traffic (percent of total)	1,442 (93%)	1,806 (92%)
Other Cumulative Traffic (percent of total / percent of new)	73 (5% / 64%)	89 (5% / 57%)
Project Traffic (percent of total / percent of new)	41 (3% / 36%)	67 (3% / 43%)
(Note: totals may not add to 100% due to rounding)		

Mitigation TR3: The Willow Avenue/SR 4 EB Hook Ramp intersection shall be signalized, a 300-foot WB right-turn pocket from Willow Avenue onto the SR 4 EB On-Ramp shall be installed, and the Willow Avenue EB left-turn lane to the SR 4 EB On-Ramp shall be extended to provide 300 feet of storage. The lane addition and extension would require widening the intersection by 12 to 14 feet.

The project sponsor shall be responsible for the fair share contribution toward the construction of the proposed mitigation measure as determined by the Development Impact Fee program in effect at the time building permits are issued. If the fee program is not sufficiently funded to construct the mitigation measure at the time the measure is needed to mitigate the selected project’s impact, then the project sponsor shall construct the mitigation measure, and shall be reimbursed for the portion of costs in excess of its fair share contribution.

Level of Significance After Mitigation: Less Than Significant Impact.

Impact TR4: Willow Avenue/Palm Avenue intersection operations degrade to LOS E and the peak hour traffic signal warrant is met under Cumulative Near-Term conditions. The Market Town project would contribute between one percent of total trips and 18 percent of new trips. This is considered a Potentially Significant Impact.

The table below shows the baseline traffic levels and then the estimated contribution of new traffic from both the Market Town project and all other projects expected in the Hercules area by 2013 (identified as “Other Cumulative Traffic” in the table). The percentage of total traffic and new traffic (i.e., traffic associated with the project and other cumulative development) using the intersection is shown in parentheses.

WILLOW AVENUE/PALM AVENUE: NEAR-TERM NO RAMP RELOCATION		
Source	AM Peak Hour	PM Peak Hour
Baseline Traffic (percent of total)	958 (94%)	1,217 (94%)
Other Cumulative Traffic (percent of total / percent of new)	50 (5% / 82%)	61 (5% / 82%)
Project Traffic (percent of total / percent of new)	11 (1% / 18%)	13 (1% / 18%)
(Note: totals may not add to 100% due to rounding)		

Mitigation TR4: The Willow Avenue/Palm Avenue intersection shall be signalized and left-turn lanes at each intersection approach shall be provided. The Willow Avenue WB approach shall have one 150-foot right-turn pocket, one through lane, and one 300-foot left-turn lane. The lane additions would require widening the intersection by 12 to 14 feet.

The project sponsor shall be responsible for the fair share contribution toward the construction of the proposed mitigation measure as determined by the Development Impact Fee program in effect at the time building permits are issued. If the fee program is not sufficiently funded to construct the mitigation measure at the time the measure is needed to mitigate the selected project’s impact, then the project sponsor shall construct the mitigation measure, and shall be reimbursed for the portion of costs in excess of its fair share contribution.

Level of Significance After Mitigation: Less Than Significant Impact.

Freeway Facilities Impacts

◆ **TRAFFIC ON REGIONAL FREEWAY FACILITIES WOULD INCREASE UNDER NEAR-TERM (2013) – NO RAMP RELOCATION CONDITIONS.**

Level of Significance Before Mitigation: Less Than Significant Impact

Impact Analysis: Table 4.14-16 (Cumulative Near-Term (2013) – No Ramp Relocation Freeway Operations) presents the freeway traffic operations for Cumulative Near-Term (2013) – No Ramp Relocation Conditions. Freeway assumptions and peak hour volumes are presented in Figure 4.14-8 (I-80/SR 4 Interchange – Near-Term (2013) – No Ramp Relocation Conditions). While HOV lanes on EB and WB I-80 north of SR 4 are assumed constructed under Cumulative Near-Term (2013) Conditions, the freeway analysis does not include the HOV demand volumes or lane capacity in the calculations. Only mixed-flow demand and lane capacity are considered.

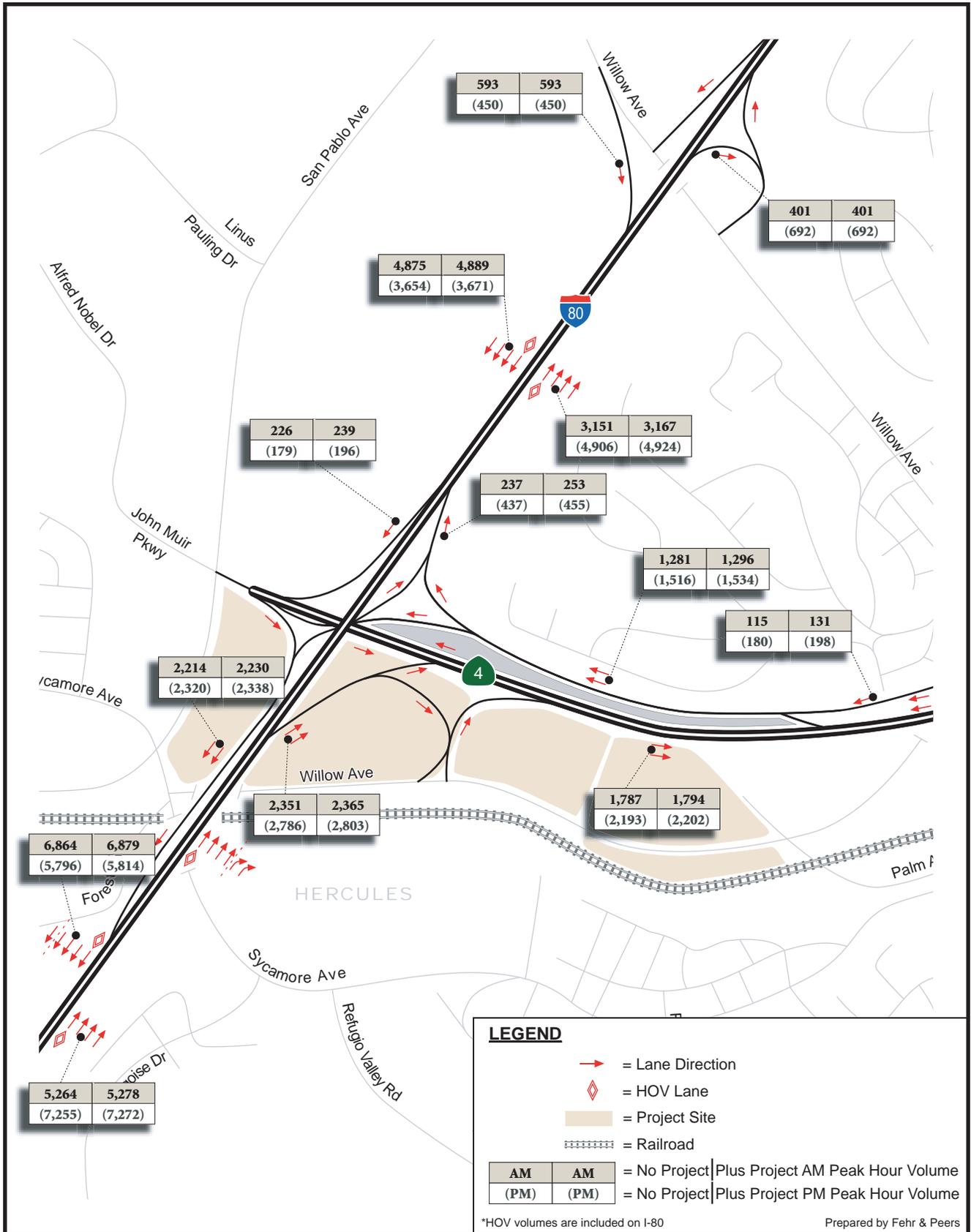
All freeway segments operate below the thresholds of significance established in Section 4.14.6. The Cumulative Near-Term conditions would result in no significant impacts to the freeway system.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

**Table 4.14-16
Near-Term (2013) – No Ramp Relocation Freeway Operations**

Freeway Facility	Facility Type	Peak Hour	LOS ¹ / Density (passenger cars/lane/mile)	Significant Impact
I-80 Facilities				
1. I-80 WB on-ramp from Willow Ave	Merge	AM PM	D / 28 C / 24	No
2. I-80 WB off-ramp to John Muir Pkwy	Diverge	AM PM	E / 39 D / 35	No
3. I-80 WB from SR 4 to Pinole Valley Rd	Weave	AM PM	E E	No
4. I-80 EB from Pinole Valley Road to SR 4	Basic	AM PM	D / 28 E / 37	No
5. I-80 EB off-ramp to EB SR 4 & Willow Ave	Diverge	AM PM	C / 24 C / 27	No
6. I-80 EB on-ramp from SR 4	Merge	AM PM	C / 21 D / 29	No
7. I-80 EB off-ramp to Willow Ave	Diverge	AM PM	C / 25 D / 34	No
SR 4 Facilities				
8. SR 4 WB east of Willow Ave	Basic	AM PM	B / 15 C / 22	No
9. SR 4 WB off-ramp to Willow Ave	Diverge	AM PM	C / 20 C / 27	No
10. SR 4 WB connector to I-80 EB & WB	Basic	AM PM	B / 11 B / 13	No
11. SR 4 EB on-ramp from Willow Ave	Merge	AM PM	B / 14 B / 15	No
12. SR 4 EB from Willow Ave to Sycamore Ave	Basic	AM PM	B / 15 C / 18	No
13. SR 4 EB off-ramp to Sycamore Ave	Diverge	AM PM	C / 20 C / 23	No
Notes:				
¹ LOS = level of service. Density defined as passenger cars per lane per mile.				
Source: Fehr & Peers (2008)				



Hercules New Town Center EIR

**I-80 / SR-4 Interchange Near Term (2013)
No Ramp Relocation Conditions**

CUMULATIVE NEAR-TERM (2013) – WITH RAMP RELOCATION IMPACT ASSESSMENT

This section documents the impacts of the project (Market Town) on the local and regional transportation system under Cumulative Near-Term (2013) – With Ramp Relocation Conditions. This scenario identifies the project’s impacts assuming that the EB SR 4 ramps **ARE** relocated. The relocation of the ramps results in some change to travel patterns along Willow Avenue, Palm Avenue, and Sycamore Avenue. This affects turning movements at some intersections and causes different LOS results. No other changes to the local roadway system are assumed. By allowing a share of existing traffic in Hercules to access the freeways that serve the City without using the most heavily trafficked portions of Sycamore Avenue and San Pablo Avenue, impacts to intersections in this corridor are reduced; however more traffic is added along Willow Avenue near the new ramps.

POTENTIAL IMPACTS AND MITIGATION MEASURES: MARKET TOWN PROJECT

Intersection Impacts

- ◆ ***TRAFFIC THROUGH THE SYSTEM OF LOCAL INTERSECTIONS WOULD INCREASE UNDER CUMULATIVE NEAR-TERM (2013) – WITH RAMP RELOCATION CONDITIONS.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: Table 4.14-17 (Cumulative Near-Term (2013) – With Ramp Relocation Intersection Operations) presents the intersection traffic operations for Cumulative Near-Term (2013) – With Ramp Relocation Conditions. Intersection assumptions and peak hour volumes are presented in Figures 4.14-9a and 4.14-9b (Lane Configurations, Traffic Control, and Peak Hour Volumes – Cumulative Near-Term (2013)– With Ramp Relocation AM and PM Peak Hour), respectively. As a result of growth in traffic in the region and the City of Hercules, LOS at four intersections exceeds the thresholds of significance established in Section 4.14.6. Each intersection impact, along with its mitigation and significance statement, are listed below.

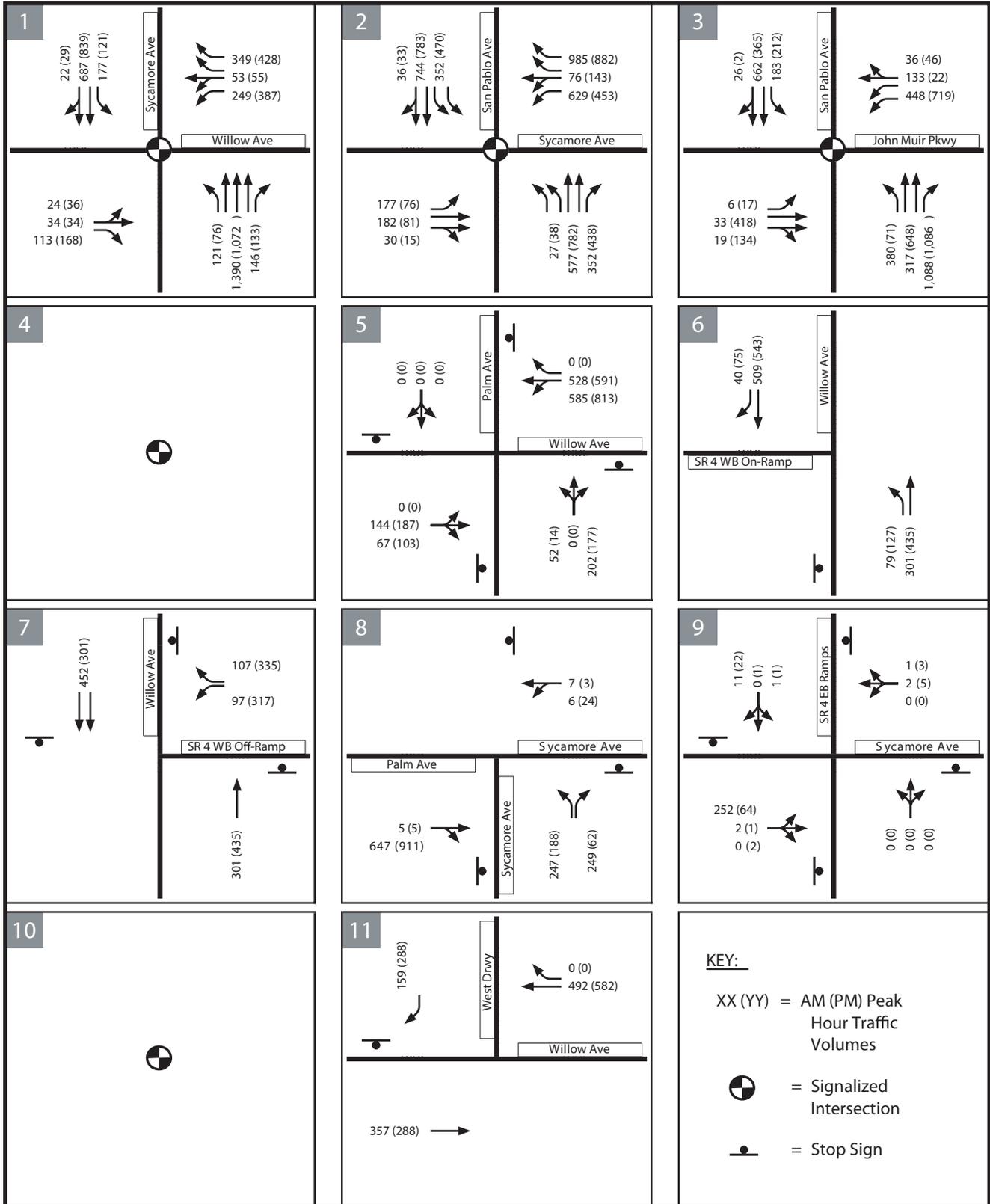
**Table 4.14-17
Near-Term (2013) – With Ramp Relocation Intersection Operations**

Intersection	Traffic Control	Peak Hour	LOS ¹ / Delay (seconds/vehicle)		Significant Impact / Mitigation Result ²
			Cumulative Near Term	With Mitigation	
San Pablo/Sycamore/Willow Avenue Corridor (SimTraffic)					
1. Willow Ave/Sycamore Ave	Signal	AM PM	F / 94 E / 65	D / 38 D / 37	Yes / LTS
2. San Pablo Ave/Sycamore Ave	Signal	AM PM	D / 45 D / 51		No
3. San Pablo Ave/John Muir Pkwy	Signal	AM PM	D / 38 D / 52		No

Intersection	Traffic Control	Peak Hour	LOS ¹ / Delay (seconds/vehicle)		Significant Impact / Mitigation Result ²
			Cumulative Near Term	With Mitigation	
4. Willow Ave/SR 4 EB Hook Ramps	AWSC ³	AM PM	n/a		No
10. San Pablo Ave/PNR Drwy	Signal	AM PM	B / 11 B / 17		No
Rest of the Study Area (HCM Methods)					
5. Willow Ave/Palm Avenue	AWSC	AM PM	F / >3 min F / >3 min	C / 22 C / 25	Yes / LTS
6. Willow Ave/SR 4 WB On-Ramp	None	AM PM	A / 9 B / 10		No
7. Willow Ave/SR 4 WB Off-Ramp	AWSC	AM PM	B / 12 C / 25		No
8. Palm Ave/Sycamore Ave	AWSC	AM PM	D / 26 F / 78	A / 9 A / 7	Yes / LTS
9. Sycamore Ave/SR 4 EB Hook Ramps	AWSC	AM PM	A / 9 A / 7		No
11. TC West Drwy/Willow Ave	SSSC ⁵	AM PM	B / 14 C / 24		No
12. TC Bus-Only Drwy/Willow Ave	SSSC	AM PM	B / 14 C / 16		No
13. TC East Drwy/Willow Ave	SSSC	AM PM	E / 44 F / 65	B / 13 B / 15	Yes / LTS
14. SR 4 Ramps/Willow Avenue	Signal	AM PM	C / 30 D / 53		No
<p>Notes: Bold font indicates unacceptable LOS ¹ LOS = level of service. Delay defined as seconds per vehicle ² "Mitigation Result" is the significance level after mitigation. LTS = "less than significant", SU = "significant and unavoidable". ³ AWSC = all-way stop-control ⁴ SSSC = side-street stop-control Source: Fehr & Peers (2008)</p>					

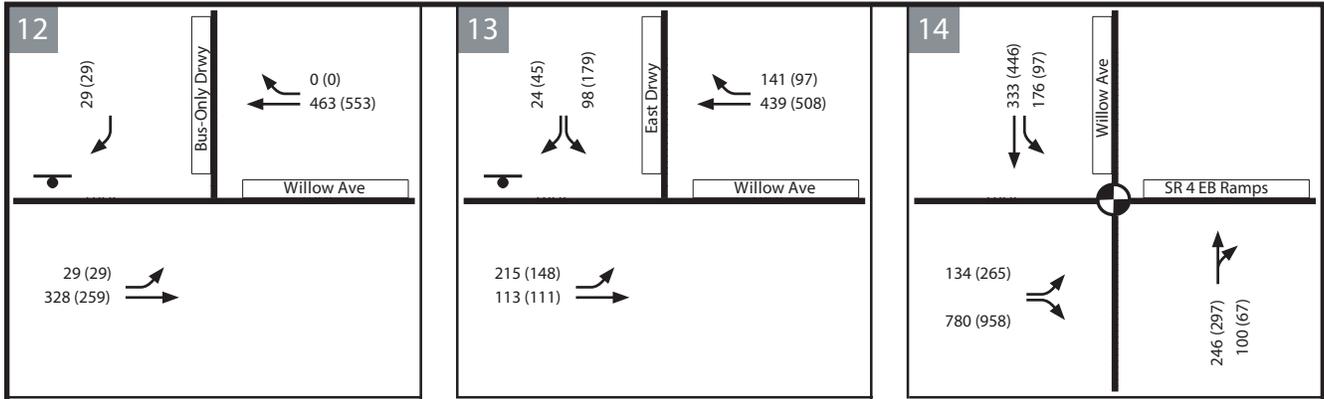
Impact, Mitigation, and Significance Statements: Each of the four significant intersection impacts is listed below from TR5 through TR8. All LOS comparisons are to Baseline Conditions (without the project). Mitigation measures addressing each impact are listed, as well as the effectiveness of the mitigation. Diagrams of the mitigation measures may be found in Figure 4.14-9b above. Many of the mitigation measures overlap with those presented in the No Ramp Relocation impact assessment section above. The overlapping mitigation measures are referenced accordingly.

Impact TR5: Willow Avenue/Sycamore Avenue intersection operations degrade from LOS D to LOS F during the AM peak hour and LOS D to LOS E during the PM peak hour. The Market Town project would contribute five percent of total trips during the AM peak and four percent of total trips during the PM peak. This is considered a Potentially Significant Impact.

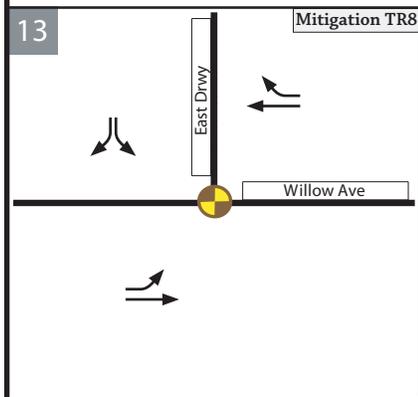
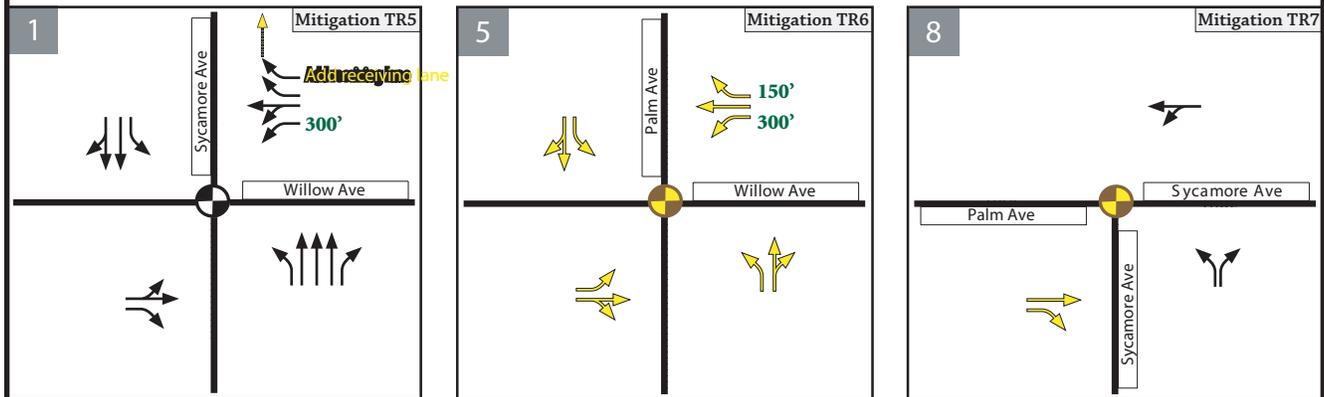


Hercules New Town Center EIR

Lane Configurations, Traffic Control, And Peak Hour Volumes Near Term (2013) Cumulative-With Ramp Relocation AM And PM Peak Hour



MITIGATION MEASURES



KEY:

XX (YY) = AM (PM) Peak Hour Traffic Volumes

⊙ = Signalized Intersection

● = Stop Sign

→ = Mitigated Lane Geometry

YYY' = Turn Pocket Storage Length

⊙ = Mitigated Traffic Signal

Hercules New Town Center EIR

Lane Configurations, Traffic Control, And Peak Hour Volumes Near Term (2013) Cumulative-With Ramp Relocation AM And PM Peak Hour

The table below shows the baseline traffic levels and then the estimated contribution of new traffic from both the Market Town project and all other projects expected in the Hercules area by 2013 (identified as “Other Cumulative Traffic” in the table). The percentage of total traffic and new traffic (i.e., traffic associated with the project and other cumulative development) using the intersection is shown in parentheses.

WILLOW AVENUE/SYCAMORE AVENUE: NEAR-TERM WITH RAMP RELOCATION		
Source	AM Peak Hour	PM Peak Hour
Baseline Traffic (percent of total)	3,064 (90%)	3,040 (90%)
Other Cumulative Traffic (percent of total / percent of new)	173 (5% / 49%)	176 (5% / 54%)
Project Traffic (percent of total / percent of new)	180 (5% / 51%)	150 (4% / 46%)
<small>(Note: totals may not add to 100% due to rounding)</small>		

Mitigation TR5: Implement Mitigation Measure TR1.

