Hidden Canyon Industrial Park Specific Plan Addendum to the Beaumont Gateway Specific Plan Certified EIR

Prepared for:

City of Beaumont
550 East Sixth Street
Beaumont, CA 92223

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February 2012

Hidden Canyon Industrial Park
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January 2012

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1.0 Introduction

SECTION 1.0 INTRODUCTION

1.1 BACKGROUND AND PREVIOUS ENTITLEMENTS

The subject site and vicinity properties have been the subject of several previous development proposals and entitlement requests. The following paragraphs summarize previous entitlements approved for the Project site.

1.1.1 Beaumont Gateway Specific Plan

The Beaumont Gateway Specific Plan, together with all necessary supporting improvements and related actions, was approved by the City of Beaumont in 1996. CEQA compliance for this project was documented through the Beaumont Gateway Specific Plan EIR, Certified by the City in 1996 (Certified EIR). The Beaumont Gateway Specific Plan Project proposed development of up to 573 dwelling units, 9.0 acres of commercial uses, a 10.0-acre community park and 4.0 acres of natural open space on an approximately 160-acre site. Due to economic and market considerations, this project was never developed.

The Beaumont Gateway Specific Plan EIR, State Clearinghouse No. 94092040, (the Certified *Beaumont Gateway EIR,* or Certified EIR)[1] addressed potential environmental impacts associated with the Beaumont Gateway Specific Plan project. The following discretionary actions were included in project approval:

[1] The proposed Hidden Canyon Industrial Park Specific Plan considered herein is evaluated under an Addendum to the Certified Beaumont Gateway Specific Plan EIR. *CEQA Guidelines* Section 15164 states that an Addendum to an EIR shall be prepared "if some changes or additions [to a Certified EIR] are necessary, but none of the conditions described in [*CEQA Guidelines]* Section 15162 calling for preparation of an EIR have occurred." The analysis provided herein substantiates compliance with *CEQA Guidelines* Section 15164.

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- Certification of the Environmental Impact Report;
- Approval of the Annexation to the City of Beaumont;
- Approval of the Beaumont Gateway Specific Plan; and
- Approval of the Beaumont Gateway Development Agreement.

1.1.2 Wyle Laboratories LaBorde Canyon Testing Facility

A subsequent proposal, which would implement industrial engineering and testing facilities on the site of the former Beaumont Gateway Specific Plan, was submitted by Wyle Laboratories and approved by the City in 2001. CEQA compliance for the Wyle Laboratories project was documented through an expanded Initial Study and Mitigated Negative Declaration, Adopted by the City in 2001. Similar to the earlier Beaumont Gateway Specific Plan project, the proposed Wyle Laboratories project was never developed.

The following discretionary actions were included in the adoption of the Wyle Laboratories LaBorde Canyon Testing Facility Mitigated Negative Declaration:

- Amendment of the Beaumont General Plan to change the project site's land use designation from Low Density Residential with a Specific Plan Overlay to Light Industrial;
- Approval of a Zone Change from Specific Plan Area (SPA) to Light Manufacturing (M-L);
- Approval of a Conditional Use Permit; and
- Adoption of the Mitigated Negative Declaration.

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1.1.3 Hidden Canyon Specific Plan

In 2003, an application was made to the City of Beaumont for the Hidden Canyon Specific Plan. This project was proposed to occupy the site of the former Beaumont Gateway Specific Plan. The Hidden Canyon Specific Plan project proposed a revised residential development plan, and expanded the area of development to include an additional adjacent 36.5 acres to the east. The Hidden Canyon Specific Plan, approved by the City in 2005 allowed for development of up to 426 single-family dwelling units, community parks totaling 19.5 acres, approximately 21 acres of natural open space, and commercial uses totaling 4.8 acres on an approximately 196.5-acre project site. CEQA compliance for the project was documented through an Addendum to the Certified Beaumont Gateway Specific Plan EIR, adopted by the City in 2005. Discretionary actions considered and approved for the Hidden Canyon Specific Plan project included:

- Zone Change from Light Manufacturing (M-L) to Specific Plan Area (SPA), and pre-zoning of the unincorporated area as Specific Plan Area (SPA);
- Riverside County Local Agency Formation Commission (LAFCO) Annexation Actions;
- Adoption of Development Agreement; and
- Approval of tract map(s).

1.2 PROPOSED ADDENDUM PROJECT

In 2011, an application was made to the City of Beaumont for the proposed Hidden Canyon Industrial Park Specific Plan Project to occupy the previous Beaumont Gateway Specific Plan Project site, together with certain adjacent properties. The Hidden Canyon Industrial Park Specific Plan Project (Addendum Project) proposes development of up to 2.89 million square feet of distribution warehouse uses configured as two buildings within the approximately 196.55 acre Specific Plan area.

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The Addendum Project will also implement all necessary supporting on-site improvements including but not limited to parking, landscaping, utility lines and service connections, and storm water management systems.

The Project site is currently designated by the City of Beaumont General Plan Land Use Element for Single Family Residential Uses, and is zoned for development as a Specific Plan Area. These existing land use designations would not permit implementation of the industrial distribution warehouse uses proposed by the Hidden Canyon Industrial Park Specific Plan Project, and will need to be amended to accommodate the Project.

Accordingly, requested Project discretionary actions would redesignate the subject site as an "Industrial" General Plan Land Use. Consistent with the proposed Industrial General Plan Land Use, the proposed Hidden Canyon Industrial Park Specific Plan would establish the range of permitted industrial uses and industrial development standards applicable to the subject site. The Zoning designation of the site would remain "Specific Plan Area." However, the governing Specific Plan would be the proposed Hidden Canyon Industrial Park Specific Plan.

1.3 PURPOSE

The purpose of this EIR Addendum document is to define, describe, compare, and contrast potential environmental impacts of the proposed Addendum Project in the context of the environmental impacts associated with the Beaumont Gateway Specific Plan, as originally approved and as assessed in the Certified EIR. In so doing, this Addendum substantiates consistency with applicable requirements of the California Environmental Quality Act (CEQA), summarized below.

More specifically, Section 15164 of the *CEQA Guidelines* states that an Addendum to an EIR shall be prepared "if some changes or additions [to a Certified EIR] are necessary, but none of the conditions described in Section 15162 calling for preparation of an EIR have occurred." Section 15162 of the *CEQA Guidelines* identifies the conditions that

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require preparation of a subsequent EIR (as opposed to and Addendum or other CEQA documentation), as discussed below.

As presented in Section 15162 of the *CEQA Guidelines*, when an EIR has been certified for a project, no subsequent EIR shall be prepared for a project unless the lead agency determines, on the basis of substantial evidence, that one or more of the following conditions are met:

- Substantial changes are proposed in the project that require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of the previously identified significant effects;

- Substantial changes have occurred with respect to the circumstances under which the project is undertaken that will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of the previously identified significant effects; or

- New information of substantial importance, which was not known and could not have been known with exercise of reasonable diligence at the time the previous EIR was certified, shows any of the following:

    - The project will have one or more significant effects not discussed in the previous EIR;

    - Significant effects previously examined will be substantially more severe than identified in the previous EIR;

    - Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant

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effects of the project, but the project proponent declines to adopt the mitigation measures or alternatives;

- Mitigation measures or alternatives that are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponent declines to adopt the mitigation measures or alternatives.

This Addendum to the Certified Beaumont Gateway Specific Plan EIR describes the Hidden Canyon Industrial Park Specific Plan Project as it would be implemented by the City of Beaumont, and substantiates how the potential environmental effects of the project are appropriately and adequately addressed in the Certified EIR. The focus of the analysis is the adequacy of the previously Certified EIR relative to the proposed project in its current environmental context.

1.4 DOCUMENT ORGANIZATION

This Addendum is presented in four (4) sections, as follows:

- **Section 1.0**, "Introduction," provides an overview of the Project, its context, and environmental documentation applicable to the proposed development.

- **Section 2.0**, "Project Description," presents the proposed Addendum Project in greater detail.

- **Section 3.0,** "Environmental Analysis Summary," summarizes the analysis of potential environmental impacts of the proposed project. The analysis considers potential effects of the Project for all environmental topics addressed in the Certified EIR. *CEQA Guidelines* topical issues incorporated pursuant recent Guidelines amendments are also addressed. Please refer also to the Environmental Checklist Form presented at Addendum Appendix A.

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- **Section 4.0,** "Determination," presents the determination regarding the appropriate environmental document for the Addendum Project.

- **Section 5.0**, "Mitigation Summary," contains a table summarizing impacts and mitigation from the Beaumont Gateway Certified EIR. Unless otherwise noted, mitigation previously required under the Beaumont Gateway Specific Plan is also required of the proposed Addendum Project.

1.5 CONCLUSIONS

The analysis presented in this document substantiates that the analysis presented in the Certified Beaumont Gateway EIR is sufficient to satisfy CEQA requirements for the proposed Addendum Project. Implementation and operation of the Addendum Project described and evaluated herein will not result in any significant new, different, additional, or substantially increased environmental impacts than were previously considered and addressed in the Certified Beaumont Gateway EIR. The environmental assessment of the Project does not require any major revision of the Certified Beaumont Gateway EIR, nor will the Addendum Project result in conditions that would require preparation of a Subsequent or Supplemental EIR as described in the *CEQA Guidelines*.

2.0 Project Description

SECTION 2.0
PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The approximately 196.54-acre Hidden Canyon Industrial Park Specific Plan Project (Project) site is located southeasterly of the intersection of State Route 60 (SR-60) and Jackrabbit Trail. Regional and vicinity locations of the Project site are presented in Figures 2.1-1 and 2.1-2, respectively.

2.2 PROJECT CHARACTERISTICS

In summary, the Project proposes construction of up to 2.89 million square feet of distribution warehouse uses configured as two (2) buildings, one (1) each on two (2) parcels. These buildings are the predominant physical features of the proposed development. The Project site will also accommodate necessary supporting on-site improvements, including but not limited to: roadway, parking, landscaping, and stormwater management features. Figure 2.2-1 presents the Project Site Development Concept. Table 2.2-1 presents a summary of site development elements proposed by the Project.

Source: Applied Planning, Inc.

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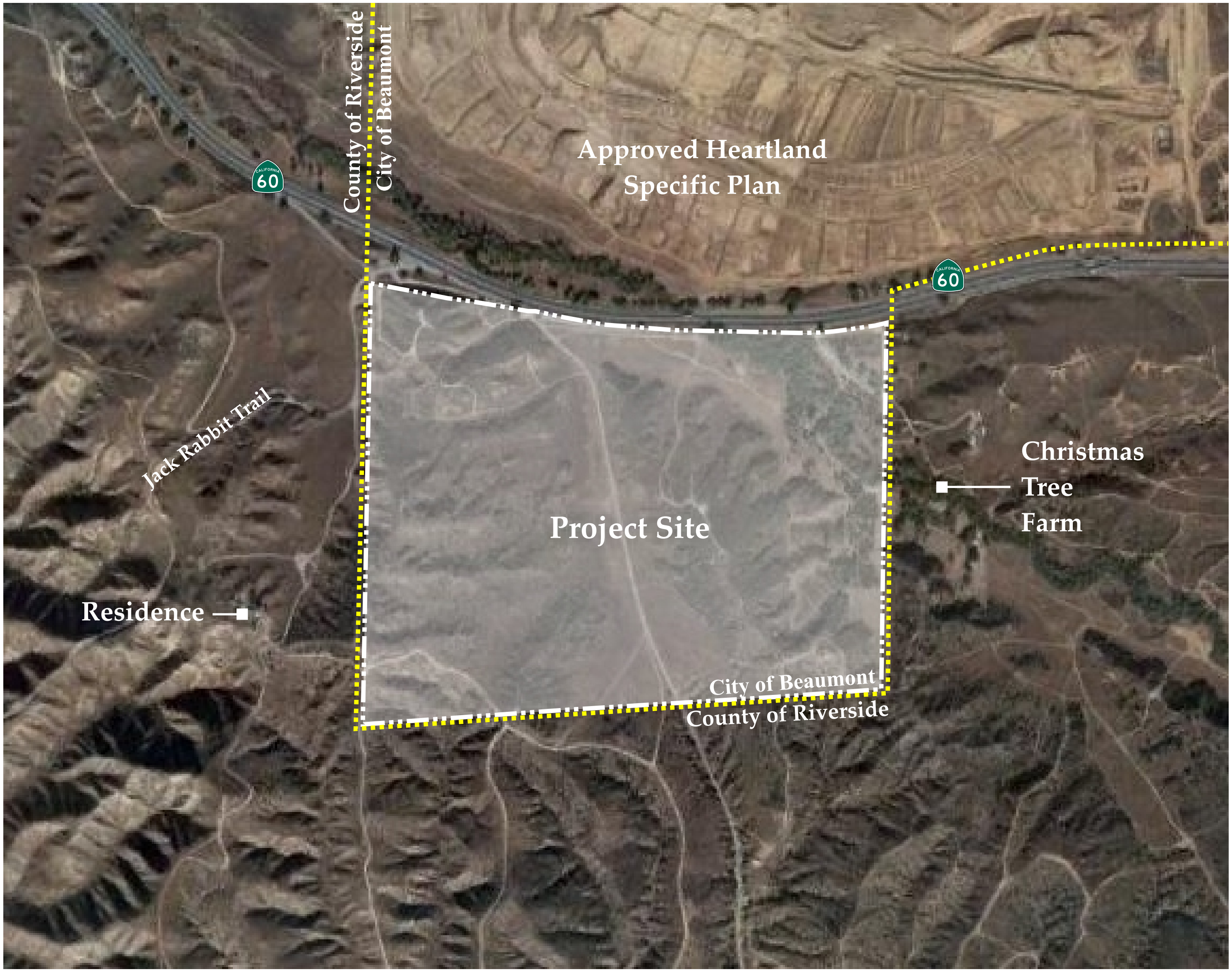
Figure 2.1-1
Regional Location



Source: Google Earth, Applied Planning, Inc.

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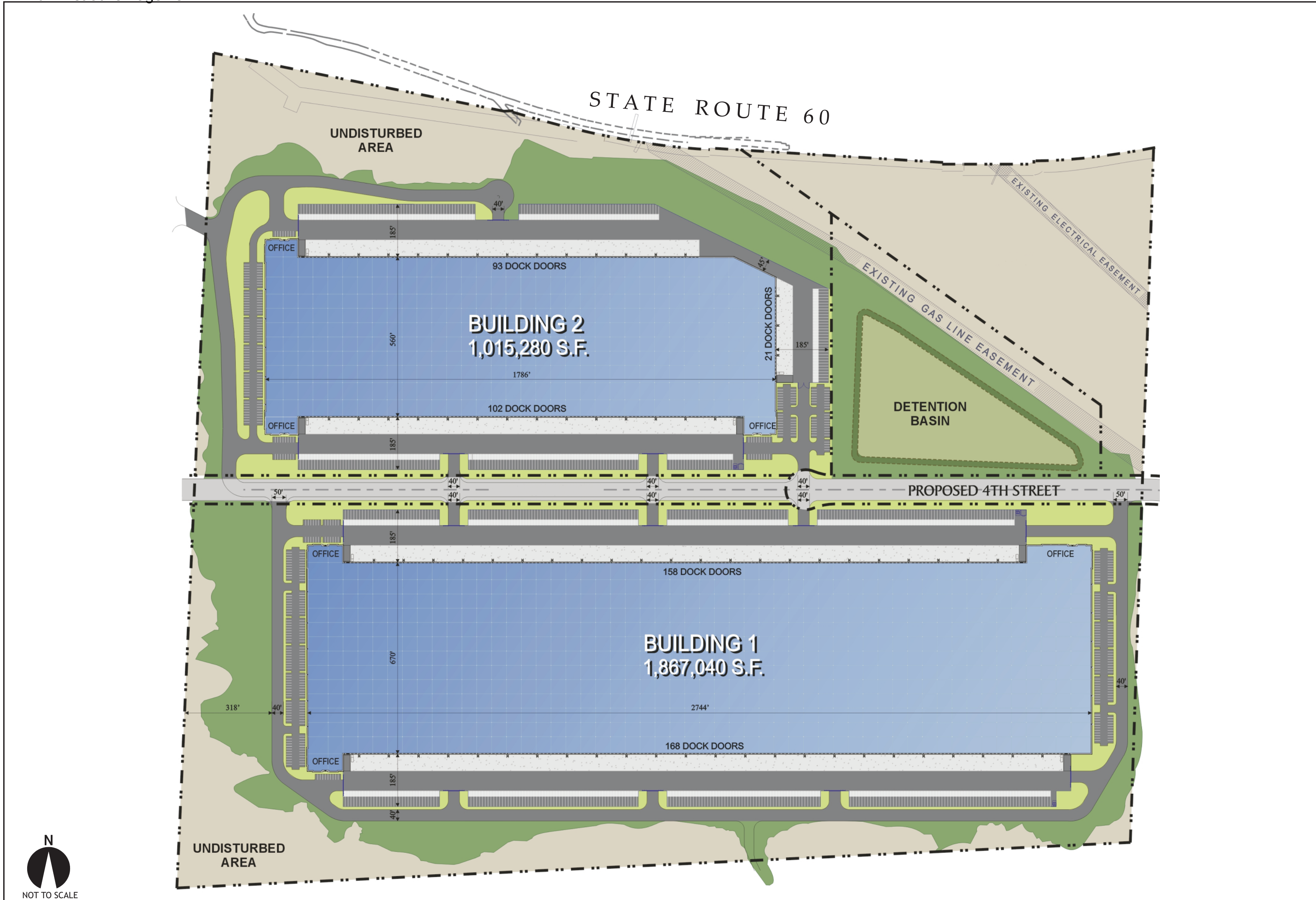
Figure 2.1-2
Vicinity Location



Source: HPA Architecture

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Figure 2.2-1

Project Site Development Concept

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Table 2.2-1
Hidden Canyon Industrial Park Development Summary

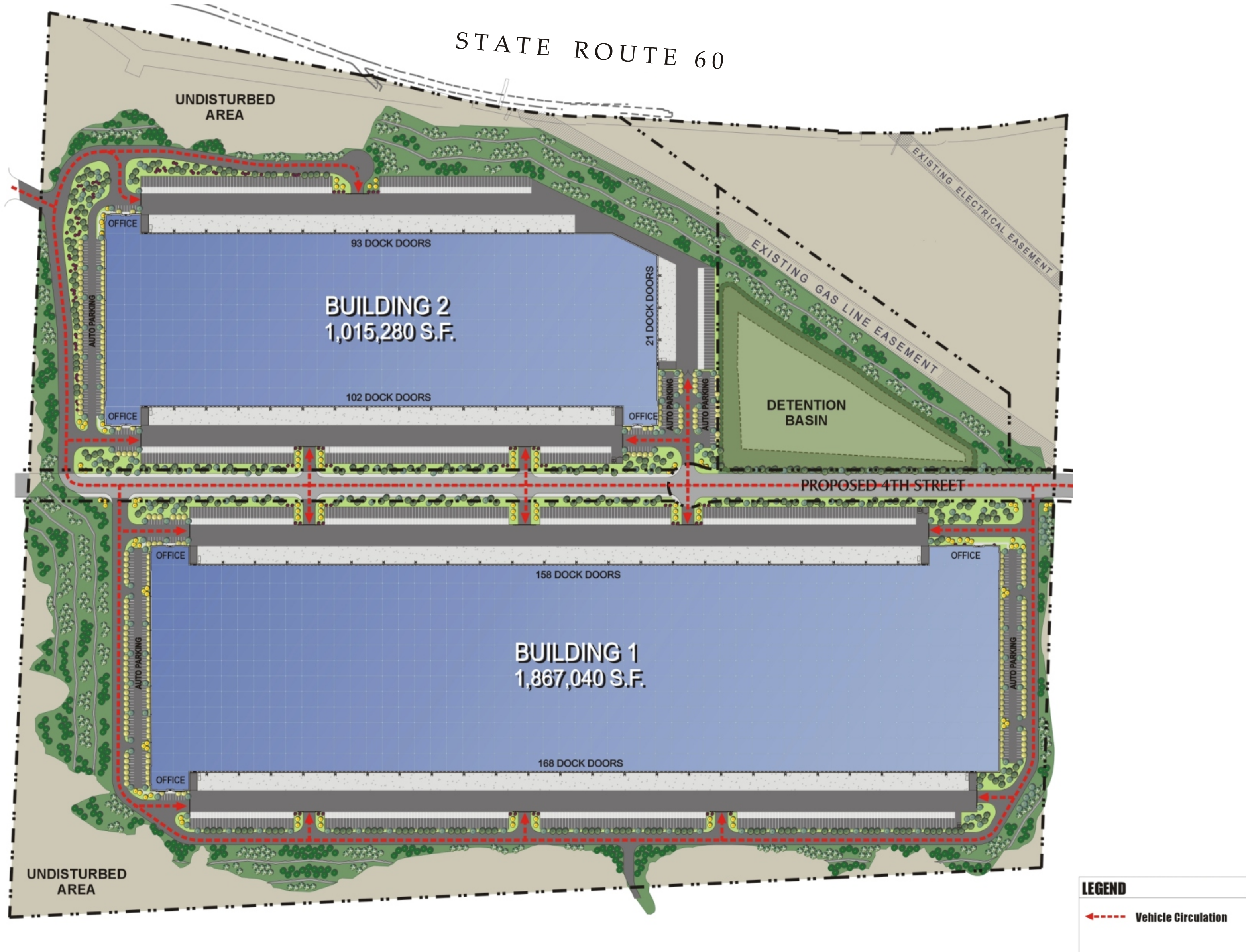
Building/Parcel	Site Area (Gross Acres)	Building Area (Square feet)/Use
1	96.53	1,867,040
2	62.30	1,015,280
3	19.22	N/A
A	10.81	Detention Basin
Lots 1 and 2	7.69	Road Right-of-Way
Totals	**196.54***	**2,882,320 Square Feet**

Source: Thienes Engineering. **Note:** * May not total due to rounding.

2.3 CIRCULATION/ACCESS CONCEPT

2.3.1 Site Access

Access to the Project site will be provided by 4th Street, a programmed General Plan Circulation Element roadway. The Project site also provides for the completion of the westerly-most segment of 4th Street, as indicated at Figure 2.3-1. Within the Project site, the proposed 4th Street alignment approximately bisects the Project site along an east-west axis, providing primary access to the proposed warehouse uses. As proposed, and until required to support development westerly of the Project site, 4th Street will be constructed to its ultimate cross-section from the easterly Project edge extending westerly for approximately 1,200 feet. From that point, a reduced cross-section within the full right-of-way dedication is proposed on an interim basis pending required continuation of 4th Street westerly of the Project site. When completed east of the Project site, 4th Street will connect the Project site to Potrero Boulevard. Potrero Boulevard will then connect northerly to the regional roadway system via the programmed Potrero Boulevard/SR-60 interchange (please refer to Figures 2.3-2, 2.3-3). The Project will also maintain access connection to southerly adjacent properties under private access agreement between the Applicant and affected off-site property owners.



Source: HPA Architecture

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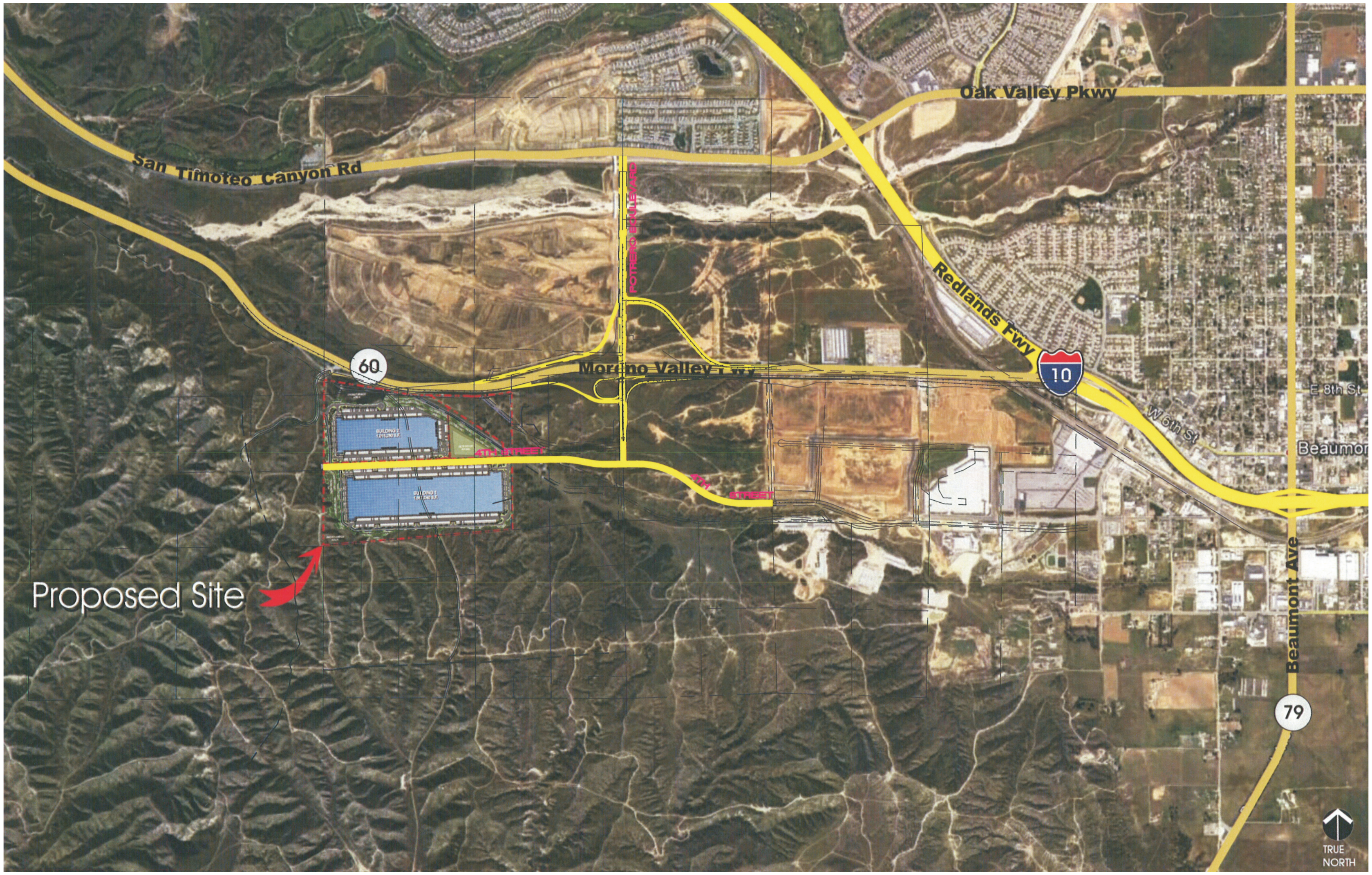
Figure 2.3-1
Circulation Concept



Source: HPA Architecture

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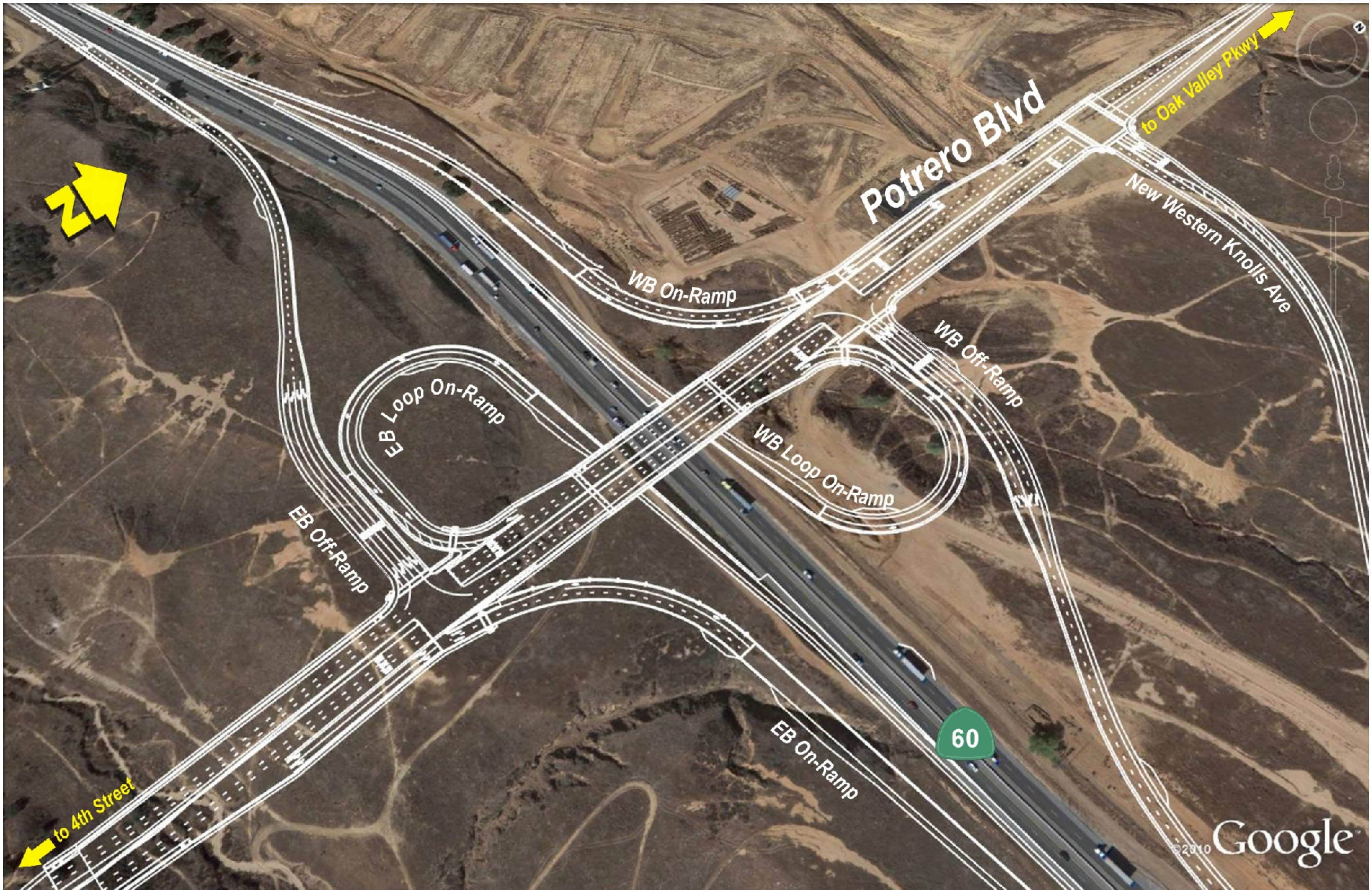
Figure 2.3-2

Future 4th Street Extension



Source: City of Beaumont

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Figure 2.3-3
Potrero Boulevard/SR-60 Interchange

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2.3.2 Internal Circulation/Parking

As indicated previously at Figure 2.2-1, proposed Building 1 (1.87 million square feet) will be constructed southerly of the proposed 4th Street alignment, and proposed Building 2 (1.02 million square feet) will be located northerly of the proposed 4th Street alignment.

Access to proposed Building 1 is provided by five (5) driveways onto 4th Street. Driveways at the easterly and westerly edges of Building 1 provide connection to southerly parking areas and the southerly-facing loading docks. Access to Building 2 is provided by four (4) driveways onto 4th Street. Driveways at the easterly and westerly edges of Building 2 connect to northerly parking areas and the northerly facing loading docks.

The Project's on-site circulation system concept is designed to ensure adequate emergency response access to all building and site areas. Final design of the on-site circulation system will conform to City of Beaumont Planning Department, Building and Safety Department, and Fire Services Department requirements.

As proposed, the Project will provide a total of 542 standard parking spaces, and 709 trailer parking spaces. All parking spaces and parking areas will be designed and implemented consistent with City Planning Department requirements.

2.4 ARCHITECTURAL CONCEPT

2.4.1 Architectural Overview

Architectural concepts for the Project proposed distribution warehouses reflect large-scale, contemporary industrial designs. Notable architectural features and design elements include: accented building entrances and openings, elevations incorporating surface relief, varied wall textures, wall insets and offsets, and façade accents. Faux and real windows are used to break up large wall surfaces, as well as provide a transition between the building office and industrial functions. The building mass is further diluted through the use rhythmic vertical elements along southerly and northerly facing

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elevations. The single-story warehouse buildings will be a maximum of approximately forty feet (40') in height.

2.4.2 Distribution Center Warehouse Design and Function Overview

Distribution warehouses such as those proposed by the Project typically accept goods or products from various sources, to be redistributed to retailers, to wholesalers, or directly to consumers. Common functions of distribution warehouses include: a "retail distribution center" that normally distributes goods to retail stores; an "order fulfillment center" that distributes goods directly to consumers; and a "cross-dock facility" that stores little or no product, but distributes goods to other destinations.

Distribution warehouses act as the foundation to a supply network as they allow a single location to accept, stock, and transfer a vast number of products. For example, multiple suppliers ship truckloads of products to a distribution warehouse, which stores the products or goods until needed by a given retail location and ships the proper type and quantity of goods on demand.

Large retailers may sell tens of thousands of products received from thousands of vendors. It is therefore extremely inefficient to ship each product directly from each vendor to each store. Retailers may own and run their own distribution networks, or outsource this function to firms whose mission is to coordinate the logistics of product acceptance and distribution.

Within the general types of uses described above, the Project proposes development of "high-cube" distribution warehouses that are used for the storage of manufactured goods prior to their distribution to retail outlets. High-cube warehouses consist of large shell buildings, (typically one million square feet or greater), with typical ceiling heights of 24 to 30 feet. These building shells are often subdivided for an individual tenant. This configuration is similarly reflected in the Project warehouse designs, which are large scale, high-ceiling structures, that have been designed to allow multiple users to operate within a single building. The market and user needs will determine the

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ultimate use and internal configuration of each building within the Project site. Following are summary descriptions of warehouse buildings proposed by the Project.

2.4.2 Building 1 (Parcel 1)

Architectural elevations of proposed Building 1 are presented at Figure 2.4-1. Building 1 is located on the southerly side of proposed 4th Street, and will provide approximately 1.87 million square feet of distribution/warehouse uses. The encompassing Parcel 1 is approximately 96.53 acres.

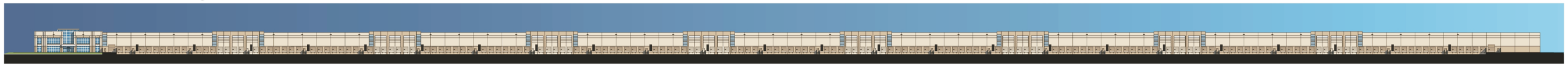
Building 1 includes approximately 158 docks doors on the northerly building face, and 168 dock doors on the southerly building face. Warehouse office/administrative areas of approximately 10,000 square feet each are located at the Building's northwesterly, and southwesterly corners, with a larger administrative/office area of approximately 20,000 square feet located in the northeasterly corner of the Building. The predominance of the Building area is devoted to warehouse acceptance, storage, and transfer functions.

2.4.3 Building 2 (Parcel 2)

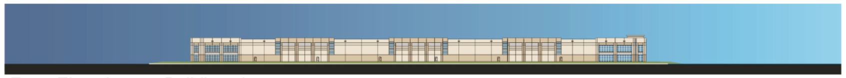
Architectural elevations of proposed Building 2 are presented at Figure 2.4-2. Building 2 is located on the northerly side of proposed 4th Street, and encompasses 1,015,280 square feet. The encompassing Parcel 2 is approximately 62.30 acres.

Building 2 includes approximately 102 loading docks along the southerly building face, 93 loading docks along the northerly building face, and 21 loading dock doors along the easterly building face. Warehouse office/administrative areas of approximately 10,000 square feet are accommodated at the Building's northwesterly, southwesterly and northeasterly corners, with the predominance of Building area devoted to warehouse acceptance, storage, and transfer functions.

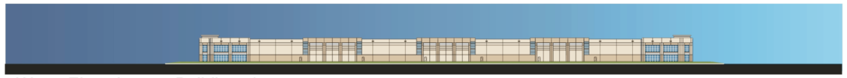
North Elevation – Building 1



South Elevation – Building 1

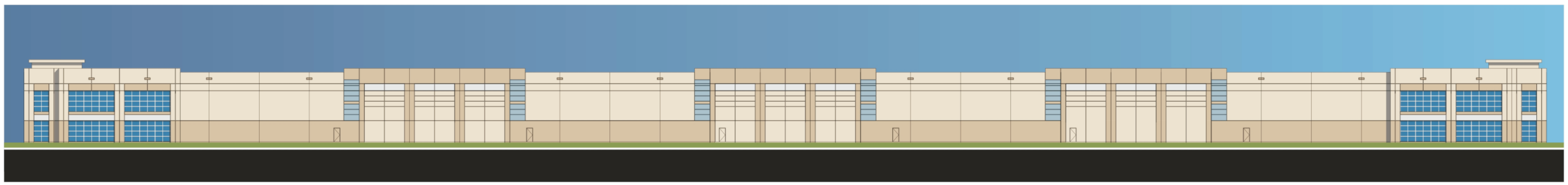


East Elevation – Building 1



West Elevation – Building 1

Enlarged View of North Elevation – Building 1



Enlarged View of West Elevation – Building 1

Source: HPA Architecture

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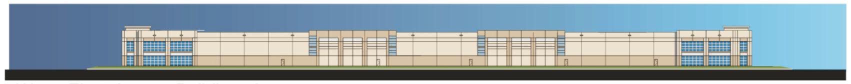
Figure 2.4-1

Building 1 Elevations

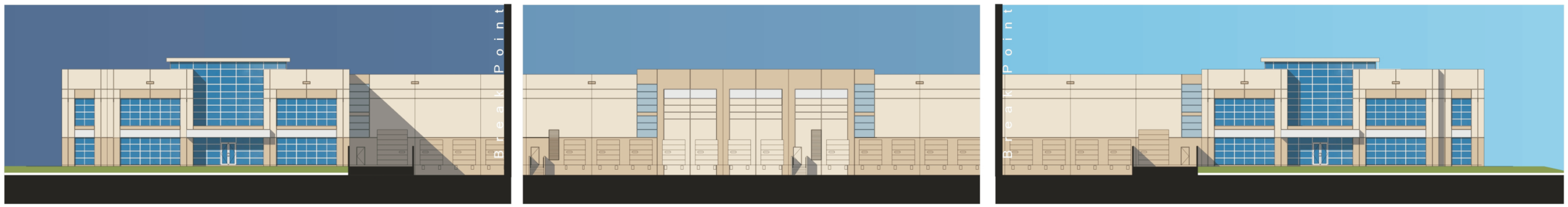
North Elevation - Building 2

South Elevation - Building 2

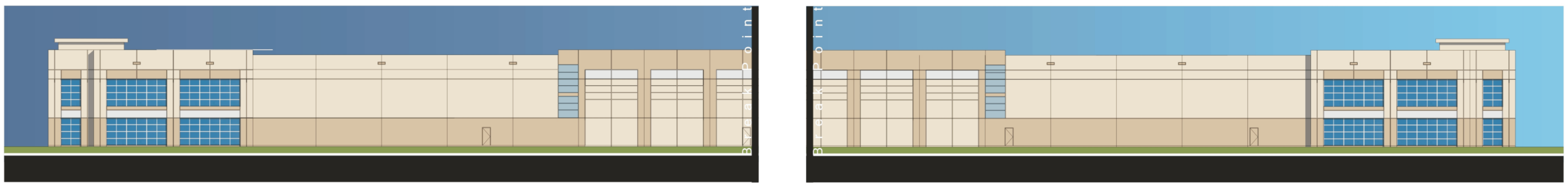
East Elevation - Building 2



West Elevation - Building 2



Enlarged View of South Elevation - Building 2



Enlarged View of West Elevation - Building 2

Source: HPA Architecture

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Figure 2.4-2

Building 2 Elevations

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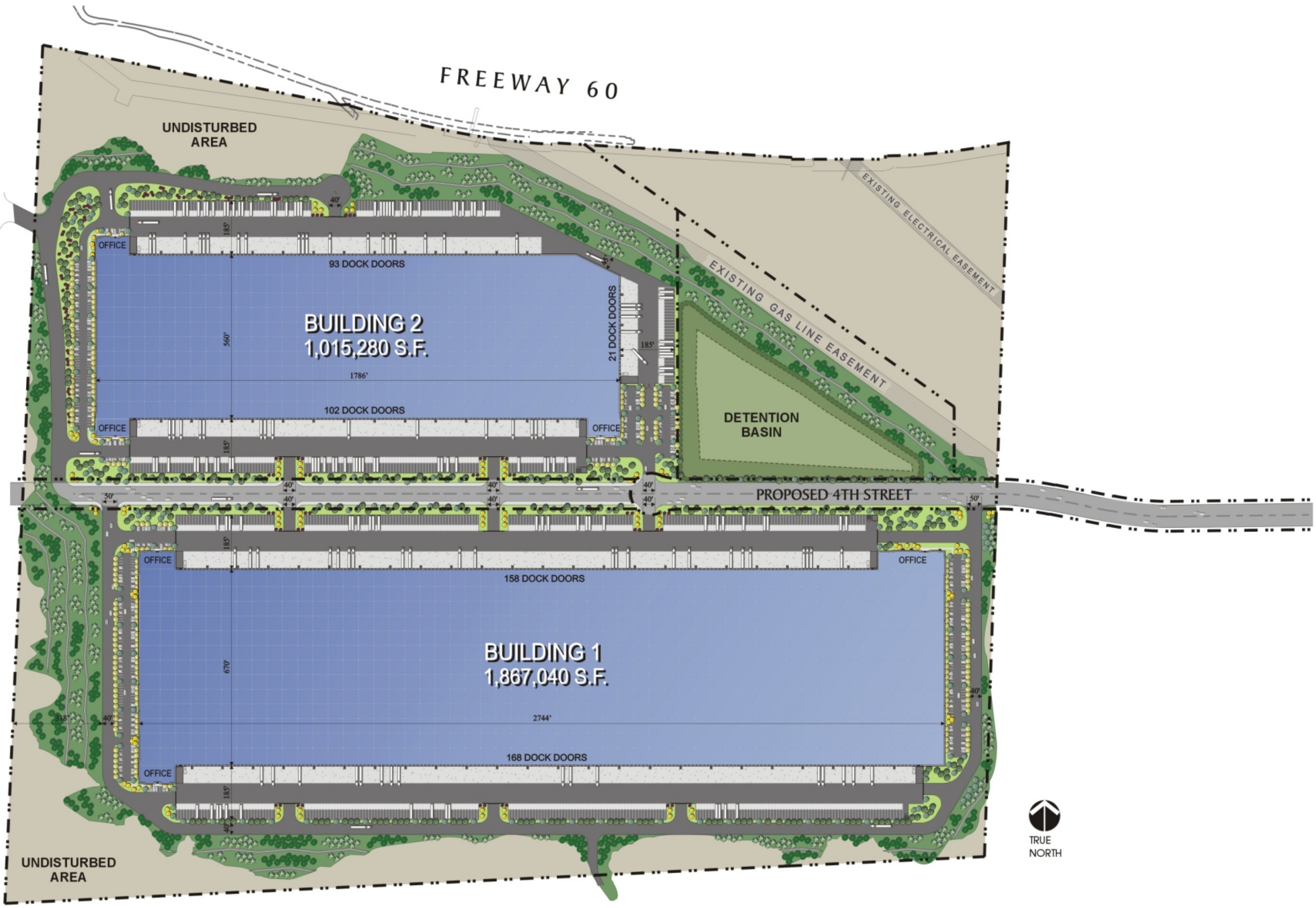
2.5 OTHER PRIMARY SITE FEATURES

2.5.1 Landscaping

Perimeter and internal landscaping will be provided consistent with City Planning Department requirements. In general, the proposed landscape concept emphasizes perimeter screening of the Project site by providing substantive tree and vegetative cover and shrubs along all property edges. Internal to the Project site, landscaping elements act to enhance roadways and buildings, provide shade and visual interest, and define entry/access points. The Project Landscape Concept is presented at Figure 2.5-1.

2.5.2 Stormwater Management Detention Basin

The Project will also implement necessary stormwater management elements acting to ensure that post-development stormwater discharges do not exceed pre-development conditions; or that the Project stormwater discharges would otherwise adversely affect area drainage patterns or area water quality. As one component of the Project stormwater management system, a stormwater detention basin will be constructed within Parcel "A", located in the northeasterly portion of the Specific Plan area (see previous Figure 2.2-1). The proposed detention basin will act to contain and control the volume and rate of stormwater discharges, provide bio-filtration removing sediment and other pollutants, and allow for groundwater discharge.



Source: HPA Architecture

Figure 2.5-1
Landscape Concept

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2.6 PROJECT OBJECTIVES

Objectives of the proposed Hidden Canyon Industrial Park Specific Plan Project include:

- Transition the existing site into a productive use;
- Capitalize on available and planned access to Major and Secondary Roads within the City, with direct connection to the regional freeway system via the programmed SR-60/Potrero Boulevard interchange;
- Provide jobs-producing, light industrial uses to the City of Beaumont; and
- Increase economic benefits to the City of Beaumont through increased job creation.

2.7 DISCRETIONARY APPROVALS ASSOCIATED WITH PROJECT

CEQA Section 15124 states in pertinent part that if "a public agency must make more than one decision on a Project, all its decisions subject to CEQA should be listed . . ." Requested decisions, or discretionary actions, necessary to realize the Project include, but may not be limited to the following:

- Adoption of this Addendum;
- Adoption of the Hidden Canyon Industrial Park Specific Plan;
- Approval of a General Plan Amendment (Community Development Element) to change the Project site General Plan land use designation from Single Family Residential to Industrial;
- Approval of a General Plan Amendment (Circulation Element) to rename the current "Willow Springs Road" alignment west of Potrero Boulevard as "4th

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Street." Additionally, this new segment of 4th Street extending westerly of Potrero Boulevard will be upgraded from a "Secondary Street" design (the current Willow Springs Road design classification), to a "Major Highway" status. The proposed classification upgrade is consistent with the current design classification of 4th Street east of Potrero Boulevard;

- Approval of a parcel map;
- Adoption of a Development Agreement; and
- Various construction, grading, and encroachment permits allowing implementation of the Project facilities.

2.8 INTENDED USE OF THIS ADDENDUM

This Addendum to the Beaumont Gateway Specific Plan Certified EIR (Addendum; Certified EIR) addresses the potential environmental effects of the implementation and operation of the proposed Hidden Canyon Industrial Park Specific Plan Project (Project) in relation to impacts anticipated to occur under the Certified EIR project. The City of Beaumont (City) is the Lead Agency for the purposes of CEQA because it has the principal responsibility and authority for deciding whether or not to approve the Project, and how it will be implemented. As the Lead Agency, the City is also responsible for preparing the environmental documentation for the Project in compliance with CEQA. The Lead Agency will employ this Addendum in its evaluation of potential environmental impacts resulting from, or associated with, approval and implementation of the Project, to include potential effects of the Project's component elements. It is anticipated that this Addendum may also be employed by Responsible Agencies, e.g., the Air Quality Management District(s), Regional Water Quality Control Board(s), et al., for their related or dependent environmental analyses.

3.0 Environmental Analysis Summary

SECTION 3.0 ENVIRONMENTAL ANALYSIS SUMMARY

3.1 INTRODUCTION

The following discussions summarize potential environmental impacts of the proposed Hidden Canyon Industrial Park Specific Plan Project within the context of the environmental analysis previously presented in the Certified EIR for the Beaumont Gateway Specific Plan, State Clearinghouse No. 94092040 (Certified EIR).

Development of the subject site pursuant to the design guidelines, development standards, and performance standards of the Hidden Canyon Industrial Park Specific Plan, together with mitigation measures previously incorporated in the Certified EIR and carried forward in this Addendum, act to ensure that development of the site minimizes or avoids potentially adverse environmental impacts; and further, that development plans and activities do not otherwise conflict with, or obstruct City goals and policies. It is also noted that the transition from residential development previously proposed under the Beaumont Gateway Specific Plan project, to industrial uses resulting from the proposed Hidden Canyon Industrial Park Specific Plan Project will provide economic stimulus to the City and region in a manner consistent with the intent of the City of Beaumont 2009 Economic Stimulus Program. [1]

[1] Please see also, City of Beaumont 2009 Economic Stimulus Program at: http://www.ci.beaumont.ca.us/index.aspx?NID=251.

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Included in this Section is a summary comparison of development and entitlements proposed by the Hidden Canyon Industrial Park Specific Plan Project in relation to development previously approved under the Beaumont Gateway Specific Plan project. The environmental analysis that follows supports the determination that the Addendum Project will not result in any new, different, or substantially increased impacts than those that were considered and addressed in the Certified EIR; and that substantive environmental analysis beyond that presented here is not required.

3.2 CERTIFIED EIR PROJECT, PROPOSED ADDENDUM PROJECT

The approved Beaumont Gateway Specific Plan project (Certified EIR project) provides for development of up to 573 residential units; up to 90,000 square feet of neighborhood commercial uses; approximately 14.0 acres of parks and open space; and approximately 6.0 acres of roads and other supporting uses within an approximately 160 acre site. In contrast, the proposed Hidden Canyon Industrial Park Specific Plan Project (Addendum Project) would provide for up to 2.89 million square feet of distribution warehouse uses configured as two (2) buildings together with supporting landscaping and roadways within an approximately 196.54 acre site.

As indicated, the site of the proposed Hidden Canyon Industrial Park Specific Plan is increased by approximately 37 acres when compared to the site comprising the Beaumont Gateway Specific Plan, with no substantively different environmental effects. That is, the additional areas affected do not exhibit resources or attributes not previously considered in the Certified EIR or other related environmental documentation described herein (*See:* Addendum Section 3.3, "Previous Environmental Documentation, Documents Incorporated by Reference"). Nor does the comparatively increased area defined within the Hidden Canyon Industrial Park Specific Plan otherwise affect environmental considerations. Please refer also to the discussion of environmental impacts presented in the CEQA Environmental Checklist discussion included at Addendum Appendix A.

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3.3 PREVIOUS ENVIRONMENTAL DOCUMENTATION, DOCUMENTS INCORPORATED BY REFERENCE

Section 15150 of the State CEQA Guidelines permits and encourages that an environmental document incorporate by reference other documents that provide relevant data. The documents outlined in this Section are hereby incorporated by reference, and the pertinent material is summarized throughout this Addendum. All documents incorporated by reference are available through the City of Beaumont Planning Department, 550 E. Sixth Street, Beaumont, CA 92223.

- **Beaumont Gateway Specific Plan Environmental Impact Report (Certified EIR), January 1995 (State Clearinghouse No. 94092040).** The core and substantive environmental analysis of the Beaumont Gateway Specific Plan project is found in the *Beaumont Gateway Specific Plan EIR* (Certified EIR). The Certified EIR comprehensively addressed potential environmental impacts resulting from the development of up to 573 single-family residences and associated community-serving commercial, recreation and open space uses (approximately 90,000 square feet of commercial uses on approximately 9.0 acres, plus a 10.0-acre community park, and approximately 4.0 acres of natural open space).

This Addendum incorporates relevant discussions and mitigation measures presented in the Certified EIR. Unless otherwise noted herein, mitigation measures incorporated in the Certified EIR shall also be applied to the proposed Addendum Project.

- **Wyle Laboratories LaBorde Canyon Testing Facility Expanded Initial Study/Mitigated Negative Declaration (Wyle Laboratories IS/MND), November, 2001.** The basic objective of the project assessed in Wyle Laboratories IS/MND was to provide engineering testing services on the site. Specifically, the proposed Wyle Laboratories facility was planned to perform three types of testing: 1) the testing of live ordnance and devices containing explosives and propellants; 2) the testing of fluid components and calibration devices; and 3)

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environmental testing of equipment within simulated wind, rain and temperature extremes. The Wyle Laboratories IS/MND concluded that although the project could have a significant effect on the environment, the mitigation measures incorporated into the project would reduce potential impacts to a less-than-significant level.

The IS/MND provides relevant general background information regarding the subject site and surrounding areas.

- **Hidden Canyon Addendum to the Beaumont Gateway Specific Plan Environmental Impact Report, (Hidden Canyon Addendum) December 2005.** Subsequent to Certification of the Beaumont Gateway Specific Plan Environmental Impact Report, and consideration of the Wyle Facilities project, the City adopted the *Hidden Canyon Specific Plan Addendum to the Beaumont Gateway Specific Plan Certified EIR* (Hidden Canyon Addendum). The Hidden Canyon Addendum project established a residential development concept similar to that presented in the previously approved Beaumont Gateway Specific Plan project, but within an expanded specific plan area totaling approximately 196.5 acres.

The Hidden Canyon Addendum provides relevant background and supporting information regarding area land uses, cultural resources, biological resources, and geologic conditions.

- **City of Beaumont General Plan and General Plan EIR (Adopted/Certified 2007).** The City of Beaumont General Plan was comprehensively updated and adopted in 2007 (2007 General Plan). The 2007 General Plan is a long range plan designed to control and regulate growth in the City and to maintain the quality of the human and natural environment. The 2007 General Plan also provides direction for City operations and programs and serves as a guide to public and private decision making. The 2007 General Plan includes the following

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integrated Elements: Community Development, Circulation, Resource Management, Safety Housing, and Implementation. Potential Environmental Impacts of the General Plan were evaluated in the City of Beaumont General Plan Update EIR.

As discussed herein, Amendment to the 2007 General Plan Community Development Element proposed under the Addendum Project is considered consistent with the goals and policies of the adopted 2007 General Plan, and would not affect the analysis and conclusions of the Beaumont General Plan EIR.

The 2007 General Plan and General Plan EIR documents contain background information employed in this Addendum.

3.4 CERTIFIED EIR AND ADDENDUM ENVIRONMENTAL CONCLUSIONS

3.4.1 Overview

The Certified EIR proposed mitigation measures for all potentially significant impacts that would result from the previously approved Beaumont Gateway Specific Plan project. However, even after the application of all feasible mitigation measures, the Beaumont Gateway Specific Plan project was found to result in significant residual significant impacts related to climate and air quality, noise, wildlife/vegetation, and land use. Consistent with *CEQA Guidelines* Section 15093 requirements, as part of the approval process, the Beaumont Gateway Specific Plan EIR was certified by the City of Beaumont, including the adoption of Facts, Findings and Overriding Considerations which acknowledged the significant impacts that would occur under that project. As supported by the analysis presented herein, in certifying the Beaumont Gateway Specific Plan EIR, the City has previously adopted a relevant Statement of Overriding Considerations addressing significant impacts that could also be attributable to buildout of the subject site as proposed under the Hidden Canyon Industrial Park Specific Plan Project. That is, the analysis presented within this Addendum demonstrates that the proposed Hidden Canyon Industrial Park Specific Plan Project

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would not result in new significant or substantively increased or different impacts than would otherwise result from the previously approved Beaumont Gateway Specific Plan project.

3.4.2 Basis for Addendum

For each environmental topic presented in the Certified EIR, the following summary analyses (and the further discussions presented at Appendix A to this Addendum) substantiate that:

- No substantial changes are proposed which will require major revisions of the previous EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

- No substantial changes in circumstances have occurred which will require major revisions to the Certified EIR due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

- No new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the EIR was certified, shows any of the following:

    - The Addendum Project would result in any significant effects not discussed in the Certified EIR (it would not);

    - Significant effects previously examined would be substantially more severe than shown in the Certified EIR (they would not);

    - Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the Addendum Project proponents decline to adopt

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the mitigation measure or alternative (no previous mitigation or alternatives are declined); and

- Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the Addendum Project proponents decline to adopt the mitigation measure or alternative (no new mitigation is declined) .

As provided for under *CEQA Guidelines* 15162, this Addendum to the Certified EIR has therefore been prepared, satisfying CEQA environmental analysis and documentation requirements for the proposed Hidden Canyon Industrial Park Specific Plan Project.

3.4.3 Environmental Issues-Comparative Summaries

3.4.3.1 Seismic Safety, Slopes and Erosion

The Certified EIR addresses potential impacts related to existing topography, seismicity, soils and slopes at the Beaumont Gateway Specific Plan site, and provides mitigation measures for seismicity and grading/erosion. Both the impacts analysis and identification of mitigation measures are applicable to all development within the Addendum Project Specific Plan area as proposed and described in this Addendum.

The proposed Addendum Project development concept would not result in new, additional, or different earth resources impacts than were considered and addressed in the Certified EIR. The Certified EIR analysis indicates that subject site and surrounding areas are not subject to known earthquake faults or other hazards such as seismic-related ground failure, including liquefaction. Within California, impacts related to seismic events are reduced to levels that are less-than-significant through avoidance of known hazards. Within suitable building areas (such as the Hidden Canyon Industrial Park site), potential seismic impacts are mitigated to levels that are less-than-significant through mandated compliance with City and State seismic design, engineering, and

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construction standards. The City requires site and design-specific geotechnical analyses in conjunction with application for building permits, and ensures through plan review and building inspections, that geotechnical analyses recommendations and standards are implemented. Under the Certified EIR project, potential seismic safety, slopes and erosion impacts are considered less-than-significant.

Conclusion:

New industrial land use entitlements under the proposed Addendum Project would not affect properties or resources not previously considered in the Certified EIR Analysis; nor would the requested entitlements under the Addendum Project result in substantially new or increased exposure to potential seismic hazards. That is, as with the Certified EIR project, final site- and design- specific geotechnical analyses are required in conjunction with application for building permits for the proposed Addendum Project. Further, the Addendum Project is required to comply with any seismic design, engineering and construction standards as may be identified in the final geotechnical analyses. Potential impacts related to rupture of a known earthquake fault; strong seismic ground shaking; and seismic-related ground failure, including liquefaction are considered less-than-significant. Under the Addendum Project, potential seismic safety, slopes and erosion impacts are considered less-than-significant and are adequately addressed in the Certified EIR. No substantive changes or additions to the Certified EIR analysis are necessary.

3.4.3.2 Hydrology/Water Quality

As discussed in the Certified EIR, and consistent with City requirements, design and implementation of the storm water management systems for the Certified EIR project was required to be completed in accordance with the City of Beaumont and County of Riverside flood control standards, and no significant hydrology/water quality impacts were anticipated.

The character of entitlements proposed under Hidden Canyon Industrial Park Specific Plan differs from those considered in the Certified EIR. However, implementation of the

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proposed Addendum Project would not result in new, additional, or different hydrology/water quality impacts than were considered and addressed in the Certified EIR. That is, for either the Certified EIR project or the Addendum Project, prior to issuance of building permits, a City-approved erosion control plan is required, acting to mitigate potential erosion and associated potential adverse altering of drainage patterns during construction. Structural and operational BMPs implemented pursuant to City-required Water Quality Management Plan(s) (WQMPs) act to avoid potential erosion impacts and drainage alteration over the life of the development. Moreover, under either the Certified EIR project or the Addendum Project, site and development-specific hydrology studies are required, demonstrating the proposed developments would not substantially alter the existing drainage pattern of the site or area or increase the rate or amount of surface runoff.

The Addendum Project, like the Certified EIR project, would implement Project and site-specific stormwater management systems, and would pay fees to fund and construct areawide drainage improvements. Pursuant to City requirements, all drainage plans and improvements for the proposed Hidden Canyon Industrial Park Project will be designed and implemented consistent with City and Regional Water Quality Control Board (RWQCB) standards. The Addendum Project is further required to develop and implement a City-approved Water Quality Management Plan (WQMP). The WQMP delineates physical and operational Best Management Practices (BMPs) acting to protect water quality over the life of the development.

Conclusion:

Based on the preceding, potential hydrology and water quality impacts, including potential stormwater discharge and drainage impacts associated with the proposed Addendum Project are considered less than significant and are adequately addressed within the Certified EIR. No substantive changes or additions to the Certified EIR analysis are necessary.

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3.4.3.3 Air Quality

The Certified EIR addresses regional and local air quality issues including short-term construction-related emissions and long-term operational emissions. The Certified EIR analysis concluded that that the Beaumont Gateway Specific Plan project would have significant impacts in regard to short-term (construction-source) respirable particulate matter (PM_{10}) and nitrogen oxide (NOx) emissions, and long-term (operational-source) emissions of carbon monoxide (CO), NOx, and reactive organic gases (ROG). Mitigation measures were incorporated which would act to reduce, but not eliminate, the significance of these impacts.

Construction-Source Emissions

The Certified EIR's analysis of short-term construction-source emissions is based on assumed development of 160 acres over seven years, with a three month grading cycle. Under this scenario, total emissions for the criteria pollutants: CO, ROG, NOx, PM_{10}, and oxides of sulfur (SOx) were calculated. The Certified EIR analysis found that emissions of CO, ROG and SOx would not exceed applicable SCAQMD thresholds. However, PM_{10} emissions were estimated to total approximately 324 lbs. /day, or 216 percent of the applicable SCAQMD threshold (150 lbs. /day), and NOx emissions were expected to occur at approximately 138 lbs. /day, or 138 percent of the applicable SCAQMD threshold (100 lbs. /day).

It is conservatively assumed that mass grading and construction activities under the Addendum Project would parallel the time frames and the scope of construction activities reflected in the Certified EIR analysis, and would result in comparable construction-source emissions impacts.

Conclusion:

Based on the preceding, construction-source emissions resulting from the Hidden Canyon Industrial Park Project would not result in new, additional, or different construction emissions impacts than were considered and addressed in the Certified EIR. As such, potential construction emissions impacts associated with the proposed

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Beaumont Gateway Specific Plan project are adequately addressed within the Certified EIR, and no changes or additions to the analysis are necessary.

Operational-Source Emissions

Mobile sources (traffic) typically accounts for more than 97 percent (by weight) of all operational source emissions generated by new development projects. In this regard, potential traffic generated by the Addendum Project is substantially less than would otherwise result from the Certified EIR project. More specifically, the proposed Addendum Project would generate an estimated 5,438 daily trips (passenger car equivalent, PCE), compared to approximately 11,800 daily trips (PCE) generated by the Certified EIR project, or an approximate 54 percent reduction in overall trip generation under the Addendum Project when compared to the Certified EIR project. Similarly, comparative reductions in vehicular emissions are anticipated under the Addendum Project when compared to the Certified EIR project. As discussed in greater detail within the Environmental Checklist discussions presented at Appendix A to this Addendum (*See*: Checklist Item 3, "Air Quality), the proposed Addendum Project would result in an overall comparative reduction in criteria pollutants [22.8 percent reduction in reactive organic gases (ROG); 32.8 percent reduction in nitrogen oxides (NOx); 77.9 percent reduction in carbon monoxide] but with an approximate 10 to 18 percent increase in particulate matter (PM_{10}/$PM_{2.5}$). However, even with the projected increase in PM_{10}/$PM_{2.5}$ emissions, the applicable PM_{10}/$PM_{2.5}$ thresholds would not be exceeded. The Addendum Project would therefore result in an overall reduction in criteria pollutant emissions, and would not result in, or cause any new potentially significant criteria pollutant emissions impacts.