Level of Significance After Mitigation: Less Than Significant Impact.

Impact TR6: Cumulative Near-Term Conditions traffic would create unacceptable (LOS F) traffic operations at the Willow Avenue/Palm Avenue intersection during both the AM and PM peak hours. The peak hour traffic signal warrant is also met. The Market Town project would contribute between three percent and four percent of total trips. This is considered a Potentially Significant Impact.

The table below shows the baseline traffic levels and then the estimated contribution of new traffic from both the Market Town project and all other projects expected in the Hercules area by 2013 (identified as “Other Cumulative Traffic” in the table). The percentage of total traffic and new traffic (i.e., traffic associated with the project and other cumulative development) using the intersection is shown in parentheses.

WILLOW AVENUE/PALM AVENUE: NEAR-TERM WITH RAMP RELOCATION		
Source	AM Peak Hour	PM Peak Hour
Baseline Traffic (percent of total)	1,487 (94%)	1,758 (93%)
Other Cumulative Traffic (percent of total / percent of new)	50 (3% / 55%)	61 (3% / 48%)
Project Traffic (percent of total / percent of new)	41 (3% / 45%)	66 (4% / 52%)
(Note: totals may not add to 100% due to rounding)		

Mitigation TR6: Implement Mitigation Measure TR4.

Level of Significance After Mitigation: Less Than Significant Impact.

Impact TR7: Cumulative Near-Term Conditions would create unacceptable (LOS F) traffic operations at the Palm Avenue/Sycamore Avenue intersection during the PM peak hour. The peak hour traffic signal warrant is also met. The Market Town project would contribute one percent of total trips for both the AM and PM peak. This is considered a Potentially Significant Impact.

The table below shows the baseline traffic levels and then the estimated contribution of new traffic from both the Market Town project and all other projects expected in the Hercules area by 2013 (identified as “Other Cumulative Traffic” in the table). The percentage of total traffic and new traffic (i.e., traffic associated with the project and other cumulative development) using the intersection is shown in parentheses.

SYCAMORE AVENUE/PALM AVENUE: NEAR-TERM WITH RAMP RELOCATION		
Source	AM Peak Hour	PM Peak Hour
Baseline Traffic (percent of total)	1,101 (95%)	1,137 (95%)
Other Cumulative Traffic (percent of total / percent of new)	49 (4% / 82%)	43 (4% / 77%)
Project Traffic (percent of total / percent of new)	11 (1% / 18%)	13 (1% / 23%)
(Note: totals may not add to 100% due to rounding)		

Mitigation TR7: The Palm Avenue/Sycamore Avenue intersection shall be signalized and a second lane shall be added at the EB Palm Avenue approach to allow the signal to serve EB Palm Avenue right-turns and NB Sycamore Avenue left-turns concurrently.

The project sponsor shall be responsible for the fair share contribution toward the construction of the proposed mitigation measure as determined by the Development Impact Fee program in effect at the time building permits are issued. If the fee program is not sufficiently funded to construct the mitigation measure at the time the measure is needed to mitigate the selected project’s impact, then the project sponsor shall construct the mitigation measure, and shall be reimbursed for the portion of costs in excess of its fair share contribution.

Level of Significance After Mitigation: Less Than Significant Impact.

Impact TR8: Transit Center East Driveway/Willow Avenue intersection operations would degrade from LOS A during both peak hours to LOS E during the AM peak hour and to LOS F during the PM peak hour under Cumulative Near-Term conditions. The peak hour signal warrant is also met. The Market Town project would contribute between four percent and six percent of total trips. This is considered a Potentially Significant Impact.

The table below shows the baseline traffic levels and then the estimated contribution of new traffic from both the Market Town project and all other projects expected in the Hercules area by 2013 (identified as “Other Cumulative Traffic” in the table). The percentage of total traffic and new traffic (i.e., traffic associated with the project and other cumulative development) using the intersection is shown in parentheses.

WILLOW AVENUE/TC EAST DRIVEWAY: NEAR-TERM WITH RAMP RELOCATION		
Source	AM Peak Hour	PM Peak Hour
Baseline Traffic (percent of total)	955 (93%)	978 (90%)
Other Cumulative Traffic (percent of total / percent of new)	34 (3% / 45%)	44 (4% / 40%)
Project Traffic (percent of total / percent of new)	41 (4% / 55%)	66 (6% / 60%)
<small>(Note: totals may not add to 100% due to rounding)</small>		

Mitigation TR8: The Transit Center East Driveway/Willow Avenue intersection shall be signalized. The proposed design for this intersection (*BART Replacement Facility MND*) already includes EB left-turn and WB right-turn pockets, as well as two lanes out of the Transit Center. Therefore, no additional turn lanes would be required when the traffic signal is installed.

The project sponsor is responsible for the fair share contribution toward the construction of the proposed mitigation measure as determined by the Development Impact Fee program in effect at the time building permits are issued. If the fee program is not sufficiently funded to construct the mitigation measure at the time the measure is needed to mitigate the selected project's impact, then the project sponsor shall construct the mitigation measure, and shall be reimbursed for the portion of costs in excess of its fair share contribution.

Level of Significance After Mitigation: Less Than Significant Impact.

Freeway Facilities Impacts

- ◆ ***TRAFFIC ON REGIONAL FREEWAY FACILITIES WOULD INCREASE UNDER CUMULATIVE NEAR-TERM (2013) – WITH RAMP RELOCATION CONDITIONS.***

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Table 4.14-18 (Cumulative Near-Term (2013) – With Ramp Relocation Freeway Operations) presents the freeway traffic operations for Cumulative Near-Term (2013) – With Ramp Relocation Conditions. Freeway assumptions and peak hour volumes are presented in Figure 4.14-10 (I-80/SR 4 Interchange – Near-Term (2013) – With Ramp Relocation Conditions). This scenario identifies the project's impacts if the EB SR 4 ramps **ARE** relocated.

The relocation of the EB SR 4 ramps does not affect the forecasted travel demand on any freeway or ramp segment within the study area. The relocation of the ramps only affects the classification of segments on EB SR 4. LOS calculations for study segments on I-80 and WB SR 4 match those reported previously in Table 4.14-16 (Cumulative Near-Term (2013) – No Ramp Relocation Freeway Operations).

While HOV lanes on EB and WB I-80 north of SR 4 are assumed constructed under Cumulative Near-Term (2013) Conditions, the freeway analysis does not include the HOV demand volumes or lane capacity in the calculations. Only mixed-flow demand and lane capacity are considered.

All freeway segments operate within the thresholds of significance established in Section 4.14.6. The addition of project traffic would result in no significant impacts to the freeway system.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

**Table 4.14-18
Cumulative Near-Term (2013) – With Ramp Relocation Freeway Operations**

Freeway Facility	Facility Type	Peak Hour	LOS ¹ / Density (passenger cars/lane/mile)	Significant Impact
I-80 Facilities				
1. I-80 WB on-ramp from Willow Ave	Merge	AM PM	D / 28 C / 24	No
2. I-80 WB off-ramp to John Muir Pkwy	Diverge	AM PM	E / 39 D / 35	No
3. I-80 WB from SR 4 to Pinole Valley Rd	Weave	AM PM	E E	No
4. I-80 EB from Pinole Valley Road to SR 4	Basic	AM PM	D / 28 E / 37	No
5. I-80 EB off-ramp to EB SR 4 & Willow Ave	Diverge	AM PM	C / 24 C / 27	No
6. I-80 EB on-ramp from SR 4	Merge	AM PM	C / 21 D / 29	No
7. I-80 EB off-ramp to Willow Ave	Diverge	AM PM	C / 25 D / 34	No
SR 4 Facilities				
8. SR 4 WB east of Willow Ave	Basic	AM PM	B / 15 C / 22	No
9. SR 4 WB off-ramp to Willow Ave	Diverge	AM PM	C / 20. C / 27	No
10. SR 4 WB connector to I-80 EB & WB	Basic	AM PM	B / 11 B / 13	No
11. SR 4 EB on-ramp from Willow Ave	Weave	AM PM	B C	No
12. SR 4 EB from Willow Ave to Sycamore Ave	Merge	AM PM	B / 19 C / 22	No
13. SR 4 EB off-ramp to Sycamore Ave	Diverge	AM PM	C / 21 C / 23	No
Notes:				
¹ LOS = level of service. Density defined as passenger cars per lane per mile.				
Source: Fehr & Peers (2008)				

4.14.9 CUMULATIVE (2035) PLUS PROJECT IMPACT ASSESSMENT

This section documents the impacts of the full buildout of the HNTC program on the local and regional transportation system under Cumulative (2035) Conditions. Potentially significant transportation impacts are identified by comparing the No Project to the Plus Program scenario.

POTENTIAL IMPACTS AND MITIGATION MEASURES: GENERAL PLAN AND ZONING ORDINANCE AMENDMENTS

Intersection Impacts

- ◆ ***DEVELOPMENT OF THE HNTC PROGRAM WOULD INCREASE TRAFFIC THROUGH THE SYSTEM OF LOCAL INTERSECTIONS UNDER CUMULATIVE (2035) CONDITIONS.***

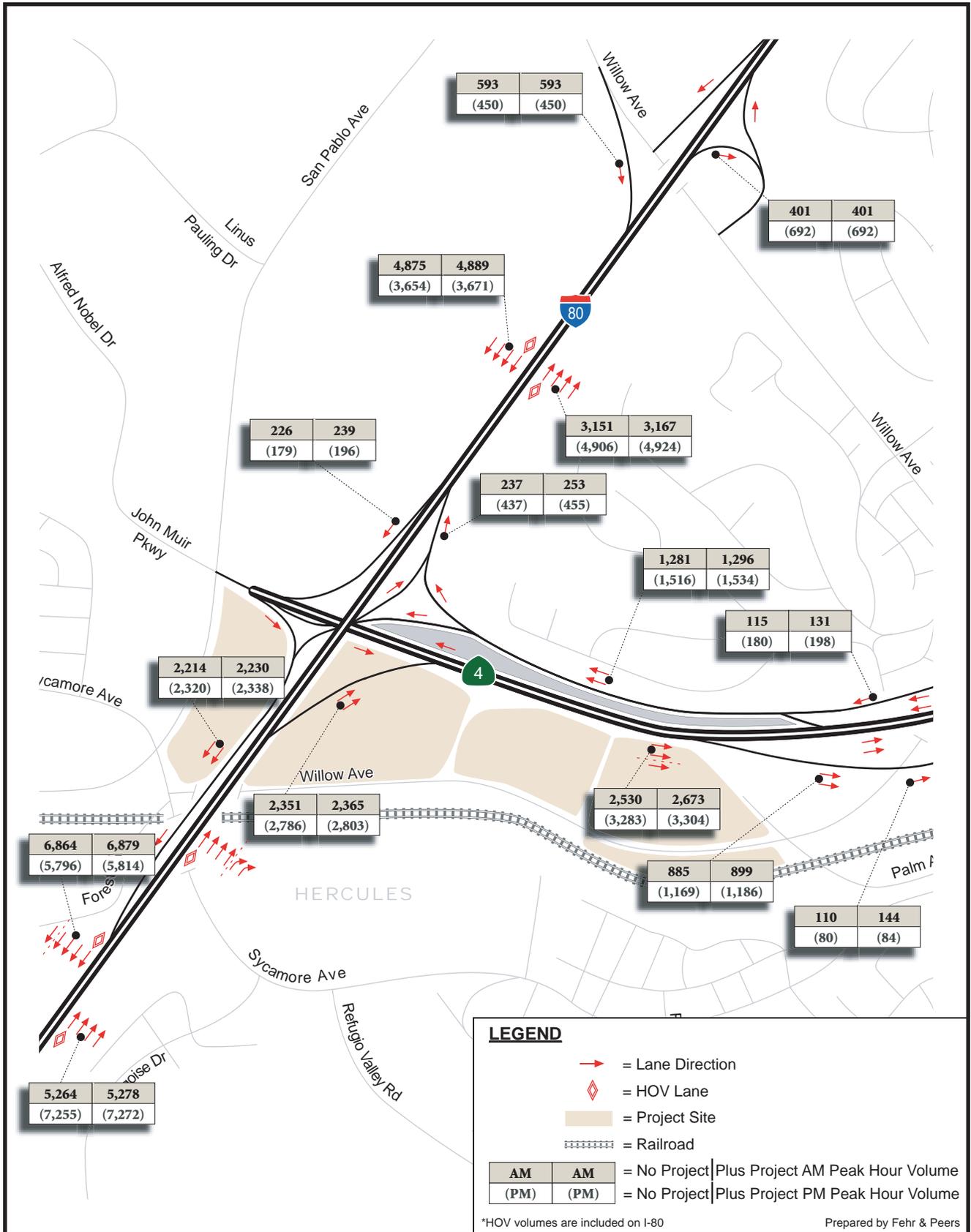
Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: Table 4.14-19 (Cumulative (2035) Intersection Operations) presents the intersection traffic operations for Cumulative (2035) Conditions. Intersection assumptions and peak hour volumes for the No Project and Plus Program scenarios are presented in Figures 4.14-11a and 4.14-11b (Lane Configurations, Traffic Control, and Peak Hour Volumes – Cumulative (2035) No Project Turning Movement Volumes AM and PM Peak Hour), and Figures 4.14-12a and 4.14-12-b (Lane Configurations, Traffic Control, and Peak Hour Volumes – Cumulative (2035) Plus Program Turning Movement Volumes AM and PM Peak Hour), respectively.

The analysis indicates that demand throughout the study area exceeds the capacity of the system under No Project Conditions. The simulation model estimates that only 65 to 70 percent of the forecast traffic demand could be served through the San Pablo Avenue, Sycamore Avenue, and Willow Avenue corridors. This is evident in the very high calculated delay estimates at intersections along these roadways under both the No Project and Plus Program scenarios.

Driver behavior would change as travel delays begin to approach three minutes at intersections. This is why delays exceeding three minutes are not shown on the tables. This level of congestion suggests that drivers would shift modes (walk, bike, transit), shift their trip to an off-peak time (peak hour spreading), choose a different destination, or not make the trip at all. The capacity constraints of the local roadway system heighten the importance of providing adequate pedestrian connectivity through the HNTC planning area.

Seven intersections experience significant impacts in cumulative conditions both with and without the program. Each intersection impact, along with its mitigation and significance statement, are listed below. The traffic operations results for the mitigation measures along San Pablo Avenue, Sycamore Avenue, and Willow Avenue (Mitigation Measures TR9, TR10, TR11 and TR12, below) do not show clear LOS and delay benefits because the system, even with these improvements, would still lack sufficient capacity to meet the forecasted demand. The simulation model estimates that these mitigation measures would increase the forecast traffic demand served to 75 or 80 percent. This is an improvement over the 65 to 70 percent for the network with no mitigation.



Hercules New Town Center EIR

**I-80 / SR-4 Interchange Near Term (2013)
With Ramp Relocation Conditions**

This page intentionally left blank.

**Table 4.14-19
Cumulative (2035) Intersection Operations**

Intersection	Traffic Control	Peak Hour	LOS ¹ / Delay (seconds/vehicle)			Significant Impact / Mitigation Result ²
			No Project	Plus Project	With Mitigation	
San Pablo/Sycamore/Willow Avenue Corridor (SimTraffic)						
1. Willow Ave/Sycamore Ave	Signal	AM PM	F />3 min F />3 min	F />3 min F />3 min	F />3 min F />3 min	Yes / SU
2. San Pablo Ave/Sycamore Ave	Signal	AM PM	F />3 min F />3 min	F />3 min F />3 min	F />3 min F />3 min	Yes / SU
3. San Pablo Ave/John Muir Pkwy	Signal	AM PM	F />3 min F />3 min	F />3 min F />3 min	F />3 min F />3 min	Yes / SU
10. San Pablo Ave/PNR Drwy	Signal	AM PM	C / 30 F / 89	F />3 min F />3 min	F />3 min F />3 min	Yes / SU
Rest of the Study Area (HCM Methods)						
5. Willow Ave/Palm Avenue	AWSC ³	AM PM	F / 169 F />3 min	F / 187 F />3 min	B / 19 C / 26	Yes / LTS
6. Willow Ave/SR 4 WB On-Ramp	None	AM PM	A / 2 A / 5	A / 2 A / 5		No
7. Willow Ave/SR 4 WB Off-Ramp	AWSC	AM PM	A / 6 B / 14	A / 6 B / 14		No
8. Palm Ave/Sycamore Ave	AWSC	AM PM	C / 22 F / 110	C / 23 F / 114	A / 9 B / 17	Yes / LTS
9. Sycamore Ave/SR 4 EB Hook Ramps	AWSC	AM PM	B / 10 A / 9	B / 10 A / 9		No
11. TC West Drwy/Willow Ave	SSSC ⁵	AM PM	B / 12 C / 18	B / 13 C / 19		No
12. TC Bus-Only Drwy/Willow Ave	SSSC	AM PM	A / 9 B / 12	B / 12 B / 12		No
13. TC East Drwy/Willow Ave	SSSC	AM PM	F / 105 F />3 min	F />3 min F / 87	B / 11 B / 12	Yes / LTS
14. SR 4 Ramps/Willow Avenue	Signal	AM PM	C / 20 C / 23	C / 21 C / 25		No
Notes: Bold font indicates unacceptable LOS ¹ LOS = level of service. Delay defined as seconds per vehicle ² "Mitigation Result" is the significance level after mitigation. LTS = "less than significant", SU = "significant and unavoidable". ³ AWSC = all-way stop-control ⁴ SSSC = side-street stop-control Source: Fehr & Peers (2008)						

Impact, Mitigation, and Significance Statements: Each of the seven intersections discussed below would experience significant impacts with or without the HNTC program. The HNTC program would exacerbate these impacts as described under TR9 through TR15. Diagrams of recommended mitigation measures to partially alleviate cumulative impacts may be found in Figure 4.14-12b. Mitigation measures addressing each impact are listed, as well as the effectiveness of the mitigation and the relative responsibility of the NTC Program.

Impact TR9: Without the HNTC program, the Willow Avenue/Sycamore Avenue intersection would experience unacceptable (LOS F) traffic conditions during both the AM and PM peak hour. The addition of traffic from

the NTC program would exacerbate the traffic conditions at the intersection by adding between five percent and six percent of total trips. This is considered a Potentially Significant Impact.

The table below shows the baseline traffic levels and then the estimated contribution of new traffic from both the Hercules New Town Center program and all other projects expected in the Hercules area by 2013 (identified as “Other Cumulative Traffic” in the table). The percentage of total traffic and new traffic (i.e., traffic associated with the project and other cumulative development) using the intersection is shown in parentheses.

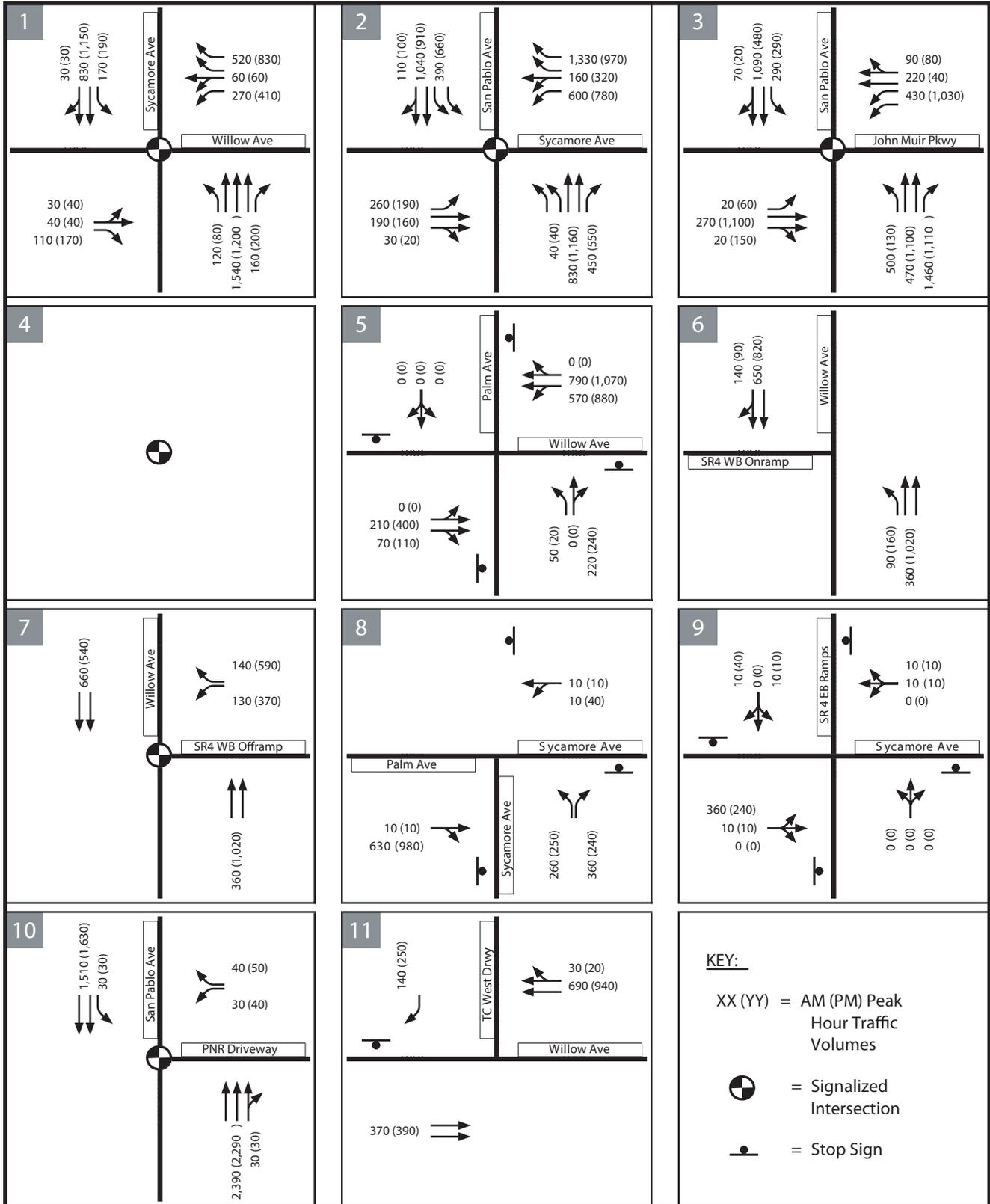
WILLOW AVENUE/SYCAMORE AVENUE: 2035 CUMULATIVE		
Source	AM Peak Hour	PM Peak Hour
Baseline Traffic (percent of total)	3,443 (84%)	3,493 (75%)
Other Cumulative Traffic (percent of total / percent of new)	437 (11% / 66%)	907 (20% / 79%)
Program Traffic (percent of total / percent of new)	230 (6% / 34%)	240 (5% / 21%)
(Note: totals may not add to 100% due to rounding)		

Mitigation TR9: Implement Mitigation Measure TR 1.

Level of Significance After Mitigation: Significant and Unavoidable Impact.