Conclusion:

Based on the preceding, the proposed Addendum Project would not result in new significant operational-source emissions impacts not considered and addressed within the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

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3.4.3.4 Noise

The Certified EIR addressed noise impacts in terms of the Beaumont Gateway Specific Plan project's compatibility with, and context within, existing and future noise environments. The Certified EIR also addressed the potential for noise from the construction and operation of the proposed uses to impact noise-sensitive receptors. Comparative construction-source and operational-source noise impacts of the Certified EIR project and the proposed Addendum Project are summarized below.

Construction Noise

Construction of the Addendum Project would employ similar equipment, operating under City Noise Ordinance constraints and limitations established for the Certified EIR project. No new or additional sensitive receptors would be affected by the Addendum Project construction activities, and noise levels received at off-site land uses would be consistent with noise levels considered in the Certified EIR. Construction-source noise impacts resulting from the Addendum Project are anticipated to be comparable to those considered and addressed in the Certified EIR.

Conclusion:

The proposed Addendum Project would therefore not result in new, additional, or substantially different construction noise impacts than were considered and addressed in the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

Operational Noise

Mobile-Source Noise

As identified in the Certified EIR, the most significant noise source affecting the Beaumont Gateway Specific Plan project site and surrounding areas is mobile source (vehicular) noise generated by traffic traveling along vicinity roadways, primarily the SR-60 freeway located northerly of the subject site. Further, traffic generated by the either the Certified EIR project or the proposed Addendum Project would incrementally contribute to area noise levels. As noted previously, total daily traffic volumes

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generated by the proposed Addendum Project are estimated to be 54 percent less than that described and analyzed in the Certified EIR, and vehicle-related noise under the Addendum Project should be correspondingly reduced.

Area-Source Noise

Truck access/movements and loading dock activities associated with the warehouse uses proposed under the Addendum Project pose the greatest potential to result in noise that could adversely affect off-site land uses. These types of noise-generating activities differ from those considered in the Certified EIR. However, the resulting noise levels received at off-site land uses would not be significant, and would not be substantively different than would otherwise occur from the Certified EIR project. In this regard, the warehouse uses proposed under the Addendum Project will be implemented and operated consistent with the site plan design, development standards, design guidelines, and performance standards established under the Hidden Canyon Industrial Park Specific Plan, acting to reduce the potential for the Addendum Project to generate adverse noise levels. Moreover, the Addendum Project site plan design orients the majority of loading dock activities interior to the Specific Plan area, or toward the SR-60 freeway, and away from potentially affected residential land uses. In those instances where loading dock activities parallel off-site residential land uses, the off-site land uses are at present undeveloped, and are separated by a minimum of approximately 300 feet from the nearest loading dock activities. This physical separation between noise source and noise receptor acts to substantially reduce noise levels received at off-site properties. In this regard, empirical noise levels observed for similar loading dock and truck delivery activities approximate 73 decibels (dBA) when measured at a distance of 60 feet. For each doubling of distance between noise source and receptor, the received noise level decreases by approximately 6.0 dBA.

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At the nearest off-site receptor residential land uses (approximately 300 feet from the nearest loading dock areas), noise levels generated by the Project's loading dock activities would approximate 60 dBA. This noise level is consistent with the City General Plan and State of California Land Use/Noise compatibility guidelines which indicate that residential land uses are conditionally acceptable in noise environments of 70 dBA or less.

Moreover, Project loading dock areas are grade-differentiated (either elevated or depressed depending on the point of adjacency) relative to surrounding properties. This grade differential further reduces perceived noise levels by interfering with line-of-sight noise transmission between the Project and proximate receivers. The Addendum Project is further required to conform to City Noise Ordinance performance standards to ensure that operational noise received at off-site land uses does not disturb the peace and quiet of adjacent residential zones.

Conclusion:
Because the scope and character of potential noise impacts resulting from the Addendum Project are within the parameters considered in the Certified EIR, no new, additional, or different operational source noise impacts than were considered and addressed in the Certified EIR are anticipated. No changes or additions to the Certified EIR analysis are necessary.

3.4.3.5 Biological Resources

The Certified EIR biological assessments (conducted in 1993) indicate that five (5) sensitive wildlife species (Stephens' Kangaroo Rat, Rufous-crowned sparrow, Bell's sage sparrow, black shouldered kite, and San Diego horned lizard), and small areas of two (2) sensitive vegetative communities (Southern Willow Scrub habitat and Riversidean Sage Scrub), were located within the subject site. Mitigation measures were incorporated in the Certified EIR to minimize potential impacts to sensitive wildlife species and sensitive vegetative communities. The Certified EIR also included biological resources mitigation measures to ensure protection of Army Corps of

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Engineers (ACOE) and California Department of Fish and Game (CDFG) jurisdictional areas (e.g. streambeds), and to mitigate potential disruption of regional wildlife movement.

Notwithstanding, even after the application of mitigation, the Certified EIR concluded that potential impacts to biological resources (i.e., loss of Riversidian Sage Scrub habitat; potential impacts to the San Timoteo Creek wildlife corridor; impacts to sensitive/listed species; potential for harassment of off-site wildlife) would be significant.

Updates to the 1993 biological surveys have been prepared in order to assess potential biological resources impacts of the proposed Addendum Project. Please refer to: *Timoteo LLC Industrial Park Specific Plan Project Biological Surveys* Letter Report (Harmsworth Associates) November 16, 2011[2], included at Appendix C of this EIR Addendum.

The updated biological surveys report included herein substantiate that conditions within the subject site are generally consistent with those considered in the 1993 biological surveys presented in the Certified EIR. Potential biological resources impacts of the Addendum Project and required mitigation are also consistent with the analysis and requirements identified in the Certified EIR. It is noted further, that in 2003 (subsequent to approval of the Certified EIR project) the City became a participant in the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Mitigation proposed under the Certified EIR project and carried forward into the Addendum Project is considered to be consistent with applicable provisions of the MSHCP.

[2] Appendices citations in certain instances refer to various previous preliminary Project titles, e.g., "Timoteo Industrial Park," "Timoteo Distribution Center," "Timoteo LLC Industrial Park," "Beaumont Distribution Center." Notwithstanding, the physical development and location described and considered in the appendices is the same as that described and considered for the current Project title, the "Hidden Canyon Industrial Park" Specific Plan. Analysis and conclusions of the appended studies are not affected.

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Conclusion:

Implementation of the proposed Addendum Project would not result in new, additional, or different biological resources impacts than were considered and addressed in the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

3.4.3.6 Land Use

The land use analysis included in the Certified EIR identifies the site's existing condition as 160 acres of vacant and undeveloped land, surrounded by similarly undeveloped lands. At the time of the Certified EIR preparation, properties in the vicinity of the subject site were predominantly vacant and designated for low-density (0.95 to 4.08 dwelling units/acre) residential development.

The Certified EIR concluded that the Beaumont Gateway Specific Plan project would, even after application of mitigation, result in significant land use impacts due to the transition of the subject site from its undeveloped vacant status to one exhibiting urban residential specific plan development.

Development of the proposed Addendum Project would similarly result in the transition of undeveloped vacant rural properties to specific plan urban uses. To allow for the proposed uses, the Addendum Project appropriately requests an amendment to the City General Plan Land Use Element that would redesignate the subject site from "Single Family Residential" to "Industrial." Consistent with the proposed "Industrial" General Plan Land Use designation, the Addendum Project would implement the Hidden Canyon Industrial Park Specific Plan, which would establish the zoning for the subject site. All development within the subject is required to conform to the requirements, standards, policies and guidelines established under the Specific Plan thereby precluding or minimizing potential land use impacts.

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Conclusion:

Based on the preceding, no new, additional, or substantially different land use impacts than those assessed in the Certified EIR are expected to result from the proposed Addendum Project. No changes or additions to the Certified EIR analysis are necessary.

3.4.3.7 Socio-Economic Considerations

The Certified EIR addressed potential socioeconomic impacts of the Beaumont Gateway Specific Plan project within the context of SCAG growth forecasts, and consideration of that project's potential fiscal impacts. In these regards, the Certified EIR determined that Beaumont Gateway Specific Plan project would not result in population growth, or affect the availability of housing in a manner that would be inconsistent with the adopted SCAG growth forecasts.

With the benefit of historic perspective, it is evident that the SCAG forecasts considered in the 1993 Certified EIR broadly overestimated the rate and scope of development within the City and associated demand for new housing. The current economic climate reflects a substantial surplus in available housing, and an ongoing deficit and need for new and additional employment opportunities. The proposed Addendum Project considered herein directly responds to current socioeconomic conditions by transitioning the subject site from proposed development of residential housing to an industrial development that will create additional job opportunities and generate additional tax revenues. In this regard, the Addendum Project is considered consistent with, and supports the City's 2009 Economic Stimulus Program.[3]

Additionally, the Certified EIR determined that the Beaumont Gateway Specific Plan project would not result in adverse effects related to the cost and provision of services, nor adversely affect land values or sources of available revenues, and potential fiscal impacts were found to be less-than-significant.

[3] Please see also, City of Beaumont 2009 Economic Stimulus Program, http://www.ci.beaumont.ca.us/index.aspx?NID=251.

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Conclusion:

Though fiscal effects were previously considered and discussed in the Certified EIR, economic effects of projects are not considered an environmental impact under CEQA unless these effects cause or result in adverse physical impacts. The City may determine that additional fiscal impact analysis is warranted for the proposed Addendum Project, however such analysis is not required as a component of, and is beyond the scope of, this Addendum. No changes or additions to the Certified EIR analysis are necessary.

3.4.3.8 Energy Conservation

The Certified EIR addressed potential energy consumption and conservation impacts that would result from electricity and natural gas demands of the Beaumont Gateway Specific Plan project. The Certified EIR concluded that increased consumption of energy resources by future project residents would result in potentially significant natural and energy resource impacts. Accordingly the Certified EIR incorporated mitigation which required the use of passive solar heating techniques wherever possible within the project. With mitigation, potential energy consumption/ conservation impacts were considered less-than-significant.

For new development such as that proposed by the Addendum Project, compliance with California Title 24 energy efficiency requirements is considered demonstrable evidence of a project's efficient use of energy. The Addendum Project will meet or surpass incumbent and applicable Title 24 Energy Efficiency Standards, and will provide and promote energy efficiencies equal to or superior to those required under other applicable State or federal standards and regulations.

Conclusion:

Based on the preceding, the potential for the Addendum Project to result in the inefficient, wasteful or unnecessary consumption of energy is determined to be less-than-significant. Moreover, in that the proposed Addendum Project will implement contemporary building designs and energy conservation technologies that will meet or

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surpass City, Uniform Building Code, and California Code of Regulations Title 24 requirements, the Addendum Project may result in reduced energy consumption when compared to the Certified EIR project. No changes or additions to the Certified EIR analysis are necessary.

3.4.3.9 Toxic Substances

The Certified EIR documents historic uses of the subject site and surrounding area, and concludes that the potential for direct or indirect toxic substances impacts or hazards to the Beaumont Gateway site are considered less-than-significant. Nonetheless, the Certified EIR incorporates mitigation measures requiring preparation of a Phase I Environmental Assessment, inspection of undocumented on-site fills by a qualified geotechnical engineer, and clearing the site and surrounding area of any structures, debris, or equipment which could be considered potential toxic, safety or groundwater hazards.

The Certified EIR also incorporates mitigation addressing potential limited use of toxic or hazardous material by commercial uses that could be implemented under the Beaumont Gateway Specific Plan. As mitigated, these potential impacts were also determined to be less-than-significant.

The Addendum Project could similarly be affected by previous use of hazardous or toxic materials within the subject site, and Phase I documentation would be required in order to identify potential sources of hazardous materials and areas of potential contamination (or absence of such concerns), with subsequent remediation of potentially hazardous conditions, if such conditions are identified. The Addendum Project does not propose the handling of acutely hazardous materials; and the subject site is not located within one-quarter mile of any existing or proposed school. The handling of hazardous materials as part of the Addendum Project development will be limited to the transport and storage of fuel and petroleum products, pesticides, fertilizers, paint products and the like. In this latter regard, pursuant to Chapter 6.95 of the State Health and Safety Code, the Project is required to develop and file a

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Hazardous Materials Business Plan (HMBP). The HMBP contains basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of in the state. The HMBP as implemented ensures an accurate inventory of materials on-site, establishes an emergency response plan and owner/operator identification, and mandates employee training that acts to preclude or minimize the potential for misuse, release, or improper disposal of hazardous materials. The subject site is not included on list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

Conclusion:
Based on the preceding, no new, additional, or substantially different hazards/hazardous materials (toxic substances) impacts than those assessed in the Certified EIR are expected to result from the proposed Addendum Project. No changes or additions to the Certified EIR analysis are necessary.

3.4.3.10 Aesthetics

The Certified EIR specifically addresses potential aesthetic impacts resulting from implementation of planned community uses pursuant to the Beaumont Gateway Specific Plan. The Certified EIR analysis recognizes that implementation of new residential, commercial and recreational uses in this location would result in a potentially significant alteration of the site's appearance. Accordingly, mitigation measures are incorporated that act to provide screening and a visual transition between the project and surrounding areas.

In addition, the Certified EIR recognizes that the City of Beaumont is required to review the project design and all architectural plans prior to tract map approval to evaluate the project's visual impacts to surrounding areas and ensure the adequacy of the project's landscaping and other visual buffers. Certified EIR mitigation measures also require that lighting and signage be provided in conformance with applicable City and County ordinances. With mitigation, potential aesthetic impacts of the Certified EIR project were found to be less-than-significant.

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The scope and character of the industrial uses proposed by the Addendum Project differ in character and scale when compared to residential and commercial development proposed by the Beaumont Gateway Specific Plan. Potential visual and aesthetic impacts of the large scale industrial warehouses proposed under the Addendum Project are mitigated through mandated conformance with design and development standards articulated in the Hidden Canyon Industrial Park Specific Plan. In this regard, except as expressly provided for within the Hidden Canyon Industrial Park Specific Plan, development within the Specific Plan Area shall, at a minimum, comply with Development Standards stipulated at City of Beaumont Zoning Ordinance Chapter 17.11 General Development Standards, Section 17.03.100 Manufacturing Zone (M Zone), Subsection C. Manufacturing Zone, Development Standards. Additionally the Addendum Project will implement lighting and signage in conformance with applicable City and County ordinances. The Project also incorporates visual buffers and transitional elements in the form of setbacks and perimeter landscaping acting to reduce its potential visual/aesthetic impacts.

Conclusion:

As supported by the preceding discussion, the Addendum Project will not result in adverse visual/aesthetic impacts that were not previously considered and addressed in the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

Light and Glare

The Certified EIR addresses potential light and glare impacts resulting from the Beaumont Gateway Specific Plan's proposed residential and commercial uses, and determined that potential light and glare impacts were less-than-significant as mitigated. In this regard, the Certified EIR incorporates mitigation requiring compliance with Riverside County Ordinance 655, which addresses light and glare impacts as they affect the Palomar Observatory, is incorporated into the Certified EIR.

Design guidelines, development standards, and performance standards reflected in the Hidden Canyon Industrial Park Specific Plan ensure that the Addendum Project, at a

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minimum, conforms to City lighting standards, ensuring that potential light and glare impacts are less-than-significant. The proposed Addendum Project is also required to comply with County Ordinance 655, acting to ensure that resulting light and glare do not adversely affect the Palomar Observatory.

Conclusion:

Based on the preceding, the proposed Addendum Project would not result in light/glare impacts not considered and addressed in the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

3.4.3.11 Cultural Resources

The Certified EIR addresses potential impacts to cultural resources (historical, or archaeological, and paleontological) that could be found within the subject site. Review of archaeological and paleontological records for the area, along with site-specific technical reports indicated no visible resources. However, there is a potential to unearth historical, archaeological, or paleontological resources in the course of development activities. Accordingly, the Certified EIR mitigation measures require cultural resources monitoring during earth moving activities. Mitigation measures also specify reporting, recovery, cataloguing and preservation procedures for resources that might be encountered within the subject site.

The Addendum Project is similarly required to conduct cultural resources monitoring during construction activities, with accompanying reporting, recovery, cataloguing and preservation procedures for resources that might be encountered within the subject site.

Conclusion:

Based on the preceding, the Addendum Project would not result in cultural resources impacts not considered and addressed in the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

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3.4.3.12 Traffic and Circulation

The Certified EIR traffic impact analysis for the Beaumont Gateway Specific Plan indicates that with mitigation, traffic and circulation impacts would be less-than-significant. As supported by the trip generation analysis prepared for the Addendum Project [*Timoteo Distribution Facility Trip Generation Analysis* (Urban Crossroads, Inc.) November 15, 2011, Addendum Appendix D], total average daily traffic (ADT), and peak-hour traffic generation under the Addendum Project is anticipated to be approximately 54 percent less than that addressed by the Certified EIR, as shown in the following Table 3.4-1.

Table 3.4-1
Comparison of Daily Trip Generation
Gateway Specific Plan and Hidden Canyon Industrial Park Specific Plan

Land Use	AM Peak Hour			PM Peak Hour			Daily Total
	Inbound	Outbound	Total	Inbound	Outbound	Total	
Hidden Canyon Industrial Park Specific Plan	221	119	340	125	253	378	5,438
Beaumont Gateway Specific Plan	200	360	560	660	510	1,170	11,800
Increase (Decrease)	**21**	**(241)**	**(220)**	**(535)**	**(257)**	**(792)**	**(6,362)**

Source: *Timoteo Distribution Facility Trip Generation Analysis* (Urban Crossroads, Inc.) November 15, 2011.

Specifically, the Addendum Project traffic study indicates that the proposed industrial warehouse uses would generate a total of approximately 5,438 daily trips (average daily traffic or ADT), of which 340 trips would occur during AM peak hour traffic conditions, with 378 trips generated during PM peak hour traffic conditions. In contrast, the Certified EIR project was estimated to generate 11,800 ADT, of which 560 trips would occur during AM peak hour traffic conditions, with 1,170 trips generated during PM peak hour traffic conditions. Addendum Project trip generation analysis indicates that the development of the proposed Addendum Project would generate significantly fewer total trips and significantly fewer peak hour trips than that previously analyzed in the Certified EIR traffic impact study report. It is also assumed that trip distribution characteristics of the Addendum Project and Certified EIR project are substantively

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comparable. Since the currently proposed Addendum Project trip generation does not exceed the trip generation under the Certified EIR project, and trip distribution characteristics are substantively unchanged, it is inferred that traffic impacts of the Addendum Project would not be substantially greater than, or different than those identified in the Beaumont Gateway Specific Plan.

Conclusion:
Based on the preceding, the Addendum Project would not result in traffic/circulation impacts not considered and addressed in the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

3.4.3.13 Public Services and Utilities

The Certified EIR addressed potential impacts to public facilities and services, including water and sewer facilities, fire protection services, police protection services, schools, parks and recreation, utilities, solid waste, libraries and health services. With implementation of mitigation measures, all potential impacts were determined to be less-than-significant.

Public services mitigation measures identified in the Certified EIR are also broadly applicable to the proposed Addendum Project, and would reduce potential impacts to levels that are less-than-significant. It is further noted that overall demand for public services would expected to be reduced under the Addendum Project. That is, the proposed distribution warehouse uses will not directly result in resident population increases, which typically act as principal drivers for public services.

Conclusion: Based on the preceding, the Addendum Project would not result in new, additional, or different impacts than were considered and addressed in the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

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3.4.3.14 Alternatives

Potential impacts of the Hidden Canyon Industrial Park Specific Plan are within the scope of impacts that would result from the Beaumont Gateway Specific Plan or from the alternatives considered in the Certified EIR. That is, the proposed Addendum Project would not result in any new significant impacts not already considered and addressed in the Certified EIR, including the Certified EIR's consideration of Alternatives to the Beaumont Gateway Specific Plan.

Conclusion:

The Alternatives Analysis presented in the Certified EIR would apply equally to the proposed Addendum Project, with no substantive alteration in conclusions regarding implementation of alternatives or their potential environmental impacts. As such, implementation of the Addendum Project would have no discernible effect on analyses or conclusions regarding development alternatives considered in the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

3.4.3.15 Additional Topical Issues Considered Pursuant to CEQA Guidelines Amendments

Within the timeframe subsequent to Certification of the Beaumont Gateway Specific Plan EIR, a number of amendments to the *CEQA Guidelines* have been adopted. Most notably, recent amendments to the Guidelines (effective March 18, 2010)[4] have been enacted to address the issue of greenhouse gas emissions/potential global climate change impacts. Accordingly, this Addendum (at Appendix A, Environmental Checklist Form) reflects the recently adopted revisions to the *CEQA Guidelines*.

- The primary changes to the Checklist evaluation questions and categories resulting from the March 18, 2010 *CEQA Guidelines* Amendments are summarized below. The effects of these revisions on the analysis previously presented in the Beaumont Gateway Certified EIR are indicated in italicized text.

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[4] A copy of the complete *CEQA Guidelines* is available at the California Natural Resources Agency website: http://ceres.ca.gov/ceqa/guidelines/.

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As noted herein, evaluation of the Addendum Project pursuant to the March 18, 2010 *CEQA Guidelines* Amendments (Guidelines Amendments) would not result in a finding that the proposed Hidden Canyon Industrial Park Specific Plan Project would result in new or substantially different significant impacts requiring preparation of CEQA documentation other than this Addendum.

- Under the Guidelines Amendments, the Checklist Category "Agricultural Resources" was revised to incorporate the evaluation of "Agriculture and Forest Resources." In addition to questions designed to assess a project's potential impacts on agricultural lands, the checklist now includes questions evaluating potential impacts on forest land, timberland, or land zoned for timberland production. *Public Resources Code Section 12220(g) defines "forest land" as "land that can support 10-percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits." The Addendum Project site currently consists of disturbed vacant land absent substantive tree cover. The Addendum Project area is not within a designated forest or timber production area. As such, the Addendum Project's potential to result in a loss of forest land, or otherwise affect forest or timber lands is considered less-than-significant, and is not considered further within this Addendum.*

- A new category, entitled "Greenhouse Gases," was added to the Environmental Checklist Form. Questions within this category include, "(a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?" and "(b) Would the project conflict with an applicable plan, policy or regulation adopted for the purposes of reducing the emissions of greenhouse gases?" *CEQA analyses prepared in California over the last several years have customarily included an assessment of a project's potential greenhouse gas emissions generation, often as part of a larger air quality evaluation. Comparative greenhouse gas emissions impacts of the Addendum Project and Certified EIR project are evaluated in the Environmental Checklist Form presented at Addendum Appendix A. As*

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discussed in the Checklist, potential GHG emissions impacts are substantially reduced under the Addendum Project.

- Several questions under the Checklist's "Transportation/Traffic" category were re-worded to more specifically address public transit and non-motorized modes of travel. The question "Would the project result in inadequate parking capacity?" has been removed from the checklist. *Standards of significance reflecting these revisions have been incorporated in the Addendum's evaluation of potential traffic impacts. Please refer to the Environmental Checklist Form presented at Addendum Appendix A.*

4.0 Determination

SECTION 4.0
DETERMINATION

As supported by the analysis presented in this Addendum, the potential environmental effects of the proposed Project, and associated required discretionary actions, have been adequately addressed in the Certified EIR for the Beaumont Gateway Specific Plan. This Addendum to the Certified EIR provides minor technical changes to the Certified EIR analysis. As such, the development of any further information and analysis (e.g., preparation of a Subsequent or Supplemental EIR) is not warranted. Pursuant to the requirements of *CEQA Guidelines* Section 15162 and 15164, the following determinations have been made:

Major Revisions to the Certified EIR Not Required

Based on the preceding analysis and information, there is no evidence that major changes to the EIR are required. Comparison of the previous project with the Project described in this Addendum indicates that there is no new significant or more severe environmental impact, and that the approval of the Project described herein would have the same impacts as those described in the Certified EIR prepared for the Beaumont Gateway Specific Plan.

No Substantial Change in Circumstances Requiring Major Revisions to the Certified EIR

No information exists in the record, or is otherwise available that indicates that there are substantial changes in circumstances that would require major changes to the Certified EIR.

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No New Information Showing Greater Significant Effects than Identified in the Certified EIR

This Addendum has considered all available relevant information to determine whether there is new information, which was not available at the time the Beaumont Gateway Specific Plan project EIR was Certified, that may indicate that a new significant effect may occur that was not reported in the Certified EIR. As supported by the analysis presented in this Addendum, there is no substantial new information that was not available at the time the Beaumont Gateway Specific Plan project EIR was Certified, indicating that there will be a new, significant impact requiring major revisions of the Certified EIR.

No New Information Showing Ability to Reduce Significant Effects Identified in the EIR

The Addendum analysis substantiates that there are no significant impacts requiring identification of new or additional alternatives to the project, or consideration of new or additional mitigation measures, in order to reduce one or more of the significant effects identified in the Certified EIR.

Summary

The analysis presented in this document substantiates that the analysis presented in the Certified Beaumont Gateway EIR is sufficient to satisfy CEQA requirements for the proposed Addendum Project. That is, implementation and operation of the Addendum Project described and evaluated herein will not result in any significant new, different, additional, or substantially increased environmental impacts than were previously considered and addressed in the Certified Beaumont Gateway EIR. As such, environmental assessment of the Project does not require any major revision of the Certified Beaumont Gateway EIR, nor will the Addendum Project result in conditions that would require preparation of a Subsequent or Supplemental EIR as described in the *CEQA Guidelines*.

5.0 Mitigation Summary

SECTION 5.0
MITIGATION SUMMARY

5.1 CERTIFIED EIR MITIGATION TO BE IMPLEMENTED BY THE ADDENDUM PROJECT

This Section presents, in Table 5.1-1, the mitigation measures that were incorporated in the Certified Beaumont Gateway Specific Plan EIR. Each of these mitigation measures, where applicable, will be implemented by the proposed Hidden Canyon Industrial Park Specific Plan Project. As indicated in the Table "Remarks," updates and/or clarifications to some of these mitigation measures may be appropriate in order to adequately address the specific conditions and updated circumstances that are anticipated to occur under the Addendum Project. At the discretion of the City of Beaumont's Planning Director, these revisions will be implemented as part of the Project's Mitigation Monitoring Program. Any such discretionary modifications cannot result in any new significant environmental impacts.

Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
1. SEISMIC SAFETY	
1. Seismic hazards due to strong ground motion will be mitigated through engineering design. All on-site structure and foundations shall be designed to resist seismic lateral loading in accordance with the criteria contained in the California Building Code Section 2313. Conformance with UBC design standards will be enforced through building plan design review and approval by City of Beaumont Department of Building and Safety, the City Engineer and the City Planning Department.	

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
SEISMIC SAFETY (cont'd)	
2. Prior to the issuance of grading permits within any area of the Specific Plan, a detailed Grading Plan for that portion of the project shall be submitted to the City Planning and Engineering Departments for approval. These Grading Plans shall address any required slope stabilization measures for terrain adjacent to developed portions of the project site.	
2. SLOPES AND EROSION	
1. Prior to the issuance of grading permits within any area of the Specific Plan, a detailed Grading Plan for that portion of the project shall be submitted to the City Planning and Engineering Departments for review and approval. The Grading Plan for each area shall be used as a guideline for subsequent detailed grading plans for individual stages of development within that area. All recommendations contained with the Geotechnical Investigation included as Appendix B to the Draft EIR shall be followed. Further, upon completion of the Grading Plan, the Geotechnical Investigation shall be reviewed and revised where necessary.	
2. Prior to grading, all surface debris and vegetation (including but not limited to, heavy weed growth, trees, stumps, logs, and roots) shall be removed from the areas to be graded. Organic materials resulting from the clearing and grubbing operations shall be disposed of off-site. Non-organic debris from site clearing may be disposed of off-site or stockpiled for crushing and/or placement by approved methods in deeper fill areas. Any structures, debris, equipment, etc., in the areas south of the site considered to be a hazard shall also be removed during the first phase of project grading.	
3. All cut and fill slopes shall he constructed at inclinations no greater than 2:1 (horizontal: vertical) ratio. Steeper slopes will require use of retaining walls and landscaping to be approved by the City of Beaumont, Engineering Department. Slopes requiring buttressing for stabilization shall be identified within detailed Grading Plans.	

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
SLOPES AND EROSION (cont'd)	
4. Fill slopes shall be properly compacted and all cut and fill slopes shall be planted with erosion resistant vegetation or other protective devices as soon as possible once grading occurs.	
5. All grading procedures shall be in compliance with the City of Beaumont Grading Standards including requirements for erosion control during rainy months. Standard engineering techniques will minimize the soil erosion and siltation potential to acceptable levels. Prior to grading plan approval, the project proponent shall submit to the City of Beaumont for review and approval an erosion control program which indicates proper control of siltation, sedimentation and other pollutants.	
6. As in most development projects, conditions revealed by excavation may be at variance with preliminary findings. If this occurs, the changed conditions shall be evaluated by the project geotechnical engineer and geologist and designs shall he adjusted as required or alternate designs will be recommended.	
7. Prior to submittal of the final tract [parcel] *map, a detailed Grading Plan shall be prepared and included with the map.*	
8. The applicant shall be responsible for maintenance and upkeep of all planting and irrigation systems until those operations are the responsibility of other parties.	
9. Prior to the issuance of grading permits, the applicant shall furnish the City of Beaumont with documentation that all NPDES requirements have been complied with.	

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
3. HYDROLOGY	
1. The proposed storm drain system for the Beaumont Gateway Specific Plan will be designed in accordance with the City of Beaumont and County of Riverside, Flood Control & Water Conservation District flood control standards. Prior to approval of any subdivision applications or grading permits, the project applicant shall submit a detailed hydrology analysis and Final Drainage Plan which shall be reviewed by all appropriate agencies.	
2. Erosion control devices will be utilized, where necessary, to mitigate the effect of increased runoff at points of discharge. Possible devices may include temporary berms, culverts, sandbagging or desilting basins, etc.	
3. The California Department of Water Resources has recommended the following mitigation measures: grade slopes so that runoff of surface water is minimized; use pervious paving material whenever feasible to reduce surface water runoff and aid in ground water recharge; and investigate the feasibility of utilizing reclaimed wastewater, stored rainwater, or grey water for irrigation.	
4. Any impact to known watercourses requires application for an Army Corps of Engineers 404 Permit of the Clean Water Act. In addition, a 1603 or 1601 Permit from the California Department of Fish and Game would be required since this project involves construction which may impact a natural stream course.	
5. The project applicant will be responsible for installation and maintenance of all on-site drainage improvements until those operations become the responsibility of other parties. The project applicant will also participate in the payment of fees to any regional drainage improvement program enacted by the City of Beaumont applicable to the subject property.	
6. Pursuant to requirements of the State Water Resources Control Board, enacted in November of 1991, a statewide general National Pollution Discharge Elimination System (NPDES) permit will apply to any construction activities.	