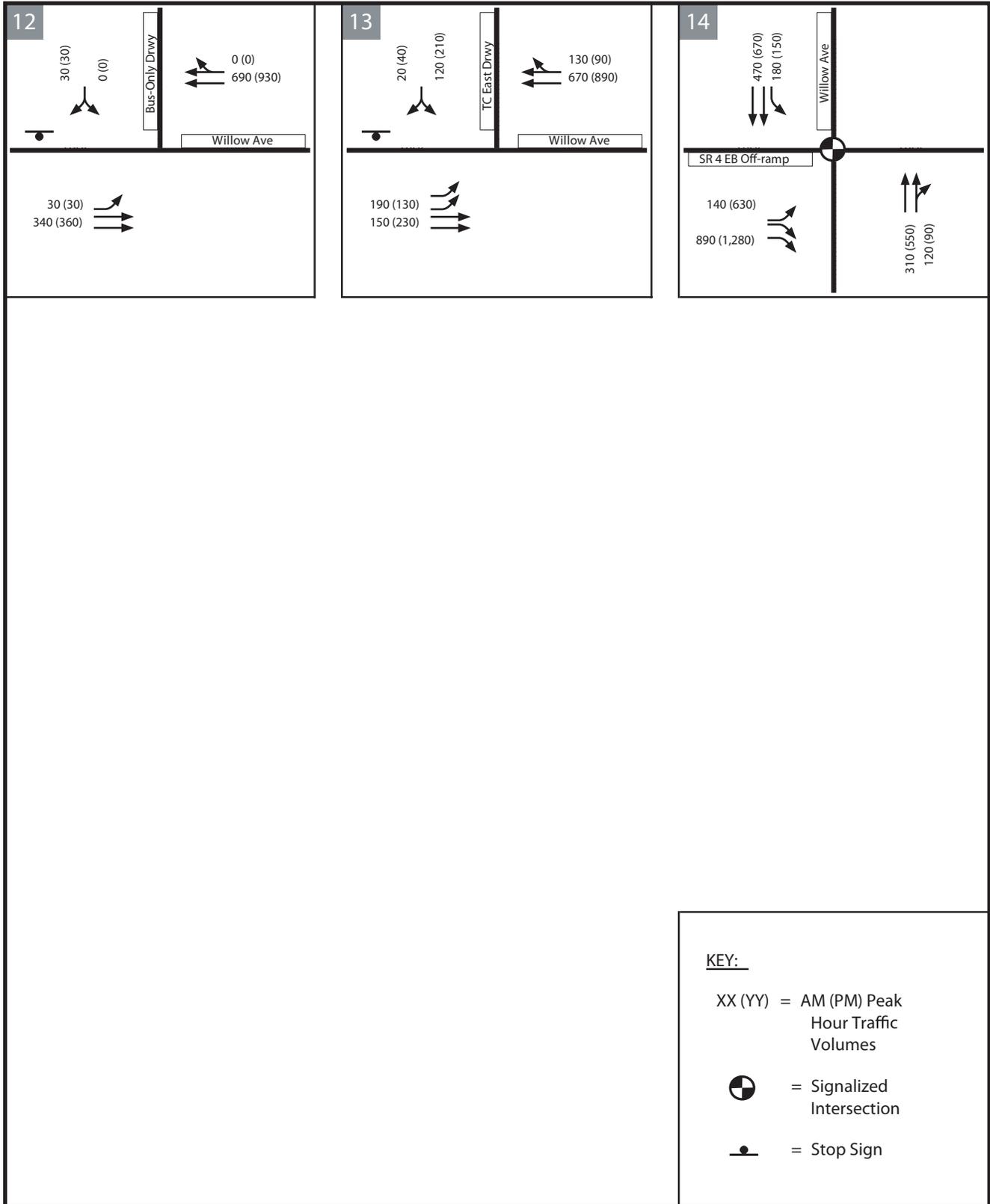
Impact TR10: Without the HNTC program, the San Pablo Avenue/Sycamore Avenue intersection would experience unacceptable (LOS F) traffic conditions during both the AM and PM peak hour. The addition of traffic from the NTC program would exacerbate the LOS F traffic conditions at the intersection by adding between three percent and four percent of total trips and only ten percent of new trips. This is considered a Potentially Significant Impact.

The table below shows the baseline traffic levels and then the estimated contribution of new traffic from both the Hercules New Town Center program and all other projects expected in the Hercules area by 2013 (identified as “Other Cumulative Traffic” in the table). The percentage of total traffic and new traffic (i.e., traffic associated with the project and other cumulative development) using the intersection is shown in parentheses.

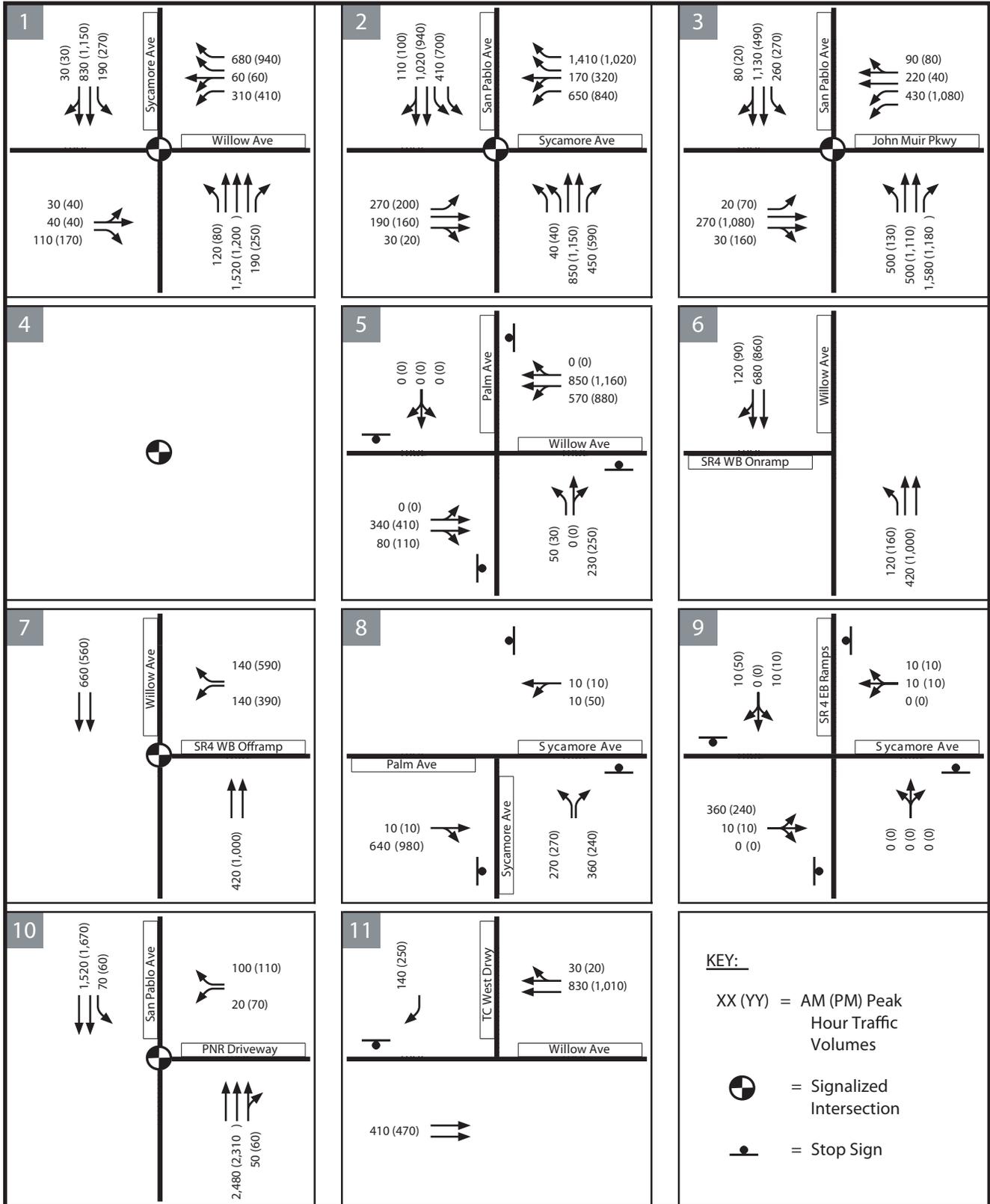


Hercules New Town Center EIR

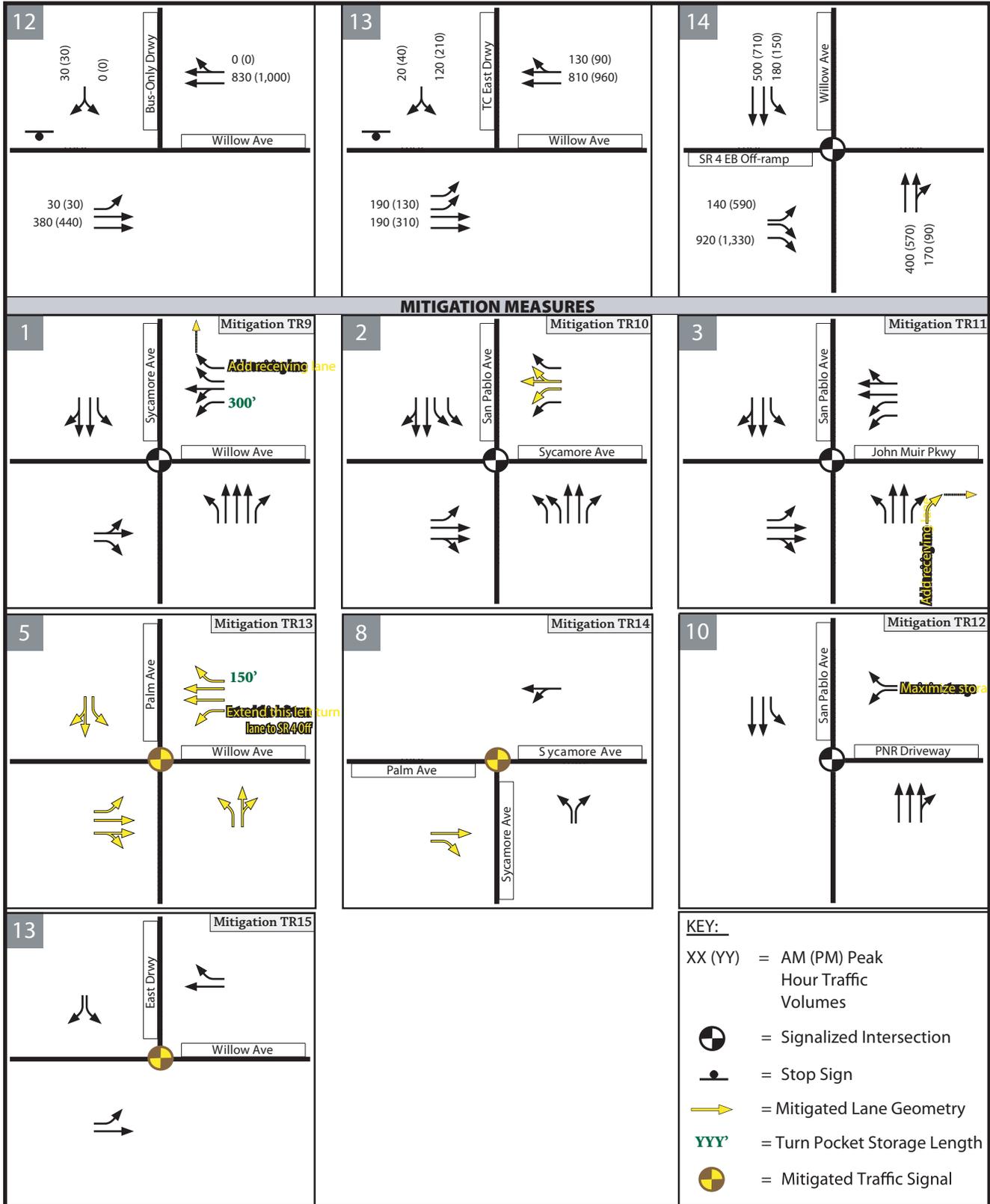
Lane Configurations, Traffic Control, And Peak Hour Volumes Cumulative (2035) No Project Turning Movement Volumes AM And PM Peak Hour



Hercules New Town Center EIR
**Lane Configurations, Traffic Control,
 And Peak Hour Volumes Cumulative (2035)
 No Project Turning Movement
 Volumes AM And PM Peak Hour**



Hercules New Town Center EIR
**Lane Configurations, Traffic Control,
 And Peak Hour Volumes Cumulative (2035)
 Plus Program Turning Movement
 Volumes AM And PM Peak Hour**



Hercules New Town Center EIR
Lane Configurations, Traffic Control,
And Peak Hour Volumes Cumulative (2035)
Plus Program Turning Movement
Volumes AM And PM Peak Hour

SAN PABLO AVENUE/SYCAMORE AVENUE: 2035 CUMULATIVE		
Source	AM Peak Hour	PM Peak Hour
Baseline Traffic (percent of total)	3,907 (70%)	3,881 (64%)
Other Cumulative Traffic (percent of total / percent of new)	1,523 (27% / 90%)	1,979 (33% / 90%)
Program Traffic (percent of total / percent of new)	170 (3% / 10%)	220 (4% / 10%)
(Note: totals may not add to 100% due to rounding)		

Mitigation TR10: Implement Mitigation Measure TR2.

Level of Significance After Mitigation: Significant and Unavoidable Impact.

Impact TR11: Without the HNTC program, the San Pablo Avenue/John Muir Parkway intersection would experience unacceptable (LOS F) traffic conditions during both the AM and PM peak hour. The addition of traffic from the NTC program would exacerbate the LOS F traffic conditions at the intersection by adding between one percent and four percent of total trips. This is considered a Potentially Significant Impact.

The table below shows the baseline traffic levels and then the estimated contribution of new traffic from both the Hercules New Town Center program and all other projects expected in the Hercules area by 2013 (identified as “Other Cumulative Traffic” in the table). The percentage of total traffic and new traffic (i.e., traffic associated with the project and other cumulative development) using the intersection is shown in parentheses.

SAN PABLO AVENUE/JOHN MUIR PARKWAY: 2035 CUMULATIVE		
Source	AM Peak Hour	PM Peak Hour
Baseline Traffic (percent of total)	3,081 (60%)	3,468 (61%)
Other Cumulative Traffic (percent of total / percent of new)	1,849 (36% / 91%)	2,122 (37% / 95%)
Program Traffic (percent of total / percent of new)	180 (4% / 9%)	120 (2% / 5%)
(Note: totals may not add to 100% due to rounding)		

Mitigation TR11: A second right-turn lane shall be provided from NB San Pablo Avenue to EB John Muir Parkway. The second right-turn lane shall be extended along the PNR frontage to the San Pablo Avenue/PNR Driveway intersection. The project applicant should dedicate the needed right of way for this additional lane. EB John Muir Parkway shall be widened to four lanes from San Pablo Avenue to the SR 4 and I-80 ramps. This widened segment of John Muir Parkway would allow the two NB San Pablo Avenue right-turn lanes to have exclusive receiving lanes that serve the I-80 WB On-Ramp. This would also require widening the I-80 WB On-Ramp from one to two lanes.

The project sponsor is responsible for the fair share contribution toward the construction of the proposed mitigation measure as determined by the Development Impact Fee program in effect at the time building permits are issued. As part of the mitigation, the project sponsor shall dedicate sufficient right of way along the PNR site frontage along San Pablo Avenue for the addition of one right-turn lane (approximately 12 feet). This dedication of right of way shall be taken into consideration when determining fair share development impact fees.

If the fee program is not sufficiently funded to construct the mitigation measure at the time the measure is needed to mitigate the selected project's impact, then the project sponsor shall construct the mitigation measure, and shall be reimbursed for the portion of costs in excess of its fair share contribution.

Level of Significance After Mitigation: Significant and Unavoidable Impact.

Impact TR12: Without the HNTC program, the San Pablo Avenue/PNR Driveway intersection would experience unacceptable (LOS F) traffic conditions during both the AM and PM peak hour. The addition of traffic from the NTC program would exacerbate the LOS F traffic conditions at the intersection by adding five percent of total trips through the intersection and only between 15 percent and 17 percent of new trips. This is considered a Potentially Significant Impact.

The table below shows the baseline traffic levels and then the estimated contribution of new traffic from both the Hercules New Town Center program and all other projects expected in the Hercules area by 2013 (identified as "Other Cumulative Traffic" in the table). The percentage of total traffic and new traffic (i.e., traffic associated with the project and other cumulative development) using the intersection is shown in parentheses.

SAN PABLO AVENUE/PNR DRIVEWAY: 2035 CUMULATIVE		
Source	AM Peak Hour	PM Peak Hour
Baseline Traffic (percent of total)	2,885 (68%)	3,032 (71%)
Other Cumulative Traffic (percent of total / percent of new)	1,145 (27% / 85%)	1,038 (24% / 83%)
Program Traffic (percent of total / percent of new)	210 (5% / 15%)	210 (5% / 17%)
(Note: totals may not add to 100% due to rounding)		

Mitigation TR12: At least one left-turn and one right-turn lane shall be provided at the PNR Driveway (WB) approach. Additional mitigation at this intersection is not possible given the closely spaced intersections along San Pablo Avenue (at John Muir Parkway and Sycamore Avenue), right-of-way constraints, and the PNR frontage on San Pablo Avenue.

The project sponsor shall be responsible for constructing this mitigation.

Level of Significance After Mitigation: Significant and Unavoidable Impact.

Impact TR13: Without the HNTC program, the Willow Avenue/Palm Avenue intersection would experience unacceptable (LOS F) traffic conditions during both the AM and PM peak hour. The addition of traffic from the NTC program would exacerbate the LOS F traffic conditions at the intersection by adding ten percent of total AM peak trips and four percent of total PM peak trips. This is considered a Potentially Significant Impact.

The table below shows the baseline traffic levels and then the estimated contribution of new traffic from both the Hercules New Town Center program and all other projects expected in the Hercules area by 2013 (identified as “Other Cumulative Traffic” in the table). The percentage of total traffic and new traffic (i.e., traffic associated with the project and other cumulative development) using the intersection is shown in parentheses.

WILLOW AVENUE/PALM AVENUE: 2035 CUMULATIVE		
Source	AM Peak Hour	PM Peak Hour
Baseline Traffic (percent of total)	958 (45%)	1,217 (43%)
Other Cumulative Traffic (percent of total / percent of new)	952 (45%)	1,503 (53%)
Program Traffic (percent of total / percent of new)	210 (10% / 18%)	120 (4% / 7%)
<small>(Note: totals may not add to 100% due to rounding)</small>		

Mitigation TR13: Willow Avenue shall be widened to a four lane cross section, the Willow Avenue/Palm Avenue intersection shall be signalized, and provide left-turn lanes shall be provided at each intersection approach. The Willow Avenue WB left-turn lane shall be continued to the EB SR 4 Off-Ramp intersection.

The project sponsor is responsible for the fair share contribution toward the construction of the proposed mitigation measure as determined by the Development Impact Fee program in effect at the time building permits are issued. If the fee program is not sufficiently funded to construct the mitigation measure at the time the measure is needed to mitigate the selected project’s impact, then the project sponsor shall construct the mitigation measure, and shall be reimbursed for the portion of costs in excess of its fair share contribution.

Level of Significance After Mitigation: Less Than Significant Impact.

Impact TR14: Without the HNTC program, the Palm Avenue/Sycamore Avenue intersection would experience unacceptable (LOS F) traffic conditions during the PM peak hour. The addition of traffic from the NTC program would exacerbate the LOS F traffic conditions at the intersection by adding only two percent of total trips and between four percent and six percent of new trips. This is considered a Potentially Significant Impact.

The table below shows the baseline traffic levels and then the estimated contribution of new traffic from both the Hercules New Town Center program and all other projects expected in the Hercules area by 2013 (identified as “Other Cumulative Traffic” in the table). The percentage of total traffic and new traffic (i.e., traffic associated with the project and other cumulative development) using the intersection is shown in parentheses.

SYCAMORE AVENUE/PALM AVENUE: 2035 CUMULATIVE		
Source	AM Peak Hour	PM Peak Hour
Baseline Traffic (percent of total)	977 (75%)	863 (55%)
Other Cumulative Traffic (percent of total / percent of new)	303 (23% / 94%)	667 (43% / 96%)
Program Traffic (percent of total / percent of new)	20 (2% / 6%)	30 (2% / 4%)
(Note: totals may not add to 100% due to rounding)		

Mitigation TR14: Implement Mitigation Measure TR7.

Level of Significance After Mitigation: Less Than Significant Impact.

Impact TR15: Without the HNTC program, the Willow Avenue/Transit Center East Driveway intersection would experience unacceptable (LOS F) traffic conditions during the AM peak hour. The addition of traffic from the NTC program would exacerbate the LOS F traffic conditions at the intersection by adding between nine percent and 12 percent of total trips. This is considered a Potentially Significant Impact.

The table below shows the baseline traffic levels and then the estimated contribution of new traffic from both the Hercules New Town Center program and all other projects expected in the Hercules area by 2013 (identified as “Other Cumulative Traffic” in the table). The percentage of total traffic and new traffic (i.e., traffic associated with the project and other cumulative development) using the intersection is shown in parentheses.

WILLOW AVENUE/TC EAST DRIVEWAY: 2035 CUMULATIVE		
Source	AM Peak Hour	PM Peak Hour
Baseline Traffic (percent of total)	657 (45%)	871 (50%)
Other Cumulative Traffic (percent of total / percent of new)	623 (43% / 78%)	719 (41% / 83%)
Program Traffic (percent of total / percent of new)	180 (12% / 22%)	150 (9% / 17%)
(Note: totals may not add to 100% due to rounding)		

Mitigation TR15: Implement Mitigation Measure TR8.

Level of Significance After Mitigation: Less Than Significant Impact.

Freeway Facilities Impacts

- ◆ **DEVELOPMENT OF THE HNTC PROGRAM WOULD INCREASE TRAFFIC ON REGIONAL FREEWAY FACILITIES UNDER CUMULATIVE (2035) CONDITIONS.**

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: Table 4.14-20 (Cumulative (2035) Freeway Operations) presents the freeway traffic operations for Cumulative (2035) Conditions. Figure 4.14-13 (I-80/SR 4 Interchange – Cumulative (2035) Conditions) presents the freeway assumptions and peak hour volumes for the No Project and Plus Program scenarios. While HOV lanes on EB and WB I-80 north of SR 4 are assumed constructed in the freeway analysis, the freeway analysis does not include the HOV demand volumes or lane capacity in the calculations. Only mixed-flow demand and lane capacity are considered. Potentially Significant Impacts to the regional freeway system are identified by comparing the No Project to the Plus Program scenario.

The analysis indicates that the addition of traffic from the HNTC Program would result in significant impacts to two segments of the freeway system. These are listed below.

Impact, Mitigation, and Significance Statements: The analysis indicates that the addition of traffic from the HNTC program would result in significant impacts to two segments of the freeway system. These freeway impacts are listed as TR16 and TR17.

Impact TR16: The addition of traffic from the HNTC program would exacerbate unacceptable (LOS F) traffic operations on the I-80 WB weave section from the SR 4 on-ramp to the Pinole Valley Road off-ramp. This is considered a Potentially Significant Impact.

Mitigation TR16: There are no feasible mitigation measures that can be recommended at this time.

Level of Significance After Mitigation: Significant and Unavoidable Impact.