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
HYDROLOGY (cont'd)	
7. Best Management Practices (BMP) will be implemented to enhance pollutant removal during storms and to improve the quality of stormwater runoff. BMP's refer to structural or non-structural pollution control measures which reduce the amount of non-point source pollution entering the waters of the United States and may be either non-structural or structural. The former group includes those BMPs in which pollutants are kept from coming in contact with the stormwater; the latter group consists of various methods of treating stormwater.	
8. The project will comply with the requirements of the California State Water Quality Control Board, Santa Ana Region.	
9. On-site public drainage facilities located outside of the road right-of-way will be contained in drainage easements.	
10. Interim drainage improvements shall be installed, if necessary, as phasing of development progress in order to insure 100 year flood protection for the entire site.	
11. Prior to development of upstream areas, the potential for the conveyance of debris by the off-site watershed will be accounted for in design of on-site drainage facilities in order to avoid abrasive erosion in certain drainage facilities and maintenance problems for facilities located within the floodplain.	
12. Inspection and maintenance of public storm drain systems shall be performed by the Riverside County Flood Control and Water Conservation District.	Inspection and maintenance of some public storm drain system components may fall under the jurisdiction of the City of Beaumont.

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
4. AIR QUALITY	
1. To minimize dust generation during grading operations, SCAQMD Rule 403 shall be adhered to which will require watering during earth moving operations. To further reduce emissions, grading shall not occur when wind speeds exceed 20 mph. Construction access roads shall be paved. In addition, soil binders shall be spread on construction sites or unpaved roads and/or parking areas. Also, street sweeping of roads adjacent to the project site shall be done to reduce fugitive dust from traffic. Soil shall be cleaned up from public roads and access roads, if necessary. In addition, rapid cleanup of debris from streets shall be implemented after a major storm. Finally, trucks shall be washed off before leaving the construction site.	
2. Construction equipment emissions shall be reduced by requiring that trucks maintain two-feet of free board (distance between top of load and top of truck bed sides). In addition, low sulfur fuel shall be used for construction equipment, and the equipment should be property maintained and tuned.	
3. To minimize traffic related impacts from construction, construction personnel shall be encouraged to rideshare. Parking for construction personnel should not interfere with traffic flows. Construction affecting roadways should be performed during non-peak traffic hours. A flag person should be provided during times when construction traffic affects roadways and one lane in each direction should remain open.	
4. Ground cover shall be reestablished on the construction site through seeding and watering. Disturbed but undeveloped soils on the construction site shall be stabilized through the use of vegetative groundcover and/or appropriate chemical soil stabilizers.	
5. Activity management techniques shall be employed, such as extending the construction period; reducing the number of pieces of equipment used simultaneously; increasing the distance between the emission sources; reducing or changing the hours of construction; and scheduling activity during off-peak hours.	

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
AIR QUALITY (cont'd)	
6. Use of temporary power should be avoided, and grid power used once established at the project site.	
7. Encourage the use of alternate transportation modes by promoting public transit usage and providing secure bicycle facilities and preferential parking rate or locations for ride-pools. The project should provide incentives for working and living within the local area.	
8. Provide mass transit accommodations, such as bus turnout lanes, park and ride areas, and bus shelters. Ride pools should be encouraged.	
9. Establish a Transportation Management Association (TMA) for the commercial areas. This will include an employee transportation coordinator. Ride pool data should be made available to those working in the buildings.	
10. Encourage formation of van-pools with company vehicles or subsidy and encourage public transit with free transit passes. Work with Riverside County Transit to expand scheduled bus service and implement long-term public transportation projects. Evaluate the potential for subscription bus service for areas of large concentrations of employees.	
11. Provide energy conserving, low sodium street lighting. Energy costs should be included in capital expenditure analyses.	
12. Provide traffic signal synchronization where feasible.	
13. Provide incentives for purchasing and installing low-polluting and high efficiency appliances. Install solar water heaters and pool heaters in homes.	This measure was established primarily to focus on residential development, and may not be applicable to the Addendum Project as proposed.
14. Provide landscaping with native drought resistant plant species to shade buildings during summer.	

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
AIR QUALITY (cont'd)	
15. Vehicle trips can be further reduced through the following methods: • *Establish a program of alternative work schedules.* • *Establish a telecommuting program.* • *Schedule goods movements for off-peak traffic hours.* • *Contribute to local shuttle and regional transit systems.* • *Provide dedicated turn lanes as appropriate.* • *Limit on-street parking.*	
5. NOISE	
1. Construction adjacent to existing residential development shall be limited to the hours of 7 a.m. to 7 p.m. on Monday through Friday. Construction should not be allowed on weekends or federal holidays.	
2. Mitigation Measures are needed to reduce noise levels in outdoor and indoor residential areas exposed to noise levels greater than 65 CNEL. Specifically, lots along Fourth Street within Residential Planning Area 4 (parallel to SR-60) may experience noise levels of 65 CNEL or greater without some form of mitigation and shall require a detailed acoustical analysis prior to tract [parcel] *map or grading plan approval. The analysis shall include mitigation measures such as noise barriers required to meet an exterior noise level of 65 CNEL. An interior noise analysis is required for these homes to show that sufficient outdoor to indoor building attenuation is provided to meet a 45 CNEL interior prior to the issuance of building permit. It has been assumed that no second story balconies will face the roadway for residential units located inside the 65 CNEL impact zone. In general, second story balconies should not overlook major roadways due to potential noise impacts. However, if such balconies are planned, additional noise mitigation will be necessary.*	This measure was established primarily to address the residential components proposed within the Beaumont Gateway Specific Plan, and is not applicable to the proposed Addendum Project.

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
NOISE (cont'd)	
3. *The commercial center to be located in Planning Area 9 shall require an acoustical report including mitigation measures necessary to achieve an interior noise standard of 50 CNEL for commercial retail uses prior to tract map or grading plan approval.*	This measure was established primarily to address noise generated within the commercial components of the Beaumont Gateway Specific Plan Project, and to assure that commercial operations would not affect the proposed residential uses. As such, this measure is not applicable to the Addendum Project.
4. *An acoustical analysis shall be required indicating measures necessary to achieve a noise standard of 65 CNEL for the neighborhood park proposed in Planning Area 6 prior to tract map or grading plan approval.*	This measure was intended to limit noise impacts at a park proposed within the Gateway Specific Plan and is not applicable to the Addendum Project.
6. WILDLIFE AND VEGETATION	
1. *Any proposed modification to on-site drainage courses will require permits from the California Department of Fish and Game (1601-1603 Streambed Alteration Permits) and U.S. Army Corps of Engineers (404 permit) with input from the U.S. Fish and Wildlife Service. In response to the requirements associated with these permits, a Mitigation Plan must be submitted to these agencies. Mitigation generally takes the form of either planting riparian associated vegetation in an area where existing vegetation is degraded, or creating new riparian areas. Of particular concern is the preservation and/or restoration of the Southern Willow Scrub habitat found along the tributary of San Timoteo Creek which flows through the northeastern corner of the subject property.*	

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
WILDLIFE AND VEGETATION (cont'd)	
2. *As the Stephens' Kangaroo Rat is on the Federally Endangered Species list, project development will require either a Section 7 consultation or a 10(a) permit from the U.S. Fish and Wildlife Service allowing incidental take of the species.*	The Western Riverside County Multiple-Species Habitat Conservation Plan (MSHCP) was adopted subsequent to the certification of the Beaumont Gateway Specific Plan. Impacts to Stephens' Kangaroo Rat are currently addressed through the payment of fees under the MSHCP. Section 7 consultation is no longer required. The Applicant has indicated that suitable in-kind property may be available to offset MSHCP fees in part or in total. Any negotiated MSHCP fee payments/property dedication shall be subject to review and approval by the Lead Agency and affected resource agencies.
3. *The loss of Riversidean Sage Scrub vegetation, the loss of the Rufous-crowned sparrow, Bell's sage sparrow and San Diego horned Lizard shall be mitigated by off-site dedication and preservation of Riversidean Sage Scrub and Chaparral vegetation within the Badlands area south of the project site as biological open space. The area to be preserved should be adjacent to existing Riversidean Sage Scrub and Chaparral adjacent or in proximity to the project site. Riversidean Sage Scrub should be preserved at a ratio of 1:1 (development to preservation), or approximately 4.3 acres. Chaparral should also be preserved at a ratio of 1:1 (development to preservation) or approximately 106 acres.*	As with the preceding mitigation measure, impacts to referenced species and habitat are currently addressed through the payment of fees under the MSHCP. Off-site dedication is no longer required. Affected acreage that will require payment of fees should be determined based on the total area of the Addendum Project. Please refer also to preceding remarks regarding potential negotiated MSHCP fee payment and property dedication in lieu of fees.

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
WILDLIFE AND VEGETATION (cont'd)	
4. To partially mitigate the disruption of wildlife movement, the project proponent shall work with Caltrans and the Riverside County Transportation Department to up-grade an existing wildlife crossing on State Route 60 or Jack Rabbit Trail. Upgrading of a crossing may consist of wing fencing to funnel animals to a corridor or planting of shrubs to provide cover for animals using the corridor.	Provisions of the MSHCP also address wildlife movement and wildlife movement corridors. The Applicant and City shall coordinate site plan development to ensure that any planned/proposed wildlife movement corridors are maintained. Please refer also to preceding remarks regarding potential negotiated MSHCP fee payment and property dedication in lieu of fees.
5. A wall or fence shall be provided to delineate the boundary of the residential and commercial areas from adjacent undeveloped areas. The wall or fence should be constructed accompanied by plantings of native vegetative species which discourage access.	
6. Native plants shall be used in landscaping of the site to provide some wildlife value for native species with as much diversity as possible being given in order to attract as many native wildlife species as possible.	
7. LAND USE	
1. On and off-site facilities (traffic improvements, utility infrastructure, etc.) shall be phased in conjunction with need as generated by project residents as well as those within adjacent projects.	
8. SOCIO-ECONOMIC RESOURCES	
No impacts were identified.	No mitigation measures are proposed.

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
9. NATURAL AND ENERGY RESOURCES	
1. Passive solar heating techniques shall be employed whenever possible within the project. Passive systems involve building design which orients buildings properly, planting trees to take advantage of the sun, adequate roof overhangs, installation of proper insulation, the use of glazed windows, and other simple heat storage techniques.	
10. TOXIC SUBSTANCES	
1. During the first phase of project grading, any structures, debris, equipment, etc. which remain in areas south of the project site which were the site of previous testing activities, and are considered potential toxic, safety or groundwater hazards shall be removed.	
2. Prior to issuance of grading permits, a Phase I Environmental Assessment shall be conducted on the project site.	
3. During project grading inspections, any existing, undocumented fills shall be removed and monitored by a qualified soils geologist. In the event that any toxic or hazardous materials are discovered, qualified authorities shall be contacted immediately. Any required mitigations, remediations, soil removal or other required actions shall occur prior to completion of project grading in accordance with applicable local State and Federal regulations.	
4. Prior to the issuance of building permits for proposed on-site commercial uses, the City of Beaumont and any other appropriate County or State agencies shall review proposed project plans to determine the potential for existence or use of toxic materials and potential adverse effects from exposure to toxic substances from these future commercial uses.	This measure is also applicable to industrial uses proposed under the proposed Addendum Project.

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
11. AESTHETICS	
1. *It is intended that visual impacts resulting from the transition from open space uses to residential development will be partially mitigated by the following features of the Beaumont Gateway Specific Plan:* • *The project design includes a proposed 10.0 acre community park to provide open space views from Fourth Street and interior collector roadways.* • *Portions of the natural hillsides along the western, southern and eastern perimeters of the site will be preserved within open space easements. These areas will be combined within manufactured slopes and fuel modification areas to provide a buffer between proposed residential land uses and surrounding open space.*	The first bullet point within this measure addresses a park that was proposed within the Gateway Specific Plan and is not applicable to the Addendum Project. Regarding the second bullet point, fuel modification areas, including buffer zones and/or other fire protection areas will be provided consistent with current Fire Department requirements.
2. *All architectural designs for all proposed structures shall be reviewed by the City of Beaumont, Planning Department prior to or concurrent with tentative tract* [parcel] *map approval.*	
3. *Prior to or concurrent with tract* [parcel] *map approval, the City of Beaumont shall review the project design in order to insure:* *a) an evaluation of the project's visual impacts on surrounding areas;* *b) an evaluation of the visual impacts of manufactured slopes greater than 10 feet in height; and* *c) the adequacy of landscaping and other visual buffers.*	
4. *All lighting shall, where applicable, comply with the requirements of County Ordinance 655.*	
5. *All proposed signs (including marketing and advertising signs) shall conform to the City of Beaumont sign ordinance.*	

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
12. CULTURAL AND SCIENTIFIC RESOURCES	
1. No archaeological or historical sites were identified, therefore no mitigation measures are warranted. Should, however, any further cultural resources be encountered as a result of grading, it is recommended that a qualified archaeologist be consulted at that time. In the event that archaeological resources are encountered during project grading, the qualified archaeologist shall be empowered to temporarily halt or redirect excavation equipment while resources are being removed.	
2. Given the assessed potential for paleontologic resources on the property, the following procedures are recommended for monitoring during grading and project development:	
a. All earth moving which involves the San Timoteo and the Older Alluvium shall be monitored by a qualified paleontological monitor, under the supervision of a vertebrate paleontologist. Monitoring shall occur in areas of the San Timoteo Formations where cuts are made to depths of 10 or more feet. The monitor must be equipped to temporarily halt or redirect excavation equipment while fossils are being removed. The monitor shall be equipped to speedily collect specimens if they are encountered.	
b. The monitor, with assistance if necessary, shall collect individual fossils and/or samples of fossil bearing sediments. If specimens of small animal species or plants are encountered, a selected volume of fossil bearing earth shall be collected and stockpiled off-site for screen washing. *c. If earthmoving exposes previously unidentified paleontological site(s) containing significant resources, it shall be subject to mitigation through excavation. Fossils recovered during earthmoving or as a result of screen washing shall he cleaned and prepared sufficiently to allow identification.*	

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
CULTURAL AND SCIENTIFIC RESOURCES (cont'd)	
d. Fossils found by the owners of the property, their agents, contractors or subcontractors during the development of the property, shall also be reported immediately to the paleontological monitor. *e. A report of findings shall be prepared and submitted to the City of Beaumont upon completion of mitigation. This report will include a statement of the types of paleontologic resources found, the methods and procedures used to recover them, an inventory of the specimens recovered, and a statement of their scientific significance. Dating of associated finds to determine the age of the deposits shall be undertaken and included in the report.* *f. The paleontological specimens recovered as a result of these mitigations shall be donated to a qualified scientific or cultural institution where they would be afforded long term preservation and the opportunity for further scientific study.*	
13. CIRCULATION	
1. The project shall construct all interior roadways to full City of Beaumont Standards as adjacent development occurs in order to provide a safe and efficient circulation system through the site. The City of Beaumont shall approve the design(s) of the internal circulation system for each developed tract [parcel] *prior to tract* [parcel] *map approval.*	
2. The project shall participate on a fair and equitable basis in the construction of Fourth Street internal to the project to its ultimate cross-section width as a secondary (88 feet right-of-way) roadway in conjunction with development. The timing and phasing of this improvement shall be determined by the City of Beaumont in conjunction with approval of tract [parcel] *maps based upon the degree of impacts from interim levels of project and related traffic.*	As required under the preceding mitigation measure, roadways will be built to current City of Beaumont standards. In the case of Fourth Street, the City's General Plan Circulation Element currently designates this roadway as a "Major Highway," with a 100-foot right-of-way.

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
CIRCULATION (cont'd)	
3. *Access to the project from Fourth Street shall be limited to the two intersections to the south and the several driveways to the proposed commercial site.*	This measure was established primarily to address the commercial components proposed within the Beaumont Gateway Specific Plan, and is not applicable to the proposed Addendum Project.
4. *The project shall participate on a fair and equitable basis in the widening of Jack Rabbit Trail from two to four lanes between State Route 60 and Fourth Street and the widening of Fourth Street from two to four lanes from the project boundary to the North-South Connector road at State Route 60. The timing of these improvements shall be determined by the City of Beaumont in connection with approval of project tract* [parcel] *maps based upon the degree of impacts from interim levels of project and related traffic.*	
5. *The project shall participate on a fair and equitable basis, in the phased construction of the following interim off-site roadway improvements.* a. *The widening of Jack Rabbit Trail and Fourth Street as noted in Mitigation Measure 4 above;*	
b. *The installation of traffic signals at:* - *Jack Rabbit Trail/Fourth Street* - *Viele Street/Sixth Street*	
6. *The project shall participate, on a fair and equitable basis, in the phased construction of the following ultimate off-site roadway improvements:* a. *Construction of a new interchange on State Route 60 at a point approximately one mile east of Jack Rabbit Trail.* b. *Extension of and/or improvements to Fourth Street from Rolling Hills Ranch to Jack Rabbit Trail*	

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
CIRCULATION (cont'd)	
c. Construction of a North-South Connector road between the new interchange and Fourth Street *d. Installation of traffic signals at:* *- Jack Rabbit Trail/Fourth Street* *- North-South Connector/State Route 60 Westbound Ramps* *- North-South Connector/State Route 60 Eastbound Ramps* *- North-South Connector/Fourth Street*	
7. The project shall dedicate right-of-way and provide for the construction of a park-and-ride facility within the proposed commercial uses within the Beaumont Gateway project in order to accommodate ridesharing and mass transit opportunities. Given the Caltrans' standard of one park-and-ride space per 40 dwelling units, a total of 12 spaces should be provided within the proposed commercial uses. Its location near a freeway access point offers an ideal location for such a facility while also being of positive value to future commercial tenants.	This measure was established primarily to address the residential and commercial components proposed within the Beaumont Gateway Specific Plan, and is not applicable to the proposed Addendum Project.
14. WATER AND SEWER	
1. All water and sewer lines shall be placed underground.	
2. All water lines and related and required water services shall be designed per the Beaumont-Cherry Valley Water District requirements and shall adhere to all requirements and secure all necessary permits from local, regional or State agencies.	
3. All water and sewer lines shall be properly sized to adequately service proposed future growth potential.	
4. All sewer service improvements shall be constructed in accordance with the City of Beaumont's requirements.	
5. All water and sewer service improvements shall be maintained by the Beaumont-Cherry Valley Water District.	Sewer facilities may fall under the jurisdiction of the City of Beaumont.

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
WATER AND SEWER (cont'd)	
6. The proposed project shall be responsible for a fair share cost of constructing oversized lines of off-site water or wastewater transmission facilities to serve the project consistent with the rates and regulations of the City of Beaumont and the Beaumont-Cherry Valley Water District.	
7. The City shall coordinate a program to monitor the quantity and quality of water provided by the City of Beaumont Water Department or the Beaumont-Cherry Valley Water District.	All water service to the Addendum Project would be provided by the Beaumont-Cherry Valley Water District, which has verified its ability to serve the Addendum Project. As such, this measure may not be applicable.
8. Reclaimed water shall he used in areas of extensive landscaping including but not limited to public rights-of-way, easements and parks within the Specific Plan when reclaimed water facilities are available within close proximity of the project site.	
9. In addition, State laws require water efficient plumbing fixtures in structures to minimize water use.	
10. Assurance for the provision of adequate water service is required prior to approval of a final map in accordance with the State Subdivision Map Act. The Beaumont-Cherry Valley Water District will review water demands for conformance to design requirements and for the ability to serve.	

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
WATER AND SEWER (cont'd)	
11. The proposed project shall integrate the following water conservation measures into the project design. • *Landscape plans for the Specific Plan shall incorporate landscape designs which minimize water irrigation requirements through the use of drought-tolerant plant species and the extensive use of mulch as groundcover.* • *Landscape irrigation systems for public areas shall be designed to minimize excess runoff. Drip irrigation systems, soil moisture sensors, and automatic irrigation systems shall be utilized.* • *Drinking fountains in all commercial, recreational or institutional uses will be equipped with self-closing valves.* • *Supply line water pressure will be reduced to 50 pounds per square inch or less.*	
12. The project applicant shall be responsible for the payment of sewer connection fees to the City of Beaumont and applicable fees for the development of an imported water system as provided in the cooperative Agreement between the City of Beaumont and the San Gorgonio Pass Water Agency.	All water service to the Addendum Project would be provided by the Beaumont-Cherry Valley Water District, which has verified its ability to serve the Addendum Project. As such, this measure may not be applicable.

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
15. FIRE SERVICES	
1. *The applicant will participate in either the existing Riverside County Fire Protection Impact Mitigation Program ($400.00 per dwelling unit and $.25 per square foot for commercial/industrial use) that provides funds for the purchase of equipment, remodel or construction of fire stations when necessary as development occurs, or participate in a fire protection impact program as adopted by the Beaumont City Council. The program shall provide for fair share funding to purchase land, build and equip a fire station or provide personnel.*	The Addendum Project will be subject to the City's current fee schedule in regard to Fire Protection fees.
2. *As the project is located in a "hazardous fire area" of Riverside County, buildings constructed within this area shall comply with the special construction provisions contained in Riverside County Ordinance No. 546, or comparable City of Beaumont requirements.*	
3. *All buildings shall be constructed with fire retardant roofing material as described in Section 3202 of the Uniform Building Code. Any wood shingles or shakes shall have a Class 'B' rating and shall be approved by the Fire Department prior to installation*	
4. *The applicant shall use County fire projection requirements for the design of structural fire protection features within the project.*	
5. *All water mains and hydrants shall he provided to the specifications of the applicable jurisdictional standards and regulations.*	
6. *Specific fire protection requirements of the proposed commercial uses will be assessed on a case-by-case basis based upon County fire protection policies.*	This measure is also applicable to industrial uses proposed under the Addendum Project.
7. *The applicant shall submit a Fuel Modification Program for the project in conjunction with tentative tract* [parcel] *map approvals that provides an acceptable level of risk, in accordance with the Riverside County Fuel Modification Standard.*	

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
16. POLICE SERVICES	
1. The Beaumont Police Department has indicated that there are no current fee requirements in effect to offset impacts due to new development. However, a capital mitigation program currently in the planning process proposes a one-time development fee and the possible formation of Community Facilities Districts to offset the cost of construction, operation, maintenance, etc. as a result of new development. Within this program, the project shall participate on a fair and equitable basis in the funding of any required police facilities and personnel needs. Police protection services to the project will also partially be paid by taxes and other revenue generated by the project.	
2. For the security and safety of future residents and commercial tenants, the applicant or developer will incorporate the following design concepts within each planning area: • *Adequate circulation for pedestrians, vehicles and police protection.* • *Adequate lighting of streets, walkways and bikeways.* • *Visibility of doors and windows from street and between buildings.* • *The house and building number identification system shall be visible and readily apparent to emergency response agencies.* • *Encourage the utilization of burglar alarm systems in both residential and commercial units.* • *Incorporation of "defensible space" concepts in detailed project design and development.*	This measure shall be interpreted and applied to industrial uses proposed under the Addendum Project

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
17. SCHOOLS	
1. The developer shall cooperate with the Beaumont Unified School District in order to fully mitigate school impacts of the Beaumont Gateway development. As part of this effort, the developer shall agree to pursue the formation of a Mello-Roos Community Facilities District or other alternative methods of financing school construction, whichever is more feasible from a financial standpoint. *In good faith demonstration of its commitment to apply equitable financial solutions to school housing district-wide, the District shall agree to use all possible means to effect the same level of encumbrance upon other new development within the District. In the event Mello-Roos or alternative means of financing construction of school facilities is mutually deemed financially infeasible, impacts shall be mitigated in accordance with the provisions of AB 1600, Section 53080 and 65995 of the Government Code or the then existing legislation and/or local ordinances adopted pursuant thereto or any applicable Mitigation Agreement entered into by the developer and the District.*	
2. As a means of mitigating schools impacts, the applicant will offer the Beaumont Unified School District the following alternatives: dedication of Planning Area C as a site for an Elementary School in lieu of payment of a portion or all required fees or payment of school fees pursuant to the adopted City School Fee Program. The precise means of mitigation among these alternatives shall be determined prior to issuance of building permits.	The Addendum Project's schools impacts are mitigated through payment of school impact fees.
3. The project shall adhere to the provisions of the Cooperative Agreement executed between the City of Beaumont and the Beaumont Unified School District.	

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
18. PARKS AND RECREATION	
1. The project applicant proposes to provide adequate park acreage and/or fees necessary to satisfy the City of Beaumont and other applicable requirements established at the time of Specific Plan approval.	
2. On-site parks shall conform to the City Parks/Open Space Beautification Concept Plan standards.	No on-site parks are proposed. The Project shall pay City park fees.
3. The proposed park site shall be delivered to the City in a fully improved condition. Any site improvements made by the developer shall be performed with financial recognition included in the site acquisition process. A minimum of 5.0 acres of usable active park area per 1,000 residents shall be provided.	As above.
4. Greenbelts, drainage/open space, and easements will be owned and maintained by an Assessment District or the Master Homeowners Association.	
5. Final design of all proposed on-site parks shall be reviewed and approved by the City of Beaumont prior to tentative, tract map approval by the City of Beaumont prior to tentative map approval.	As above.
6. In the event that the proposed school site overlay alternative is accepted by the Beaumont Unified School District, a revised Park Plan will be submitted to and approved by the City of Beaumont prior to or concurrent with final tract map approval.	The Addendum Project's schools impacts are mitigated through payment of school impact fees.

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
19. UTILITIES	
1. Development plans will be provided to Southern California Gas Company, Southern California Edison, and General Telephone Company as they become available in order to facilitate engineering, design and construction of improvements necessary to provide services to the project site.	
2. Building energy conservation will be largely achieved by compliance with Title 20 and 24 of the Energy Conservation Code. Title 24, California Administrative Code Section 2-5307(b) is the California Energy Conservation Standard for New Buildings which prohibits the installation of fixtures unless the manufacturer has certified to the CEC compliance with the flow rate standards. Title 24, California Administrative Code Sections 2-5352(i) and (j) address pipe insulation requirements which can reduce water used before hot water reaches equipment of fixtures. Title 20, California Administrative Code Sections 1604(f) and 1606(b) are Appliance Efficiency Standards that set the maximum flow rates of all plumbing fixtures and prohibit the sale of non-conforming fixtures.	The Addendum Project shall comply with those incumbent Title 20 and 24 requirements applicable at the time of building permit issuance.
3. The City Engineer shall be kept apprised of all dealings with the Southern California Gas Company, Southern California Edison, or any other utility purveyor when any proposed construction occurs.	

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Table 5.1-1
Mitigation and Implementation Summary Matrix

Certified EIR Mitigation Measures	Remarks
20. SOLID WASTE	
1. *The refuse hauler(s) serving the project site shall be advised of the efforts the developer will be pursuing relating to recycling and waste reduction (i.e., curbside recycling, buy back centers, etc.). The use of such facilities will be encouraged by the developer through information (e.g. location, materials accepted, etc.) provided in sales literature.*	
2. *The developer shall pursue and implement any available source reduction programs for the disposal of construction materials to the satisfaction of the City of Beaumont Planning Department.*	
3. *The developer shall participate in any established City-wide program to reduce solid waste generation.*	
4. *The City of Beaumont shall review the number, size and location of solid waste bin enclosures for proposed commercial, recreational, and where applicable, residential uses.*	
21. LIBRARIES	
1. *Impacts to the library facilities will be partially mitigated through the collection of taxes and the current developer assessment fee established by the library district.*	
2. *A Library District Mitigation Program shall be completed prior to tentative tract* [parcel] *map approval which will identify the extent of any additional developer participation in the mitigation of library impacts.*	
22. HEALTH SERVICES	
As no adverse impacts are anticipated as a result of development, no mitigation is proposed.	

Source: Beaumont Gateway Specific Plan Draft EIR, January 1995.

APPENDICES

Appendices presented herein refer in certain instances to previous preliminary Project titles, e.g., "Timoteo Industrial Park," "Beaumont Distribution Center." Notwithstanding, the physical development and location described and considered in the appendices is the same as that described and considered for the current Project title, the "Hidden Canyon Industrial Park" Specific Plan. Analysis and conclusions of the appended studies are not affected.

Appendix A: Environmental Checklist

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ENVIRONMENTAL CHECKLIST

Hidden Canyon Industrial Park Specific Plan Addendum
to the Beaumont Gateway Specific Plan Certified EIR

1. AESTHETICS

Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Have a substantial adverse effect on a scenic vista?					X	
b) Substantially damage visible scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?					X	
c) Substantially degrade the existing visual character or quality of the site and its surroundings?					X	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?					X	

Summary

Potential aesthetic/visual impacts associated with the development of the subject site activities were previously analyzed within the Certified EIR (please refer to Certified EIR, Section IV. K., “Aesthetics”).

The Certified EIR concluded that development of the subject site with urban uses as proposed by the Beaumont Gateway Specific Plan would substantially alter the site’s rural and undeveloped character, and thereby result in potentially significant aesthetic impacts. Accordingly, mitigation is proposed within the Certified EIR to reduce potentially significant aesthetic impacts to levels that are less-than-significant.

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The Certified EIR also found that development of the Beaumont Gateway Specific Plan project would introduce new sources of light and glare in the area. Notwithstanding, all development would be required to comply with applicable provisions of the Beaumont Gateway Specific Plan as well as City standards for exterior lighting, thereby avoiding potential light and glare impacts at nearby off-site land uses. Moreover, the Certified EIR requires monitored compliance with Riverside County Ordinance 655. In summary, this Ordinance addresses potential light pollution generated by area development in order to preclude or minimize adverse effects at the Mount Palomar Observatory.

The Certified EIR concluded that impacts of the Beaumont Gateway Specific Plan project related to substantial adverse effects on scenic vistas, and substantial damage to visible scenic resources were less-than-significant and required no mitigation.

The industrial uses proposed by the Addendum Project differ in character and scale when compared to residential development proposed by the Beaumont Gateway Specific Plan project. Potential visual and aesthetic impacts of the large scale industrial warehouses proposed under the Addendum Project are mitigated through applicable Certified EIR mitigation measures in combination with mandated conformance with design guidelines, development standards, and performance standards articulated in the Hidden Canyon Industrial Park Specific Plan document. In this regard, except as expressly provided for within the Hidden Canyon Industrial Park Specific Plan, development within the Specific Plan Area shall, at a minimum, comply with Development Standards stipulated at City of Beaumont Zoning Ordinance Chapter 17.11 General Development Standards, Section 17.03.100 Manufacturing Zone (M Zone), Subsection C. Manufacturing Zone, Development Standards. Additionally the Addendum Project will implement lighting and signage in conformance with applicable City and County ordinances. The Project also incorporates visual buffer and transitional elements in the form of setbacks and perimeter landscaping acting to reduce its potential visual/aesthetic impacts.

Applicable Certified EIR mitigation measures and conformance with the Specific Plan design guidelines, development standards, and performance standards also ensure that potential light and glare impacts resulting from the Addendum Project are reduced to levels that are

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less-than-significant. The proposed Addendum Project is also required to comply with County Ordinance 655, acting to ensure that resulting light and glare do not adversely affect the Mount Palomar Observatory.

Previous conclusions of the Certified EIR regarding potential impacts related to: substantial adverse effects on scenic vistas; and substantial damage to visible scenic resources are not affected by the entitlements requested under the Addendum Project, and these impacts would remain less-than-significant.

Based on the preceding, the proposed Addendum Project would not result in visual, aesthetic or light/glare impacts not considered and addressed in the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

Sources: *Beaumont Gateway Specific Plan Environmental Impact Report* (Douglas Wood & Associates) January 1995, State Clearinghouse No. 94092040; *Hidden Canyon Industrial Park Specific Plan* (Applied Planning, Inc.) December 2011; Site inspection conducted by Applied Planning, Inc. (August 2011).

2. AGRICULTURE AND FOREST RESOURCES

Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?						X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?						X
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code						X

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Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
section 1220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?						
d) Result in the loss of forest land or conversion of forest land to non-forest use?						X
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use, or conversion of forest land to non-forest use?						X

Summary

Potential agricultural/forest land impacts associated with the development of the subject site activities were previously analyzed within the Certified EIR (please refer to Certified EIR, Section IV. G., "Land Use").

The Certified EIR indicates that no agricultural lands or uses are located within the subject site, nor would development of the subject site otherwise affect agricultural lands or agricultural uses. Proposed development activities would not affect any agriculturally-zoned properties, forest lands, or any lands where a Williamson Act contract is currently in place. Prime Farmlands, Unique Farmlands, and Farmlands of Statewide Importance do not exist within the subject site. On this basis, the Certified EIR project was determined to have no impact on agricultural resources.

No changed or new information has been identified to indicate that any potential agriculture and/or forest resources impacts resulting from the proposed Addendum Project would be different from those previously analyzed within the Certified EIR Initial Study. That is, the subject site remains unviable for agricultural uses, is not agriculturally-zoned, is not

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designated as forest land, is not forested or proposed for forestation, and is not subject to a Williamson Act contract. No changes or additions to the Certified EIR analysis are necessary.

Sources: *Beaumont Gateway Specific Plan Environmental Impact Report* (Douglas Wood & Associates, Inc.) 1995, State Clearinghouse No. 94092040; *Hidden Canyon Industrial Park Specific Plan* (Applied Planning, Inc.) December 2011; Site inspection conducted by Applied Planning, Inc. (August 2011).

3. AIR QUALITY

Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?					X	
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?					X	
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?					X	
d) Expose sensitive receptors to substantial pollutant concentrations?					X	
e) Create objectionable odors affecting a substantial number of people?					X	

Summary

As discussed below, the Certified EIR air quality analysis considered potential air pollutant emissions impacts resulting from short-term/temporary construction-source emissions and from long-term operational-source emissions.

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Construction-source Emissions

Potential air quality impacts were previously analyzed at Certified EIR Section IV. D. "Climate and Air Quality." The Certified EIR analysis concluded that that the Beaumont Gateway Specific Plan project would have significant impacts in regard to construction-source particulate matter (PM_{10}) and nitrogen oxide (NOx) emissions, and operational-source emissions of carbon monoxide (CO), NOx, and reactive organic gases (ROG). Mitigation measures were incorporated which would act to reduce, but not eliminate, the significance of these impacts. These measures are carried forward in this Addendum.

Under a likely maximum impact scenario, mass grading and construction activities under the Addendum Project would parallel the time frames and the scope of construction activities reflected in the Certified EIR analysis, and would result in comparable construction-source emissions. Construction-source emissions resulting from the Hidden Canyon Industrial Park Specific Plan Project would therefore not result in new, additional, or different construction emissions impacts than were considered and addressed in the Certified EIR.

Operational-source Emissions

The Certified EIR also considered operational source air quality impacts, and concluded that even after mitigation, impacts for emissions of reactive organic gases (ROG), nitrogen oxides (NOx), and carbon monoxide (CO) would be significant.

Mobile sources (traffic) typically accounts for more than 97 percent (by weight) of all operational source emissions generated by new development projects. In this regard, potential traffic generated by the Addendum Project is substantially less than would otherwise result from the Certified EIR project. That is, the proposed Addendum Project would generate an estimated 5,438 daily trips (passenger car equivalent, PCE), compared to approximately 11,800 daily trips (PCE) generated by the Certified EIR project, or an approximate 54 percent reduction in overall trip generation under the Addendum Project when compared to the Certified EIR project. Comparable reductions in vehicular emissions are anticipated under the Addendum Project when compared to the Certified EIR project.

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In this regard, as detailed in *Timoteo Distribution Facility Air Quality and Greenhouse Gas Emissions Assessment,* (Urban Crossroads, Inc.) November 22, 2011 (Addendum Appendix B)[1], the proposed Addendum Project would result in an overall reduction in criteria pollutants when compared to emissions generated under the Certified EIR project, but would however incrementally increase generation of particulate emissions ($PM_{10}/PM_{2.5}$). However, even with the projected increase in $PM_{10}/PM_{2.5}$ emissions, the applicable $PM_{10}/PM_{2.5}$ thresholds (50 lbs./day and 25 lbs./day respectively) would not be exceeded. A comparison of peak daily operational air pollutant emissions under the Certified EIR project and the proposed Addendum Project is presented at Table A-1.

Table A-1
Comparison of Peak Daily Operational Emissions (lbs./day)
Gateway Specific Plan and Hidden Canyon Industrial Park Specific Plan

Project Scenario	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Hidden Canyon Industrial Park Specific Plan	108.92	198.97	292.13	0.44	45.86	7.05
Beaumont Gateway Specific Plan	141.04	295.91	1,324.15	22.95	38.92	6.33
Increase (Decrease)	***(32.12)***	***(96.94)***	***(1,032.02)***	***(22.51)***	***6.94***	***0.72***

Source: *Timoteo Distribution Facility Air Quality and Greenhouse Gas Emissions Assessment* (Urban Crossroads, Inc.) November 22, 2011. Emissions summary reflects the greater of summer and winter emission levels.

As indicated at Table A-1, with the previously noted exception of incrementally increased $PM_{10}/PM_{2.5}$ emissions, the Addendum Project would result in reduced generation of criteria air pollutant emissions when compared to the Certified EIR project (ROG, a 22.8 percent reduction; NOx, a 32.8 percent reduction; and CO, a 77.9 percent reduction); and further, the Addendum Project would not create or result in new significant air quality impacts. Germane mitigation from the Certified EIR is carried forward to address potential operational air quality impacts of the Addendum Project.

[1] Appendices citations in certain instances refer to various previous preliminary Project titles, e.g., "Timoteo Industrial Park," "Timoteo Distribution Center," "Timoteo LLC Industrial Park," "Beaumont Distribution Center." Notwithstanding, the physical development and location described and considered in the appendices is the same as that described and considered for the current Project title, the "Hidden Canyon Industrial Park" Specific Plan. Analysis and conclusions of the appended studies are not affected.

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Based on the preceding, the Addendum Project would not cause new significant, substantively increased or substantively different air quality impacts than those previously addressed in the Certified EIR. Construction-source and mobile-source emissions impacts associated with the proposed Addendum Project are therefore adequately addressed within the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

Sources: *Beaumont Gateway Specific Plan Environmental Impact Report* (Douglas Wood & Associates) January 1995, State Clearinghouse No. 94092040; *Hidden Canyon Industrial Park Specific Plan* (Applied Planning, Inc.) December 2011; Timoteo *Distribution Facility Trip Generation Analysis* (Urban Crossroads, Inc.) November 15, 2011; *Timoteo Distribution Facility Air Quality and Greenhouse Gas Emissions Assessment* (Urban Crossroads, Inc.) November 22, 2011.

4. BIOLOGICAL RESOURCES

Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Have a substantial adverse effect, either directly or through habitat modification, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?					X	
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies and regulations; or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?					X	

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Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?					X	
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?					X	
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?					X	
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?					X	

Summary

The Certified EIR biological assessments (conducted in 1993) indicate that five (5) sensitive wildlife species (Stephens' Kangaroo Rat, Rufous-crowned sparrow, Bell's sage sparrow, black shouldered kite, and San Diego horned lizard), and small areas of two (2) sensitive vegetative communities (Southern Willow Scrub habitat and Riversidean Sage Scrub), were located within the subject site. Mitigation measures were incorporated in the Certified EIR to minimize potential project impacts to sensitive wildlife species and sensitive vegetative communities. The Certified EIR also included biological resources mitigation measures to ensure protection of Army Corps of Engineers (ACOE) and California Department of Fish and Game (CDFG) jurisdictional areas (e.g. streambeds), and to mitigate potential disruption of regional wildlife movement.

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Updates to the 1993 biological surveys have been prepared in order to assess potential biological resources impacts of the proposed Addendum Project. A copy of the *Timoteo LLC Industrial Park Specific Plan Project Biological Surveys*, prepared by Harmsworth Associates and dated November 16, 2011, is included as Appendix C of the EIR Addendum. A biologist from Harmsworth Associates conducted a site visit, reviewed past reports and current site plans, and made an assessment of potential impacts compared with the Certified EIR impacts and mitigation measures.

The updated biological assessment reports included herein substantiate that conditions within the subject site are generally consistent with those considered in the 1993 biological surveys presented in the Certified EIR. No new areas of disturbance or change to on-site vegetation communities were noted.

With specific regard biological resources impacts and required mitigation, a number of measures were proposed in 1993 to mitigate for the Beaumont Gateway Specific Plan project's biological resources impacts. However, even after the application of mitigation, the Certified EIR for Beaumont Gateway Specific Plan project (Certified EIR) concluded that potential impacts to biological resources (i.e., loss of Riversidian Sage Scrub habitat; potential impacts to the San Timoteo Creek wildlife corridor; impacts to sensitive/listed species; potential for harassment of off-site wildlife) would be significant.

It is noted further, that in 2003, subsequent to approval of the Beaumont Gateway Specific Plan project and the Certified EIR, the City became a participant in the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). As a result of the City's participation in the MSHCP, certain of the mitigation measures previously proposed in Certified EIR for the Beaumont Gateway Specific Plan project are superseded by, and are now reflected in, provisions of the MSHCP. In summary, under the MSHCP, mitigation for impacts to species and habitat that was previously accomplished through in kind-habitat mitigation, consultation, and species specific surveys and take permits (as reflected in the Certified EIR mitigation measures), is now realized through compensating payment of mitigation fees consistent with the MSHCP fee schedule. The Addendum Project will be implemented consistent with applicable provisions of the MSHCP, to include payment of

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required MSHCP mitigation fees. It is also noted here that the Applicant has indicated that suitable in-kind property may be available to offset MSHCP fees in part or in total. Any negotiated MSHCP fee payments/property dedication shall be subject to review and approval by the Lead Agency and affected resource agencies.

Notwithstanding the preceding, the proposed Hidden Canyon Industrial Park Specific Plan Project is still required to provide necessary mitigation for potential biological resources impacts not addressed under the MSHCP (e.g., potential impacts to jurisdictional areas and wetlands). Accordingly, applicable mitigation from the Certified EIR addressing these potential impacts is carried forward for the proposed Hidden Canyon Industrial Park Specific Plan Project.

Based on the preceding discussion, with the application of mitigation summarized above, the proposed Hidden Canyon Industrial Park Specific Plan Project would not result in or cause new significant, substantively increased, or substantively different, biological resources impacts than those previously addressed in the Certified EIR for the approved Beaumont Gateway Specific Plan project.

Sources: *Beaumont Gateway Specific Plan Environmental Impact Report* (Douglas Wood & Associates) January 1995, State Clearinghouse No. 94092040; *Hidden Canyon Industrial Park Specific Plan* (Applied Planning, Inc.) December 2011; *Timoteo LLC Industrial Park Specific Plan Biological Surveys* (Harmsworth Associates) November 16, 2011.

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5. CULTURAL RESOURCES

Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Cause a substantial adverse change in the significance of a historical or archaeological resource as defined in Section 15064.5?					X	
b) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?					X	
c) Disturb any human remains, including those interred outside of formal cemeteries?					X	

Summary

As discussed in the Certified EIR, the geological formations underlying subject site and surrounding areas are considered to have a relatively high potential to yield paleontological resources. There is also a potential to discover buried, and as yet unidentified archaeological resources during the course of development activities (please refer to Certified EIR Section IV.L. “Cultural and Scientific Resources”). Accordingly, the Certified EIR incorporates mitigation measures which require cultural resources monitoring during earth moving activities. Mitigation measures also specify reporting, recovery, cataloguing and preservation procedures should resources be encountered within the subject site.

Revised entitlements requested under the Addendum Project would not alter or otherwise affect the scope of and location cultural resources considered in the Certified EIR. As with the Certified EIR project, the Addendum Project is required to mitigate potential impacts to cultural resources by conducting cultural resources monitoring during construction activities, with accompanying reporting, recovery, cataloguing and preservation procedures for resources that might be encountered within the subject site.

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On the basis of the preceding discussions, the Addendum Project would not result in cultural resources impacts not considered and addressed in the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

Sources: *Beaumont Gateway Specific Plan Environmental Impact Report* (Douglas Wood & Associates) January 1995, State Clearinghouse No. 94092040; *Hidden Canyon Industrial Park Specific Plan* (Applied Planning, Inc.) December 2011.

6. GEOLOGY AND SOILS

Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: (i) rupture of a known earthquake fault; (ii) strong seismic ground shaking; (iii) seismic-related ground failure, including liquefaction; or (iv) landslides?					X	
b) Result in substantial soil erosion or the loss of topsoil?					X	
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?					X	
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?					X	
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?						X

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Summary

The Certified EIR addresses potential impacts related to existing topography, seismicity, soils and slopes at the Beaumont Gateway Specific Plan site, and provides mitigation measures for strong seismic motion/ground shaking, and grading/slope stabilization. (Please refer to Certified EIR Section IV. A. "Seismic Safety"). The Certified EIR analysis further indicates that known earthquake faults or other hazards do not exist within the subject site; nor is the site susceptible to seismic-related ground failure or liquefaction. Nor would the Certified EIR project result in or cause potentially significant impacts related to: substantial soil erosion or the loss of topsoil; location on a geologic unit or soil that is unstable, or that would become unstable; location on expansive soils; or soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems. Under the Certified EIR project, potential seismic safety, slopes and erosion impacts are considered less-than-significant.

The proposed Addendum Project development concept would not result in new, additional, or different earth resources impacts than were considered and addressed in the Certified EIR. That is, as noted above, the Certified EIR analysis indicates that subject site and surrounding areas are not subject to known earthquake faults or other hazards such as seismic-related ground failure, including liquefaction. Within California, impacts related to seismic events are reduced to levels that are less-than-significant through avoidance of known hazards and incorporation of appropriate seismic designs for buildings and supporting infrastructure. Within suitable building areas (such as the Hidden Canyon Industrial Park site), potential seismic impacts are mitigated to levels that are less-than-significant through mandated compliance with City and state seismic design, engineering, and construction standards. The City requires site and design-specific geotechnical analyses in conjunction with application for building permits, and ensures through plan review and building inspections that geotechnical analyses recommendations and standards are implemented.

New industrial land use entitlements under the Addendum Project would not result in substantially new or increased exposure to potential seismic hazards. In this regard, as with the Certified EIR project, final site- and design- specific geotechnical analyses are required in conjunction with application for building permits for the proposed Addendum Project. Further, the Addendum Project is required to comply with any seismic design, engineering

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and construction standards as may be identified in the final geotechnical analyses. Potential impacts related to rupture of a known earthquake fault; strong seismic ground shaking; and seismic-related ground failure, including liquefaction are considered less-than-significant. Under the Addendum Project, potential seismic safety, slopes and erosion impacts are considered less-than-significant and are adequately addressed in the Certified EIR.

Based on the preceding, the proposed Addendum Project would not result in geology and soils impacts not considered and addressed in the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

Sources: *Beaumont Gateway Specific Plan Environmental Impact Report* (Douglas Wood & Associates) January 1995, State Clearinghouse No. 94092040; *Hidden Canyon Industrial Park Specific Plan* (Applied Planning, Inc.) December 2011.

7. GREENHOUSE GAS EMISSIONS

Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?					X	
b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purposed of reducing the emissions of greenhouse gases?					X	

Summary

Consideration of greenhouse gases (GHGs) and potential effects of GHGs on global climate change (GCC) were formalized as CEQA Guidelines topical issues in March 2010. As such, these issues/topics were not considered or evaluated in the 1995 Certified EIR.

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Notwithstanding, the analysis presented within this Addendum demonstrates that potential GHG/GCC impacts of the proposed Hidden Canyon Industrial Park Specific Plan Project would be substantially reduced when compared to the Beaumont Gateway Specific Plan as summarized at Table A-2.

Table A-2
Comparison of Daily Greenhouse Gas Emissions (annual metric tons)
Gateway Specific Plan and Hidden Canyon Industrial Park Specific Plan

Project Scenario	**CO_2**	**CH_4**	**N_2O**	**Total CO_2E**
Hidden Canyon Industrial Park Specific Plan	10,502.30	91.30	0.08	12,448.51
Beaumont Gateway Specific Plan	20,488.70	10.96	0.10	20,748.16
Increase (Decrease)	(9,986.40)	80.34	(0.02)	(8,299.65)

Source: *Timoteo Distribution Facility Air Quality and Greenhouse Gas Emissions Assessment* (Urban Crossroads, Inc.) November 22, 2011.

As indicated, the development of the proposed Industrial Park Specific Plan is anticipated to generate significantly fewer GHG emissions (CO2e) when compared to GHG emissions otherwise resulting from implementation of the Beaumont Gateway Specific Plan.

No changed or new information has been identified to indicate that any potential GHG emissions impacts of the Addendum Project would be substantively greater than or different from those that would occur from the Certified EIR project, and would likely be comparatively diminished.

Sources: *Beaumont Gateway Specific Plan Environmental Impact* Report (Douglas Wood & Associates) January 1995, State Clearinghouse No. 94092040; *Hidden Canyon Industrial Park Specific Plan* (Applied Planning, Inc.) December 2011; *Timoteo Distribution Facility Air Quality and Greenhouse Gas Emissions Assessment* (Urban Crossroads, Inc.) November 22, 2011.

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8. HAZARDS AND HAZARDOUS MATERIALS

Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?					X	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?					X	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school?						X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?					X	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?						X
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?						X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?					X	

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Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?					X	

Summary

At Section IV. J "Toxic Substances," the Certified EIR documents historic uses of the subject site and surrounding area, and concludes that "the potential for direct or indirect toxic substances impacts or hazards to the Beaumont Gateway site . . . are considered insignificant." Nonetheless, the Certified EIR incorporates mitigation measures requiring preparation of a Phase I Environmental Assessment, inspection of undocumented on-site fills by a qualified geotechnical engineer, and clearing the site and surrounding area of any structures, debris, equipment which could be considered potential toxic, safety or groundwater hazards.

There is also potential limited use of potentially toxic or hazardous materials such as gasoline, paint, cleaners/solvents, pesticides/herbicides, that would employed during construction activities and during on-going operations and maintenance of the developed site. Transportation, use, storage and disposal of these substances are extensively addressed through local, regional, state, and federal regulations. All development activities and operations within the City are required to comply with these regulations thereby minimizing or precluding associated potential hazards/hazardous materials impacts.

As with the Certified EIR project, the Addendum Project could similarly be affected by previous use of hazardous or toxic materials within the subject site, and Phase I documentation would be required in order to identify potential sources of hazardous materials and areas of potential contamination (or absence of such concerns), with

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subsequent remediation of potentially hazardous conditions, if such conditions are identified. Accordingly, germane mitigation from the Certified EIR is carried forward to address these potential impacts.

The Addendum Project does not propose the handling of acutely hazardous materials; and the subject site is not located within one-quarter mile of any existing or proposed school. The handling of hazardous materials as part of the Addendum Project development will be limited to the transport and storage of fuel and petroleum products, pesticides, fertilizers, paint products and the like. In this latter regard, pursuant to Chapter 6.95 of the State Health and Safety Code, the Project is required to develop and file a Hazardous Materials Business Plan (HMBP). The HMBP contains basic information on the location, type, quantity, and health risks of hazardous materials stored, used, or disposed of in the state. The HMBP as implemented ensures an accurate inventory of materials on-site, establishes an emergency response plan and owner/operator identification, and mandates employee training that acts to preclude or minimize the potential for misuse, release, or improper disposal of hazardous materials. The subject site is not included on list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

No schools exist or are proposed within ¼ of the subject site, therefore there is no potential to emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school. The subject site is not included on list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and in this regard would therefore not create a significant hazard to the public or the environment.

The nearest airport (Banning Municipal Airport) is located approximately nine (9) miles easterly of the subject site. The subject site does not lie within a designated airport or airfield approach/departure zone, nor is the site otherwise substantially affected by airports or airport operations. Neither the Certified EIR project nor the Addendum project would result in nor cause a potentially significant safety hazard for people residing or working in the project area.

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The Certified EIR project as well as the Addendum Project would introduce new development into an area that currently exhibits areas of flammable brush and grass. Accordingly, both the Certified EIR project and the Addendum Project are subject to City and County policies and requirements that act to reduce potential wildland fire hazards. More specifically, all development will be designed and implemented consistent with applicable building code and fire code requirements. Conformance to local fire department regulations during construction and operation of development proposals is also required, specifically in relation to areas of interface between open space and developed areas.

Any development of the subject site is further guided by General Plan Safety Element Policies (e.g., Safety Element Policies 18 and 20, following) which act to reduce potential wildland fire hazards:

> ***Safety*** Element ***Policy 18.*** *The City of Beaumont will continue to implement those measures that will be effective in reducing the potential for wildfire*;
>
> ***Safety Element Policy 20.*** *The City of Beaumont will continue to provide technical and policy information regarding structural and wildland fire hazards to developers, interested parties and the general public through all available media).*

In support of these General Plan Policies, the City and County have adopted the Uniform Building Code (UBC) and Uniform Fire Code (UFC) which present mandatory building design and construction techniques which reduce, or eliminate potential impacts related to provision of public utilities and services. Additionally, all construction within the subject site will comply with applicable fire protection measures as specified by the City and/or the County Fire Department.

Development of the subject site would not adversely affect or be affected by designated emergency evacuation routes, or otherwise affect emergency evacuation plans. The nearest designated evacuation route is State Route 60 (SR-60) located northerly adjacent to the subject site. SR-60 connects to Interstate 10 (I-10) approximately two (2) miles to the east.

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Based on the preceding, no changed or new information has been identified to indicate that any potential hazards/hazardous materials impacts of the Addendum Project would be substantively different from those previously analyzed within the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

Sources: *Beaumont Gateway Specific Plan Environmental Impact Report (*Douglas Wood & Associates) January 1995, State Clearinghouse No. 94092040; *Hidden Canyon Industrial Park Specific Plan* (Applied Planning, Inc.) December 2011.

9. HYDROLOGY AND WATER QUALITY

Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Violate any water quality standards or waste discharge requirements?					X	
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (for example, the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?					X	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?					X	

Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?					X	
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?					X	
f) Otherwise substantially degrade water quality?					X	
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?						X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?						X
g) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?						X
h) Inundation by seiche, tsunami, or mudflow?						X

Summary

As discussed in the Certified EIR (Section IV. C "Hydrology),"the storm drain system that would be constructed to service the Certified EIR project is required to be completed in accordance with the City of Beaumont and County of Riverside standards. Moreover, the Certified EIR project is required to develop and implement City-mandated construction

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Stormwater Pollution Prevention Plan (SWPPP) and Water Quality Management Plan (WQMP). In total the Certified EIR project is also required to comply with applicable provisions of the National Pollutant Discharge Elimination System (NPDES) permit, to which the City is a participant party. In these regards, implementation of the approved stormwater management system, and compliance with provisions of the SWPPP, WQMP, and NPDES permit adequately addresses potential impacts related to:

- Violation of any water quality standards or waste discharge requirements;
- Alteration of existing drainage patterns resulting in substantial erosion or siltation;
- Alteration of existing drainage patterns in a manner which would result in flooding;
- Creation or contribution of runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- Violation of any water quality standards or waste discharge requirements; or
- Other substantial degradation of water quality.

The subject site for the Certified EIR project and proposed Addendum Project does not lie within a designated 100-year floodplain; housing located within a 100-year floodplain is not proposed under either scenario; and structures that would impede or redirect flood flows are not proposed or required under either scenario. Nor is the site of the Certified EIR project and proposed Addendum Project subject to inundation by seiche, tsunami, or mudflow.

The scope and character of entitlements proposed under Hidden Canyon Industrial Park Specific Plan differ from those considered in the Certified EIR. Notwithstanding, implementation of the proposed Addendum Project would not result in new, additional, or different hydrology impacts than were considered and addressed in the Certified EIR. That is, for either the Certified EIR project or the Addendum Project, a City-approved SWPPP is

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required, acting to mitigate potential erosion and associated potential adverse altering of drainage patterns during construction. Additionally, a City-approved WQMP is required, detailing structural and operational BMPs to be implemented in order to avoid potential erosion impacts, drainage alteration, or contribution of stormwater pollutants over the life of the development. A draft WQMP for the Addendum Project is provided at Addendum Appendix E. NPDES permit compliance is also mandated irrespective of the proposed development scheme.

Moreover, under either the Certified EIR project or the Addendum Project, site and development-specific hydrology studies are required, demonstrating the proposed developments would not substantially alter the existing drainage pattern of the site or area or increase the rate or volume of surface runoff. In this latter regard, preliminary hydrology calculations for the Addendum Project are provided at Addendum Appendix E. These calculations demonstrate that the Addendum Project would not increase the rate or velocity of surface runoff when compared to pre-development conditions.

The Addendum Project, like the Certified EIR project, would pay fees to fund and construct areawide drainage improvements, and implement site-specific stormwater management systems. Pursuant to City requirements, all drainage plans and improvements for the proposed Hidden Canyon Industrial Park Specific Plan Project will be designed and implemented consistent with City, County, and Regional Water Quality Control Board (RWQCB) standards.

With regard to potential impacts to groundwater and water supplies, no direct groundwater withdrawals are proposed under the Certified EIR project or the Addendum Project. Mitigation incorporated in the Certified EIR requires that the serving water purveyor (Beaumont Cherry Valley Water District, BCVWD) verify that adequate water supplies are available prior to final map recordation. Through a Water Supply Assessment, the Addendum Project is also required to substantiate that adequate water supplies are available to serve the proposed development, with no adverse effects to water service for other existing and programmed/planned uses. In this latter regard, under the Addendum Project, overall water demands are anticipated to be substantially reduced when compared to the Certified

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EIR project (80 acre-feet per year for the Addendum Project compared to 275 acre-feet per year for the Certified EIR project). Please refer to Addendum Appendix E, *Report of Water Service and Fire Flow Analysis Timoteo Industrial Park City of Beaumont* (Parsons Engineering) October 20, 2011, page 1. A determination of water supply adequacy for the Certified EIR Project would indicate similar adequacy for the proposed Addendum Project.

Based on the preceding, potential hydrology, water quality, and water supply impacts associated with the proposed Addendum Project are adequately addressed within the Certified EIR. No substantive changes or additions to the Certified EIR analysis are necessary.

Sources: *Beaumont Gateway Specific Plan Environmental Impact* Report (Douglas Wood & Associates) January 1995, State Clearinghouse No. 94092040; *Hidden Canyon Industrial Park Specific Plan* (Applied Planning, Inc.) December 2011; *Preliminary Hydrology Calculations for Beaumont Distribution Park, 4th Street, Beaumont, California 92223, A.P.N. # 421-020-001 and 421-020-006* (Thienes Engineering) *November 4, 2011*; *Water Quality Management Plan for Beaumont Distribution Park, 4th Street, Beaumont, California 92223, A.P.N. # 421-020-001 and 421-020-006* (Thienes Engineering) November 4, 2011.

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10. LAND USE AND PLANNING

Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Physically divide an established community?						X
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?					X	
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?					X	

Summary

An analysis of potential land use impacts is included in the Certified EIR (Certified EIR Section IV G., “Land Use”). In summary, the analysis characterizes the subject site's existing condition as vacant undeveloped property, surrounded by similarly undeveloped lands. No established communities would be divided by the Beaumont Gateway Specific Plan project. Development of the site would occur pursuant to guidelines, standards, and requirements of the adopted Beaumont Gateway Specific Plan, thereby avoiding or effectively mitigating potential to conflict with any applicable land use plan, policy, or regulation. Mitigation is provided for potential impacts to biological resources including native habitat, and no governing habitat conservation plan or natural community conservation plan was in effect at the time the Beaumont Gateway Specific Plan project was approved.[2] The Certified EIR nonetheless concluded that the Beaumont Gateway Specific Plan project would result in

[2] Subsequent to Certification of the Beaumont Gateway Specific Plan EIR, the City of Beaumont has become a participant agency to the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). As discussed herein (Checklist Item 4. “Biological Resources”) the Addendum Project will be implemented consistent with applicable provisions of the MSHCP.

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significant land use impacts due to the transition of the subject site from undeveloped vacant properties to urban uses. The Certified EIR incorporates mitigation requiring that on-site and off-site facilities (e.g., roadways, utility infrastructure) be phased in conjunction with development of the site. However, even with the application of mitigation, the Certified EIR concluded that implementation of the Beaumont Gateway Specific Plan project would result in a significant and unavoidable land use impact.

The subject site remains vacant and undeveloped and as such, there is no potential to physically divide an established community. Development of the proposed Addendum Project would, as with the Certified EIR project, result in the transition of undeveloped vacant properties to urban uses. To allow for the proposed industrial uses, the Addendum Project appropriately requests an amendment to the City's General Plan Land Use Element that would redesignate the subject site from "Single Family Residential" to "Industrial." Consistent with the proposed "Industrial" General Plan Land Use designation, Industrial Specific Plan zoning is proposed (the Hidden Canyon Industrial Park Specific Plan). All development within the subject site is required to conform to requirements, standards, policies and guidelines established under the Hidden Canyon Industrial Park Specific Plan, thereby precluding or minimizing potential land use impacts, including the potential to conflict with any applicable land use plan, policy, or regulation. Germane mitigation requiring that on-site and off-site facilities (e.g., roadways, utility infrastructure) be phased in conjunction with development of the site is carried forward into the Addendum Project.

Based on the preceding discussions, no new, additional, or substantially different land use impacts than those assessed in the Certified EIR are expected to result from the proposed Addendum Project. No changes or additions to the Certified EIR analysis are necessary.

Sources: *Beaumont Gateway Specific Plan Environmental Impact Report* (Douglas Wood & Associates) January 1995, State Clearinghouse No. 94092040; *Hidden Canyon Industrial Park Specific Plan* (Applied Planning, Inc.) December 2011; *City of Beaumont General Plan Update and General Plan Update Final EIR* (Adopted/Certified 2007).

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11. MINERAL RESOURCES

Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?						X
a) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?						X

Summary

No known mineral resources of value to the region and the residents of the state exist within the subject site, or would otherwise be affected by the Certified EIR project, and there would be no impact in this regard. Moreover, no delineated mineral resource recovery site exists within the subject site, nor would a delineated mineral resource recovery site otherwise be affected by the Certified EIR project. Neither would implementation and/or operations of the Certified EIR project create a substantial demand for any scarce mineral resources or mineral resources otherwise of local, regional, or statewide importance.

The proposed Addendum Project would similarly not affect any mineral resources of local, regional, or statewide importance. Neither would implementation and/or operations of the Addendum Project create a substantial demand for any scarce mineral resources or mineral resources otherwise of local, regional, or statewide importance.