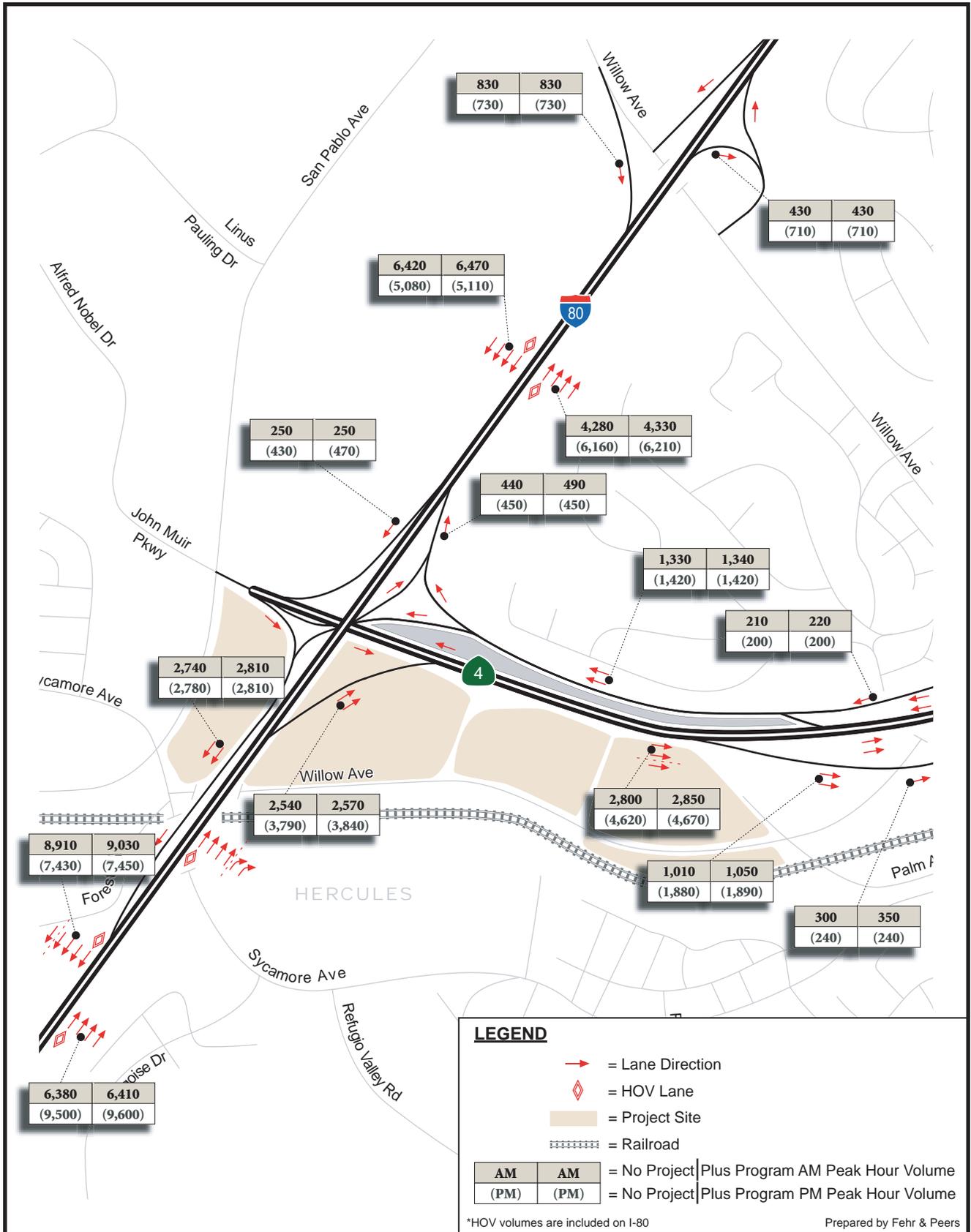
Impact TR17: The addition of traffic from the HNTC program would exacerbate unacceptable (LOS F) traffic operations on the I-80 EB mainline freeway segment from Pinole Valley Road to the SR 4 EB connector ramp. This is considered a Potentially Significant Impact.

Mitigation T17: There are no feasible mitigation measures that can be recommended at this time.

Level of Significance After Mitigation: Significant and Unavoidable Impact.

**Table 4.14-20
Cumulative (2035) Freeway Operations**

Freeway Facility	Facility Type	Peak Hour	LOS ¹ / Density (passenger cars/lane/mile)		Significant Impact / Mitigation Result ²
			No Project	Plus Program	
I-80 Facilities					
1. I-80 WB on-ramp from Willow Ave	Merge	AM PM	E / 37 D / 32	E / 39 D / 33	No
2. I-80 WB off-ramp to John Muir Pkwy	Diverge	AM PM	E / 55 E / 43	E / 55 E / 44	No
3. I-80 WB from SR 4 to Pinole Valley Rd	Weave	AM PM	F F	F F	Yes / SU
4. I-80 EB from Pinole Valley Road to SR 4	Basic	AM PM	D / 31 F / >45	D / 31 F / >45	Yes / SU
5. I-80 EB off-ramp to EB SR 4 & Willow Ave	Diverge	AM PM	C / 23 E / 36	C / 23 E / 36	No
6. I-80 EB on-ramp from SR 4	Merge	AM PM	C / 28 E / 36	C / 28 E / 37	No
7. I-80 EB off-ramp to Willow Ave	Diverge	AM PM	D / 33 E / 40	D / 34 E / 40	No
SR 4 Facilities					
8. SR 4 WB east of Willow Ave	Basic	AM PM	C / 19 C / 24	C / 19 C / 24	No
9. SR 4 WB off-ramp to Willow Ave	Diverge	AM PM	C / 25 D / 30	C / 25 D / 31	No
10. SR 4 WB connector to I-80 EB & WB	Basic	AM PM	B / 11 B / 12	B / 12 B / 12	No
11. SR 4 EB from I-80 connector to Willow Ave off-ramp	Weave	AM PM	B E	C E	No
12. SR 4 EB new on-ramp from Willow Ave	Merge	AM PM	C / 22 D / 29	C / 22 D / 29	No
13. SR 4 EB off-ramp to Sycamore Ave	Diverge	AM PM	C / 23 D / 31	C / 24 D / 31	No
Notes: Bold font indicates unacceptable traffic operations. ¹ LOS = level of service. Density defined as passenger cars per lane per mile. ² "Mitigation Result" is the significance level after mitigation. LTS = "less than significant", SU = "significant and unavoidable". Source: Fehr & Peers (2008)					



Hercules New Town Center EIR
I-80 / SR-4 Interchange
Cumulative (2035) Conditions

MULTI-MODAL TRANSPORTATION SYSTEMS IMPACT ASSESSMENT

This section documents the impacts of the Market Town project and the HNTC program on transit, pedestrian, and bicycle modes. The impacts of the Market Town project are evaluated for Cumulative Near-Term (2013) Conditions, while the HNTC program impacts are evaluated under Cumulative (2035) Conditions.

POTENTIAL IMPACTS AND MITIGATION MEASURES: MARKET TOWN PROJECT

Transit Impacts

- ◆ ***DEVELOPMENT OF THE MARKET TOWN PROJECT WOULD INCREASE TRANSIT ACTIVITY IN THE VICINITY OF THE PLANNING AREA.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: The project (Market Town) proposes a mixed-use/high density development in close proximity to the new transit center on the C1 parcel. Locating more residential, commercial, and office uses near the new transit center would increase transit ridership.

The traffic operations results presented in Sections 4.14.9 (Near-Term (2013) Cumulative – No Ramp Relocation Impact Assessment) and 4.14.10 (Near-Term (2013) Cumulative – With Ramp Relocation Impact Assessment) indicate that the addition of project traffic would result in several intersection impacts on local streets. Bus routes using the new transit center would have to traverse many of these impacted intersections (e.g., Willow Avenue/Sycamore Avenue, San Pablo Avenue/Sycamore Avenue, San Pablo Avenue/John Muir Parkway) to access San Pablo Avenue and I-80. This would increase bus run times on many routes. The increase in transit travel times exceeds the thresholds of significance established in Section 4.14.6 (Thresholds of Significance).

Impact, Mitigation, and Significance Statements: The analysis indicates that the addition of traffic from the project (Market Town) and other development in the City of Hercules and the region would result in a significant impact to transit system operations.

Impact TR18: The addition of traffic from the project (Market Town) causes several local intersection impacts, which would cause bus run times to increase on many routes. This could affect the reliability of scheduled bus arrivals and departures, reduce utilization, and negatively impact the travel experience of transit riders. This is considered a Potentially Significant Impact.

Mitigation TR18: Implement Mitigations Measures TR1, TR2, TR3, TR4, TR7 and TR8. All of these mitigation measures would benefit bus travel times through the affected study area.

Additional actions to help lessen the transit travel time effects could include some of the following:

- Provide bus transponders and traffic signal equipment that allow for signal preemption at major intersections along San Pablo Avenue and Sycamore Avenue, in order to allow transit vehicles to progress through the intersections with less delay, provided overall traffic flows are not worsened.
- Re-route buses and update schedules to reflect the changes in travel time and retain opportunities for timed transfers at the HTC. This may include reducing dwell times or layover times at the new HTC or other stops.
- Increase the number of buses on certain routes.
- Provide real-time information systems at the HTC and other major stops that rely on accurate bus location information. Such information could be provided to all web users via services such as NextBus (currently used by AC Transit and Muni).
- Provide enhanced scheduling software.

Level of Significance After Mitigation: Less Than Significant Impact.

Pedestrian and Bicycle Impacts

- ◆ ***DEVELOPMENT OF THE MARKET TOWN PROJECT WOULD INCREASE PEDESTRIAN AND BICYCLE ACTIVITIES ADJACENT TO AND WITHIN THE SITE.***

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Mixed-use TODs, such as the Market Town project, typically generate more pedestrian and bicycle activity than single-use suburban developments. TODs are higher density developments that feature a mixing of land use types (e.g., residential units adjacent to retail shopping) that are easily accessible by non-motorized travel modes (e.g., transit, walking, and bicycle). Placing complimentary land uses within a development allows users to satisfy multiple activities in one location, while adequate sidewalk and transit connectivity allows users to easily access multiple destinations without driving. These characteristics necessitate careful design of multi-modal systems within and connecting to the site(s).

The Project Initial Planned Development Plan (IPDP) defines typical street cross-sections and design guidelines for bike lanes and sidewalks. Bike lanes are defined for the roads adjacent to the site(s) including Willow Avenue, Sycamore Avenue, and San Pablo Avenue. Minimum six-foot sidewalks are also shown along these streets. Project and program consistency with the applicable standards as they relate to transportation infrastructure would ensure that pedestrian and bicycle impacts would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

POTENTIAL IMPACTS AND MITIGATION MEASURES: GENERAL PLAN AND ZONING ORDINANCE AMENDMENTS

Transit Impacts

- ◆ ***DEVELOPMENT OF THE HNTC PROGRAM WOULD INCREASE TRANSIT ACTIVITY IN THE VICINITY OF THE PLANNING AREA.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: The HNTC program proposes a mixed-use “transit-oriented development” (TOD) that is built around a centrally located bus/transit center on the C1 parcel. The location of mixed-use/high density development in close proximity to the transit center would greatly increase transit ridership.

However, the traffic operations results presented in Section 4.14.11 (Cumulative (2035) Plus Program Impact Assessment) indicate that considerable congestion on local streets would occur under Cumulative (2035) Conditions. The analysis indicates that the addition of traffic from the full buildout of the HNTC program would exacerbate this level of congestion and cause seven Significant and Unavoidable Impacts at many critical intersections within the City. Bus routes using the new transit center would have to traverse many of these congested and impacted intersections (e.g., Willow Avenue/Sycamore Avenue, San Pablo Avenue/Sycamore Avenue, San Pablo Avenue/John Muir Parkway) to access San Pablo Avenue and I-80. This would increase bus run times on many routes. The increase in transit travel times exceeds the thresholds of significance established in Section 4.14.6 (Thresholds of Significance).

Impact, Mitigation, and Significance Statements: The analysis indicates that the addition of traffic from the HNTC program would result in a significant impact to transit system operations.

Impact TR19: The No Project scenario would create unacceptable (LOS F) traffic conditions at several intersections in the City. The addition of traffic from the HNTC program would exacerbate congestion through the local street system, which would cause bus run times to increase on many routes. This could affect the reliability of scheduled bus arrivals and departures, reduce utilization, and negatively impact the travel experience of transit riders. This is considered a Potentially Significant Impact.

Mitigation TR19: Implement Mitigations Measures TR1, TR2, TR8, TR11, TR12 and TR13. All of these mitigation measures would benefit bus travel times through the affected study area.

Additional actions to help lessen the transit travel time effects could include some of the following:

- Provide bus transponders and traffic signal equipment that allow for signal preemption at major intersections along San Pablo Avenue and Sycamore Avenue, in

order to allow transit vehicles to progress through the intersections with less delay, provided overall traffic flows are not worsened.

- Re-route buses and update schedules to reflect the changes in travel time and retain opportunities for timed transfers at the HTC. This may include reducing dwell times or layover times at the new HTC or other stops.
- Increase the number of buses on certain routes.
- Provide real-time information systems at the HTC and other major stops that rely on accurate bus location information. Such information could be provided to all web users via services such as NextBus (currently used by AC Transit and Muni).
- Provide enhanced scheduling software.

Level of Significance After Mitigation: Significant and Unavoidable Impact.

Pedestrian and Bicycle Impacts

- ◆ ***DEVELOPMENT OF THE HNTC PROGRAM WOULD INCREASE PEDESTRIAN AND BICYCLE ACTIVITIES ADJACENT TO AND WITHIN THE SITE.***

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: Mixed-use TODs, such as the HNTC, typically generate more pedestrian and bicycle activity than single-use suburban developments. TODs are higher density developments that feature a mixing of land use types (e.g., residential units adjacent to retail shopping) that are easily accessible by non-motorized travel modes (e.g., transit, walking, and bicycle). Placing complimentary land uses within a development allows users to satisfy multiple activities in one location, while adequate sidewalk and transit connectivity allows users to easily access multiple destinations without driving. These characteristics necessitate careful design of multi-modal systems within and connecting to the site(s).

The Initial Planned Development Plan (IPDP) for Market Town defines typical street cross-sections and design guidelines for sidewalks. Bike lanes are defined for the roads adjacent to the site(s) including Willow Avenue, Sycamore Avenue, and San Pablo Avenue. Minimum sidewalk widths of between five and 12 feet are also shown along these streets. The FPDP for Market Town is consistent with the standards in the identified in the IPDP. In addition, the proposed NTC zoning district has standards for street connectivity, block length and open spaces that promote walking and cycling. Project and program consistency with the applicable standards as they relate to transportation infrastructure would ensure that pedestrian and bicycle impacts would be less than significant.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

4.14.10 PARKING ANALYSIS

This section documents the parking impacts of the Market Town project and the HNTC program. The impacts of the Market Town project are evaluated for the Initial Planned Development Plan (IPDP) and the Final Planned Development Plan (FPDP) for the Market Town project and the maximum amount of development evaluated for the proposed NTC land use designation and zoning district. The parking ratios used to calculate parking demand for each land use type are provided in Section 4.14.6 (Thresholds of Significance).

POTENTIAL IMPACTS AND MITIGATION MEASURES: MARKET TOWN PROJECT

Parking Impacts

- ◆ ***DEVELOPMENT OF THE MARKET TOWN PROJECT WOULD INCREASE DEMAND FOR PARKING.***

Level of Significance Before Mitigation: Potentially Significant Impact.

Impact Analysis: The proposed parking for the project (Market Town) was evaluated by first estimating the required parking using the ratios from the Zoning Ordinance and then calculating the maximum amount of parking required based on the proposed development program in the IPDP and FPDP. The required parking was then compared to the project’s proposed supply of residential and non-residential spaces identified in the Final Planned Development Plan. This was done since the IPDP identifies the maximum amount of development allowed on the site while the FPDP provides specific information on the amount of development in the proposed project. Table 4.14-21A (Market Town IPDP Parking Analysis) presents the results of the parking analysis for the maximum amount of development in identified in the IPDP (Market Town). Table 4.14-21B (Market Town FPDP Parking Analysis) presents an analysis of the parking in the FPDP.

**Table 4.14-21A
Market Town IPDP Parking Analysis**

Land Use	Units	Quantity	From Zoning Ordinance	
			Minimum Parking Ratios	Minimum Parking Required
Multi-Family	DU ¹	400	2.0 per DU	800
Retail	SF ²	60,000	4.0 per 1,000 sf	240
Office	SF	80,000	3.0 per 1,000 sf	240
Notes: ¹ DU = dwelling unit ² sf = square feet Source: City of Hercules, <i>Zoning Ordinance</i> , (January 9, 2007); Fehr & Peers, (2007).				

**Table 4.14-21B
Market Town FPDP Parking Analysis**

Land Use	Units	Quantity	From Zoning Ordinance		Market Town FPDP	Difference
			Minimum Parking Ratios	Minimum Parking Required	Parking Spaces	
Multi-Family	DU ¹	320	2.0 per DU	640	526	-114
Retail	SF ²	56,000	4.0 per 1,000 sf	224	236 (structured + 15 surface) = 251	+27
Office	SF	80,000	3.0 per 1,000 sf	240	240	0

Notes:
¹ DU = dwelling unit
² sf = square feet
 Source: City of Hercules, *Zoning Ordinance*, (January 9, 2007); Fehr & Peers, (2007).

The parking analysis for the FPDP indicates that there would be a total deficiency of 87 parking spaces for the project, which would be a potentially significant impact. Implementation of any of the three actions described in Mitigation Measure TR20 would reduce the impact to a less than significant level.

Mitigation Measure:

Mitigation TR20: Prior to issuance of building permits for the Market Town project, one of the following actions shall be taken:

- Plans submitted for building permits shall provide an additional 87 parking spaces on-site.
- A shared parking agreement between users in the Market Town project shall be prepared for review and approval of the Planning Division. The NTC zoning district allows projects in the NTC district to create shared parking arrangements between users in order to reduce the total number of parking spaces required. This could be combined with the first option above.
- The City is currently in the process of developing a revised parking ordinance for the Central Hercules Area and this parking ordinance would apply to the Market Town project. In its current form, the Draft Ordinance is proposing reductions in the minimum parking ratios. If the Parking Ordinance is approved prior to the approval of building permits, then the Market Town project could provide the amount of parking in the new ordinance. This amount may be lower than the overall parking required in the Zoning Ordinance.

Level of Significance After Mitigation: Less Than Significant Impact.

POTENTIAL IMPACTS AND MITIGATION MEASURES: GENERAL PLAN AND ZONING ORDINANCE AMENDMENTS

Parking Impacts

- ◆ **DEVELOPMENT OF THE HNTC PROGRAM WOULD INCREASE DEMAND FOR PARKING.**

Level of Significance Before Mitigation: Less Than Significant Impact.

Impact Analysis: The proposed parking for the HNTC program was evaluated by estimating the required parking using the ratios from the Zoning Ordinance and the maximum amount of development assumed in the NTC district. Table 4.14-22 (HNTC Program Parking Analysis) presents the results of the parking analysis for the HNTC program. The land use totals in Table 4.14-22 include all of the parcels in the HNTC planning area.

**Table 4.14-22
HNTC Program Project Parking Analysis**

Land Use	Units	Quantity	From Zoning Ordinance	
			Minimum Parking Ratios	Minimum Parking Required
Multi-Family	DU ¹	1,650	2.0 per DU	3,300
Retail	SF ²	320,000	4.0 per 1,000 sf	1,280
Office	SF	196,250	3.0 per 1,000 sf	588
Notes: ¹ DU = dwelling unit ² sf = square feet Source: City of Hercules, <u>Zoning Ordinance</u> , (January 9, 2007); Fehr & Peers, (2007).				

The parking analysis indicates that there would be 3,300 residential and 1,868 non-residential parking spaces required as part of the NTC district to meet the assumed development program presented in the project description (Chapter 3). Since this is a program-level analysis, a specific number of parking spaces are not required at this time. Future projects within the NTC district would need to be evaluated based on the proposed minimum parking ratios in the Zoning Ordinance. Thus, the current standards are considered adequate.

Mitigation Measures: No mitigation required.

Level of Significance After Mitigation: Not applicable.

5.0 CUMULATIVE AND GROWTH INDUCING IMPACTS

5.1 INTRODUCTION

Section 15130 of the California Environmental Quality Act Guidelines (*CEQA Guidelines*) requires that an EIR include a discussion of cumulative impacts “...when the project’s incremental effect is cumulatively considerable, as defined in [*CEQA Guidelines* Section 15065(c)].” Cumulatively considerable effects are those “...incremental effects of an individual project that are significant when viewed in conjunction with the effects of past projects, the effects of other current projects, and the effects of probable future projects.” (*CEQA Guidelines* Section 15065(c)) A lead agency need not consider every incremental effect as “cumulatively considerable,” but does need to briefly describe the basis for concluding that the incremental effect is not a cumulatively considerable contribution to a cumulatively significant impact.

“The discussion of cumulative impacts shall reflect the severity of impacts and their likelihood of occurrence, but the discussion need not provide as great [a level of] detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact.” (*CEQA Guidelines* Section 15130(b))

This chapter also analyzes the potential environmental consequences of the foreseeable growth and development that could be induced by implementation of the proposed project. Section 15126(d) of the *CEQA Guidelines* requires that the growth-inducing effects of a proposed project be addressed in an EIR. The evaluation of whether a project would result in growth-inducing effects focuses on the consideration of factors outlined in Section 15126.2(d) of the *CEQA Guidelines*, which are described below in Section 5.4.

5.2 CUMULATIVE IMPACTS ANALYSIS METHODOLOGY

For the cumulative impacts analysis, the City compiled base year (2005) land use data and then developed land use projections for the year 2035 as this is the expected time horizon for buildout of the City of Hercules General Plan (General Plan). The land use projections include all approved and pending projects within the City as well as a significant amount of speculative development that may occur over the next 30 years. This conservative approach was utilized to ensure that the analysis does not understate future cumulative impacts.

Among the projects included in the land use projections are the Hercules Waterfront, Hilltown and Hercules Crossing projects. In addition, the Sycamore North project, expansion of the Victoria by the Bay Business Park, a significant expansion of the Bio-Rad campus, and redevelopment of the major shopping centers in the City are included in the projections.

The cumulative impacts analysis included the following total amount of growth in the City; the percentage from the Hercules New Town Center (HNTC) planning area is identified in parentheses:

- 7,192 single-family homes (0%)
- 6,592 multifamily homes (25%)
- 6,618 retail and office jobs (17%)
- 1,888 industrial/trade jobs (0%)

Overall, development within the HNTC planning area represents a relatively small percentage of overall growth in the City through 2035.

Analysis of cumulative impacts requires estimation in many cases, because specific quantification of impacts is not always possible, due to variations in the status and timing of projects and environmental conditions that may exist when cumulative projects are developed. CEQA notes that the discussion of cumulative impacts should be guided by standards of practicality and reasonableness (*CEQA Guidelines* Section 15130 (b)). As such, this analysis addresses impacts that might compound or interrelate with those of the proposed project.

5.3 ANALYSIS OF CUMULATIVE IMPACTS

5.3.1 LAND USE AND PLANNING

Implementation of the proposed project would amend the General Plan and Zoning Ordinance to create a "New Town Center" (NTC) land use designation and zoning district that would apply to the HNTC planning area. The proposed project would not result in any cumulative land use impacts, as future development within the planning area would undergo the City's project review process in order to preclude potential land use compatibility issues and planning policy conflicts. Development within the HNTC planning area would progress in accordance with the criteria outlined in the NTC land use designation and zoning district, which would ensure that the goals, objectives, and policies outlined for the planning area are consistently upheld.

5.3.2 AESTHETICS

Aesthetic impacts are typically project-specific in nature. Section 4.3 (Aesthetics) of this EIR identified one significant construction-related aesthetic impact associated with the future development of the HNTC planning area. However, implementation of a mitigation measure that would require construction sites within the HNTC planning area to be maintained, cleaned, and screened would reduce potential impacts to a less than significant level. Under full buildout of the General Plan, new development could occur adjacent to the HNTC planning area, but these potential developments would be visually separated from the planning area by terrain, existing structures, and vegetation, as well as surrounding urban development. The proposed project would result in less than significant cumulative aesthetic impacts.

5.3.3 AIR QUALITY

Section 4.4 (Air Quality) analyzes cumulative air quality impacts that would occur with implementation of the proposed project. Refer to Section 4.4 for a discussion of cumulative air quality impacts.

5.3.4 BIOLOGICAL RESOURCES

In conjunction with past and future development projects within the City, the project's future conversion of developed, ruderal, wetlands, and baccharis scrub to urban development and the potential placement of fill material in drainages and seeps within the planning area would incrementally add to the loss of special-status species habitat (e.g., California red-legged frog and White-tailed kite as well as common avian species and bat species) and wetlands. As identified in Section 4.5 (Biological Resources), the proposed project would have potentially significant impacts on these resources and mitigation measures are identified to avoid, minimize, and compensate for these impacts. Given that project specific mitigation measures would reduce impacts associated with the loss of wetlands and special-status species habitat to less than significant, no additional mitigation for cumulative impacts is required.

5.3.5 CULTURAL RESOURCES

As identified in Section 4.6 (Cultural Resources), the planning area contains no known prehistoric, historic, or paleontological resources. However, due to the planning area's proximity to the north fork of the Refugio Creek, there is a moderate potential for Native American sites to be present. Section 4.6 recommends mitigation to reduce potential project impacts on the site to less than significant, including measures to reduce impacts on any unknown cultural resources that may be discovered during project construction (e.g., grading). No cumulative impacts to cultural resources have been identified and the cultural resource impacts of other pending and approved projects in the City would be assessed and mitigated on a project-by-project basis. Therefore, the project's cumulative impact on cultural and historic resources would be less than significant.