As summarized in the previous discussions, no changed or new information has been identified to indicate that the Addendum Project would result in any potential impacts not previously considered and addressed within the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

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Sources: *Beaumont Gateway Specific Plan Environmental Impact Report* (Douglas Wood & Associates) January 1995, State Clearinghouse No. 94092040; *Hidden Canyon Industrial Park Specific Plan* (Applied Planning, Inc.) December 2011.

12. NOISE

Would the project result in:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?					X	
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?					X	
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?					X	
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?					X	
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?						X
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?						X

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Summary

The Certified EIR at Section IV. E, "Noise," addresses noise impacts in terms of the Beaumont Gateway Specific Plan project's compatibility with, and context within, existing and future noise environments. The Certified EIR also addressed the potential for noise from the construction and operation of the proposed uses to impact noise-sensitive receptors. Comparative noise impacts of the Certified EIR project and the proposed Addendum Project are summarized below.

Construction Noise

Construction of the Addendum Project would employ similar equipment, operating under City Noise Ordinance constraints and limitations established for the Certified EIR project. No new or additional sensitive receptors would be affected by the Addendum Project construction activities, and noise levels received at off-site land uses would be consistent with noise levels considered in the Certified EIR. Construction-source noise impacts resulting from the Addendum Project are anticipated to be comparable to those considered and addressed in the Certified EIR.

Germane construction-source noise mitigation required of the Certified EIR project will also be required under the proposed Addendum Project. The proposed Addendum Project would therefore not result in new, additional, or substantially different construction noise impacts than were considered and addressed in the Certified EIR.

Operational Noise

Mobile-Source Noise

As identified in the Certified EIR, the most significant noise source affecting the Beaumont Gateway Specific Plan project site and surrounding areas is mobile source (vehicular) noise generated by traffic traveling along vicinity roadways, primarily SR-60 freeway located northerly of the subject site. Further, traffic generated by the either the Certified EIR project or the proposed Addendum Project would incrementally contribute to area noise levels. As noted previously, total daily traffic volumes generated by the proposed Addendum Project

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are estimated to be 54 percent less than that described and analyzed in the Certified EIR, and vehicle-related noise under the Addendum Project should be correspondingly reduced.

Area-Source Noise

Truck access/truck movements and loading dock activities associated with the warehouse uses proposed under the Addendum Project pose the greatest potential to result in noise that could adversely affect off-site land uses. These types of noise- generating activities differ from those considered in the Certified EIR. However, the resulting noise levels received at off-site land uses would not be significant, and would not be substantively different than would otherwise occur from the Certified EIR project. In this regard, the warehouse uses proposed under the Addendum Project will be implemented and operated consistent with the site plan design, development standards, design guidelines, and performance standards established under the Addendum Project Specific Plan, acting to reduce the potential for the Addendum project to generate adverse noise levels.

Moreover, the Addendum Project site plan design orients the majority of loading dock activities interior to the Specific Plan area, or toward the SR-60 freeway, and away from potentially affected residential land uses. In those instances where loading dock activities parallel off-site residential land uses, the off-site land uses are at present undeveloped, and are separated by a minimum of approximately 300 feet from the nearest loading dock activities. This physical separation between noise source and noise receptor acts to substantially reduce noise levels received at off-site properties.

Empirical noise levels observed for similar distribution warehouse loading dock and truck delivery activities approximate 73 decibels (dBA) when measured at a distance of 60 feet. For each doubling of distance between noise source and receptor, the received noise level decreases by approximately 6.0 dBA. At the nearest off-site receptor residential land uses (approximately 300 feet from the nearest loading dock areas), noise levels generated by the Project's loading dock activities would approximate 60 dBA. This noise level is consistent with the City General Plan and State of California Land Use/Noise compatibility guidelines, which indicate that residential land uses are conditionally acceptable in noise environments of 70 dBA or less.

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Moreover, Project loading dock areas are grade-differentiated (either elevated or depressed depending on the point of adjacency) relative to surrounding properties. This grade differential further reduces perceived noise levels by interfering with line-of-sight noise transmission between the Project and proximate receivers. The Addendum Project is further required to conform to City Noise Ordinance performance standards to ensure that operational noise received at off-site land uses does not disturb the peace and quiet of adjacent residential zones. Based on the preceding, the proposed Addendum Project would not result in new, additional, or substantially different operational noise impacts than were considered and addressed in the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

Other

Other CEQA noise considerations were determined to be less-than-significant for the Certified EIR project, and would remain less-than-significant under the proposed Addendum Project. These considerations include:

- *Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.* Neither the Certified EIR project, nor the Addendum Project require or propose operations or activities that would expose persons to, or generate excessive groundborne vibration or groundborne noise. No changes or additions to the Certified EIR analysis are necessary.

- *Expose people residing or working in the project area to excessive noise levels from airports/airstrips or airport operations.* The nearest airport (Banning Municipal Airport) is located approximately nine (9) miles easterly of the subject site. The subject site does not lie within a designated airport or airfield approach/departure zone, nor is the site otherwise substantially affected by airports or airport operations. Neither the Certified EIR project nor the Addendum Project would be affected by noise from airports/airstrips or related operations. No changes or additions to the Certified EIR analysis are necessary.

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Sources: *Beaumont Gateway Specific Plan Environmental Impact Report* (Douglas Wood & Associates) January 1995, State Clearinghouse No. 94092040; *Hidden Canyon Industrial Park Specific Plan* (Applied Planning, Inc.) December 2011.

13. POPULATION AND HOUSING

Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Induce substantial 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)?					X	
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?						X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?						X

Summary

The Certified EIR at Section H., "Socio-Economic Resources," addresses the potential population and housing impacts through assessment of the Beaumont Gateway Specific Plan project within the context of SCAG growth forecasts. In this regard, the Certified EIR determined that Beaumont Gateway Specific Plan project would not result in population growth, or affect the availability of housing in a manner that would be inconsistent with SCAG growth forecasts. No housing or resident population exists within the subject site, and no displacement of housing or persons would occur.

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The potential for the Certified EIR project to induce substantial growth in the area; displace substantial numbers of existing housing units ; or displace substantial numbers of people was therefore determined to be less-than-significant.

Current population/employment statistics and related demand for housing indicate that the SCAG forecasts considered in the 1995 Certified EIR broadly overestimated the rate of population growth, scope of development, and associated requirements for new housing within the City. That is, the current socio-economic climate reflects an essentially static population base, a substantial surplus of housing, and a substantial deficit in employment opportunities. The Addendum Project considered herein directly responds to these conditions by proposing transition of the subject site from a residential land use designation (that under current conditions would likely remained undeveloped for the foreseeable future), to an industrial development that in the near-term will create needed employment opportunities and generate additional tax revenues available to the City.[3] Industrial uses proposed under the Addendum Project may create a demand for housing for new employees however any such demand can be satisfied through currently available housing resources. No housing units or residential areas exist within the subject site, and none would be displaced by implementation of the Addendum Project.

Based on the preceding, and as with the Certified EIR project, the potential for the Addendum Project to induce substantial growth in the area; displace substantial numbers of existing housing units; or displace substantial numbers of people is considered to be less-than-significant.

[3] In this regard, the Addendum Project is consistent with, and supports the City's 2009 Economic Stimulus Program. See also http://www.ci.beaumont.ca.us/index.aspx?NID=251.

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As summarized above, the proposed Addendum Project would not result in new, additional, or substantially different population and housing impacts than were considered and addressed in the Certified EIR. No changes or additions to the Certified EIR analysis are necessary. [4]

Sources: *Beaumont Gateway Specific Plan Environmental Impact Report* (Douglas Wood & Associates) January 1995, State Clearinghouse No. 94092040; *Hidden Canyon Industrial Park Specific Plan* (Applied Planning, Inc.) December 2011.

14. PUBLIC SERVICES

Would the project result in substantial adverse physical impacts associated with the provision of 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 public service:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Fire protection?					X	
b) Police protection?					X	
c) Schools?					X	
d) Parks?					X	
e) Other public facilities?					X	

Summary

The Certified EIR at Section N. "Public Services and Facilities" addressed potential impacts to public facilities and services, including water and sewer facilities, fire protection services, police protection services, schools, parks and recreation, utilities, solid waste, libraries and

[4] Though fiscal effects were previously considered and discussed in the Certified EIR, economic effects of projects are not considered an environmental impact under CEQA unless these effects cause or result in adverse physical impacts. In this case, economic effects attributable to development of the subject site under either the Certified EIR project or the proposed Addendum Project would not result in any adverse physical impacts. The City may nonetheless determine that additional fiscal impact analysis is warranted for the proposed Addendum Project. However such analysis is not required for, and is beyond the scope of, this Addendum. No changes or additions to the Certified EIR analysis concerning fiscal implications of site development are necessary.

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health services. With implementation of mitigation measures, all potential impacts were determined less-than-significant. Public services and facilities mitigation measures identified in the Certified EIR are broadly applicable to the proposed Addendum Project, and would similarly reduce the Addendum Project's potential public services and facilities impacts to levels that are less-than-significant.

Based on the preceding discussions, the Addendum Project would not result in new, additional, or different public services impacts than were considered and addressed in the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

Sources: *Beaumont Gateway Specific Plan Environmental Impact Report* (Douglas Wood & Associates) January 1995, State Clearinghouse No. 94092040; *Hidden Canyon Industrial Park Specific Plan* (Applied Planning, Inc.) December 2011.

15. RECREATION

Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?					X	
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?					X	

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Summary

As noted above at Checklist Item 14. "Public Services," the Certified EIR addressed potential impacts to public facilities and services, (including parks and recreation facilities). With implementation of mitigation measures, all potential impacts to public services and facilities (including parks and recreation facilities) were determined to be less-than-significant.

Mitigation measures identified in the Certified EIR are also broadly applicable to the proposed Addendum Project, and would reduce the Addendum Project's potential parks and recreation facilities impacts to levels that are less-than-significant. It is further noted that overall demand for recreational facilities would expected to be reduced under the Addendum Project. That is, the Addendum Project's proposed distribution warehouse uses will not directly result in resident population increases, which typically act as principal drivers for recreational facilities. No direct increased demand for recreational facilities would be anticipated under the Addendum Project, and demands for recreational facilities and services would be incrementally reduced when compared to the Certified EIR project.

Based on the preceding discussions, the Addendum Project would not result in new, additional, or different recreation impacts than were considered and addressed in the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

Sources: *Beaumont Gateway Specific Plan Environmental Impact Report* (Douglas Wood & Associates) January 1995, State Clearinghouse No. 94092040; *Hidden Canyon Industrial Park Specific Plan* (Applied Planning, Inc.) December 2011.

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16. TRANSPORTATION/TRAFFIC

Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?					X	
b) Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads and highways?					X	
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?						X
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?					X	
e) Result in inadequate emergency access?					X	
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?					X	

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Summary

The Certified EIR discussion of traffic and circulation (Certified EIR Section M. "Circulation") indicates that with mitigation, traffic and circulation impacts of the Certified EIR project would be less-than-significant. As supported by the project-specific Trip Generation Analysis prepared for the Hidden Canyon Industrial Park Specific Plan Project (Urban Crossroads, November 15, 2011, Addendum Appendix D) total average daily traffic (ADT) under the Addendum Project is anticipated to be approximately 54 percent less than that anticipated under the Certified EIR, as summarized at the following Table A-3. It is also assumed that trip distribution characteristics of the Addendum Project and Certified EIR project are substantively comparable.

More specifically, the Addendum Project traffic study indicates that the proposed industrial warehouse uses would generate total of 5,438 trips daily, of which 340 trips would occur during the morning peak hour period (7 a.m. to 9 a.m.), and 378 trips would occur during the evening peak hour period (4 p.m. to 6 p.m.). In contrast, the Certified EIR project was estimated to generate 11,800 trips daily, of which 560 would have occurred during the morning peak hour period and 1,170 of which would have occurred during the evening peak hour. Since the currently proposed Addendum Project trip generation does not exceed the trip generation under the Certified EIR project, and trip distribution characteristics are substantively unchanged, it is inferred that traffic impacts of the Addendum Project would not be substantially greater than, or different than those identified in the Beaumont Gateway Specific Plan.

Table A-3
Trip Generation Comparison
Gateway Specific Plan and Hidden Canyon Industrial Park Specific Plan

	AM Peak Hour			PM Peak Hour			
Development Scenario	**Inbound**	**Outbound**	**Total**	**Inbound**	**Outbound**	**Total**	**Daily Total**
Hidden Canyon Industrial Park Specific Plan	200	360	560	660	510	1,170	11,800
Beaumont Gateway Specific Plan	221	119	340	125	253	378	5,438
Increase (Decrease)	21	(241)	(220)	(535)	(257)	(792)	(6,362)

Source: *Timoteo Distribution Facility Trip Generation Analysis* (Urban Crossroads, Inc.) November 15, 2011.

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Under either the Certified EIR project or the proposed Addendum Project, required mitigation includes those traffic improvements (constructed as part of the development and/or programmed and funded on a fair share basis) necessary to ensure circulation system operating efficiencies. On this basis, under either the Certified EIR project or the Addendum Project, with incorporation of mitigation, the following potential transportation/traffic impacts are reduced to levels that are less-than-significant:

- *Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system;*

- *Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures.*

Other CEQA transportation/traffic considerations were determined to be less-than-significant for the Certified EIR project, and would remain less-than-significant under the proposed Addendum Project. These considerations include:

Result in a change in air traffic patterns, resulting in substantial safety risks. As noted previously in these discussions, the nearest airport (banning Municipal Airport) is located approximately nine (9) miles easterly of the subject site. Moreover, the subject site does not lie within any airport approach/departure zones. The potential for the Certified EIR project or the Addendum Project to result in a change in air traffic patterns, resulting in substantial safety risks is therefore considered less-than-significant.

Substantially increase hazards due to a design feature. Neither the Certified EIR project, nor the Addendum Project propose or require transportation/traffic design features that would substantially increase hazards. All proposed transportation improvements will be designed and implemented consistent with (as applicable) City, County, and Caltrans requirements and standards. Conformance with these requirements and standards are supported by Specific Plan documentation prepared for the respective projects. The potential for the Certified EIR project or the Addendum Project to substantially increase hazards due to a design feature is therefore considered less-than-significant.

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Result in inadequate emergency access. Neither the Certified EIR project, nor the Addendum Project propose or require transportation/traffic design features that would result in or cause inadequate emergency access. As noted above, all proposed transportation improvements will be designed and implemented consistent with (as applicable) City, County, and Caltrans requirements and standards. These standards include provision and maintenance of appropriate emergency access. The potential for the Certified EIR project or the Addendum Project to Result in inadequate emergency access is therefore considered less-than-significant.

Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. Neither the Certified EIR project nor the Addendum Project development scenario require or propose elements that would conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities. Moreover, designs of both the Certified EIR project and the Addendum Project appropriately provide for and accommodate alternative transportation modes including public transit, bicycle, or pedestrian facilities.

Based on the preceding discussions, the Addendum Project would not result in new, additional, or different traffic/transportation impacts than were considered and addressed in the Certified EIR. No changes or additions to the Certified EIR analysis are necessary. Please refer also to the *Timoteo Distribution Facility Trip Generation Analysis* (Urban Crossroads, Inc.) November 15, 2011 (Addendum Appendix D).

Sources: *Beaumont Gateway Specific Plan Environmental Impact Report* (Douglas Wood & Associates) January 1995, State Clearinghouse No. 94092040; *Hidden Canyon Industrial Park Specific Plan* (Applied Planning, Inc.) December 2011; *Timoteo Distribution Facility Trip Generation Analysis* (Urban Crossroads, Inc.) November 15, 2011.

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17. UTILITIES AND SERVICE SYSTEMS

Would the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?					X	
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?					X	
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significance environmental effects?					X	
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?					X	
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?					X	
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?					X	
g) Comply with federal, state, and local statutes and regulations related to solid waste?					X	

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Summary

As noted at previously at Checklist Item 14. "Public Services," the Certified EIR addressed potential impacts to utilities and service systems (water and sewer facilities, wastewater treatment facilities, other utilities systems, solid waste disposal) and provided mitigation to ensure that impacts to utilities and service systems (water and sewer facilities, other utilities systems, and solid waste disposal) were reduced to levels that are less-than-significant. Mitigated impacts related to drainage/stormwater management systems, and availability of water are demonstrated to be less-than-significant at Checklist Item 9. "Hydrology and Water Quality."

Utilities and service systems mitigation measures identified in the Certified EIR are also broadly applicable to the proposed Addendum Project, and would reduce potential utilities and services impacts to levels that are less-than-significant. It is further noted that overall demand for utilities and services will likely be reduced under the Addendum Project. That is, the Addendum Project's proposed distribution warehouse uses will typically result in reduced water, sewer, wastewater treatment, and electrical demands when compared to comparable intensities of residential development such as would occur under the previously-approved Beaumont Gateway Specific Plan project. Moreover, the proposed Addendum Project designs and development standards reflect contemporary energy/resource conserving designs and operational programs, acting in total to reduce potential utilities and service systems impacts. As with the Certified EIR project, the proposed Addendum Project will design, implement, and maintain all utilities systems and system connections consistent with City and purveyor requirements.

Based on the preceding, the Addendum Project would not result in new, additional, or different impacts than were considered and addressed in the Certified EIR. No changes or additions to the Certified EIR analysis are necessary.

Sources: *Beaumont Gateway Specific Plan Environmental Impact Report* (Douglas Wood & Associates) January 1995, State Clearinghouse No. 94092040; *Hidden Canyon Industrial Park Specific Plan* (Applied Planning, Inc.) December 2011.

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18. MANDATORY FINDINGS OF SIGNIFICANCE

Does the project:	Substantial Change in Project Requiring Major EIR Revisions	Substantial Change in Circumstances Requiring Major EIR Revisions	New Information Showing Greater Significant Effects than Previous EIR	New Information Showing Ability to Reduce but not Eliminate Significant Effects in Previous EIR	No Changes or New Information Requiring Preparation of an EIR	No Impact
a) Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?					X	
b) Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of the past projects, the effects of other current projects, and the effects of probable future projects.)					X	
c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?					X	

Summary

As supported by the discussions presented herein, the proposed Addendum Project would not result in or cause new significant impacts, substantively increased or substantively different environmental impacts than those previously addressed in the Certified EIR. There are no changes or new information requiring preparation of an EIR based on the Addendum Project's potential to: degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining

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levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory; result in impacts that are individually limited, but cumulatively considerable; or have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly. No changes or additions to the Certified EIR analysis are necessary.

Appendix B: Air Quality

41 Corporate Park | Suite 300 | Irvine, CA 92606 | (949) 660-1994
www.urbanXroads.com

November 22, 2011

Mr. Ross Geller
APPLIED PLANNING, INC.
5817 Pine Avenue, Suite A
Chino Hills, CA 91709

Subject: Timoteo Distribution Facility Air Quality and Greenhouse Gas Emissions Assessment

Dear Mr. Geller:

The firm of Urban Crossroads, Inc. is pleased to submit the following air quality and greenhouse gas emissions assessment for the proposed Timoteo Distribution Facility ("Project"). The Project is located south of the SR-60 Freeway and east of Jack Rabbit Trail in the City of Beaumont. The purpose of this emissions assessment is to compare the proposed Project's emissions to that previously assumed and analyzed in the *Beaumont Gateway Specific Plan Air Quality Assessment Report* (Mestre Greve Associates) August 1994. As concluded herein, the Project will not result in new significant or substantively increased or substantively different air quality impacts than those resulting from the previously proposed *Beaumont Gateway Specific Plan* project.

PROJECT DESCRIPTION

A vicinity map and the preliminary site layout for the proposed Project are shown on Exhibit 1. The currently proposed Project includes the development of approximately 2,882,320 square feet of high-cube warehouse use divided between two buildings. Building 1 is proposed to consist of approximately 1,867,040 square feet of high-cube distribution warehouse use and Building 2 is proposed to consist of approximately 1,015,280 square feet of high-cube distribution warehouse use.

OPERATIONAL CRITERIA POLLUTANTEMISSIONS

Long-term operational criteria air pollutant emissions are categorized as area source emissions, energy demand emissions, and operational emissions. Operational emissions will result from automobile, truck, and other vehicle sources associated with daily trips to and from the Project. Following is a summary discussion of air pollutant emission sources and quantified emissions generated by the currently proposed Timoteo Distribution Facility Project. Subsequently, emissions sources and quantities associated with the previously approved Beaumont Gateway Specific Plan Project are presented, after which emissions under both development scenarios are compared.

Timoteo Distribution Facility Project

For purposes of this emissions evaluation, the California Emissions Estimator Model™ (CalEEMod™) was used to calculate criteria pollutant and greenhouse gas (GHG) emissions. Operational activity includes emissions from vehicles, combustion emissions associated with natural gas and electricity, fugitive dust related to vehicular travel, landscape maintenance equipment, and application of architectural coatings (re-painting over time).

Trip characteristics used to calculate vehicular emissions are available from the Trip Generation Letter Report, Timoteo Distribution Facility Trip Generation Analysis (Urban Crossroads, Inc.) 2011. It should be noted that the Letter Report presents the total Project vehicle trips in terms of Passenger Car Equivalents (PCEs) in an effort to recognize and acknowledge the effects of heavy vehicles at the study area intersections. For purposes of the emissions evaluation presented here, the PCE trips were not used. Rather to be more representative of actual emissions, the actual number of vehicles by type [passenger cars (including light trucks) and heavy trucks] were used in the analysis. The vehicle fleet mix was derived from the previously noted Trip Generation Letter Report for the Project, and is comprised of approximately 79.57% passenger cars and 20.43% trucks.

Table 1 summarizes the daily Project criteria pollutant emissions. The results of the analysis indicated emissions of ROG's (Reactive Organic Gases) and Nitrogen Oxides (NOx) would exceed the applicable numeric thresholds established by the SCAQMD.

Table 2 summarizes the annual GHG emissions associated with the Project.

Beaumont Gateway Specific Plan Project

The operational criteria pollutant emissions summary for the Beaumont Gateway Specific Plan was obtained from the previously-noted Beaumont Gateway Specific Plan Air Quality Assessment Report. The Beaumont Gateway Specific Plan assumed the development of 473 single family residential dwelling units, 100 multi-family residential dwelling units and 90,000 square feet of commercial retail use.

Table 3 summarizes the resulting daily criteria pollutant emissions for the Beaumont Gateway SP. The results of the analysis indicated emissions of ROG's and NOx would exceed the applicable numeric thresholds established by the SCAQMD.

GHG emissions were not previously calculated in the Beaumont Gateway SP EIR. Therefore GHG emissions were calculated based on the allowable uses as evaluated within the Beaumont Gateway SP EIR to establish what level of GHG emissions would be generated if the Beaumont Gateway SP were developed in full. Table 4 summarizes the annual GHG emissions associated with the Beaumont Gateway SP.

EMISSIONS COMPARISON

As shown in Table 5, the development of the proposed Timoteo Distribution Facility is anticipated to generate fewer criteria pollutant emissions of ROGs, NOx, CO, and SOx as compared to the previously analyzed Beaumont Gateway Specific Plan. PM_{10} and $PM_{2.5}$ emissions generated by the Timoteo Distribution Facility Project are approximately 10-18 percent more as compared to the previously analyzed Beaumont Gateway Specific Plan, however, the emissions do not exceed the applicable numeric emissions thresholds established by the SCAQMD and no new potentially significant or substantively increased or substantively different impacts would occur and no additional mitigation would be required.

As shown in Table 6, the development of the proposed Timoteo Distribution Facility is anticipated to generate significantly fewer GHG emissions (CO2e) as compared to GHG emissions otherwise resulting from implementation of the Beaumont Gateway Specific Plan.

FINDINGS AND CONCLUSIONS

It is anticipated that the development of the proposed Timoteo Distribution Facility would generate significantly fewer criteria pollutant and GHG emissions than would be generated by the previously approved Beaumont Gateway Specific Plan project , with the exception of 10-18 percent increased emissions of PM10 and PM2.5 as noted above. Under no circumstances would the Timoteo Distribution Facility Project result in or cause new significant or substantively increased or substantively different air quality impacts than those resulting from the previously proposed Beaumont Gateway Specific Plan project.

If you have any questions or comments, please contact me directly at (949) 660-1994 ext. 217.

Respectfully submitted,

URBAN CROSSROADS, INC.

Haseeb Qureshi, MES
Senior Associate - Air Quality/
Climate Change Specialist

HQ
JN:08048-03 Letter

Attachments

TABLE 1

PROPOSED PROJECT (TIMOTEO DISTRIBUTION FACILITY)

SUMMARY OF PEAK OPERATIONAL EMISSIONS (POUNDS PER DAY)

Summer Conditions	**ROG**	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Area Source Emissions [a]	75.35	0	0	0	0	0
Energy Source Emissions [b]	0.18	1.66	1.39	0.01	0.13	0.13
Vehicular Emissions [c]	32.20	185.94	289.45	0.43	45.61	6.82
Total Daily Emissions	**107.73**	**187.60**	**290.84**	**0.44**	**45.74**	**6.95**
SCAQMD Regional Threshold	55	55	550	150	150	55
Significant?	**YES**	**YES**	**NO**	**NO**	**NO**	**NO**

Winter Conditions	**ROG**	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Area Source Emissions [a]	75.35	0	0	0	0	0
Energy Source Emissions [b]	0.18	1.66	1.39	0.01	0.13	0.13
Vehicular Emissions [c]	33.39	197.31	290.74	0.40	45.73	6.92
Total Daily Emissions	**108.92**	**198.97**	**292.13**	**0.41**	**45.86**	**7.05**
SCAQMD Regional Threshold	55	55	550	150	150	55
Significant?	**YES**	**YES**	**NO**	**NO**	**NO**	**NO**

Note: Please refer to Appendix B for the CalEEMod™ output files and additional supporting information for the estimated emissions.

[a] Includes emissions of landscape maintenance equipment and architectural coatings emissions

[b] Includes emissions of natural gas consumption

[c] Includes emissions of vehicle emissions and fugitive dust related to vehicular travel

Mr. Ross Geller
APPLIED PLANNING, INC.
November 22, 2011
Page 5

TABLE 2

PROPOSED PROJECT (TIMOTEO DISTRIBUTION FACILITY)
TOTAL GREENHOUSE GAS EMISSIONS (ANNUAL) (METRIC TONS PER YEAR)

	Emissions (metric tons per year)			
Emission Source	**CO_2**	**CH_4**	**N_2O**	**Total CO_2E**
Energy	2,861.07	0.12	0.05	2,878.94
Mobile Sources	5,968.38	0.28	--	5,974.17
Waste	1,516.25	89.61	--	3,398.01
Water Usage	156.60	1.29	0.03	197.39
Total CO_2E (All Sources)	**12,448.51**			

Source: CalEEMod™ model output, See Appendix "A" for detailed model outputs.
Note: Totals obtained from CalEEMod™ and may not total 100% due to rounding.

TABLE 3

BEAUMONT GATEWAY SPECIFIC PLAN

SUMMARY OF PEAK OPERATIONAL EMISSIONS (POUNDS PER DAY) [a]

	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Stationary Emissions	0.84	25.21	5.15	1.45	0.52	0.52[b]
Vehicular Emissions	140.2	270.70	1,319.00	21.50	38.40	5.81[c]
Total Daily Emissions	**141.04**	**295.91**	**1,324.15**	**22.95**	**38.92**	**6.33**
SCAQMD Regional Threshold	55	55	550	150	150	55
Significant?	**YES**	**YES**	**YES**	**NO**	**NO**	**NO**

[a] Source: *Beaumont Gateway Specific Plan Air Quality Assessment Report* (prepared by Mestre Greve Associates in August 1994)

[b] Not Quantified within the *Beaumont Gateway Specific Plan Air Quality Assessment Report.* *PM2.5* emissions are estimated as approximately 100 percent of PM10 per the proportion of PM10 to PM2.5 as shown on Table 1 for Energy Source (Stationary Emissions) for the Proposed Project using the CalEEMod emissions model.

[c] Not Quantified within the *Beaumont Gateway Specific Plan Air Quality Assessment Report.* *PM2.5* emissions are estimated as approximately 15.13 percent of PM10 per the proportion of PM10 to PM2.5 as shown on Table 1 for Vehicular Emissions for the Proposed Project using the CalEEMod emissions model.

TABLE 4

BEAUMONT GATEWAY SPECIFIC PLAN
TOTAL GREENHOUSE GAS EMISSIONS (ANNUAL) (METRIC TONS PER YEAR)

	Emissions (metric tons per year)			
Emission Source	**CO_2**	**CH_4**	**N_2O**	**Total CO_2E**
Area	425.99	0.20	0.01	432.86
Energy	2,716.02	0.09	0.05	2,732.83
Mobile Sources	16,949.18	0.98	--	16,969.66
Waste	141.13	8.34	--	316.27
Water Usage	256.40	1.35	0.04	296.54
Total CO_2E (All Sources)		**20,748.16**		

Source: CalEEMod™ model output, See Appendix "A" for detailed model outputs.
Note: Totals obtained from CalEEMod™ and may not total 100% due to rounding.