5.3.6 GEOLOGY AND SOILS

Cumulative impacts to geology and soils include short-term increases in erosion due to excavation, backfilling, and grading activities. It is anticipated that these impacts would be mitigated on a project-by-project basis by enforcing erosion protection measures. Implementation of the proposed project could expose residents and structures to geologic and seismically related hazards within the planning area, particularly liquefaction and expansive soils. However, with implementation of the mitigation measures described in Section 4.7 (Geology and Soils), and with future development of the planning area incorporating design features, including adherence to the California Building Code (which establishes minimum building standards and thresholds based on the geologic and seismic conditions of the region in which a project is located), and to other local and state standards, potential cumulative geology and soils impacts would be reduced to less than significant.

5.3.7 HAZARDS AND HAZARDOUS MATERIALS

The proposed project would not contribute to cumulative impacts related to hazards and hazardous materials based on the nature of the proposed uses (residential, commercial and retail). However, the Phase I Environmental Site Assessment (ESA) conducted for the C1, Loop, Ramp, Caltrans, Carone, and WC Drilling parcels established the varying presence of potentially hazardous materials throughout the HNTC planning area. Implementation of mitigation measures described in Section 4.8 (Hazards and Hazardous Materials) would

reduce potential project-related exposure to hazardous materials to a less than significant level. Therefore, the project's cumulative impact on hazards and hazardous materials would also be less than significant.

5.3.8 HYDROLOGY AND WATER QUALITY

Section 4.9 (Hydrology and Water Quality) identified mitigation measures that would reduce the planning area's impacts on hydrology and water quality to less than significant. Moreover, future development within the HNTC planning area would be required to comply with Clean Water Act provisions, National Pollutant Discharge Elimination System permit requirements and the Contra Costa Clean Water Program best management practices, which, when combined with mitigation measures in Section 4.9, would result in projects having a limited contribution to adverse cumulative water quality effects. Projects identified in Table 5-1 would also be required to comply with federal, state, and local water quality standards. Therefore, the project's contribution to cumulative hydrology and water quality impacts would be less than significant.

5.3.9 NOISE

Section 4.10 (Noise) analyzes cumulative noise impacts that would occur with implementation of the proposed project. Refer to Section 4.10 for a discussion of cumulative noise impacts.

5.3.10 POPULATION AND HOUSING

The proposed project, in combination with other approved, pending, and future projects, would directly and indirectly induce population growth. According to the Association of Bay Area Governments (ABAG), the City's current population is approximately 23,975 and is expected to increase to approximately 27,500 by the year 2020, resulting in an increase of 3,525 people between 2007 and 2020. The General Plan projects that full buildout will occur when the City's population grows to 29,927 residents, which would occur around the year 2035. The proposed Market Town project and future development within the HNTC planning would increase the City's population by approximately 3,482 persons. The projected growth in population due to project implementation represents approximately 58 percent of the total growth expected in the General Plan. However, the project would result in an increase in population that has been contemplated and identified by the City via its General Plan growth estimates. Consequently, cumulative impacts to population and housing are not anticipated.

5.3.11 RECREATION

Development of the HNTC planning area and implementation of the proposed project would increase the City's population by 3,482 persons. The City currently provides adequate open space and neighborhood parks, but does not provide adequate community parks. However, the City is proposing the future development of a 26-acre community park and four-acre neighborhood park, which would address the City's need for additional recreational facilities and reduce regional demand generated by the City. With the addition of these parks, the City would have adequate park space for the current population as well as future

development within the HNTC planning area and Market Town project. The proposed project as well as other approved, pending, and future projects would be required to pay a park and recreation facilities impact fee that would off-set potential cumulative impacts. Cumulative recreation impacts would not result.

5.3.12 PUBLIC SERVICES, UTILITIES, AND SERVICE SYSTEMS

The Rodeo–Hercules Fire District (RHFD) and City of Hercules Police Department currently serve the planning area. The RHFD has identified the need for additional personnel and equipment to service the proposed project as well as other approved, pending, and future projects. Additional facilities would not be required to accommodate growth within the planning area and the City; however, current facilities would need to be updated or modified to accommodate the additional personnel. The Citywide Public Facilities and Services Financing Plan anticipated this growth and need for additional fire personnel and equipment and identifies required resources needed to provide adequate fire service to the City, as well as the City’s ability to procure the required resources. Future development within the City would be required to pay a fair share contribution toward needed public facilities and services.

Although the proposed project would increase the City's population, it would not create a substantial additional demand (approximately one percent) for law enforcement services. Implementation of the project would increase the demand on public schools within the West Contra Costa Unified School District; however, the project would pay its fair share in fees for schools.

While the project would increase demand for fire, police, and schools, the proposed project would not contribute to any cumulative impacts on these services because the project would pay its fair share in fees for schools, and would meet all the local and state code requirements for fire and police protection.

The service providers (wastewater, water, and solid waste) in the City were contacted directly in preparation of this EIR. They analyzed the project's effects on their systems in light of other approved, pending, and future development projects. The Pinole–Hercules Wastewater Treatment Plant, East Bay Municipal Utility District (EBMUD), and the Potrero Hills Landfill have planned for future growth consistent with the City’s General Plan. In all cases, infrastructure and community service providers have indicated that the proposed project could be accommodated through existing and planned systems and/or entitlements when taken into consideration with planned future growth consistent with the General Plan. Therefore, no cumulative impacts to public services, utilities, and service systems would result from the proposed project.

5.3.13 TRANSPORTATION/TRAFFIC

Section 4.14 (Transportation/Traffic) analyzes cumulative traffic impacts that would occur with the implementation and buildout of the proposed planning area. Refer to Section 4.14 for a discussion of cumulative transportation/traffic impacts.

5.4 GROWTH INDUCING IMPACTS

As stated in the introduction, CEQA requires an EIR to address the “growth-inducing” effects of a proposed project. According to Section 15126.2(d) of the *CEQA Guidelines*, the growth-inducing effects of a project are:

- Fostering economic or population growth, or the construction of additional housing
- Removing obstacles to population growth
- Taxing existing community services or facilities, requiring the construction of new facilities that could cause significant environmental effects
- Encouraging and facilitating other activities that could significantly affect the environment, either individually or cumulatively

As such, this section of the EIR analyzes the potential environmental consequences of the foreseeable growth and development of the surrounding area that would be induced by future development within the HNTC planning area and with implementation of the proposed Market Town project.

5.4.1 FOSTER ECONOMIC GROWTH

After buildout of the HNTC planning area, the retail and office space would provide opportunities for businesses to locate in the City. Attracting and retaining quality jobs and development and preserving the local economy are established goals in the General Plan. These businesses would provide jobs for City residents and individuals residing in the surrounding region.

The proposed HNTC planning area and Market Town project would result in construction of approximately 320,000 square feet of retail space and 196,250 square feet of office space. Using the calculation of one employee per 300 square feet of retail space and one employee per 400 square feet of office space, the project would result in 1,558 new jobs. The jobs generated by the project would foster economic growth within the City. In addition, future construction within the HNTC planning area would generate employment opportunities for construction workers, heavy equipment operators, engineers, surveyors, building inspectors, and several other types of workers related to construction activities. The addition of 1,558 new jobs is consistent with the growth outlined in the General Plan.

5.4.2 POPULATION AND HOUSING GROWTH

Development within the HNTC planning area and implementation of the proposed Market Town project would result in approximately 1,650 multi-family residential units and an increase in population of 3,482 residents. According to the General Plan, full buildout of the City would be realized when the City’s population grows to 29,927 residents. The population growth generated by the proposed project would be approximately 58 percent of the growth anticipated within the City as outlined in the General Plan. Therefore, the project would not exceed the amount of growth projected for the ultimate buildout of the City.

While the proposed project would directly induce population growth, the amount of growth would be within the range of growth anticipated by the City and ABAG and would, therefore, not be considered substantial. Population growth impacts would be less than significant.

5.4.3 OBSTACLES TO GROWTH

Several types of projects can induce population growth by removing obstacles that prevent growth. An example of this type of project would be the expansion of a wastewater treatment plant, which would accommodate additional sewer connections within the service area and, therefore, would allow future construction and growth. The proposed project would not result in or require the construction or expansion of such public facilities. In addition, the project would not remove any other obstacles that would encourage growth in an adjacent area.

5.4.4 TAX EXISTING COMMUNITY SERVICES OR FACILITIES

Substantial increases in population growth may tax existing community services and facilities, thus requiring the construction of new facilities that could cause significant environmental effects. The construction of new facilities may also result in the need to expand the service capacity, which would then allow future population growth.

As described in Section 4.12 (Public Services, Utilities, and Service Systems), the proposed project would not result in significant environmental effects related to public services, utilities, and service systems. Therefore, the proposed project would not substantially tax existing public services and utilities.

5.4.5 OTHER INDIVIDUAL OR CUMULATIVE EFFECTS

The individual environmental effects of the proposed project are discussed in Chapter 4.0 (Environmental Analysis). The project's potential to contribute to cumulative environmental effects was discussed above in Section 5.3 of this chapter. The proposed project would not be expected to generate other environmental effects above and beyond those analyzed in Chapter 4.0 or Section 5.3.

5.4.6 CONCLUSION

Future development within the HNTC planning area and implementation of the Market Town project would directly induce population and housing growth in the region. The anticipated increase in population would not be considered substantial because it would be within the range of employment and population growth projected by the General Plan. In addition, the population growth generated by the proposed project would not remove obstacles to growth, tax existing public facilities and services, or encourage and facilitate other activities that could significantly affect the environment, whether individually or cumulatively. The growth that may be induced by the proposed project, either directly or indirectly, is anticipated to be only a portion of future growth currently under consideration or review for full buildout of the General Plan, and would be consistent with adopted growth projections for the City. Thus, the analysis of cumulative effects of the proposed project plus buildout of the General Plan reflects the potential environmental impacts associated with growth that might be induced by the project.

6.0 ALTERNATIVES

6.1 INTRODUCTION

Section 15126.6 of the California Environmental Quality Act Guidelines (*CEQA Guidelines*) requires an EIR to describe and evaluate a reasonable range of alternatives to a proposed project. The purpose of the evaluation is to identify ways to mitigate or avoid the significant effects that a project may have on the environment. An EIR does not need to consider every conceivable alternative to a proposed project, nor is it required to consider alternatives that are infeasible. Rather, it must consider a reasonable range of alternatives that could feasibly attain most of the project's basic objectives, while avoiding or substantially lessening any significant adverse environmental effects of the project. The EIR must evaluate the comparative merits of the alternatives and provide sufficient information about each alternative to allow meaningful evaluation, analysis and comparison with the proposed project to foster informed decision-making and public participation. *CEQA Guidelines* Section 15126.6(e) requires that an EIR specifically evaluate the impacts associated with the alternative of 'no project' to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project.

This chapter provides a brief description of the proposed project, project goals and objectives, and potentially significant project impacts, followed by a description and evaluation of each alternative selected for inclusion in the EIR. Finally, this chapter concludes with a comparison of the alternatives, identifying trade-offs and the environmentally superior alternative.

6.2 PROJECT SUMMARY

6.2.1 PROJECT CHARACTERISTICS

As described in Chapter 3, Project Description, the project consists of two elements: (1) amendments to the City of Hercules General Plan (General Plan) and Zoning Ordinance to create a "New Town Center" (NTC) land use designation and zoning district that would apply to the Hercules New Town Center (HNTC) planning area (HNTC program); and (2) the redevelopment of one parcel, the PNR parcel, within the HNTC planning area with a mixed-use, transit-oriented development (Market Town project). The overall intent of the NTC land use designation and zoning district is to create a "Transit-Oriented Town Center" that has a pedestrian- and transit-friendly mix of residential, commercial, office, and public and quasi public uses, designed in a more urban pattern of development with buildings set close to defined streets in the center of town.

6.2.2 PROJECT OBJECTIVES

The following are the combined objectives of the City of Hercules Redevelopment Agency (City RDA), the Bay Area Rapid Transit District (BART), and the Hercules New Town Center LLC:

- Create a “Transit-Oriented Town Center,” consisting of a relatively dense pattern of building in the center of town and a mix of residential, commercial, office, and public and quasi public uses
- Develop or construct affordable housing in compliance with state law
- Establish commercial and retail development in the area around Sycamore and San Pablo Avenues and along State Route (SR) 4
- Create a vibrant, urbanized place for shopping, working, and living at the core of Hercules
- Emphasize a compact, diverse mix of uses around a new “Town Square”
- Develop or redevelop land by private enterprise or public agencies for purposes and uses consistent with the objectives of the Redevelopment Plan for the Dynamite Project Area
- Closely coordinate with BART and WestCat to increase the capacity and service levels for WestCat express service to the El Cerrito del Norte BART station
- Improve the utilization of the Hercules Transit Center automobile parking lot to focus on supporting regional transit
- Develop according to principles of transit-oriented development and urban design identified in the Central Hercules Plan

6.2.3 POTENTIALLY SIGNIFICANT PROJECT IMPACTS

Chapter 4 (Existing Conditions, Environmental Impacts and Mitigation Measures) and Chapter 5 (Cumulative and Growth Inducing Impacts) of this EIR describe the potentially significant environmental impacts of the proposed project separately for the HNTC program and the Market Town project. As identified in those chapters, the HNTC program and the Market Town project would result in a number of potentially significant environmental impacts, some of which could be mitigated to less than significant levels by implementing feasible mitigation measures. The following summarizes the proposed project's potentially significant impacts prior to implementation of mitigation measures:

- Aesthetics - Temporary degradation of the HNTC planning area during construction of the Market Town project and future development associated with the HNTC program.
- Air Quality - Increases in air pollutants during construction activities associated with the Market Town project and future development under the HNTC program; significant and unavoidable increases in air pollutants during operation of the Market Town project and future development under the HNTC program; and a significant and unavoidable conflict with the Bay Area Air Quality Management District (BAAQMD) Air Quality Management Plan.
- Biological Resources - Potential California red legged frog (CRLF) mortality and loss of CRLF aquatic, upland and dispersal habitat during construction of future development associated with the HNTC program on Parcel 2 (C1 parcel), Parcel 3 (Loop parcel), Parcel 4 (Ramp parcel), and Parcel 5 (Caltrans parcel); potential White-tailed kite mortality and loss of White-tailed kite foraging and nesting habitat during

construction of future development associated with the HNTC program on Parcels 2 through 5; potential direct mortality and loss of nesting habitat for birds and bats during construction of future development associated with the HNTC program on Parcels 2 through 7; and direct loss of 1.4 acres of wetlands, approximately 481 linear feet of streams, and approximately 0.3 acres of riparian forest with future development associated with the HNTC program on Parcels 2, 3 and 5.

- Cultural Resources - Potential disturbance or destruction of prehistoric, historic or paleontological resources during construction of the Market Town project and future development directed by the HNTC program.
- Geology and Soils - Structural damage and safety risks from seismic ground shaking, seismic-related ground failure and expansive soils for the Market Town project and future development related to the HNTC program.
- Hazards and Hazardous Materials - Accidental exposure to hazardous materials for the construction and operation of the Market Town project and future development associated with the HNTC program.
- Hydrology and Water Quality - Violation of water quality standards during construction and operation of the Market Town project and future development allowed under the HNTC program; increase stormwater runoff, potentially exceeding the capacity of the existing storm drainage system for the Market Town project and future development related to the HNTC program; and future development associated with the HNTC program on Parcel 3 would place structures or housing within a 100-year flood hazard area.
- Noise - Combined or collective impacts resulting from construction of more than one facility at a time under the direction of the HNTC program; temporary exceedance of established noise standards during construction of the Market Town project; exposure of residential uses in the Market Town project and future development facilitated by the HNTC program to traffic and railroad noise levels in exceedance of established exterior noise levels; increases in ambient noise levels due to the generation of on-site noise associated with commercial uses in the Market Town project and HNTC program; and a significant and unavoidable impact resulting from cumulative mobile noise source levels along nine roadway segments.
- Transportation/Traffic - Reduction in intersection level of service (LOS) for Market Town; potentially significant and significant and unavoidable impacts associated with a reduction in LOS for several nearby intersections as a result of future development facilitated by the HNTC program; significant and unavoidable impacts on two freeway segments resulting from future development related to the HNTC program; significant and unavoidable impacts on public transit stemming from Market Town and future development allowed under the HNTC program; potential impacts on pedestrians and bicyclists resulting from Market Town and future development associated with the HNTC program; and increase parking demand caused by development of the Market Town project and development facilitated by the HNTC program

Project impacts on other resources areas that are the subject of this EIR (Land Use and Planning, Population and Housing, Public Services, Utilities and Service Systems, and Recreation) were determined to either be non-existent, less than significant or beneficial.

Environmental analysis in Chapter 4 did not identify any land use and planning impacts for either the HNTC program or the Market Town project. Impacts associated with population and housing growth were determined to be less than significant for both the HNTC program and the Market Town project, while the project was determined to have a beneficial impact by increasing employment opportunities within the City. The project's impacts on recreational resources, and public services, utilities and service systems were also determined to be less than significant.

As noted in Chapter 4, most of the potentially significant impacts identified can be mitigated to less than significant levels through implementation of feasible mitigation measures. However, significant and unavoidable impacts related to air quality, noise and traffic would occur as a result of the proposed project.

6.3 PROJECT ALTERNATIVES

6.3.1 SELECTION OF ALTERNATIVES

In accordance with CEQA, appropriate project alternatives are those that meet most of the project's basic objectives and avoid or substantially lessen the significant environmental impacts of the proposed project. The alternatives analyzed in this chapter were selected for their potential to eliminate or reduce project impacts, for their potential to generate fewer impacts or require lesser levels of mitigation, and to provide a comparison between the project's impacts with those that may occur from future development anticipated by the General Plan (Alternatives 2 and 3). These alternatives include:

- Alternative 1 - No Project/No Build (Status Quo) With No Ramp Relocation Project
- Alternative 2 - No Project/Future Development Under Existing General Plan With Ramp Relocation Project
- Alternative 3 - No Project/Future Development Under Existing General Plan With No Ramp Relocation Project
- Alternative 4 - Development of HNTC Program With No Ramp Relocation Project
- Alternative 5 - Development of HNTC Program With No Relocation of BART Park-And-Ride Lot/Market Town Project
- Alternative 6 - Market Town Project Only

This EIR analyzes impacts associated with full buildout of the HNTC planning area as directed by the HNTC program. This EIR also separately analyzes impacts associated with the Market Town project, which would develop one of the HNTC planning area parcels (the PNR parcel) within the maximum extent allowed by the HTNC program for the parcel. Alternatives were not chosen to only the HTNC program or to only the Market Town project. Rather, the alternatives selected represent a series of different scenarios which, depending on the scenario, apply to either the HNTC program; or to the Market Town project; or to both the HNTC program and the Market Town project collectively.

6.3.2 ALTERNATIVES ANALYSIS

OVERVIEW OF THE APPROACH TO THE ANALYSIS

Under the first three alternatives, no development would occur within the entire HNTC planning area as directed by the HNTC program, including on the PNR parcel where the Market Town project would occur. Therefore, the evaluation of these three alternatives focuses on comparing their impacts with those associated with the HNTC program as a whole, since the HNTC program impacts also take into account impacts associated with the Market Town project. Similarly, because Alternative 4 would result in full buildout of the entire HNTC planning area, excluding any development on the Ramp parcel, the assessment of Alternative 4 centers on comparing its impacts with the HNTC program impacts because they are based on full buildout of all the parcels within the HNTC planning area and consider impacts associated with the Market Town project. Alternative 5 would result in full buildout of the HNTC planning area parcels east of I-80 and no Market Town project. Thus, the evaluation of Alternative 5 compares its impacts with those associated with the HNTC program, but essentially excludes a comparison with the Market Town project, since buildout of the PNR parcel would not occur. Finally, Alternative 6 proposes implementation of only the Market Town project. The evaluation of Alternative 6 contrasts its impacts with those associated with the HNTC program as a whole, in essence excluding a comparison with the development of HNTC planning area parcels east of I-80, as only the Market Town project would occur.

HNTC program impacts and Market Town project impacts do not need to be compared to alternatives impacts separately. As stated above, implementation of the HNTC program would result in full buildout of the entire HNTC planning area and the Market Town project would develop only one parcel within the HNTC planning area to the maximum extent allowed by the HNTC program for that parcel. Therefore, HNTC program impacts take into account Market Town project impacts. Overall, Market Town project impacts are reduced compared to HNTC program impacts because the development potential of the Market Town project is substantially less than that of the HNTC program. The development potential of the Market Town project is 400 residential units/360,000 square feet of residential uses and 140,000 square feet of office/retail uses, compared to the development potential of the HNTC program, which is 1,650 residential units/1,610,000 square feet of residential uses and 516,250 square feet of office uses (including the Market Town project). In general, the Market Town project's development potential would accordingly result in reduced impacts when compared to the impacts associated with the HNTC program. (Refer to the evaluation of Alternative 6 for additional details on Market Town project impacts compared to HNTC program impacts.) Thus, in the evaluation of each alternative below, the alternative's impacts are compared to impacts associated with the project as a whole, which address full buildout of the entire HNTC planning area.

The following provides a description and evaluation of each alternative selected for inclusion in the EIR. Table 6.1 (Comparison of Alternative Project Impacts to the Proposed Project), presents a comparison of the alternative project impacts to those of the proposed project.

**Table 6-1
Comparison of Alternative Project Impacts to the Proposed Project**

Topic	Alternative 1 - No Project/No Build (Status Quo) With No Ramp Relocation Project	Alternative 2 - No Project/ Future Development Under Existing General Plan With Ramp Relocation Project	Alternative 3 - No Project/ Future Development Under Existing General Plan With No Ramp Relocation Project	Alternative 4 - Development of HNTC Program With No Ramp Relocation Project	Alternative 5 - Development of HNTC Program With No Relocation of BART Park-And-Ride Lot	Alternative 6 - Market Town Project
Land Use and Planning	+	+	+	+	+	+
Aesthetics	+	+	+	NC	+	+
Air Quality	-	NC	-	-	-	-
Biological Resources	-	-	-	-	NC	NC
Cultural Resources	-	NC	NC	NC	NC	NC
Geology and Soils	-	+/-	-	-	-	-
Hazards and Hazardous Materials	-	+/-	-	-	-	-
Hydrology and Water Quality	-	+	-	-	-	-
Noise	-	+	-	-	-	-
Population and Housing	-	-	-	NC	-	-
Public Services, Utilities and Service Systems	-	-	-	-	-	-
Recreation	-	-	-	-	-	-
Transportation/Traffic	-	NC	NC	+	NC	NC
Notes: + = Greater impact than that of the proposed project - = Decreased impact from that of the proposed project +/- = Greater impact with regard to some aspects of impact and decreased impact in other aspects NC = No substantial change in impact from that of the proposed project						

ALTERNATIVE 1: NO PROJECT/NO BUILD (STATUS QUO) WITH NO RAMP RELOCATION PROJECT

Description of Alternative

The No Project/No Build (Status Quo) With No Ramp Relocation Alternative (Alternative 1) would not result in any physical or operational changes to the planning area. The existing undeveloped parcels, parking lots, storage lots, off-ramp for Interstate 80 (I-80), on ramp for SR 4, and industrial uses would remain unchanged with the implementation of this alternative. Amendments to the General Plan and Zoning Ordinance and the re-designation and rezoning of the project site to the NTC land use designation and zoning district would also not occur under Alternative 1. This alternative would not satisfy the project objectives stated in Chapter 3, Project Description, which are re-stated above.

Environmental Impacts Compared to the Proposed Project

Land Use and Planning

The proposed project would not result in any land use or planning impacts. Alternative 1 would not result in any land use or zoning policy changes, or in any physical or operational changes. However, Alternative 1 would not be consistent with the vision of the Central Hercules Plan for the HNTC planning area, which is a pedestrian- and transit friendly mix of uses, including retail, office and residential. This alternative is also not consistent with the underlying purpose of the Central Hercules Plan, which is to enhance the City's quality of life, increase mobility and to create a true "town center."

Aesthetics

Future development directed by the HNTC program, including the Market Town project, would result in less than significant aesthetic impacts during construction with the implementation of mitigation measures. Under Alternative 1, no physical changes would occur to the HNTC planning area, and the overall character and image of the HNTC planning area would not change from existing conditions. Alternative 1 would not result in any aesthetic impacts, which would accordingly reduce the proposed project's mitigated aesthetic impacts during construction from less than significant to a level of no impact. However, this alternative would avoid the project's potentially beneficial aesthetic impacts because it would not result in any cohesive, compatible development on any of the planning area parcels that would be required to be aesthetically attractive, unobtrusive, compatible with the character of adjacent buildings, and contain landscaping that provides visual relief, complements buildings and structures, and provides an attractive environment for the enjoyment of the public.