TABLE 5

OPERATIONAL EMISSIONS COMPARISON (POUNDS PER DAY)

Land Use	**ROG**	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
Currently Proposed	108.92	198.97	292.13	0.44	45.86	7.05
Previous SP Air Quality Assessment	141.04	295.91	1,324.15	22.95	38.92	6.33
Variance	***-32.12***	***-96.94***	***-1,032.02***	***-22.51***	***6.94***	***0.72***

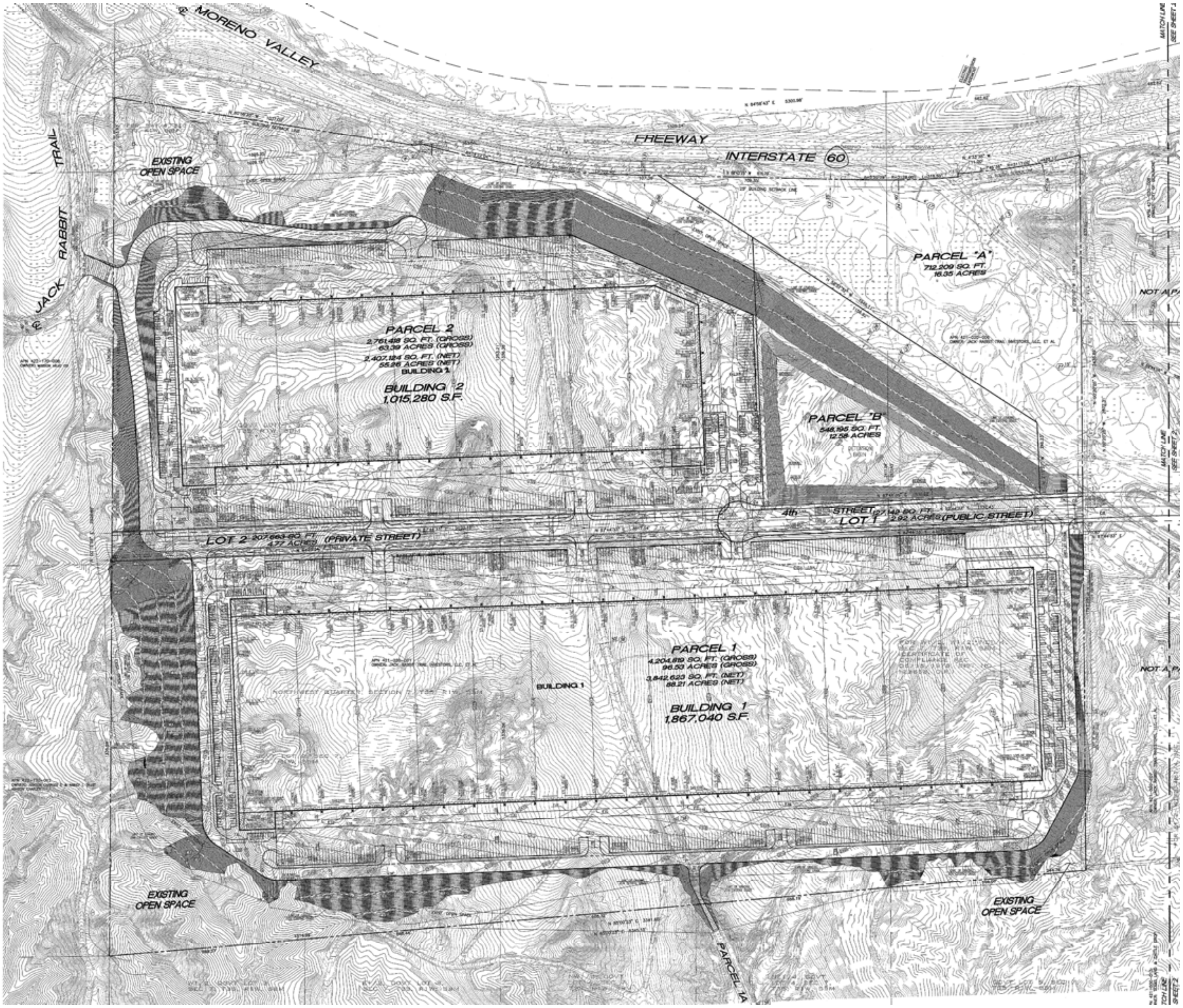
TABLE 6

TOTAL GREENHOUSE GAS EMISSIONS (ANNUAL) (METRIC TONS PER YEAR) EMISSIONS COMPARISON

Land Use	Emissions (metric tons per year)			
	CO_2	CH_4	N_2O	Total CO_2E
Currently Proposed	10,502.30	91.30	0.08	12,448.51
Previous SP Land Uses	20,488.70	10.96	0.10	20,748.16
Variance	***-9,986.40***	***80.34***	***-0.02***	***-8,299.65***

EXHIBIT 1

PRELIMINARY SITE PLAN



N

ATTACHMENT "A" CalEEMod Model Outputs

CalEEMod Version: CalEEMod.2011.1.1 Date: 11/21/2011

Timeteo Distribution Facility

South Coast AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Unrefrigerated Warehouse-No Rail	2882.32	1000sqft

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Utility Company** Southern California Edison

Climate Zone 10 **Precipitation Freq (Days)** 31

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - Operational Activity Only

Off-road Equipment - Construction equipment estimate from Project Engineer

Off-road Equipment -

Trips and VMT -

Grading -

Architectural Coating -

Vehicle Trips - Trip rate based on data in traffic study.

Vechicle Emission Factors - Fleet mix reflects passenger car (LDA, LDT1, LDT2, MDV), 2, 3, and 4+ axle trucks per traffic study.

Vechicle Emission Factors - Fleet mix reflects passenger car (LDA, LDT1, LDT2, MDV), 2, 3, and 4+ axle trucks per traffic study.

Vechicle Emission Factors - Fleet mix reflects passenger car (LDA, LDT1, LDT2, MDV), 2, 3, and 4+ axle trucks per traffic study.

Area Coating -

Water And Wastewater - Based on 14.58 gal/SF, consistent with other Warehouse/Distribution EIR's

Solid Waste - 1.42 lb/100 s.f./day <http://www.calrecycle.ca.gov/WasteChar/WasteGenRates/default.htm>

Construction Off-road Equipment Mitigation -

Area Mitigation -

Energy Mitigation -

Water Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	75.35	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.18	1.66	1.39	0.01		0.00	0.13		0.00	0.13		1,988.13		0.04	0.04	2,000.23
Mobile	32.20	185.94	289.45	0.43	38.83	6.78	45.61	0.61	6.20	6.82		51,123.72		2.20		51,169.82
Total	**107.73**	**187.60**	**290.84**	**0.44**	**38.83**	**6.78**	**45.74**	**0.61**	**6.20**	**6.95**		**53,111.85**		**2.24**	**0.04**	**53,170.05**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	75.35	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.18	1.66	1.39	0.01		0.00	0.13		0.00	0.13		1,988.13		0.04	0.04	2,000.23
Mobile	32.20	185.94	289.45	0.43	38.83	6.78	45.61	0.61	6.20	6.82		51,123.72		2.20		51,169.82
Total	**107.73**	**187.60**	**290.84**	**0.44**	**38.83**	**6.78**	**45.74**	**0.61**	**6.20**	**6.95**		**53,111.85**		**2.24**	**0.04**	**53,170.05**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	32.20	185.94	289.45	0.43	38.83	6.78	45.61	0.61	6.20	6.82		51,123.72		2.20		51,169.82
Unmitigated	32.20	185.94	289.45	0.43	38.83	6.78	45.61	0.61	6.20	6.82		51,123.72		2.20		51,169.82
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Unrefrigerated Warehouse-No Rail	4,150.54	4,150.54	4150.54	11,676,590	11,676,590

Total	4,150.54	4,150.54	4,150.54	11,676,590	11,676,590

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Unrefrigerated Warehouse-No Rail	8.90	13.30	7.40	59.00	0.00	41.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.18	1.66	1.39	0.01		0.00	0.13		0.00	0.13		1,988.13		0.04	0.04	2,000.23
NaturalGas Unmitigated	0.18	1.66	1.39	0.01		0.00	0.13		0.00	0.13		1,988.13		0.04	0.04	2,000.23
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Unrefrigerated Warehouse-No Rail	16899.1	0.18	1.66	1.39	0.01		0.00	0.13		0.00	0.13		1,988.13		0.04	0.04	2,000.23
Total		**0.18**	**1.66**	**1.39**	**0.01**		**0.00**	**0.13**		**0.00**	**0.13**		**1,988.13**		**0.04**	**0.04**	**2,000.23**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Unrefrigerated Warehouse-No Rail	16.8991	0.18	1.66	1.39	0.01		0.00	0.13		0.00	0.13		1,988.13		0.04	0.04	2,000.23
Total		**0.18**	**1.66**	**1.39**	**0.01**		**0.00**	**0.13**		**0.00**	**0.13**		**1,988.13**		**0.04**	**0.04**	**2,000.23**

6.0 Area Detail

6.1 Mitigation Measures Area

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	75.35	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	75.35	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

SubCategory	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Architectural Coating	18.28					0.00	0.00		0.00	0.00						0.00
Consumer Products	57.07					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**75.35**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	18.28					0.00	0.00		0.00	0.00						0.00
Consumer Products	57.07					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**75.35**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

CalEEMod Version: CalEEMod.2011.1.1 Date: 11/21/2011

Timeteo Distribution Facility

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Unrefrigerated Warehouse-No Rail	2882.32	1000sqft

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 2.2 **Utility Company** Southern California Edison

Climate Zone 10 **Precipitation Freq (Days)** 31

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - Operational Activity Only

Off-road Equipment - Construction equipment estimate from Project Engineer

Off-road Equipment -

Trips and VMT -

Grading -

Architectural Coating -

Vehicle Trips - Trip rate based on data in traffic study.

Vechicle Emission Factors - Fleet mix reflects passenger car (LDA, LDT1, LDT2, MDV), 2, 3, and 4+ axle trucks per traffic study.

Vechicle Emission Factors - Fleet mix reflects passenger car (LDA, LDT1, LDT2, MDV), 2, 3, and 4+ axle trucks per traffic study.

Vechicle Emission Factors - Fleet mix reflects passenger car (LDA, LDT1, LDT2, MDV), 2, 3, and 4+ axle trucks per traffic study.

Area Coating -

Water And Wastewater - Based on 14.58 gal/SF, consistent with other Warehouse/Distribution EIR's

Solid Waste - 1.42 lb/100 s.f./day <http://www.calrecycle.ca.gov/WasteChar/WasteGenRates/default.htm>

Construction Off-road Equipment Mitigation -

Area Mitigation -

Energy Mitigation -

Water Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	75.35	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.18	1.66	1.39	0.01		0.00	0.13		0.00	0.13		1,988.13		0.04	0.04	2,000.23
Mobile	33.39	197.31	290.74	0.40	38.83	6.90	45.73	0.61	6.31	6.92		48,579.68		2.24		48,626.63
Total	**108.92**	**198.97**	**292.13**	**0.41**	**38.83**	**6.90**	**45.86**	**0.61**	**6.31**	**7.05**		**50,567.81**		**2.28**	**0.04**	**50,626.86**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	75.35	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.18	1.66	1.39	0.01		0.00	0.13		0.00	0.13		1,988.13		0.04	0.04	2,000.23
Mobile	33.39	197.31	290.74	0.40	38.83	6.90	45.73	0.61	6.31	6.92		48,579.68		2.24		48,626.63
Total	**108.92**	**198.97**	**292.13**	**0.41**	**38.83**	**6.90**	**45.86**	**0.61**	**6.31**	**7.05**		**50,567.81**		**2.28**	**0.04**	**50,626.86**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	33.39	197.31	290.74	0.40	38.83	6.90	45.73	0.61	6.31	6.92		48,579.68		2.24		48,626.63
Unmitigated	33.39	197.31	290.74	0.40	38.83	6.90	45.73	0.61	6.31	6.92		48,579.68		2.24		48,626.63
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Unrefrigerated Warehouse-No Rail	4,150.54	4,150.54	4150.54	11,676,590	11,676,590

Total	4,150.54	4,150.54	4,150.54	11,676,590	11,676,590

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Unrefrigerated Warehouse-No Rail	8.90	13.30	7.40	59.00	0.00	41.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.18	1.66	1.39	0.01		0.00	0.13		0.00	0.13		1,988.13		0.04	0.04	2,000.23
NaturalGas Unmitigated	0.18	1.66	1.39	0.01		0.00	0.13		0.00	0.13		1,988.13		0.04	0.04	2,000.23
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Unrefrigerated Warehouse-No Rail	16899.1	0.18	1.66	1.39	0.01		0.00	0.13		0.00	0.13		1,988.13		0.04	0.04	2,000.23
Total		**0.18**	**1.66**	**1.39**	**0.01**		**0.00**	**0.13**		**0.00**	**0.13**		**1,988.13**		**0.04**	**0.04**	**2,000.23**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Unrefrigerated Warehouse-No Rail	16.8991	0.18	1.66	1.39	0.01		0.00	0.13		0.00	0.13		1,988.13		0.04	0.04	2,000.23
Total		**0.18**	**1.66**	**1.39**	**0.01**		**0.00**	**0.13**		**0.00**	**0.13**		**1,988.13**		**0.04**	**0.04**	**2,000.23**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	75.35	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	75.35	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	18.28					0.00	0.00		0.00	0.00						0.00
Consumer Products	57.07					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**75.35**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	18.28					0.00	0.00		0.00	0.00						0.00
Consumer Products	57.07					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	**75.35**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**		**0.00**		**0.00**		**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Timeteo Distribution Facility

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Unrefrigerated Warehouse-No Rail	2882.32	1000sqft

1.2 Other Project Characteristics

Urbanization Urban

Wind Speed (m/s) 2.2

Utility Company Southern California Edison

Climate Zone 10

Precipitation Freq (Days) 31

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - Operational Activity Only

Off-road Equipment - Construction equipment estimate from Project Engineer

Off-road Equipment -

Trips and VMT -

Grading -

Architectural Coating -

Vehicle Trips - Trip rate based on data in traffic study.

Vechicle Emission Factors - Fleet mix reflects passenger car (LDA, LDT1, LDT2, MDV), 2, 3, and 4+ axle trucks per traffic study.

Vechicle Emission Factors - Fleet mix reflects passenger car (LDA, LDT1, LDT2, MDV), 2, 3, and 4+ axle trucks per traffic study.

Vechicle Emission Factors - Fleet mix reflects passenger car (LDA, LDT1, LDT2, MDV), 2, 3, and 4+ axle trucks per traffic study.

Area Coating -

Water And Wastewater - Based on 14.58 gal/SF, consistent with other Warehouse/Distribution EIR's

Solid Waste - 1.42 lb/100 s.f./day <http://www.calrecycle.ca.gov/WasteChar/WasteGenRates/default.htm>

Construction Off-road Equipment Mitigation -

Area Mitigation -

Energy Mitigation -

Water Mitigation -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	13.75	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	2,861.07	2,861.07	0.12	0.05	2,878.94
Mobile	3.57	12.89	39.07	0.06	6.31	0.38	6.70	0.09	0.36	0.45	0.00	5,968.38	5,968.38	0.28	0.00	5,974.17
Waste						0.00	0.00		0.00	0.00	1,516.25	0.00	1,516.25	89.61	0.00	3,398.01
Water						0.00	0.00		0.00	0.00	0.00	159.60	159.60	1.29	0.03	197.39
Total	**17.35**	**13.19**	**39.32**	**0.06**	**6.31**	**0.38**	**6.72**	**0.09**	**0.36**	**0.47**	**1,516.25**	**8,989.05**	**10,505.30**	**91.30**	**0.08**	**12,448.51**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	13.75	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	2,861.07	2,861.07	0.12	0.05	2,878.94
Mobile	3.57	12.89	39.07	0.06	6.31	0.38	6.70	0.09	0.36	0.45	0.00	5,968.38	5,968.38	0.28	0.00	5,974.17
Waste						0.00	0.00		0.00	0.00	1,516.25	0.00	1,516.25	89.61	0.00	3,398.01
Water						0.00	0.00		0.00	0.00	0.00	159.60	159.60	1.29	0.03	197.39
Total	**17.35**	**13.19**	**39.32**	**0.06**	**6.31**	**0.38**	**6.72**	**0.09**	**0.36**	**0.47**	**1,516.25**	**8,989.05**	**10,505.30**	**91.30**	**0.08**	**12,448.51**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.57	12.89	39.07	0.06	6.31	0.38	6.70	0.09	0.36	0.45	0.00	5,968.38	5,968.38	0.28	0.00	5,974.17
Unmitigated	3.57	12.89	39.07	0.06	6.31	0.38	6.70	0.09	0.36	0.45	0.00	5,968.38	5,968.38	0.28	0.00	5,974.17
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Unrefrigerated Warehouse-No Rail	4,150.54	4,150.54	4150.54	11,676,590	11,676,590
Total	4,150.54	4,150.54	4,150.54	11,676,590	11,676,590

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Unrefrigerated Warehouse-No Rail	8.90	13.30	7.40	59.00	0.00	41.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	2,531.91	2,531.91	0.11	0.04	2,547.78
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	2,531.91	2,531.91	0.11	0.04	2,547.78
NaturalGas Mitigated	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	329.16	329.16	0.01	0.01	331.16
NaturalGas Unmitigated	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	329.16	329.16	0.01	0.01	331.16
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Unrefrigerated Warehouse-No Rail	6.16816e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	329.16	329.16	0.01	0.01	331.16
Total		**0.03**	**0.30**	**0.25**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**	**0.00**	**329.16**	**329.16**	**0.01**	**0.01**	**331.16**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Unrefrigerated Warehouse-No Rail	6.16816e+006	0.03	0.30	0.25	0.00		0.00	0.02		0.00	0.02	0.00	329.16	329.16	0.01	0.01	331.16
Total		**0.03**	**0.30**	**0.25**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**	**0.00**	**329.16**	**329.16**	**0.01**	**0.01**	**331.16**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Unrefrigerated Warehouse-No Rail	8.70461e+006					2,531.91	0.11	0.04	2,547.78
Total						**2,531.91**	**0.11**	**0.04**	**2,547.78**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Unrefrigerated Warehouse-No Rail	8.70461e+006					2,531.91	0.11	0.04	2,547.78
Total						**2,531.91**	**0.11**	**0.04**	**2,547.78**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	13.75	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	13.75	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

<u>Unmitigated</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.34					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	10.42					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**13.76**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

<u>Mitigated</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	3.34					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	10.42					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**13.76**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					159.60	1.29	0.03	197.39
Unmitigated					159.60	1.29	0.03	197.39
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

<u>Unmitigated</u>

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Unrefrigerated Warehouse-No Rail	42.0156 / 0					159.60	1.29	0.03	197.39
Total						**159.60**	**1.29**	**0.03**	**197.39**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Unrefrigerated Warehouse-No Rail	42.0156 / 0					159.60	1.29	0.03	197.39
Total						**159.60**	**1.29**	**0.03**	**197.39**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					1,516.25	89.61	0.00	3,398.01
Unmitigated					1,516.25	89.61	0.00	3,398.01
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Unrefrigerated Warehouse-No Rail	7469.53					1,516.25	89.61	0.00	3,398.01
Total						**1,516.25**	**89.61**	**0.00**	**3,398.01**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Unrefrigerated Warehouse-No Rail	7469.53					1,516.25	89.61	0.00	3,398.01
Total						**1,516.25**	**89.61**	**0.00**	**3,398.01**

9.0 Vegetation

Beaumont Gateway SP GHG Emissions

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Single Family Housing	473	Dwelling Unit
Condo/Townhouse	100	Dwelling Unit
Strip Mall	90	1000sqft

1.2 Other Project Characteristics

Urbanization Urban

Wind Speed (m/s) 2.2

Utility Company Southern California Edison

Climate Zone 10

Precipitation Freq (Days) 31

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - Operations only.

Vehicle Trips - Trip Rate from Beaumont Gateway SP

Vechicle Emission Factors -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											60.86	365.13	425.99	0.20	0.01	432.86
Energy											0.00	2,716.02	2,716.02	0.09	0.05	2,732.83
Mobile											0.00	16,949.18	16,949.18	0.98	0.00	16,969.66
Waste											141.13	0.00	141.13	8.34	0.00	316.27
Water											0.00	256.40	256.40	1.35	0.04	296.54
Total											**201.99**	**20,286.73**	**20,488.72**	**10.96**	**0.10**	**20,748.16**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											60.86	365.13	425.99	0.20	0.01	432.86
Energy											0.00	2,716.02	2,716.02	0.09	0.05	2,732.83
Mobile											0.00	16,949.18	16,949.18	0.98	0.00	16,969.66
Waste											141.13	0.00	141.13	8.34	0.00	316.27
Water											0.00	256.40	256.40	1.35	0.04	296.54
Total											**201.99**	**20,286.73**	**20,488.72**	**10.96**	**0.10**	**20,748.16**

3.0 Construction Detail

3.1 Mitigation Measures Construction

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.00	16,949.18	16,949.18	0.98	0.00	16,969.66
Unmitigated											0.00	16,949.18	16,949.18	0.98	0.00	16,969.66
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse	586.00	586.00	586.00	1,951,717	1,951,717
Single Family Housing	4,517.15	4,517.15	4517.15	15,044,705	15,044,705
Strip Mall	6,738.30	6,738.30	6738.30	15,481,040	15,481,040
Total	11,841.45	11,841.45	11,841.45	32,477,462	32,477,462

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Condo/Townhouse	12.70	7.00	9.50	40.20	19.20	40.60
Single Family Housing	12.70	7.00	9.50	40.20	19.20	40.60
Strip Mall	8.90	13.30	7.40	16.60	64.40	19.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated											0.00	1,544.17	1,544.17	0.07	0.03	1,553.85
Electricity Unmitigated											0.00	1,544.17	1,544.17	0.07	0.03	1,553.85
NaturalGas Mitigated											0.00	1,171.85	1,171.85	0.02	0.02	1,178.98
NaturalGas Unmitigated											0.00	1,171.85	1,171.85	0.02	0.02	1,178.98
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Condo/Townhouse	2.58258e+006											0.00	137.82	137.82	0.00	0.00	138.66
Single Family Housing	1.91682e+007											0.00	1,022.89	1,022.89	0.02	0.02	1,029.11
Strip Mall	208800											0.00	11.14	11.14	0.00	0.00	11.21
Total												**0.00**	**1,171.85**	**1,171.85**	**0.02**	**0.02**	**1,178.98**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Condo/Townhouse	2.58258e+006											0.00	137.82	137.82	0.00	0.00	138.66
Single Family Housing	1.91682e+007											0.00	1,022.89	1,022.89	0.02	0.02	1,029.11
Strip Mall	208800											0.00	11.14	11.14	0.00	0.00	11.21
Total												**0.00**	**1,171.85**	**1,171.85**	**0.02**	**0.02**	**1,178.98**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Condo/Townhouse	493873					143.65	0.01	0.00	144.55
Single Family Housing	3.40551e+006					990.56	0.04	0.02	996.77
Strip Mall	1.4094e+006					409.95	0.02	0.01	412.52
Total						**1,544.16**	**0.07**	**0.03**	**1,553.84**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Condo/Townhouse	493873					143.65	0.01	0.00	144.55
Single Family Housing	3.40551e+006					990.56	0.04	0.02	996.77
Strip Mall	1.4094e+006					409.95	0.02	0.01	412.52
Total						**1,544.16**	**0.07**	**0.03**	**1,553.84**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											60.86	365.13	425.99	0.20	0.01	432.86
Unmitigated											60.86	365.13	425.99	0.20	0.01	432.86
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products											0.00	0.00	0.00	0.00	0.00	0.00
Hearth											60.86	350.88	411.74	0.19	0.01	418.26
Landscaping											0.00	14.25	14.25	0.02	0.00	14.60
Total											**60.86**	**365.13**	**425.99**	**0.21**	**0.01**	**432.86**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products											0.00	0.00	0.00	0.00	0.00	0.00
Hearth											60.86	350.88	411.74	0.19	0.01	418.26
Landscaping											0.00	14.25	14.25	0.02	0.00	14.60
Total											**60.86**	**365.13**	**425.99**	**0.21**	**0.01**	**432.86**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					256.40	1.35	0.04	296.54
Unmitigated					256.40	1.35	0.04	296.54
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

<u>Unmitigated</u>

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Condo/Townhouse	6.5154 / 4.10754					38.02	0.20	0.01	43.97
Single Family Housing	30.8179 / 19.4286					179.85	0.95	0.03	207.96
Strip Mall	6.66653 / 4.08594					38.53	0.21	0.01	44.61
Total						**256.40**	**1.36**	**0.05**	**296.54**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Condo/Townhouse	6.5154 / 4.10754					38.02	0.20	0.01	43.97
Single Family Housing	30.8179 / 19.4286					179.85	0.95	0.03	207.96
Strip Mall	6.66653 / 4.08594					38.53	0.21	0.01	44.61
Total						**256.40**	**1.36**	**0.05**	**296.54**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					141.13	8.34	0.00	316.27
Unmitigated					141.13	8.34	0.00	316.27
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Condo/Townhouse	46					9.34	0.55	0.00	20.93
Single Family Housing	554.73					112.61	6.65	0.00	252.36
Strip Mall	94.5					19.18	1.13	0.00	42.99
Total						**141.13**	**8.33**	**0.00**	**316.28**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Condo/Townhouse	46					9.34	0.55	0.00	20.93
Single Family Housing	554.73					112.61	6.65	0.00	252.36
Strip Mall	94.5					19.18	1.13	0.00	42.99
Total						**141.13**	**8.33**	**0.00**	**316.28**

9.0 Vegetation

Appendix C: Biological Resources

HARMSWORTH ASSOCIATES
Environmental Consultants

November 29, 2011

Charly Ray
Applied Planning, Inc
5817 Pine Avenue, Suite A
Chino Hills, CA 91709

Dear Mr. Ray:

Re: Timoteo LLC Industrial Park Specific Plan Project Biological Surveys

Harmsworth Associates is pleased to provide this letter report on biological surveys and a site assessment for the Timoteo LLC Industrial Park Specific Plan Project, Riverside County, California.

We conducted a site visit, reviewed past reports and current site plans and made an assessment of potential impacts compared with the original EIR impacts and mitigation measures.

If you require additional information or if you have any questions please contact me at (714) 389-9527.

Sincerely,

HARMSWORTH ASSOCIATES

Paul Galvin

Paul Galvin, M.S.
Vice President

29 Vacaville, Irvine, California 92602 – (714) 389-9527 – Cell (714) 287-4986 – pgalvin9@cox.net

INTRODUCTION AND BACKGROUND

The Timoteo LLC Industrial Park Specific Plan Project is located just outside the City of Beaumont in Riverside County, California (Figure 1). The project site is located in U.S. Geological Survey (USGS) topographic map; Beaumont and El Casco quadrangles. The entire project area is within the unincorporated area of Riverside County.

Biological assessments and surveys were initially conducted at this site in 1993 (Pacific Southwest Biological Services 1993) as part of the CEQA document for the proposed project. The CEQA document analyzed impacts and provided required mitigation measures for the proposed project. Follow-up biological surveys and assessments were conducted in 2003 (Harmsworth Associates 2004a,b) and site conditions were not significantly different compared with conditions in 1993.

The original project site totaled approximately 160 acres south of SR 60, and from east of Jack Rabbit Trail to where Cooper's Creek flows under the SR 60. The current site totals approximately 202 acres; it includes the original site and an additional 42 acres to the east from where Cooper's Creek flows under the SR 60 to the narrow bridge over Cooper's Creek (Figure 2). The additional 42 acres was not included in the 1993 CEQA documents (Pacific Southwest Biological Services 1993) but biological surveys and assessments were conducted there in 2004 (Harmsworth Associates 2004c).

The primary purpose of the current assessment is to determine if site conditions have changed significantly since the 1993/2003 and 2004 surveys or if there are any additional impacts to biological resources not considered during the 1993/2003 assessment.

METHODS

The biological assessment consisted of reviewing existing documents and biological reports and conducting a site visit. The site visit was conducted on November 9, 2011 by Harmsworth Associates biologist Paul Galvin. The site visit included walking throughout the project site assessing site conditions, examining any site disturbances or impacts and comparing vegetation communities and conditions with past conditions.

No focused surveys were conducted.

An analysis was conducted of current site conditions compared with past site conditions.

RESULTS

In the original 160 acre portion of the site, site conditions are not significantly different compared with conditions in 1993 or 2003. There was no new area of disturbance and no change to vegetation communities onsite. No new sensitive vegetation communities or federally/state listed species were documented onsite during the current surveys.

In the additional 42 acre portion of the site, site conditions were not significantly different compared with conditions in 2004. There was no new area of disturbance and no change to vegetation communities onsite. No new sensitive vegetation communities or federally/state listed species were documented onsite during the current surveys.

The additional 42 acre portion of the site included portions of Cooper's Creek and associated riparian woodland, Riversidean sage scrub, chaparral, agriculture, disturbed and developed areas (Harmsworth Associates 2004).

Cooper's Creek and the entire northeast portion of the site would be avoided by the proposed development. Approximately 60% of the site (approximately 25 acres) in the southern portion would be impacted by the proposed development. The impacts would include approximately 0.2 acres of non-native grassland; 1.5 acres of buckwheat scrub; 3.0 acres of Riversidean sage scrub; 8.5 acres of chaparral; 0.2 acres of isolated willow scrub not associated with Cooper's Creek; and 11.6 acre of agriculture, disturbed and developed areas.

COMPARISON WITH 1993 SURVEYS AND POTENTIAL IMPACTS

Site conditions are not significantly different compared with conditions in 1993, 2003 or 2004. No new sensitive vegetation communities or federally/state listed species were documented onsite during the current surveys.

At that time of the 1993 assessments it was assumed that the development of the proposed Beaumont Gateway Specific Plan would result in removal of 155-acres of vegetation from the project site, including all the Riversidean sage scrub, buckwheat scrub and the majority of the remaining habitats, with the exception of the riparian woodland along Cooper's Creek which was to remain untouched, (Pacific Southwest Biological Services 1993). The current proposal is not significantly different from the 1993 plan, with the exception of the additional 42 acre are along the eastern boundary. Approximately 25 acres of this new area would be developed under the current proposal, of which approximately13.4 acres was vegetated. This would result in the removal of 168.4-acres of vegetation from the site but would not directly impact the riparian woodland along Cooper's Creek.

The additional 13.4 acres of vegetation impacts compared to 1993 includes 3.0 acres of Riversidean sage scrub and 8.5 acres of chaparral.

A number of measures were proposed in 1993 to mitigate for the Beaumont Gateway Specific Plan project's biological resources impacts. However, even after the application of mitigation, the Certified EIR for Beaumont Gateway Specific Plan project (Certified EIR) concluded that potential impacts to biological resources (i.e., loss of Riversidean Sage Scrub habitat; potential impacts to the San Timoteo Creek wildlife corridor; impacts to sensitive/listed species; potential for harassment of off-site wildlife) would be significant.

It is noted further, that in 2003, subsequent to approval of the Beaumont Gateway Specific Plan project and the Certified EIR, the City became a participant in the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). As a result of the City's participation in the MSHCP, certain of the mitigation measures previously proposed in Certified EIR for the Beaumont Gateway Specific Plan project are superseded by, and are now reflected in, provisions of the MSHCP. In summary, under the MSHCP, mitigation for impacts to species and habitat previously accomplished through in kind-habitat mitigation, consultation, and species specific surveys and take permits (as reflected in the Certified EIR mitigation measures), is now realized through compensating payment of mitigation fees consistent with the MSHCP fee schedule. The Addendum Project will be implemented consistent with applicable provisions of the MSHCP, to include payment of required MSHCP mitigation fees.

Notwithstanding the preceding, the proposed Timoteo LLC Industrial Park Specific Plan Project is still required to provide necessary mitigation for potential biological resources impacts not addressed under the MSHCP (e.g., potential impacts to jurisdictional areas and wetlands). Accordingly, applicable mitigation from the Certified EIR addressing these potential impacts is carried forward for the proposed Timoteo LLC Industrial Park Specific Plan Project.

Based on the preceding discussion, with the application of mitigation summarized above, the proposed Timoteo LLC Industrial Park Specific Plan Project would not result in or cause new significant, substantively increased, or substantively different, biological resources impacts than those previously addressed in the Certified EIR for the approved Beaumont Gateway Specific Plan project.

REFERENCES

Harmsworth Associates 2004a. Report on biological assessment for Hidden Ranch. Prepared for Rox Consulting, Inc. March 2004.

Harmsworth Associates 2004b. Report on jurisdictional delineation for Hidden Ranch. Prepared for Rox Consulting, Inc. March 2004.

Harmsworth Associates 2004c. Report on biological assessment for the Hidden Ranch Pacific project site. Prepared for Rox Consulting, Inc. September 2004.

Pacific Southwest Biological Services 1993. Biological assessment of the Jack Rabbit Trail site, Riverside County, California. Prepared for Douglas Wood and Associates.