Air Quality

Alternative 1 would entirely avoid the potentially significant and significant and unavoidable impacts of the project because no development would occur. Thus, no potential for air quality impacts would result.

Biological Resources

With Alternative 1, no development would occur and, therefore, no biological resource impacts would result.

Cultural Resources

Alternative 1 would avoid the potentially significant cultural resource impacts associated with the proposed project, as the HTNC planning area would remain in its existing condition and unknown cultural resource resources could not be disturbed or destroyed.

Geology and Soils

Implementation of the proposed project could result in structural damage and pose safety risks to building occupants and visitors from seismic ground shaking, seismic-related ground failure and expansive soils. All potentially significant impacts could be mitigated to less than significant with the implementation of mitigation measures. Implementation of Alternative 1 would completely avoid the potentially significant geology and soils impacts associated with the proposed project, as no physical changes to the site or its surroundings would occur. In addition, Alternative 1 would expose fewer buildings and less people to potential risks associated with geologic hazards and seismic events.

Hazards and Hazardous Materials

The proposed project could result in accidental exposure to hazardous materials. Mitigation measures would reduce potentially significant impacts related to hazardous materials exposure to less than significant. Alternative 1 would completely avoid the potentially significant hazardous material impacts of proposed project since no physical or operational changes would occur to the site.

Hydrology and Water Quality

Alternative 1 would avoid the construction activities and introduction of new impervious surfaces (e.g., buildings, parking, access roads) associated with the project. It would also avoid placing structures or housing within a 100-year flood hazard area. This alternative would not result in any impacts to hydrology or water quality.

Noise

Under Alternative 1, no development would occur within the HNTC planning area with the potential to generate noise or expose people to existing noise sources.

Population and Housing

With Alternative 1 the beneficial impact of providing more employment opportunities and improving the City's jobs/housing balance would not be realized.

Public Services, Utilities and Service Systems

The proposed project would result in less than significant impacts on public services, utilities and service systems. No physical or operational changes would occur beyond existing conditions with Alternative 1, resulting in no impacts on public services and utilities.

Recreation

Recreational impacts associated with the project would be less than significant. Because Alternative 1 would not result in any physical or operational changes, it would not increase recreational facility use. Thus, Alternative 1 would not have any impacts on recreational facilities.

Transportation/Traffic

The proposed project would reduce intersection LOS; exacerbate conditions on two freeway segments operating below acceptable LOS; and significantly affect public transit travel times in the planning area. Under Alternative 1, there would be no increase in vehicle trips or the potential for multi-modal conflicts. Alternative 1 would not have any traffic impacts.

ALTERNATIVE 2: NO PROJECT/FUTURE DEVELOPMENT UNDER EXISTING GENERAL PLAN WITH RAMP RELOCATION PROJECT

Description of Alternative

Alternative 2 assumes that the proposed General Plan and Zoning Ordinance Amendments are not adopted and future development of the planning area occurs under the direction of the existing General Plan and Zoning Ordinance. Accordingly, the Market Town project would not be developed under Alternative 2. The purpose of this alternative is to provide a comparison between the project's impacts with those that may occur from future development of the planning area anticipated by the General Plan. This alternative assumes that the Ramp Relocation project would take place; therefore, the existing I-80 off ramp and SR 4 on-ramp would be relocated further east along SR 4 from their current location.

The PNR parcel has a General Plan land use designation and zoning district of Commercial Public (CP). Under this alternative, the types of uses that could potentially be developed on the PNR parcel consist of transit-related uses (park and ride lots, etc.) that could combine with commercial development comprised of retail, wholesale (open to the public), offices (business, professional and service), automobile service stations, restaurants and automobile repair services. The Ramp parcel is currently California Department of Transportation (Caltrans) right-of-way and has no General Plan land use designation. It is assumed that the City would designate it with the same land use designation and zoning as the surrounding parcels, General Commercial (GC), and it would redevelop according to the GC designation and zoning. All other parcels in the planning area have a General Plan land use designation and zoning district of General Commercial (GC). Retail, wholesale (open to the public), offices (business, professional and service uses), and other highway-oriented businesses (automobile service stations, restaurants and automobile repair services) could develop on parcels with the GC land use designation and zoning. Buildings in these land use categories would be typical of those found in suburban areas, one or two stories in height with a typical

floor area ratio (FAR) of 0.30, although the FAR would be permitted to range from 0.20 to 1.00. Under this alternative, the maximum development potential of the project parcels would be:

- 288,367 square feet of general commercial building space (retail, wholesale, office and other highway-oriented businesses) on the PNR parcel
- 378,536 square feet of general commercial building space (retail, wholesale, office and other highway-oriented businesses) on the C1 parcel
- 272,250 square feet of general commercial building space (retail, wholesale, office and other highway-oriented businesses) on the Loop parcel
- 140,699 square feet of general commercial building space (retail, wholesale, office and other highway-oriented businesses) on the Ramp parcel
- 276,606 square feet of general commercial building space (retail, wholesale, office and other highway-oriented businesses) on the Caltrans parcel
- 165,964 square feet of combined general commercial building space (retail, wholesale, office and other highway-oriented businesses) on the Carone/WC Drilling parcels

This alternative would not result in any residential development. It would also eliminate potential public and quasi-public uses (daycare facilities, government offices, libraries, museums, galleries, park and recreational facilities, public safety facilities, utility facilities), bed and breakfast inn/hotel uses, and recreation and entertainment uses. However, it would potentially result in the development of substantially more retail/office building space (approximately 1,006,172 square feet more) than the proposed project. Overall, the proposed project would have a greater total development potential (office/retail and residential combined) than Alternative 2 (603,828 square feet more). Table 6-2, Comparison of Alternative 2 and the Proposed Project, shows a comparison between buildout of Alternative 2 and buildout of the proposed project.

**Table 6-2
Comparison of Alternative 2 and the Proposed Project**

Parcel	Size (Acres)	Proposed Project		Alternative 2	
		Number of Residential Units/ Square Feet	Gross Square Feet of Office/Retail	Number of Residential Units/ Square Feet	Gross Square Feet of Office/Retail
PNR (1)	6.62	400/ 360,000	140,000	0	288,367
C1 (2)	8.69	250/ 250,000	93,750	0	378,536
Loop (3)	6.25	375/ 375,000	187,500	0	272,250
Ramp (4)	3.23	175/ 175,000	75,000	0	140,699
Caltrans (5)	6.35	300/ 300,000	12,500	0	276,606

Parcel	Size (Acres)	Proposed Project		Alternative 2	
		Number of Residential Units/ Square Feet	Gross Square Feet of Office/Retail	Number of Residential Units/ Square Feet	Gross Square Feet of Office/Retail
Carone/ WC Drilling (6 & 7)	3.81	150/ 150,000	7,500	0	165,964
Total	34.95	1,650/ 1,610,000	516,250	0	1,522,422

Environmental Impacts Compared to the Proposed Project

Land Use and Planning

The proposed project would not result in any land use and planning impacts. Alternative 2 would require an amendment to the General Plan and Zoning Ordinance to designate the Ramp Parcel CG, so it could redevelop similarly to the surrounding parcels, but this would not conflict with existing uses or planned uses identified in the General Plan. All other parcels within the HNTC planning area would retain their existing land use designations, thus remaining consistent with the original intent of the Commercial Public and General Commercial land use designations as described in the General Plan. However, Alternative 2 would not be consistent with the overall vision of the Central Hercules Plan, nor its underlying purpose of creating a true "town center."

Aesthetics

The proposed project would have potentially significant aesthetic impacts that could be mitigated to less than significant. The aesthetic impacts of Alternative 2 would be similar to those associated with the proposed project. Alternative 2 would differ from the proposed project in that it would have less overall development, which would result in a lower density and intensity of development compared to the project. In contrast to Alternative 2, the proposed project would allow park and open space uses, which could allow for more visual relief than Alternative 2.

Air Quality

The proposed project would increase air emissions during its construction and operation. Construction related air quality impacts would be less than significant with the implementation of mitigation measures. However, operational air quality impacts would remain significant and unavoidable even after the implementation of mitigation. Furthermore, because the project would exceed BAAQMD thresholds for operational emissions it would also conflict with the BAAQMD Air Quality Management Plan. This conflict would be a significant and unavoidable impact.

As with implementation of the project, construction-related emissions generated by future development projects under the Alternative 2 scenario could also be reduced to a less than significant level with the implementation of standard mitigation measures.

The development potential of Alternative 2 (total of 1,522,422 square feet) would be less than the development potential of the proposed project (total of 2,126,250 million square feet). Furthermore, Alternative 2 would be expected to have a total of 5,075 employees¹ compared to the project, which would be expected to have a total of 1,558 employees and 3,482 residents, for a total of 5,040 individuals. Assuming a worst-case scenario of all employment being generated by retail space, which generates one employee per 300 square feet versus office space, which generates one employee per 400 square feet of space, Alternative 2 would generate slightly more people within the planning area than the proposed project. Vehicle trips and related vehicle emissions associated with Alternative 2 would be expected to be roughly the same as with the proposed project. Thus, Alternative 2 would not be expected to reduce the significant and unavoidable air quality impacts of the project.

Biological Resources

The construction of the proposed project would result in potentially significant impacts on wetlands, streams, riparian forest, CRLF and their aquatic, upland and dispersal habitat, White-tailed kite and their foraging and nesting habitat, nesting birds and bats, and other wildlife that may occur on the site. All potentially significant impacts of the proposed project could be mitigated to less than significant. The implementation of Alternative 2 would result in similar biological resource impacts as the proposed project. Similar mitigation measures would be required for Alternative 2.

Cultural Resources

Alternative 2 would have similar effects on cultural resources as the proposed project. This alternative would require a similar development area as the project and potentially significant impacts associated with previously undiscovered resources and/or remains would occur. Recommended mitigation measures would apply to Alternative 2 to reduce cultural resource impacts to less than significant.

Geology and Soils

The construction and operation of the proposed project would result in potentially significant geology and soils impacts. All impacts would be considered less than significant with the implementation of mitigation measures. The implementation of Alternative 2 would result in comparable geology and soils impacts, as it would have a similar development footprint as the project. Like the project, this alternative would be required to implement mitigation measures to reduce potential geologic impacts to less than significant levels.

The development potential of Alternative 2 (1,522,422 square feet total) would be less than the development potential of the proposed project (2,126,250 square feet total). Furthermore, Alternative 2 proposes only office/retail uses, while most of the project's building space would be residential (1,610,000 square feet/1,650 units) as opposed to office/retail (516,250 square feet). Alternative 2 would be expected to have a total of 5,075 employees compared to the project, which would be expected to have a total of 1,558 employees and 3,482 residents, for a total of 5,040 individuals. Residents would be anticipated to be within the HNTC planning

¹ Assumes a worst-case scenario of one employee per 300 square feet of retail space, as opposed to one employee per 400 square feet of office space.

area more consistently and for greater periods of time than employees or patrons of businesses. Should a seismic event occur, Alternative 2 would expose less building space, but slightly more people to potential harm or danger than the proposed project. Consequently, Alternative 2 would be expected to have similar potential geology and soil impacts as the proposed project.

Hazards and Hazardous Materials

Alternative 2 would result in a similar potential for disturbance and upset of hazardous materials within the HNTC planning area as the proposed project. A comparable area of development would be necessary, and the construction activities necessary for Alternative 2 would be similar to those necessary for the project. Similar mitigation measures would be applied to this alternative as with the proposed project.

Alternative 2's total development potential (1,522,422 million square feet) would be substantially less than the project's total development potential (2,126,250 million square feet). Additionally, Alternative 2 would develop only office/retail uses, whereas the project would develop both residential (1,610,000 square feet) and office/retail (516,250 square feet). Overall, Alternative 2 would generate 35 more individuals than the project. In general, the project's residents would be expected to be within the HNTC planning area more consistently and for greater periods of time than Alternative 2's employees or patrons. Consequently, Alternative 2 would result in slightly greater overall numbers of individuals within the HNTC planning area than the project, possibly exposing 35 more people to potential hazards than the project. Therefore, the Alternative 2 would result in relatively comparable hazard impacts as the project.

Hydrology and Water Quality

The construction and operation of the proposed project would result in potentially significant hydrology and water quality impacts that could be reduced to less than significant levels with the implementation of mitigation. Alternative 2 would result in similar hydrology and water quality impacts as the proposed project. Similar mitigation measures as those required for the project would be required for Alternative 2. This alternative would have a less dense and intense development pattern. However, the proposed project would allow park and open space uses, which would provide additional opportunities for open space and landscaped areas in the planning area. More open space and landscaped areas would reduce the amount of impervious surfaces, which would reduce runoff and improve water quality. Consequently, storm water runoff and water quality impacts would be slightly reduced with the project.

Noise

Future development projects that would occur under the direction of the General Plan would involve short-term and long-term noise impacts generated by construction activities, the introduction of additional traffic along area roadways and intersections and additional ambient noise in the planning area from stationary sources. Impacts associated with Alternative 2 could be mitigated to less than significant levels. However, because the proposed project would be mixed-use, it would most likely have slightly less traffic noise due to fewer overall vehicle trips. Therefore, the project would likely generate less noise along

area roadways and intersections than Alternative 2. Consequently, significant and unavoidable impacts associated with increased mobile source noise levels would remain.

Population and Housing

The proposed project would increase the number of jobs and housing in the City. The project's increase in housing would result in less than significant impacts, as it would be within the expected growth identified by the City. The project's potential increase in employment opportunities would have a beneficial impact on the City, since it would help to reduce the jobs/housing imbalance in the City. Alternative 2 would not construct any residential housing. Alternative 2 would also increase the number of jobs in the City through future redevelopment and intensification of the planning area. The additional employment that could be generated by Alternative 2 (estimated at 5,075 employees) would be greater than the additional employment that could be generated by the proposed project (estimated at 1,558 employees). Therefore, Alternative 2 would have an increased ability to reduce the job/housing imbalance in the City compared to the project.

Public Services, Utilities and Service Systems

The proposed project would increase the demand for public services, utilities and service systems in the City; however, the increased demand on these services and utilities would not be considered significant or adverse. The implementation of Alternative 2 would result in similar increased demand for public services, utilities and service systems as the proposed project. Similar to the project, Alternative 2's increased demand would be considered less than significant, although, Alternative 2 would not construct any housing units. Therefore, it would likely place less demand on water supply, wastewater disposal/capacity, and public service providers, such as schools, police, and fire/medical emergency services. Consequently, Alternative 2 would have less demand than the proposed project.

Recreation

The proposed project would increase the use of open space and neighborhood and community parks. To offset the cost of new parks and recreation facilities and improvements to existing parks and recreation facilities, the City imposes a park and recreation facilities impact fee on new development. The proposed project would be required to pay this fee, resulting in less than significant impacts on park and recreation facilities in the City. Future development under Alternative 2 would be required to pay this fee as well, resulting in less than significant impacts like the project. However, this alternative would not generate any new residents to the City. Consequently, it would place less demand on park and recreational facilities than the project.

Transportation/Traffic

As described in Section 4.13, Transportation/Traffic, implementation of the proposed project would facilitate future development, including the Market Town project that would generate additional local and regional vehicle trips. Significant and unavoidable impacts would occur along two freeway segments and isolated intersections, as well as on public transit travel times despite the implementation of mitigation measures. Implementation of Alternative 2

would be expected to result in significant and unavoidable impacts similar to the project, despite the implementation of mitigation measures.

ALTERNATIVE 3: NO PROJECT/FUTURE DEVELOPMENT UNDER EXISTING GENERAL PLAN WITH NO RAMP RELOCATION PROJECT

Description of Alternative

Alternative 3 is the same as Alternative 2 with the exception that under Alternative 3 the Ramp Relocation Project would not occur. Thus, under Alternative 3, no physical or operational changes would occur to the approximately 3.25-acre Ramp parcel; the existing off-ramp for I-80 and on-ramp for SR 4 would continue to function in their current capacity, while the remaining project parcels would develop under the direction of the existing General Plan and Zoning Ordinance. This alternative was included in the alternatives analysis to provide a comparison between the project's impacts with those that would be anticipated from buildout of the project site under the direction of the General Plan in the event that the I-80 off-ramp and SR 4 on-ramp are not relocated further east along SR 4 from their current location within the planning area.

Like Alternative 2 and unlike the proposed project, Alternative 3 would not result in any residential development, nor would any public/quasi-public uses (daycare facilities, government offices, libraries, museums, galleries, park and recreational facilities, public safety facilities, utility facilities), bed and breakfast inn/hotel uses, or recreation and entertainment uses be developed. Alternative 3 would potentially result in the development of substantially more retail/office building space (approximately 865,473 square feet more) than the proposed project; however, the retail/office building space of Alternative 3 would be reduced compared to Alternative 2. The total development potential of the proposed project would be 744,527 square feet more than the total development potential of Alternative 3. Table 6-3, Comparison of Alternative 3 and the Proposed Project, illustrates the differences between the number of residential units and residential, retail and office square footage proposed by Alternative 3 and the project under buildout conditions.

**Table 6-3
Comparison of Alternative 3 and the Proposed Project**

Parcel	Size (Acres)	Proposed Project		Alternative 3	
		Number of Residential Units/ Square Feet	Gross Square Feet of Office/Retail	Number of Residential Units/ Square Feet	Gross Square Feet of Office/Retail
PNR (1)	6.62	400/ 360,000	140,000	0	288,367
C1 (2)	8.69	250/ 250,000	93,750	0	378,536
Loop (3)	6.25	375/ 375,000	187,500	0	272,250
Ramp (4)	3.23	175/ 175,000	75,000	0	0
Caltrans (5)	6.35	300/ 300,000	12,500	0	276,606

Parcel	Size (Acres)	Proposed Project		Alternative 3	
		Number of Residential Units/ Square Feet	Gross Square Feet of Office/Retail	Number of Residential Units/ Square Feet	Gross Square Feet of Office/Retail
Carone/ WC Drilling (6 & 7)	3.81	150/ 150,000	7,500	0	165,964
Total	34.95	1,650/ 1,610,000	516,250	0	1,381,723

Environmental Impacts Compared to the Proposed Project

Land Use and Planning

The proposed project would not result in any land use and planning impacts. Alternative 3 would not result in any changes in land use or zoning policies. It would be consistent with the CP and GC designations as described in the General Plan. However, Alternative 3 would not be consistent with the overall vision identified in the Central Hercules Plan of creating a pedestrian- and transit-friendly mix of uses, including retail, office and residential, nor would it be consistent with the underlying purpose of the Central Hercules Plan, as it would not create a true "town center."

Aesthetics

The proposed project would result in less than significant aesthetics impacts with the implementation of mitigation measures. Alternative 3 would have comparable aesthetic impacts as the proposed project, requiring mitigation during construction to screen aesthetically unappealing views. While Alternative 3 would involve less development and have a reduced density and intensity compared to the proposed project, the proposed project would allow park and open space uses, which could allow for more visual relief than Alternative 3.

Air Quality

The proposed project would increase air emissions during its construction and operation. Construction related air quality impacts would be less than significant with the implementation of mitigation measures. However, operational air quality impacts would remain significant and unavoidable even after the implementation of mitigation. Additionally, the project would exceed BAAQMD thresholds for operational emissions, resulting in a significant and unavoidable conflict with the BAAQMD Air Quality Management Plan.

Implementation of Alternative 3 would result in comparatively similar air quality impacts during construction. Like the proposed project, mitigation measures would be required for construction activities under Alternative 3. The development potential of Alternative 3 (total of 1,381,723 square feet) would be less than the development potential of the proposed project (total of 2,126,250 million square feet). Alternative 2 would be expected to have a total of 4,606 employees compared to the project, which would be expected to have a total of 1,558 employees and 3,482 residents, for a total of 5,040 individuals. Alternative 3 would

generate fewer people within the planning area than the proposed project. Vehicle trips and related vehicle emissions associated with Alternative 3 would be reduced compared to the proposed project. However, Alternative 3 would not be expected to reduce the significant and unavoidable air quality impacts of the project. Nonetheless, Alternative 3 would generate less vehicle emissions and less overall air quality impacts than the proposed project.

Biological Resources

Project construction would result in potentially significant, but mitigable impacts on sensitive habitats and special-status species, as well as on nesting birds and bats, and other wildlife that may occur within the planning area. Alternative 3 would result in similar potentially significant, but mitigable biological resource impacts as the proposed project. Although, Alternative 3 would not construct any residential units, decreasing the potential for “loose” pets to harm, harass or kill special-status species or other bird or bat species. Moreover, the Ramp parcel would not be redeveloped under Alternative 3, eliminating potential impacts on CRLF and CRLF habitat that could be present on that parcel. However, other potential impacts on CRLF and their habitat in other parts of the planning area would still remain with implementation of Alternative 3. Therefore, Alternative 3 would reduce the biological resource impacts of the project, but not appreciably.

Cultural Resources

Grading and earthmoving during construction of the proposed project could potentially disturb unknown subsurface cultural resources. Mitigation measures implemented during project construction would reduce potential impacts to less than significant. Like the proposed project, construction activities associated with Alternative 3 could disturb unknown subsurface cultural resources, requiring similar mitigation measures as the project.

Geology and Soils

Potential geology and soils impacts that could occur with the implementation Alternative 3 would be similar to those that could occur with the implementation of the proposed project. Like the proposed project, mitigation measures would be implemented under Alternative 3 on a project-by-project basis to reduce potential geologic impacts to less than significant. Alternative 3 would not reduce the potentially significant geology and soils impacts of proposed project to a level of no impact.

Alternative 3 would expose fewer buildings and less people to potential hazards if a geologic hazard or seismic event were to occur. Alternative 3 has a total development potential of 1,381,723 square feet, which is less than the project's total development potential of 2,126,250 million square feet. Alternative 3 proposes only office/retail uses. The majority of project development would consist of residential uses (1,610,000 square feet) with a much smaller share devoted to office/retail (516,250). Residents would be anticipated to be within the HNTC planning area more consistently and for greater periods of time than employees or patrons of businesses. Alternative 3 would be expected to have a total of 4,606 employees, while the project would be expected to have a total of 1,558 employees and 3,482 residents (5,040 individuals total). Thus, Alternative 3 would reduce the potential exposure of people and structures to geology and soils impacts compared to the proposed project.

Hazards and Hazardous Materials

The proposed project has the potential to disturb hazardous materials within the planning area, resulting in accidental exposure to construction workers, occupants of residences, stores, and offices and wildlife. Mitigation measures would reduce potentially significant hazardous materials impacts to less than significant. The potential for hazardous materials disturbance and accidental exposure would be similar for Alternative 3 as is it would be for the proposed project. Mitigation measures recommended for the proposed project would apply to Alternative 3 to reduce any potential for adverse impacts associated with the presence of hazardous materials.

The total development potential of the project is 2,126,250 million square feet: 1,610,000 square feet would develop with residential uses and 516,250 square feet would develop with office/retail uses. The total development potential of Alternative 3 is 1,381,723 million square feet of office/retail uses exclusively. Residents would spend more time in the planning area than employees or patrons. The project would provide enough office/retail and living space for a total of 5,040 people, while Alternative 3 would provide enough office/retail space for 4,606 employees. Thus, the project would expose more building space and people to potential hazards than Alternative 3. While impacts associated with hazardous materials would be reduced under Alternative 3 compared to the proposed project, implementation of Alternative 3 would not result in substantive reductions and/or substantially minimize project impacts.

Hydrology and Water Quality

Project construction and operation would result in potentially significant, but mitigable hydrology and water quality impacts. Alternative 3 would result in similar hydrology and water quality impacts as the proposed project, requiring similar mitigation measures as the project. Alternative 3 would have a less dense and intense development pattern and would not develop the approximately 3.25 acre Ramp parcel. However, the proposed project would allow park and open space uses, which would provide additional opportunities for open space and landscaped areas in the planning area. More open space and landscaped areas would reduce the amount of impervious surfaces, which would reduce runoff and improve water quality. Consequently, storm water runoff and water quality impacts would be slightly reduced with the project.

Noise

The proposed project would have short-term construction noise impacts, as well as long-term noise impacts associated with additional traffic along area roadways and intersections and new stationary sources in the planning area. Project noise impacts would be mitigated to less than significant levels with the exception of increased mobile source noise levels that would result in a significant and unavoidable impact. Alternative 3 would have similar noise impacts as the project that would be mitigated with measures similar to those identified for project. However, because the proposed project would be mixed-use, it would most likely have slightly less traffic noise due to fewer overall vehicle trips. Therefore, the project would likely generate less noise along area roadways and intersections than Alternative 3.

Population and Housing

The proposed project would increase the City's housing supply, resulting in less than significant impacts. The proposed project would also increase employment opportunities in the City, resulting in a beneficial effect of bringing the jobs/housing ratio more in balance. Alternative 3 would not increase the City's housing supply. However, it would increase the number of jobs in the City as parcels in the planning area redevelop with general commercial uses. The additional employment that could be generated by Alternative 3 (estimated at 4,606 employees) would be greater than the additional employment that could be generated by the proposed project (estimated at 1,558 employees). Therefore, Alternative 3 would have an increased ability to reduce the job/housing imbalance in the City compared to the project.

Public Services, Utilities and Service Systems

The proposed project would have less than significant public services, utilities and service systems impacts. While Alternative 3 would have similar impacts as the project, it would likely place less demand on water supply, wastewater disposal capacity and public service providers, such as schools, police, and fire/medical emergency services than the project because it would not construct any housing units. Thus, Alternative 3 would have less demand than the proposed project.

Recreation

Project implementation would result in less than significant impacts on park and recreation facilities in the City with the payment of park and recreation facilities impact fees. Future development under Alternative 3 would be required to pay this fee as well, resulting in less than significant impacts comparable to the project.

Transportation/Traffic

Future development facilitated by implementation of the proposed project, including the Market Town project, would generate additional local and regional vehicle trips. Significant and unavoidable impacts would occur along two freeway segments and isolated intersections, as well as on public transit travel times despite the implementation of mitigation measures. Implementation of Alternative 3 would be expected to result in significant and unavoidable impacts similar to the project, despite the implementation of mitigation measures.

ALTERNATIVE 4: DEVELOPMENT OF HNTC PROGRAM WITH NO RAMP RELOCATION PROJECT

Description of Alternative

Alternative 4 was developed to illustrate the difference in impacts that would occur from implementation of the HNTC program without the relocation of the I-80 off-ramp and SR 4 on-ramp further east along SR 4 from their current location within the project site. Alternative 4 assumes that the proposed General Plan and Zoning Ordinance Amendments are adopted and would apply to all the project parcels except the Ramp parcel (the Ramp parcel would remain as Caltrans right-of-way) and the Market Town project is implemented. All the project parcels would redevelop, except the Ramp parcel, into a mixed-use town center

consisting of residential, commercial, office, and public and quasi public uses. No physical or operational changes would occur to the Ramp parcel, as the I-80 off-ramp and SR 4 on-ramp would not be relocated further east along SR 4 from their current location within the planning area. This alternative would result in 75,000 square feet less office/retail uses than the proposed project and 175,000 square feet less residential development (175 residential units less) than the proposed project. Table 6-4, Comparison of Alternative 4 and the Proposed Project, compares the proposed project's development scenario with that of Alternative 4.

**Table 6-4
Comparison of Alternative 4 and the Proposed Project**

Parcel	Size (Acres)	Proposed Project		Alternative 4	
		Number of Residential Units/ Square Feet	Gross Square Feet of Office/Retail	Number of Residential Units/ Square Feet	Gross Square Feet of Office/Retail
PNR (1)	6.62	400/ 360,000	140,000	400/ 360,000	140,000
C1 (2)	8.69	250/ 250,000	93,750	250/ 250,000	93,750
Loop (3)	6.25	375/ 375,000	187,500	375/ 375,000	187,500
Ramp (4)	3.23	175/ 175,000	75,000	0/0	0
Caltrans (5)	6.35	300/ 300,000	12,500	300/ 300,000	12,500
Carone/ WC Drilling (6 & 7)	3.81	150/ 150,000	7,500	150/ 150,000	7,500
Total	34.95	1,650/ 1,610,000	516,250	1,475/ 1,435,000	441,250

Environmental Impacts Compared to the Proposed Project

Land Use and Planning

The proposed project would allow future development within the HNTC planning area that would be compatible with the overall goals and policies of the General Plan, the Central Hercules Plan and the Dynamite Redevelopment Project Area and Project Area No. 2, resulting in no land use impacts. Implementation of Alternative 4 would result in the same policy changes as the proposed project (with the exception that the Ramp parcel would remain as Caltrans right-of-way). Consequently, it would have land use impacts similar to the proposed project. However, Alternative 4 would fragment the planning area, preventing it from achieving a cohesive town center, which in turn would affect mobility in the area and potentially increase the chance of conflicts between vehicles and pedestrians and bicyclists.

Aesthetics

Alternative 4 would result in aesthetics impacts similar to those of the proposed project. Although the alternative would result in fewer residential units and retail/office buildings, it

would disturb roughly the same amount of land area and would generate virtually the same level of potential impacts as the proposed project.

Air Quality

Project construction related air quality impacts would be less than significant with the implementation of mitigation measures. However, project operational air quality impacts would remain significant and unavoidable even after the implementation of mitigation measures. Furthermore, the project would result in a significant and unavoidable conflict with the BAAQMD Air Quality Management Plan. Like the proposed project, Alternative 4 would require mitigation measures to reduce potentially significant construction related air quality impacts. The development potential of Alternative 4 (total of 1,876,250 square feet) would be less than the development potential of the proposed project (total of 2,126,250 square feet). Alternative 4 would be expected to have a total of 1,344 employees and 3,112 residents (4,456 combined), compared to the project, which would be expected to have a total of 1,558 employees and 3,482 residents, for a total of 5,040 individuals. Alternative 4 would generate fewer people within the planning area than the proposed project. Vehicle trips and related vehicle emissions associated with Alternative 4 would be reduced compared to the proposed project. However, Alternative 4 would not be expected to reduce the significant and unavoidable air quality impacts of the project. Nonetheless, Alternative 4 would generate less vehicle emissions and less overall air quality impacts than the proposed project.

Biological Resources

Alternative 4 would result in the same potentially significant biological resource impacts as the proposed project, since the development footprint would essentially be the same as the project with the exception that the Ramp parcel would not be redeveloped. The same mitigation measures required for the project would be required for Alternative 4. Because the Ramp parcel would not be redeveloped under Alternative 4, potential impacts on CRLF and CRLF habitat would be reduced compared to the project. Accordingly, Alternative 4 would reduce the project's biological resource impacts, but not substantially.

Cultural Resources

The proposed project could potentially disturb unknown subsurface cultural resources. Mitigation measures implemented during construction activities would reduce potential impacts to a less than significant level. Implementation of Alternative 4 would have the potential to generate similar cultural resource impacts as the proposed project and would require similar mitigation measures.

Geology and Soils

Alternative 4 would result in geology and soils impacts similar to those of the proposed project. However, it would disturb a slightly smaller amount of land area, which would create less potential impacts than the proposed project. The development potential of Alternative 4 (total of 1,876,250 square feet) would be less than the development potential of the proposed project (total of 2,126,250 square feet). As a result, the additional employees and residents that could be generated by the project (1,558 employees and 3,482 residents) would be greater than the additional employees and residents that could be generated by Alternative 4

(1,344 employees and 3,112 residents). Therefore, if a seismic event takes place, this alternative would expose less building space and fewer people to potential harm or danger than the proposed project. Consequently, Alternative 4 would slightly reduce the potential geology and soil impacts of the proposed project.

Hazards and Hazardous Materials

Alternative 4's hazardous materials impacts would be comparable to the hazardous materials impacts associated with the proposed project, requiring similar mitigation. Nonetheless, this Alternative would disturb a slightly smaller amount of land than the proposed project, creating less potential hazardous materials impacts than the project. Furthermore, because Alternative 4 would have 250,000 square feet less total development potential (combined office/retail and residential) than the proposed project, it would generate 214 fewer employees and 370 fewer residents than the project. Consequently, this alternative would expose less building space and fewer people to potential harm or danger from hazardous materials than the proposed project. Therefore, Alternative 4 would reduce the potential hazardous materials impacts of the proposed project.

Hydrology and Water Quality

Alternative 4 would result in similar hydrology and water quality impacts as the proposed project. Implementation of Alternative 4 would necessitate similar mitigation measures as required for the project to reduce potentially significant hydrology and water quality impacts to less than significant. However, Alternative 4 would not develop the approximately 3.25-acre Ramp parcel, creating less impervious surface area than the project. Thus, Alternative 4 would allow more infiltration of rainwater, reducing the amount of storm water runoff as well as potential sources of polluted runoff. As a result, storm water runoff and water quality impacts would be slightly reduced with Alternative 4.

Noise

Project short-term construction and stationary noise impacts are potentially significant, but mitigable to less than significant levels. However, the proposed project would result in an increase in mobile source noise levels and a significant and unavoidable impact. Because development associated with Alternative 4 would be similar to the project, Alternative 4 would be expected to have impacts as the project. However, Alternative 4 would develop less office, retail, and residential uses than the project. Consequently, it would generate less overall noise due to decreased activity and vehicle trips.

Population and Housing

Implementation of the project would result in less than significant impacts on population growth, while project impacts on employment and the jobs/housing ratio would be beneficial. Alternative 4 is similar in nature to the proposed project and would accordingly have impacts comparable to the project.

Public Services, Utilities and Service Systems

Alternative 4 would have similar less than significant public services, utilities and service systems impacts as the project. However, because it would be reduced in intensity, it would result in less demand on public service providers, such as schools, police and fire/medical emergency services than the project. It would also produce less wastewater and solid waste and have less water demand than the project. Thus, Alternative 4 would reduce the impacts of the project.

Recreation

The proposed project would increase the use of park and recreation facilities. However, it would have less than significant impacts on park and recreation facilities with the payment park and recreation facilities impact fees. Alternative 4 would also increase the use of park and recreation facilities. Alternative 4 would be required to pay park and recreation facilities impact fees as well, resulting in less than significant impacts. However, this alternative would not generate fewer new residents to the City, placing less demand on park and recreational facilities than the project.

Transportation/Traffic

After the implementation of mitigation measures, the proposed project would have significant and unavoidable impacts along two freeway segments and isolated intersections, as well as on public transit travel times. Although Alternative 4 would result in less overall development in the planning area compared to the project, it would still be expected to result in significant and unavoidable impacts similar to the project, as the traffic generation would decrease only marginally under this alternative. However, Alternative 4 would fragment the planning area, which would affect mobility in the area and potentially increase the chance of conflicts between vehicles and pedestrians and bicyclists.

ALTERNATIVE 5: DEVELOPMENT OF HNTC PROGRAM WITH NO RELOCATION OF BART PARK-AND-RIDE LOT**Description of Alternative**

Under Alternative 5, the proposed General Plan and Zoning Ordinance Amendments would be adopted and would apply to the entire project site with the exception of the PNR parcel, which would retain its CP land use designation and zoning, as well as its current transit center use, and the Market Town project would not be implemented. Thus, the existing Hercules Transit Center would remain on the PNR parcel, while all the project parcels east of I-80 would redevelop into a mixed-use town center consisting of residential, commercial, office, and public and quasi public uses. Consequently, the Market Town project could not be implemented, as the PNR parcel would continue to operate as transit center for commuters. This alternative assumes that the I-80 off-ramp and SR 4 on-ramp would be relocated further east along SR 4 from their current location within the planning area. Alternative 5 would have 140,000 square feet less of office/retail uses than the proposed project and 360,000 less residential square footage than the project with 400 less residential units. Table 6-5, Comparison of Alternative 5 and the Proposed Project, provides a comparison between the proposed project's development scenario and Alternative 5's development scenario. This

alternative was developed to demonstrate differences in impacts that would occur from implementation of the HNTC program should the BART park-and-ride lot not relocate from the PNR parcel and the Market Town project not develop.

**Table 6-5
Comparison of Alternative 5 and the Proposed Project**

Parcel	Size (Acres)	Proposed Project		Alternative 5	
		Number of Residential Units/ Square Feet	Gross Square Feet of Office/Retail	Number of Residential Units/ Square Feet	Gross Square Feet of Office/Retail
PNR (1)	6.62	400/ 360,000	140,000	0/0	0
C1 (2)	8.69	250/ 250,000	93,750	250/ 250,000	93,750
Loop (3)	6.25	375/ 375,000	187,500	375/ 375,000	187,500
Ramp (4)	3.23	175/ 175,000	75,000	175/ 175,000	75,000
Caltrans (5)	6.35	300/ 300,000	12,500	300/ 300,000	12,500
Carone/ WC Drilling (6 & 7)	3.81	150/ 150,000	7,500	150/ 150,000	7,500
Total	34.95	1,650/ 1,610,000	516,250	1,250/ 1,250,000	376,250

Environmental Impacts Compared to the Proposed Project

Land Use and Planning

Project implementation would not result in any land use or planning impacts. Given that Alternative 5 would be similar to the proposed project with the exception that the PNR parcel would not redevelop into a mix of residential, commercial, office, and public and quasi public uses, but would retain its current transit center use. This alternative would be expected to be compatible with the overall goals and policies of the General Plan and the Dynamite Redevelopment Project Area and Project Area No. 2. However, Alternative 5 would not be consistent with the overall vision of the Central Hercules Plan, which envisioned the PNR parcel as one of the most important parcels in the development of the new downtown and one of the first parcels to be developed as part of the HNTC project.

Aesthetics

Alternative 5 would not reduce the aesthetics impacts associated with the proposed project. This is because like the proposed project, Alternative 5 would require mitigation during construction to screen aesthetically unappealing views. While Alternative 5 would have less overall development, resulting in a lower density and intensity of development compared to the project, the proposed project would allow more park and open space uses, which could allow for more visual relief than Alternative 5.

Air Quality

Construction emissions associated with the project would be potentially significant, but mitigable. Operational emissions resulting from development of the project would generate significant and unavoidable long-term air quality impacts. The project would also result in a significant and unavoidable conflict with the BAAQMD Air Quality Management Plan. Development under Alternative 5 and the associated impacts would be similar to the proposed project. While Alternative 5 would have less residential, retail and office uses than the proposed project, this reduction would not considerably lessen the significant and unavoidable air quality impacts of the project. Regardless, Alternative 5 would generate less vehicle emissions and less overall air quality impacts than the proposed project.

Biological Resources

Alternative 5 would result in the same potentially significant biological resource impacts as the proposed project. Similar areas would be redeveloped and similar mitigation would be required. As such, Alternative 5 would result in similar biological resource impacts as the proposed project.

Cultural Resources

Construction associated with the project could potentially disturb unknown subsurface cultural resources. Recommended mitigation measures would reduce the project's potential impacts on cultural resources to less than significant. Construction activities related to implementation of Alternative 5 would have the same potential to disturb unknown subsurface cultural resources as the project, requiring similar mitigation as the project.

Geology and Soils

Project implementation could result in structural damage and pose safety risks to building occupants and visitors from seismic ground shaking, seismic-related ground failure and expansive soils. Implementation of Alternative 5 would result in similar geology and soils impacts as the proposed project. Like the proposed project, mitigation measures would be implemented under Alternative 5 on a project-by-project basis to reduce potential geologic impacts to less than significant. Because this alternative would disturb a slightly smaller area than the project, it would create less potential impacts than the project. Additionally, this alternative would have 400 less residential units, 60,000 less square feet of retail uses and 80,000 square feet less of office uses than the proposed project. As a result, it would have 400 less employees and 844 fewer residents than the project. Consequently, this alternative would expose less building space and fewer people to potential harm or danger than the proposed project if a seismic event takes place. Accordingly, Alternative 5 would reduce the potential geology and soils impacts of the proposed project; however, they would not be reduced to a level of no impact.

Hazards and Hazardous Materials

Project implementation could disturb hazardous materials within the HNTC planning area, resulting in accidental exposure to construction workers, occupants of residences, stores, and offices as well as wildlife. Implementation of Alternative 5 would result in similar hazardous

materials impacts as the proposed project, requiring similar mitigation measures as the project to reduce any potential adverse hazardous materials impacts. However, this alternative would disturb a slightly smaller area than the project, thereby reducing its potential to encounter hazardous materials compared to the project. Moreover, this alternative would have 140,000 square feet less office/retail uses and 400 less residential units than the proposed project. Consequently, it would have 400 fewer employees and 844 fewer residents than the project. Therefore, this alternative would expose less building space and fewer people to potential harm or danger from hazardous materials than the proposed project, slightly reducing the potential hazards and hazardous materials impacts of the proposed project.

Hydrology and Water Quality

Alternative 5 would result in similar hydrology and water quality impacts as the proposed project. Alternative 5 would also require similar mitigation measures as the project to reduce potentially significant hydrology and water quality impacts to less than significant. However, Alternative 5 would not redevelop the approximately 6.5-acre PNR parcel, which is approximately two-thirds undeveloped. Consequently, Alternative 5 would have increased pervious surface area, reducing the amount storm water runoff and potential sources of polluted storm water runoff compared to the project. Storm water runoff and water quality impacts would be slightly reduced with Alternative 5.

Noise

Development associated with Alternative 5 would be similar to the project. Thus, implementation of Alternative 5 would be expected to have noise impacts. However, Alternative 5 would develop less office, retail and residential uses than the project, generating less overall noise than the project due to decreased activity and vehicle trips.

Population and Housing

Implementation of the project would result in less than significant impacts on population growth, while project impacts on employment and the jobs/housing ratio would be beneficial. Alternative 5 is similar in nature to the proposed project and would accordingly have impacts comparable to the project.

Public Services, Utilities and Service Systems

Alternative 5 would develop less office, retail and residential uses than the project, generating less demand for water, schools, police and fire/medical emergency services than the project. It would also produce less wastewater and solid waste than the project. However, implementation of Alternative 5 would not result in substantive reductions and/or substantially minimize project impacts.

Recreation

Both the project and Alternative 5 would increase the use of park and recreation facilities in the City. However, both the project and Alternative 5 would have less than significant impacts on park and recreation facilities with the payment park and recreation facilities

impact fees. Although Alternative 5 would develop less office, retail and residential uses than the project, generating fewer new residents to the City who may utilize park and recreation facilities, it would not substantially reduce park and recreation use compared to the project.

Transportation/Traffic

The proposed project would have significant and unavoidable impacts along two freeway segments and isolated intersections, as well as on public transit travel times despite the implementation of mitigation measures. Given that traffic generation would not decrease appreciably with Alternative 5, even though Alternative 5 would result in less overall development in the planning area compared to the project, it would be expected to result in significant and unavoidable impacts similar to the project.

ALTERNATIVE 6: MARKET TOWN PROJECT ONLY

Description of Alternative

This alternative was selected to show the different impacts that could occur with implementation of only the Market Town project. Alternative 6 consists of the adoption of General Plan and Zoning Ordinance Amendments to create a NTC land use designation and zoning district that would apply to the PNR parcel only and the implementation of the Market Town project. All other parcels east of I-80 would develop under the direction of the existing General Plan and Zoning Ordinance except the Ramp parcel, which would remain as Caltrans right-of-way. Under this alternative, the PNR parcel would redevelop with a mixed-use town center consisting of residential, commercial, office, and public and quasi public uses, the C1 parcel would redevelop into a replacement parking facility for the existing Hercules Transit Center, the Ramp parcel would continue to function as the off-ramp for I-80 and on-ramp for SR 4 from Willow Avenue, and the remaining parcels east of I-80 would develop with either retail, wholesale (open to the public), offices (business, professional and service uses), or other highway-oriented businesses (automobile service stations, restaurants and automobile repair services) located in one- or two-story buildings with FARs ranging from 0.20 to 1.00.

Alternative 6 would have 338,570 square feet more of office/retail uses and 1,250,000 square feet less of residential uses (1,250 less residential units) than the proposed project. Table 6-6, Comparison of Alternative 6 and the Proposed Project, compares the proposed project's development scenario with the development scenario proposed by Alternative 6.

**Table 6-6
Comparison of Alternative 6 and the Proposed Project**

Parcel	Size (Acres)	Proposed Project		Alternative 6	
		Number of Residential Units/ Square Feet	Gross Square Feet of Office/Retail	Number of Residential Units/ Square Feet	Gross Square Feet of Office/Retail
PNR (1)	6.62	400/ 360,000	140,000	400/ 360,000	140,000
C1 (2)	8.69	250/ 250,000	93,750	0	0

Parcel	Size (Acres)	Proposed Project		Alternative 6	
		Number of Residential Units/ Square Feet	Gross Square Feet of Office/Retail	Number of Residential Units/ Square Feet	Gross Square Feet of Office/Retail
Loop (3)	6.25	375/ 375,000	187,500	0	272,250
Ramp (4)	3.23	175/ 175,000	75,000	0	0
Caltrans (5)	6.35	300/ 300,000	12,500	0	276,606
Carone/ WC Drilling (6 & 7)	3.81	150/ 150,000	7,500	0	165,964
Total	34.95	1,650/ 1,610,000	516,250	400/ 360,000	854,820

Environmental Impacts Compared to the Proposed Project

Land Use and Planning

Implementation of the proposed project would not result in any land use or planning impacts. It would allow for future development projects that would be compatible with the overall goals and policies of the General Plan, the Central Hercules Plan and the Dynamite Redevelopment Project Area and Project Area No. 2. Alternative 6 would allow the redevelopment of the PNR parcel, while all other parcels east of I-80 would retain their existing land use designations (in the case of the Ramp parcel, it would remain as Caltrans right-of-way). Under Alternative 6, the redevelopment of the PNR parcel would be consistent with the overall goals and policies of the General Plan, the Central Hercules Plan and the Dynamite Redevelopment Project Area and Project Area No. 2, and the development/use of the remaining parcels east of I-80 would remain consistent with the original intent of the GC land use designation as described in the General Plan. However, Alternative 6 would not be consistent with the Central Hercules Plan vision for the HNTC area, as the area would not develop with a pedestrian- and transit-friendly mix of uses, including retail, office and residential. This alternative would also not be consistent with the underlying purpose of the Central Hercules Plan because it would not create a true “town center.”

Aesthetics

With the implementation of mitigation measures, the proposed project would result in less than significant aesthetics impacts. Given that Alternative 6 would disturb roughly the same amount of land area as the proposed project, it would have comparable impacts as the proposed project, requiring mitigation during construction to screen aesthetically unappealing views, like the proposed project. Alternative 6 would involve less development and have a reduced density and intensity compared to the proposed project. The proposed project would allow more park and open space uses, providing more visual relief than Alternative 6.

Air Quality

Construction emissions associated with the project would be potentially significant, but mitigable. Operational emissions resulting from development of the project would generate significant and unavoidable long-term air quality impacts. The project would also result in a significant and unavoidable conflict with the BAAQMD Air Quality Management Plan. Alternative 6 would have less residential, retail and office uses than the proposed project, but would still have the same potentially significant, but mitigable construction-related air quality impacts as the project, as well as the same significant and unavoidable long-term air quality impacts and significant and unavoidable conflict with the BAAQMD Air Quality Management Plan. Nonetheless, Alternative 6 would generate less vehicle emissions and less overall air quality impacts than the proposed project. Therefore, it would reduce the severity of the project's air quality impacts, but not to a level of no impact.

Biological Resources

A similar development area would be required for Alternative 6 as would be required for the proposed project. As such, similar impacts on biological resources could occur, requiring similar mitigation measures as the project. Consequently, Alternative 6 would result in similar biological resource impacts as the proposed project.

Cultural Resources

Project construction activities could potentially disturb unknown subsurface cultural resources, requiring mitigation. Alternative 6 would not reduce the cultural resource impacts of the proposed project. This alternative would require a similar development area as the project and potentially significant impacts associated with previously undiscovered resources and/or remains would occur. Recommended mitigation measures would apply to Alternative 6 to reduce cultural resource impacts to less than significant.

Geology and Soils

Alternative 6 would have similar geology and soils impacts as the proposed project. Like the proposed project, this alternative would require mitigation on a project-by-project basis to reduce potential impacts to less than significant levels. Alternative 6 would have a total development potential of 854,820 square feet, which is less than the project's total development potential of 2,126,250. Because Alternative 6 would have 338,570 more square feet of office/retail uses than the proposed project, it would generate 1,225 more employees than the project. However, this alternative would have 1,250 fewer residential units than the project, resulting in 2,638 fewer residents than the project. The project would be expected to have a total of 5,040 individuals (3,482 residents and 1,558 employees), while Alternative 6 would be expected to generate a total of 3,627 total individuals (844 residents and 2,783 employees). Consequently, this alternative would expose less building space and fewer people to potential harm or danger should a seismic event occur, reducing the project's potential geology and soils impacts.

Hazards and Hazardous Materials

Alternative 6 could potentially disturb and/or upset hazardous materials within the HNTC planning area, similar to the proposed project, as it would have a similar development footprint. Accordingly, recommended mitigation measures would apply to this alternative to reduce hazardous materials impacts to less than significant. Regardless, Alternative 6 would expose less building space and fewer people to potential harm or danger from hazardous materials, as it would have 900,430 square feet less development potential (including 1,250 less residential units) and 1,413 fewer individuals (employees and residents combined) than the proposed project. Thus, Alternative 6 would reduce the project's potential hazardous materials impacts.

Hydrology and Water Quality

Alternative 6 would result in similar hydrology and water quality impacts as the proposed project. Alternative 6 would also require similar mitigation measures as the project to reduce potentially significant hydrology and water quality impacts to less than significant. However, Alternative 6 would not develop the approximately 3.25-acre Ramp parcel, creating less impervious surface area than the project. Thus, Alternative 6 would allow more infiltration of rainwater, reducing the amount of storm water runoff as well as potential sources of polluted runoff. As a result, storm water runoff and water quality impacts would be slightly reduced with Alternative 6.

Noise

Development associated with Alternative 6 would be similar to the project. Thus, implementation of Alternative 6 would be expected to have the same noise impacts as the project. However, Alternative 6 would develop slightly less office, retail and residential uses than the project, generating slightly less noise than the project due to decreased activity and vehicle trips.

Population and Housing

Implementation of the project would result in less than significant impacts on population growth, while project impacts on employment and the jobs/housing ratio would be beneficial. Alternative 6 would increase the City's housing supply to a lesser extent than the proposed project, generating far fewer new residents to the City (approximately 2,638 less) than the proposed project. However, the additional employment that could be generated by Alternative 6 (estimated at 2,783 employees) would be greater than the additional employment that could be generated by the proposed project (estimated at 1,558 employees). Therefore, Alternative 6 would have an increased ability to reduce the job/housing imbalance in the City compared to the project.

Public Services, Utilities and Service Systems

The proposed project would increase demand for water, schools, police and fire/medical emergency services. It would also increase the amount wastewater and solid waste generated in the City. However, these increases were found to be less than significant. Alternative 6 would develop less office, retail and residential uses than the project, generating less demand

for water, schools, police and fire/medical emergency services than the project. It would also produce less wastewater and solid waste than the project. Accordingly, Alternative 6 would less than significant impacts on public services, utilities and service systems like the project, but its demand on public services, utilities and service systems would be reduce compared to the project.

Recreation

Both the project and Alternative 6 would increase the use of park and recreation facilities in the City. However, both the project and Alternative 6 would have less than significant impacts on park and recreation facilities with the payment park and recreation facilities impact fees. Alternative 6 would develop less office, retail and in particular residential uses than the project. Thus, this alternative would generate far fewer new residents to the City who may utilize park and recreation facilities.

Transportation/Traffic

The proposed project would have significant and unavoidable impacts along two freeway segments and isolated intersections, as well as on public transit travel times despite the implementation of mitigation measures. Given that traffic generation would not decrease appreciably with Alternative 6, even though Alternative 6 would result in less overall development in the planning area compared to the project, it would be expected to result in significant and unavoidable impacts similar to the project.

6.4 COMPARISON OF ALTERNATIVES

The following discussion summarizes the key similarities and differences between the proposed project and the six alternatives focusing on whether the alternatives meet project objectives and lessen the severity of the project's environmental impacts.

6.4.1 ALTERNATIVE 1

The implementation of Alternative 1 would completely avoid the potential impacts of the proposed project since no physical or operational changes to the site and its surroundings would occur beyond existing conditions. Alternative 1 would not achieve the potentially beneficial impacts of the proposed project related to creating a new town center for the City that is a cohesive, compatible development that provides an attractive environment for the enjoyment of the public. Nor would this alternative improve the City's jobs/housing ratio. Alternative 1 would not be consistent with the vision of the Central Hercules Plan for the HNTC planning area, which is a pedestrian- and transit-friendly mix of uses, including retail, office and residential. This alternative is also not consistent with the underlying purpose of the Central Hercules Plan, which is to enhance the City's quality of life, increase mobility and to create a true "town center." Finally, Alternative 1 would not meet any of the basic project objectives.

6.4.2 ALTERNATIVE 2

Alternative 2 would generate impacts that are comparatively similar to the proposed project. In general, Alternative 2 would reduce the impacts of the proposed project related to

biological resources, jobs/housing imbalance, public services, utilities and service systems, and recreation. Alternative 2 would not achieve the potentially beneficial impacts of the proposed project related to creating a new town center for the City that is a cohesive, compatible development that provides an attractive environment for the enjoyment of the public. Alternative 2 would not meet the project objectives, nor would it be consistent with the vision or the underlying purpose of the Central Hercules Plan.

6.4.3 ALTERNATIVE 3

Impacts associated with Alternative 3 would be comparatively similar to those associated with the proposed project. In general, Alternative 3 would reduce the impacts of the proposed project related to air quality, biological resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, population and housing, public services, utilities and service systems, and recreation. Alternative 3 would not achieve the potentially beneficial impacts of the proposed project related to creating a new town center for the City that is a cohesive, compatible development that provides an attractive environment for the enjoyment of the public. Alternative 3 would not meet the project objectives, nor would it be consistent with the vision or the underlying purpose of the Central Hercules Plan.

6.4.4 ALTERNATIVE 4

Alternative 4 would have similar impacts to the proposed project. In general, Alternative 4 would reduce the severity of project impacts on air quality, biological resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, public services, utilities and service systems, and recreation. Alternative 4 would create a new town center for the City, resulting in a beneficial impact similar to the project. However, Alternative 4 would fragment the planning area, preventing it from achieving a cohesive town center. This would also affect mobility in the area and potentially increase the chance of conflicts between vehicles and pedestrians and bicyclists. Alternative 4 would not meet all the project objectives.

6.4.5 ALTERNATIVE 5

Impacts associated with implementation of Alternative 5 would be generally similar to those identified with implementation of the proposed project. Overall, Alternative 5 would reduce the severity of project impacts on air quality, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, public services, utilities and service systems, and recreation. Alternative 5 would create a new town center for the City, resulting in a beneficial impact similar to the project. However, Alternative 5 would not be consistent with the overall vision of the Central Hercules Plan, which envisioned the PNR parcel as one of the most important parcels in the development of the new downtown and one of the first parcels to be developed as part of the HNTC project. Alternative 5 would not meet all the project objectives.

6.4.6 ALTERNATIVE 6

Overall, Alternative 6's impacts would be similar to those associated with the proposed project. In general, Alternative 6 would reduce the severity of project impacts on air quality, geology and soils, hazards and hazardous materials, hydrology and water quality, noise,

public services, utilities and service systems, and recreation. Alternative 6 would create a new, but much smaller town center for the City. Additionally, Alternative 6 would not be consistent with the Central Hercules Plan vision for the HNTC planning area, as the area would not redevelop with a pedestrian- and transit-friendly mix of uses, including retail, office and residential. This alternative would also not be consistent with the underlying purpose of the Central Hercules Plan because it would not create a true “town center.” Alternative 6 would not meet all the project objectives.

6.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires that an Environmentally Superior Alternative be identified; that is, an alternative that would result in the fewest or least significant environmental impacts. If the No Project Alternative is the Environmentally Superior Alternative, CEQA requires that another alternative be chosen as the Environmentally Superior Alternative.

None of the Project Alternatives, including any of the No Project Alternatives, is clearly environmentally superior to the proposed project. While the No Project/No Build (Status Quo) With No Ramp Relocation Project would reduce all of the potentially significant and significant and unavoidable impacts associated with the project, it would not meet the project objectives. It would also fundamentally conflict with the vision of the Central Hercules Plan for the HNTC planning area, which specifies a pedestrian- and transit-friendly mix of uses, including retail, office and residential. Furthermore, this alternative is not consistent with the underlying purpose of the Central Hercules Plan, which is to enhance the City’s quality of life, increase mobility and to create a true “town center.”

7.0 OTHER CEQA CONSIDERATIONS

7.1 SIGNIFICANT AND UNAVOIDABLE IMPACTS

Section 15162(b) of the California Environmental Quality Act (*CEQA Guidelines*) requires an EIR to discuss the significant impacts of a proposed project that cannot be reduced to a less than significant level. These impacts are referred to as “significant and unavoidable impacts” of the project.

7.1.1 AIR QUALITY

As described in Section 4.4, Air Quality, future development within the Hercules New Town Center (HNTC) planning area would result in the following significant and unavoidable impacts:

- ◆ Long-term operational emissions due to the exceedance of criteria pollutants.

Despite compliance with mitigation measures, long-term operational emissions associated with future development within the HNTC planning area would exceed the Bay Area Air Quality Management District (BAAQMD) thresholds for PM₁₀ and ROG_s due to the net increase in daily trips. Thus, the project would result in significant and unavoidable impacts for long-term operations under Year 2035 conditions. The Market Town project would also exceed the BAAQMD thresholds for PM₁₀ due to the net increase in daily trips and would result in significant and unavoidable impacts for long-term operations under Year 2013 conditions.

- ◆ Consistency with the BAAQMD Air Quality Management Plan.

Although the proposed project would be in conformance with the *2000 Clean Air Plan*, it would exceed BAAQMD thresholds for operational emissions. Given that there are no feasible mitigation measures, a significant and unavoidable impact would result.

- ◆ Cumulative Operational Emissions.

Based on the long-term operational impacts analysis, the proposed project would exceed BAAQMD thresholds for ROG and PM₁₀. Thus, cumulative operational impacts associated with the proposed project in combination with other future projects would be significant and unavoidable.

7.1.2 NOISE

As described in Section 4.10 (Noise), future development within the HNTC planning area would result in the following significant and unavoidable impact:

- ◆ Cumulative long-term noise impacts for nine roadway segments in the study area which would exceed the City’s 60-dBA noise standard.

Traffic noise levels associated with the proposed project and related cumulative projects would significantly increase noise along ten roadway segments. Of these ten segments, nine would exceed the City's 60 dBA noise standard. Therefore, cumulative mobile source noise levels along these segments would result in a significant and unavoidable impact.

7.1.3 TRANSPORTATION/TRAFFIC

As described in Section 4.14 (Transportation/Traffic), future development within the HNTC planning area would result in the following significant and unavoidable impacts:

- ◆ Development of the HNTC program area would increase traffic through the system of local intersections under cumulative (2035) conditions.

Intersections that would exacerbate unacceptable (LOS F) traffic operations include:

- Willow Avenue/Sycamore Avenue intersection during both the AM and PM peak hour
- San Pablo Avenue/Sycamore Avenue intersection during both the AM and PM peak hour
- San Pablo Avenue/John Muir Parkway intersection during both the AM and PM peak hour
- San Pablo Avenue/PNR Driveway intersection during both the AM and PM peak hour

Despite compliance with mitigation measures outlined in Section 4.14, development within the HNTC planning area would increase traffic through these intersections and significant and unavoidable impacts would result.

- ◆ Development of the HNTC program area would increase traffic on regional freeway facilities under Cumulative (2035) Conditions.

The addition of traffic from future development within the HNTC planning area would exacerbate unacceptable (LOS F) traffic operations on the Interstate 80 (I-80) west bound weave section from the State Route 4 (SR 4) on-ramp to the Pinole Valley Road off-ramp and on the I-80 east bound mainline freeway segment from Pinole Valley Road to the SR 4 east bound connector ramp. No feasible mitigation measures have been identified that would reduce the impacts from increased traffic on regional freeway facilities. Therefore, the impact would remain significant and unavoidable.

- ◆ Development of the HNTC program area would increase transit activity to the site.

Despite compliance with mitigation measures outlined in Section 4.14, vehicle delay from future development within the HNTC planning area and cumulative development in Hercules would cause significant intersection impacts. These impacts are considered significant and unavoidable.

7.2 SIGNIFICANT IRREVERSIBLE CHANGES

Section 15126.2(c) of the *CEQA Guidelines* requires an EIR to discuss the significant irreversible environmental changes that would result from implementation of a proposed project. Examples include: uses of nonrenewable resources during the initial and continued phases of the project (because a large commitment of such resources make removal or nonuse thereafter unlikely); primary or secondary impacts of the project that would generally commit future generations to similar uses (e.g., highway improvements that would provide access to a previously inaccessible area); and/or irreversible damage that could result from any potential environmental accidents associated with the project.

Future development within the HNTC planning area consistent with the proposed General Plan and Zoning Ordinance Amendments and implementation of the Market Town project would require the long-term commitment of natural resources and land. Actions related to future development and Market Town would result in an irretrievable commitment of nonrenewable resources, such as energy supplies and other construction-related resources. These energy resources would be used for construction, heating and refrigeration of food and water, lighting, and other associated energy needs.

Insofar as fossil fuels currently are the principal source of energy, future development in the planning area as well as the Market Town project would incrementally reduce existing supplies of fuel, such as fuel oil, natural gas and gasoline. This represents a long-term commitment to consumption of essentially nonrenewable resources.

Development anticipated within the HNTC planning area together with other projects in the City would require the commitment or destruction of other nonrenewable and slowly renewable resources. These resources include (but are not limited to) lumber and other forested products; sand and gravel; asphalt; petrochemical construction materials; steel, copper; lead, other metals; and water. A marginal increase in the commitment of social services and public maintenance services (e.g., waste disposal and treatment) would also be required.

As described previously, the parcels within the HNTC planning area are currently used for various purposes and are currently designated General Commercial (GC) and Commercial Public (CP) under the City's General Plan and Zoning Ordinance. Construction within the planning area would have varying effects on the built and physical environment depending on the current use of each site. Construction on parcels that are currently undeveloped would result in a long-term commitment to urbanization because reversion of the land back to vacant land use would be difficult and highly unlikely. Construction would also result in the conversion of sites that are currently used as a park and ride lot, storage lots, off-ramps for SR 4, and low-density industrial use to higher density, mixed use development. However, construction of the HNTC project would result in a more proficient design and use of these parcels when compared to their use today. The HNTC project would serve as the central gathering, shopping, living and working place for the City. The mixed-use and transit-oriented nature of this project makes it more efficient than a traditional development that would likely occur under the planning area's current General Plan land use designation and zoning district.

No explosives or other hazardous materials would be used within the planning area. Accidental spills of fuel, paints or other construction-related materials might occur during construction. However, these types of accidents would be limited because site development would be implemented and overseen by experienced construction workers. Such potential spills would not result in irreversible environmental changes.

8.0 REPORT PREPARATION PERSONNEL

8.1 CITY OF HERCULES

(Community Development Department)

Steve Lawton Community Development Director
Dennis Tagashira.....Planning Manager
Robert Reber.....Assistant Planner
Rochelle Samuels.....Development Services Technician
Matt Raimi.....Adjunct Planner (Raimi + Associates, Inc.)

8.2 RBF CONSULTING

(EIR Consultant)

Kristie Wheeler Project Manager
Eddie Torres Environmental Specialist
Dustin Joseph..... Environmental Planner
Kara Spencer Environmental Planner
Brian Madigan Environmental Analyst
Kimberly Comacho Environmental Analyst

8.3 WRA ASSOCIATES

(Biological Resources)

Doug Spicher..... Project Manager
Geoff Smick.....Senior Botanist
Liza Wozniak Senior Technician

8.4 FEHR & PEERS

(Traffic Analysis)

Robert Rees Principal
Richard Lee..... Project Manager
Mike Iswalt..... Project Engineer

9.0 REFERENCES

- Aerometric Data Analysis and Measurement System (ADAM), summaries from 2002 to 2006, <http://www.arb.ca.gov/adam>.
- Bay Area Air Quality Management District, *CEQA Guidelines*, December 1999.
- AllWest, *Environmental Site Assessment, Hercules Transit Center, San Pablo Avenue at Sycamore Avenue, Hercules, California*, December 16, 2005.
- California Air Resources Board and U.S. Environmental Protection Agency, February 22, 2007.
- California Department of Fish and Game, Wildlife and Habitat Data Analysis Branch, Natural Diversity Database, 2007.
- California Department of Fish and Game, Environmental Services Division (ESD), *A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607, California Fish and Game Code*, 1994.
- California Energy Commission, *Inventory of California Greenhouse Gas Emissions and Sinks 1990 to 2004*, December 2006, http://www.energy.ca.gov/2006publications/CEC_600_2006_013/CEC_600_2006_013_SF.PDF.
- California Native Plant Society, *Electronic Inventory of Rare and Endangered Vascular Plants of California*, <http://www.cnps.org>, accessed May 2007.
- Caltrans, *2005 Bay Area HOV Lanes*, 2006.
- Caltrans, *Guidelines for Applying Traffic Micro simulation Modeling Software*, 2002.
- City of Hercules *General Plan*, September 22, 1998.
- City of Hercules, *General Plan, Hazardous Waste Management Plan*, December 1990.
- City of Hercules, *General Plan Land Use and Circulation Elements Update and Redevelopment Plan Amendments Final Environmental Impact Report*, Vol. I, June 9, 1995.
- City of Hercules: Local Parks, <http://www.ci.hercules.ca.us/New/Rec/parks.htm>
- Climate Change (Intergovernmental Panel on Climate Change, *Climate Change, The Science of Climate Change – Contribution of Working Group I to the Second Assessment Report of the IPCC*, 1996).
- Contra Costa Transit Authority, *2007 Update, Contra Costa County Congestion Management Program*, November 21, 2007

Engeo, Inc., *Geotechnical Exploration, Proposed Parking Lot and Bus Facility, Parcel C-1, Hercules, California*, June 14, 2007.

Energy Information Administration, *Other Gases: Hydrofluorocarbons, Perfluorocarbons, and Sulfur Hexafluoride*, October 29, 2001, http://www.eia.doe.gov/oiaf/1605/gg00rpt/other_gases.html.

Fehr & Peers, *Draft Traffic Operations Report for Willow Avenue Ramp Relocation Project Study Report (PSR)*, December 2007.

Geocon Consultants, Inc., *Phase I Environmental Site Assessment, State Route 4 Ramp Relocation Project, Hercules, CA*, December 2004.

Google, maps.google.com, January 2008.

HARP Model Documentation, Appendix K, *Risk Assessment Procedures to Evaluate Particulate Emissions from Diesel-Fueled Engines*, ARB, <http://www.arb.ca.gov/toxics/harp/docs/userguide/appendixK.pdf>, February 2005.

Hickman, James C., ed., *The Jepson Manual: Higher Plants of California*, University of California Press, Berkeley, CA, 1993.

Holland, R. F., *Preliminary Descriptions of the Terrestrial Natural Communities of California*, prepared for the California Department of Fish and Game, Sacramento, California, 1986.

Hurt, G.W., and P.M. Whited, eds., *Field Indicators of Hydric Soils in the United States*, version 5.0., U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), in cooperation with the National Technical Committee for Hydric Soils, Fort Worth, TX, 2002.

Impact Sciences, Inc., *Biological Resources Assessment for Hercules Hotel Project Site, Hercules, California*, 2001.

Institute of Transportation Engineers (ITE), *Trip Generation*, 7th Edition, 2003.

Intergovernmental Panel on Climate Change, *Climate Change 2007: The Physical Science Basis*, Summary for Policymakers, February 2007.

Jennings, M.R. and M.P. Hayes, *Amphibian and Reptile Species of Special Concern in California*, prepared for the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova, California, 1994.

LFR Levine Fricke, *Site Evaluation, Vacant Property, Southeastern Quadrant at Highway 4 Onramp and Willow Avenue, Hercules, California*, February 12, 2002.

LSA Associates, Inc., *Health Risk Assessment, Hercules New Town Center*, February 2008.

- Mansholt, M. Scott, Chevron Environmental Management Company, letter to Steve Lawton, Community Development Director, City of Hercules, September 11, 2007.
- Metcalf & Eddy, *Wastewater Engineering: Treatment, Disposal, and Reuse* (3rd Edition), 1991.
- OEHHA, *Air Toxics Hot Spots Program Risk Assessment Guidelines*, August 2003, Appendix D, *Risk Assessment Procedures to Evaluate Particulate Emissions from Diesel-Fueled Vehicles*, Section B.
- RBF Consulting, *Phase I Environmental Assessment Approximate 28.33-Acre Hercules Town Center Project APNs 406-070-025, -070-042, -070-043, -160-002, and -160-006 City of Hercules, County of Contra Costa, State of California* July 2007a.
- RBF Consulting, Technical Memorandum, October 1, 2007b.
- Red Barn Co., *Hercules New Town Center Kick-Off Meeting, Plan & Stats Reference Material and PNR Parcel Master Plan*, October 9, 2005.
- Reed, Jr., Porter B., "National List of Plant Species That Occur in Wetlands: National Summary," *U.S. Fish & Wildlife Service. Biol. Rep.* 88 (24), 1988.
- Riley, Kim, Facility Planning & Construction, West Contra County Unified School District, personal communication (re proposed schools in the vicinity of the project), September 17, 2007.
- Transportation Research Board (TRB), *Highway Capacity Manual*, 2000.
- Treadwell & Rollo, *Phase II Environmental Site Assessment Hercules New Town Center – PNR Parcel, Hercules, California*, July 18, 2007.
- Treadwell & Rollo, *Preliminary Geotechnical Investigation Geotechnical Due Diligence Hercules New Town Center PNR Parcel, Hercules, California*, July 23, 2007.
- U.S. Army Corps of Engineers, Waterways Experiment Station, Environmental Laboratory, *Wetlands Delineation Manual*, 1987.
- U.S. Department of Agriculture, Soil Conservation Service, *Soil Survey of Contra Costa County, California*, 1977.
- U.S. Environmental Protection Agency, *Class I Ozone Depleting Substances*, March 7, 2006, <http://www.epa.gov/ozone/ods.html>.
- U.S. Environmental Protection Agency, *High GWP Gases and Climate Change*, October 19, 2006, <http://www.epa.gov/highgwp/scientific.html#sf6>.
- U.S. Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990 to 2004*, April 2006, <http://www.epa.gov/climatechange/emissions/usinventoryreport.html>.

- U.S. Environmental Protection Agency, *Protection of Stratospheric Ozone: Listing of Global Warming Potential for Ozone Depleting Substances*, November 7, 2006, <http://www.epa.gov/fedrgstr/EPA AIR/1996/January/Day 19/pr 372.html>.
- U.S. Fish and Wildlife Service (USFWS), *Recovery Plan for the California Red-legged Frog (Rana aurora draytonii)*, 2002.
- U.S. Fish and Wildlife Service (USFWS), Critical Habitat for the California Red-legged Frog, Federal Register 71:19243, 2006.
- U.S. Geological Society (USGS), Working Group on California Earthquake Probabilities (WG02), *Earthquake Probabilities in the San Francisco Bay Region: 2002–2031*, 2003; “Summary of Main Results,” <http://earthquake.usgs.gov/regional/nca/wg02/results.php>, accessed August 17, 2007.
- WRA, *Delineation of Potential Section 404 Wetlands, Highway 4, Contra Costa County, California*, prepared for Impact Sciences, 2006a.
- WRA, *Rare Plant Survey Report (Draft) Highway 4, Contra Costa County, California*, prepared for Impact Sciences, 2006b.
- Zeiner, D. C., W. F. Laudenslayer, Jr., K. E. Mayer, and M. White, *California's Wildlife, Volume I-III: Amphibians and Reptiles, Birds, Mammals*, California Department of Fish and Game, California Statewide Wildlife Habitat Relationships System, Sacramento. 1990.