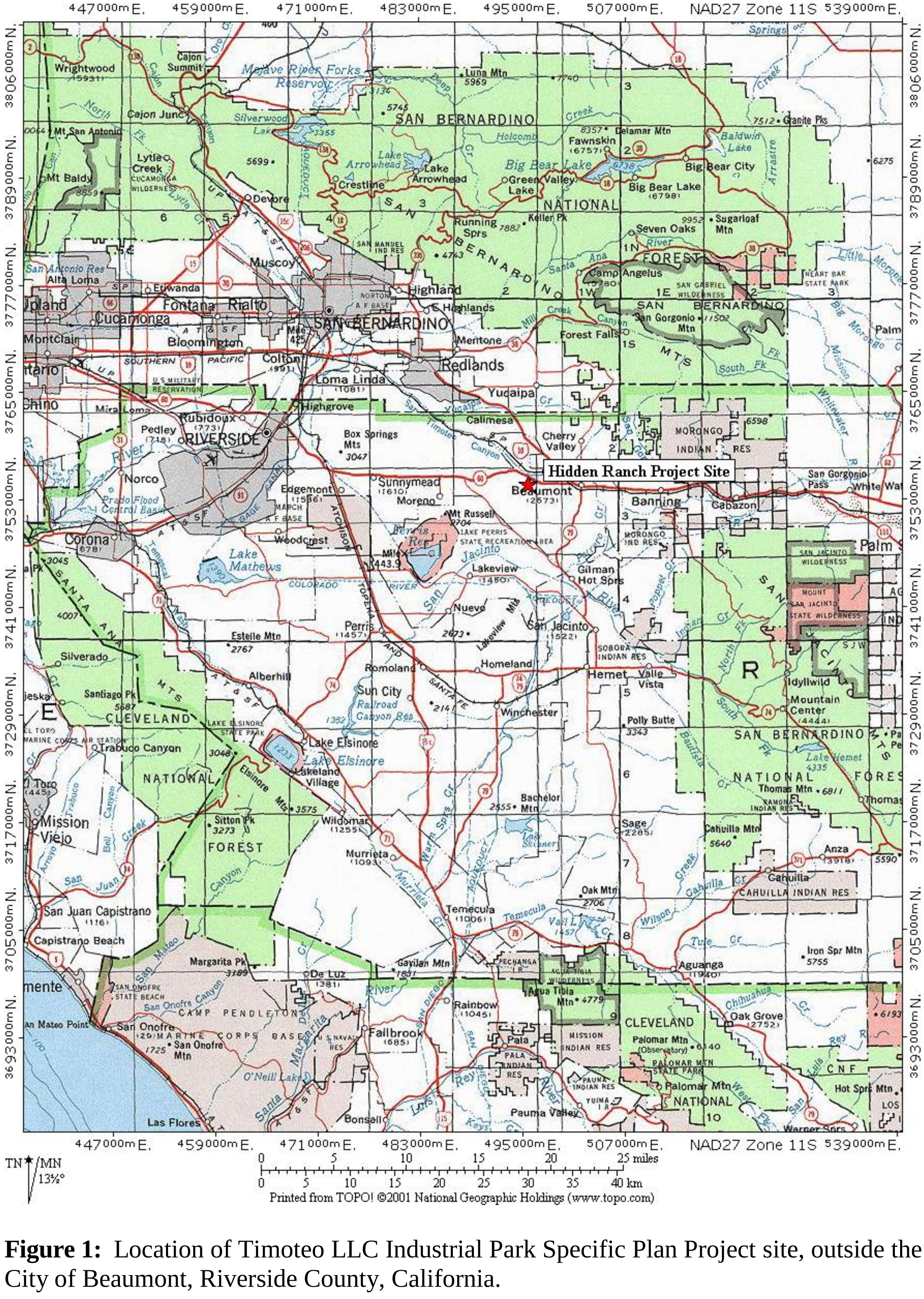


Figure 1: Location of Timoteo LLC Industrial Park Specific Plan Project site, outside the City of Beaumont, Riverside County, California.

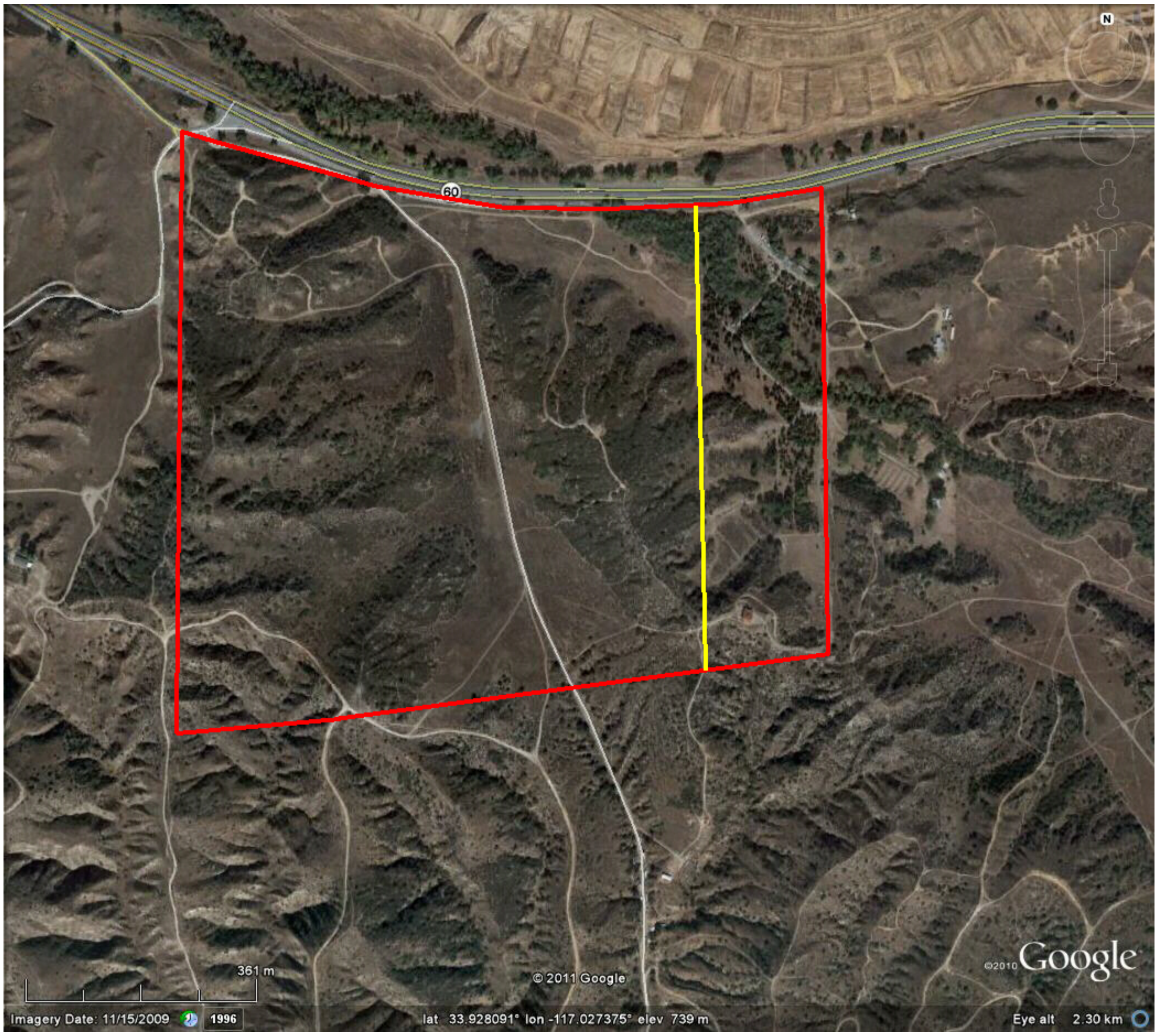


Figure 2: Timoteo LLC Industrial Park Specific Plan Project site, red line is current boundary; yellow line is original eastern boundary of site.

REPRESENTATIVE SITE PHOTOGRAPHS

Photograph 1: Main central valley showing non-native grassland, California buckwheat and chamise chaparral on hillsides.

Photograph 2: California buckwheat and chamise chaparral on hillsides.

Photograph 3: Cooper's Creek riparian woodland at crossing under SR 60.

Photograph 4: Agriculture area in the additional 42 acre portion of site.

Appendix D: Traffic

URBAN CROSSROADS

41 Corporate Park | Suite 300 | Irvine, CA 92606 | (949) 660-1994
www.urbanXroads.com

November 15, 2011

Mr. Ross Geller
APPLIED PLANNING, INC.
5817 Pine Avenue, Suite A
Chino Hills, CA 91709

Subject: Timoteo Distribution Facility Trip Generation Analysis

Dear Mr. Geller:

The firm of Urban Crossroads, Inc. is pleased to submit the following trip generation analysis for the proposed Timoteo Distribution Facility ("Project"). The project is located south of the SR-60 Freeway and east of Jack Rabbit Trail in the City of Beaumont. The purpose of this trip generation analysis is to compare the proposed Project's trip generation to that previously assumed and analyzed in the *Beaumont Gateway Specific Plan Traffic Impact Study Report* (prepared by Kunzman Associated in July 1994). A vicinity map and the preliminary site layout for the proposed Project are shown on Exhibit 1.

PROJECT DESCRIPTION

The currently proposed Project includes the development of 2,882,320 square feet of high-cube warehouse use divided between two buildings. Building 1 is proposed to consist of 1,867,040 square feet of high-cube warehouse use and Building 2 is proposed to consist of 1,015,280 square feet of high-cube warehouse use.

PROJECT TRIP GENERATION

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development. The trip generation rates used for this assessment are based upon information collected by the Institute of Transportation Engineers (ITE) as provided in their *Trip Generation* manual, 8th Edition, 2008. The ITE *Trip Generation* manual is a nationally recognized source for estimating site specific trip generation.

Timoteo Distribution Facility (Currently Proposed Project)

For purposes of this trip generation analysis, ITE land use code 152 (High-Cube Warehouse) has been utilized to derive specific trip generation estimates for the currently proposed Project. ITE released an updated edition of the *Trip Generation* manual (8th Edition) in 2008, which included twelve (12) new land uses, one of which is high-cube warehouse land use (ITE Land Use Code 152).

ITE defines high cube warehousing land use (Land Use 152) to consist of warehouses used for the storage of manufactured goods prior to their distribution to retail outlets. The facilities consist of large shells of steel buildings often subdivided for an individual tenant, with a typical ceiling height of 24 to 30 feet. They may be characterized by a small employment count due to a high level of mechanization, truck activities frequently outside of the peak hour of the adjacent street system, and good freeway access. The average square footage for the sites surveyed for high cube warehouse (Land Use 152) use was above 500,000 square feet. The weighted average daily trip generation rate for high cube warehouse (Land Use 152) use is 1.44 trips per TSF.

Trip generation rates for the Project are shown in Table 1. Refinements to these raw trip generation estimates have been made to provide a more detailed breakdown of trips by vehicle mix, similar to the existing count data. Per County of Riverside standard practice, vehicle mix percentages were obtained from the City of Fontana *Truck Trip Generation Study* (August 2003), a recognized source throughout the County of Riverside and the County of San Bernardino for estimating the vehicle mix associated with industrial and warehouse uses. Although ITE provides truck trip generation information for the high-cube warehouse use, this data is not considered as comprehensive as the data available in the Fontana Study nor is it specific to large warehouses/distribution centers in Southern California. As such, the vehicle-mix for the Fontana land use code 150 for Heavy Warehouse has been applied to ITE trip generation rates for land use code 152.

Finally, Passenger Car Equivalents (PCE) factors have been applied to the trip generation rates for heavy trucks (large 2-axles, 3-axles, 4+-axles). Consistent with standard traffic engineering practice in Southern California, PCE factors have been utilized due to the expected heavy truck component for the proposed Project uses. PCE factors allow the typical "real-world" mix of vehicle types to be represented as a single, standardized unit, such as the passenger car, for the purposes of capacity and level of service analyses. PCE factors are applied to large truck types such as large two-axles, three-axles, 4+-axles. A PCE factor of 1.5 has been applied to large 2-axle trucks, a factor of 2.0 for 3-axle trucks and a factor of 3.0 for 4+-axle trucks. These PCE factors are consistent with the values recommended by the San Bernardino Associated Governments (SANBAG) and are accepted factors in the County of Riverside and City of Beaumont.

Project daily and peak hour trip generation by vehicle type is illustrated in Table 1. The proposed Project is anticipated to generate a net total of approximately 5,438 PCE based trip-ends per day with 340 PCE based AM peak hour trips and 378 PCE based PM peak hour trips.

Beaumont Gateway Specific Plan

The trip generation rates and trip generation summary for the Beaumont Gateway Specific Plan were obtained from the *Beaumont Gateway Specific Plan Traffic Impact Study Report*. The traffic impact study report utilized the trip generation rates from the ITE *Trip Generation* manual, 5th Edition, 1991 for single family residential (ITE Land Use Code 210), multi-family residential (ITE Land Use Code 230) and commercial (ITE Land Use Code 820). The Beaumont Gateway Specific Plan assumed the development of 473 single family residential dwelling units, 100 multi-family residential dwelling units and 90,000 square feet of commercial retail use.

Table 2 summarizes the resulting trip generation estimates utilized in the analysis for the Beaumont Gateway SP. The Beaumont Gateway Specific Plan was anticipated to generate a net total of approximately 11,800 trip-ends per day with 560 AM peak hour trips and 1,170 PM peak hour trips.

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TRIP GENERATION COMPARISON

As shown in Table 3, the development of the proposed Timoteo Distribution Facility is anticipated to generate 6,362 fewer trip-ends per day with 220 fewer AM peak hour trips and 792 fewer PM peak hour trips as compared to the previously analyzed Beaumont Gateway Specific Plan.

FINDINGS AND CONCLUSIONS

It is anticipated that the development of the proposed Timoteo Distribution Facility would generate significantly fewer trips than that previously analyzed in the Beaumont Gateway Specific Plan traffic impact study report. Since the currently proposed Project trip generation does not exceed the trip generation under the Beaumont Gateway Specific Plan, it is inferred that traffic impacts of the Project would not be substantially greater than, or different than those identified in the Beaumont Gateway Specific Plan.

If you have any questions or comments, please contact me directly at (949) 660-1994 ext. 204.

Respectfully submitted,

URBAN CROSSROADS, INC.

Aric Evatt, PTP
Principal

Charlene S. Hwang, PE
Senior Transportation Engineer

AE:CH
JN:07982-02 Letter

Attachments

EXHIBIT 1

PRELIMINARY SITE PLAN

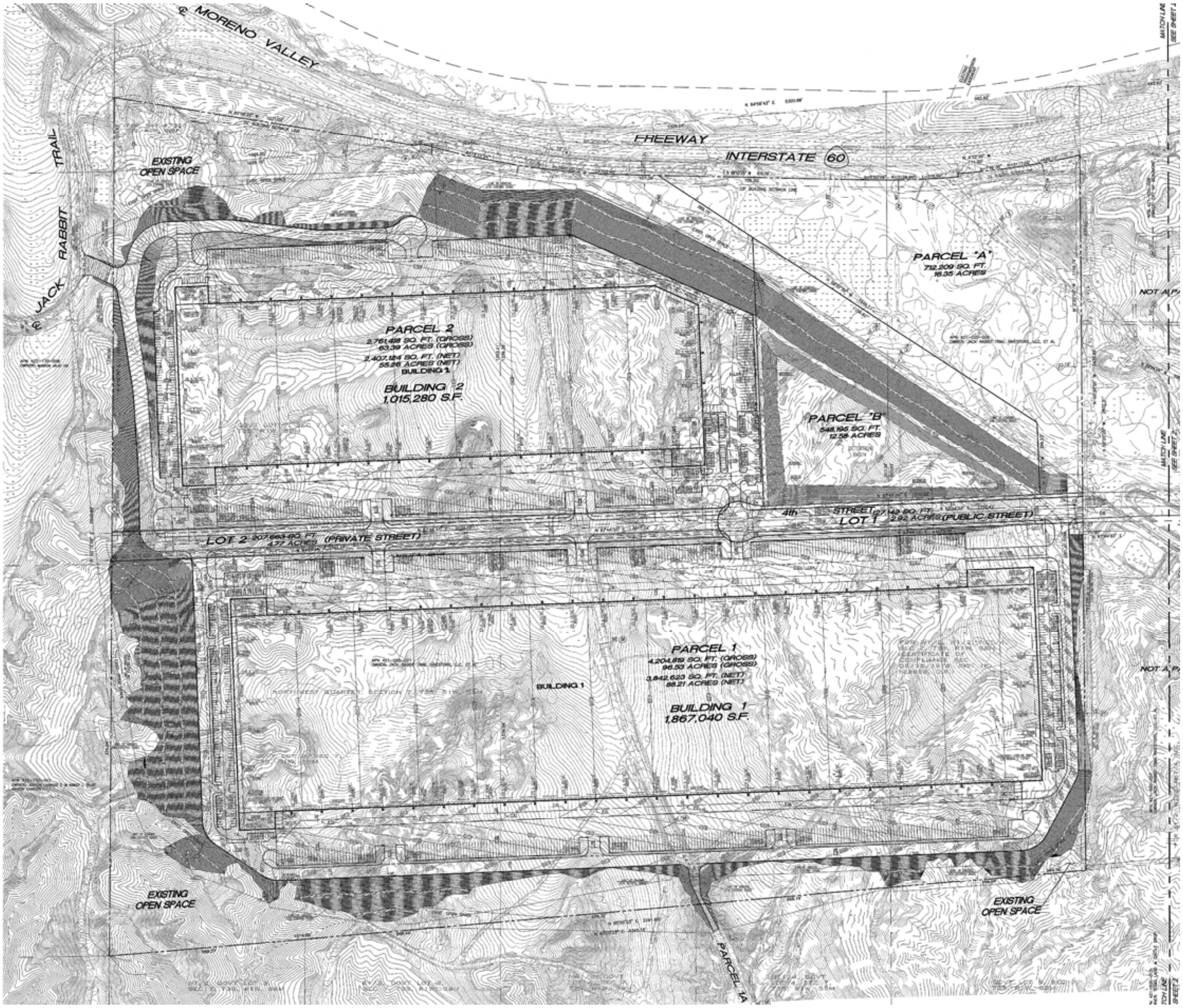

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Table 1

Currently Proposed Project Trip Generation Summary

Land Use	Units[3]	ITE LU Code	AM Peak Hour Inbound	AM Peak Hour Outbound	AM Peak Hour Total	PM Peak Hour Inbound	PM Peak Hour Outbound	PM Peak Hour Total	Daily
Trip Generation Rates[1]									
High-Cube Warehouse[2]	TSF	152	0.059	0.032	0.090	0.033	0.067	0.100	1.440
79.57% Passenger Cars			0.047	0.025	0.072	0.026	0.053	0.080	1.146
3.46% 2-Axle Trucks (PCE = 1.5)			0.003	0.002	0.005	0.002	0.003	0.005	0.075
4.64% 3-Axle Trucks (PCE = 2.0)			0.005	0.003	0.008	0.003	0.006	0.009	0.134
12.33% 4-Axle+ Trucks (PCE = 3.0)			0.022	0.012	0.033	0.012	0.025	0.037	0.533

Land Use	Quantity	Units[3]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Trip Generation									
Building 1	1,867.040	TSF							
Passenger Cars:			87	47	134	49	100	149	2,139
Truck Trips:									
2-axle:			*6*	*3*	*9*	*3*	*6*	*10*	*140*
3-axle:			*10*	*5*	*16*	*6*	*12*	*17*	*249*
4+-axle:			*40*	*22*	*62*	*23*	*46*	*69*	*994*
- Net Truck Trips (PCE)			*56*	*30*	*86*	*32*	*64*	*96*	*1,384*
Building 2	1,015.280	TSF							
Passenger Cars:			47	25	73	27	54	81	1,163
Truck Trips:									
2-axle:			*3*	*2*	*5*	*2*	*4*	*5*	*76*
3-axle:			*6*	*3*	*8*	*3*	*6*	*9*	*136*
4+-axle:			*22*	*12*	*34*	*12*	*25*	*38*	*541*
- Net Truck Trips (PCE)			*31*	*16*	*47*	*17*	*35*	*52*	*752*
TOTAL (PCE)[4]			**221**	**119**	**340**	**125**	**253**	**378**	**5,438**

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eighth Edition (2008) (Average Rates).

[2] Vehicle Mix Source: City of Fontana Truck Trip Generation Study for LU 150 (Heavy Warehouse), August 2003.
PCE rates are per County of San Bernardino CMP - Appendix "C".

[3] TSF = thousand square feet

[4] TOTAL TRIPS (PCE) = Passenger Cars + Net Truck Trips (PCE).

Table 2

Beaumont Gateway Specific Plan Trip Generation Summary

Land Use	Units[2]	ITE LU Code	AM Peak Hour Inbound	AM Peak Hour Outbound	AM Peak Hour Total	PM Peak Hour Inbound	PM Peak Hour Outbound	PM Peak Hour Total	Daily
Trip Generation Rates[1]									
Single Family Residential	DU	210	0.190	0.550	0.740	0.660	0.350	1.010	9.550
Multi-Family Residential	DU	230	0.070	0.370	0.440	0.360	0.190	0.550	5.860
Commercial	TSF	820	1.090	0.640	1.730	3.430	3.500	6.930	74.870

Land Use	Quantity	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Trip Generation									
Single Family Residential	473	DU	90	260	350	310	170	480	4,500
Multi-Family Residential	100	DU	10	40	50	40	20	60	600
Commercial	90.000	TSF	100	60	160	310	320	630	6,700
TOTAL [3]			**200**	**360**	**560**	**660**	**510**	**1,170**	**11,800**

[1] Trip Generation Rate Source: Institute of Transportation Engineers (ITE), Trip Generation, Fifth Edition (1991).

[2] DU = Dwelling Units; TSF = thousand square feet

[3] Trip Generation Source: Beaumont Gateway Specific Plan Traffic Impact Study Report, Kunzman Associates, July 1994.

Table 3

Trip Generation Comparison

Land Use	AM Peak Hour			PM Peak Hour			Daily
	Inbound	Outbound	Total	Inbound	Outbound	Total	
Currently Proposed	221	119	340	125	253	378	5,438
Previous SP TIA	200	360	560	660	510	1,170	11,800
Variance	**21**	**-241**	**-220**	**-535**	**-257**	**-792**	**-6,362**

Appendix E: Hydrology and Water Services

PRELIMINARY HYDROLOGY CALCULATIONS

FOR

BEAUMONT DISTRIBUTION PARK
4TH STREET
BEAUMONT, CALIFORNIA 92223
A.P.N. # 421-020-001 and 421-020-006

PREPARED FOR:

TIMOTEO LAND DEVELOPMENT, LLC.
1300 QUAIL STREET, SUITE #100
NEWPORT BEACH, CA. 92660
CONTACT: STEVEN T. ST. CLAIR
P. (949) 833-0222

JOB NO. 3080

NOVEMBER 4, 2011

PREPARED BY

THIENES ENGINEERING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
P. (714) 521-4811 FAX. (714) 521-4173

PRELIMINARY HYDROLOGY CALCULATIONS

FOR

BEAUMONT DISTRIBUTION PARK

PREPARED BY BRIAN WEIL
UNDER THE SUPERVISION OF

REINHARD STENZEL DATE:
R.C.E. 56155
EXP. 12/31/12

INTRODUCTION

A: PROJECT LOCATION

The project site is located on the south side of the Moreno Valley Freeway east of Jack Rabbit Trail in the City of Beaumont. Please see Figure 1 for vicinity map.

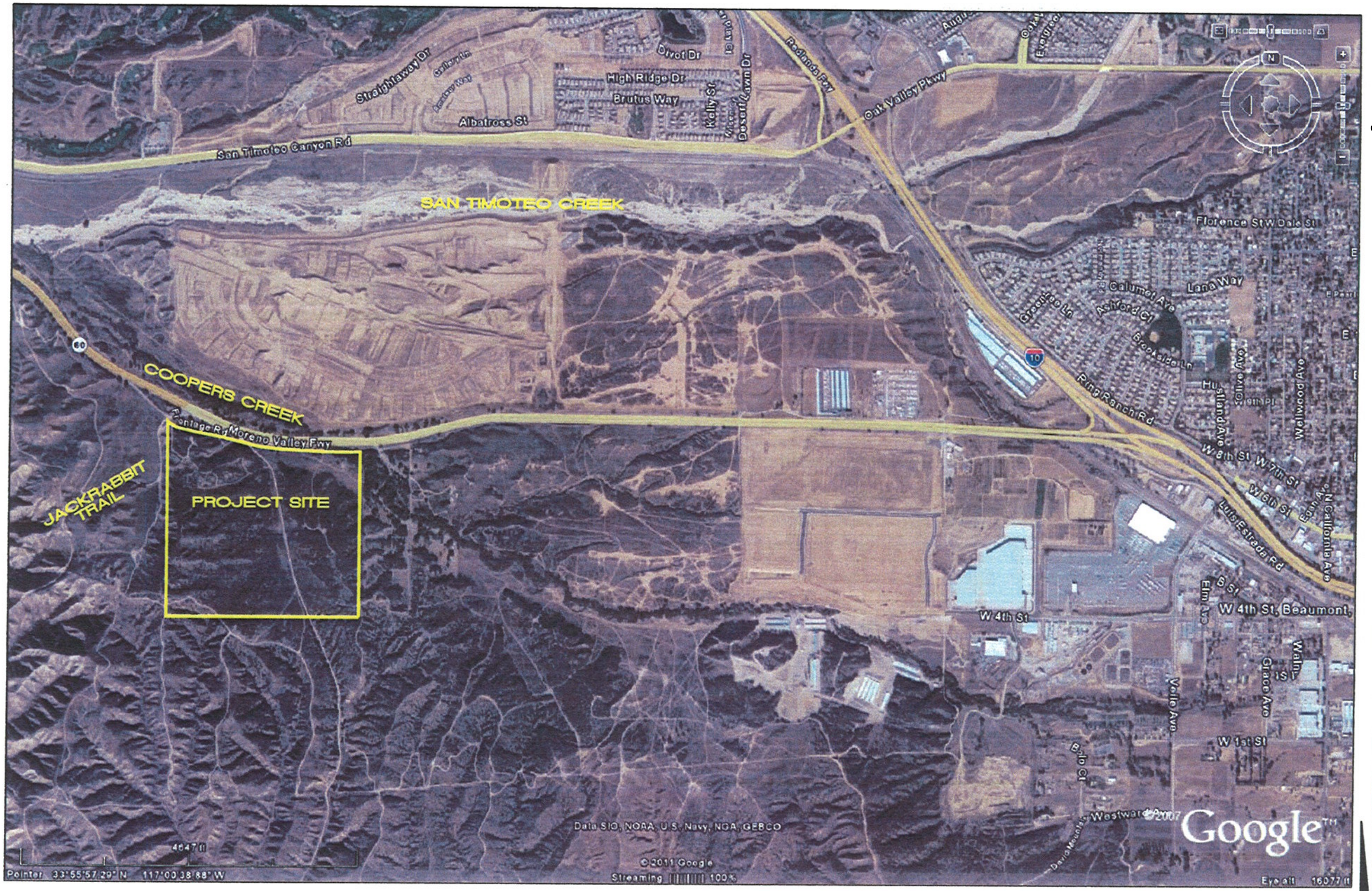
B: STUDY PURPOSE

The purpose of this study is to determine the pre- and post-developed 100-year peak flow rate from the project site that ultimately drains to an existing natural channel (Coopers Creek) that traverses through the northeast corner of the project site.

C: PROJECT STAFF:

Thienes Engineering staff involved in this study include:

Reinhard Stenzel
Brian Weil
Mark Soltynski



Thienes Engineering, Inc.
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14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH.(714)521-4811 FAX(714)521-4173

"VICINITY MAP"

FOR

200 DISTRIBUTION FACILITY, BEAUMONT

DISCUSSION

The overall project site encompasses approximately 196 acres. Proposed improvements include two large warehouse type buildings. The southerly building is approximately 1,866,000 square feet while the northerly building is approximately 1,014,000 square feet. Each building has truck loading/unloading areas on the north and south sides of building. There will be a proposed access drive between the buildings. A water quality/detention basin is proposed at the northeasterly portion of the project site. Several vegetate side slopes are proposed to match existing grades along the perimeter of the site. The remainder of the site will be paved for vehicle and truck parking.

HYDROLOGY

Existing Condition

The site is currently undeveloped hillside areas with native vegetation. A natural drainage course traverses through the northeast corner of the property. Over 1600 acres of upstream area is tributary to this natural drainage course.

The majority of the project site drains from south to north to two separate culverts that convey runoff under the Freeway located at the northerly property line. Approximately 2/3 of the westerly portion of the project site (nodes 10-26 on existing condition hydrology map) drains to an existing 10' x 3' culvert while a smaller area (nodes 30-33) at the east drains to the existing natural drainage course. The 100-year existing condition peak flow rate tributary to the 10' x 3' culvert is approximately 199 cfs while the 100-year peak flow rate to the existing drainage course is approximately 62 cfs.

Areas near the southerly property line generally drain to the south through natural drainage courses.

See Appendix "A" for existing condition hydrology calculations.

Proposed Condition

Proposed site conditions will alter the existing drainage patterns. However, with the proposed detention basin, overall peak flows and discharge locations will be similar to existing condition hydrology. Areas near the existing drainage course at the northeast corner of the property will remain undisturbed.

Runoff from the southerly building drains from west to east to catch basins located within the truck yard areas. The proposed drive aisles, side slopes to meet existing natural grades and some existing tributary offsite area around this building are also intercepted by catch basins. A proposed storm drain system conveys all flow to the proposed water quality/detention basin located at the easterly portion of the site north of the proposed access road.

Runoff from the proposed access road between the buildings drains from west to east and is also conveyed into the water quality/detention basin.

Flow from the westerly parking lot and northerly drive aisle for the northerly building is intercepted by catch basins and conveyed easterly in a proposed storm drain system. Runoff from the northerly half of the building and truck yard are also tributary to this storm drain. The storm drain system discharges into the proposed water quality/detention basin. Runoff from the southerly half of the northerly building and truck yards drains from west to east to grate inlets near the truck yard. A storm drain conveys this flow to the proposed basin.

The overall 100-year peak flow rate tributary to the proposed basin is approximately 338 cfs. Discharge from the basin will be directed to the existing 10' x 3' culvert under the Freeway. This is the location where the majority of the project site drains under existing conditions.

The westerly drive aisle and access road drains to the northwest corner of the site. Here, the elevations needed to match existing grades are too low to drain to the basin. Runoff from the area will simply sheet flow to the existing natural features in this area. The 100-year peak flow rate for this area is approximately 14.0 cfs.

See Appendix "B" for proposed condition hydrology calculations.

WATER QUALITY/DETENTION

Runoff from virtually all of the proposed improvements will drain to the water quality/detention basin. The basin is designed such that the lower portion of the basin will be used to store the required water quality volume with the upper portion of the basin to be used to mitigate 100-year peak flow rates to existing conditions.

The required water quality volume (calculated in the preliminary WQMP) is approximately 8.9 acre-feet. A CMP riser will be used to control the outflow from the basin. The top of the riser is set at the elevation necessary to store the required water quality volume. Once the basin exceeds the water quality volume, flow will be able to discharge through the proposed storm drain system. The goal is to limit the proposed condition peak flow rate in the 100-year storm to less than or equal to the existing condition peak flow at the same location.

Riverside County typically requires 3 different hydrograph models, 3-hour, 6-hour and 24-hour for a site of this size. Hydrographs for these events were established for the existing condition area tributary to the 10' x 3' culvert. Proposed condition hydrographs and basin routing were established for the same storm events. The follow table summarizes the 100-year results:

100-Year Hydrograph Peak Flow Rate Summary

Condition	Tributary Area (acres)	3-Hr. Peak Flow Rate (cfs)	6-Hr. Peak Flow Rate (cfs)	24-Hr. Peak Flow Rate (cfs)
Existing	135.0	169	156	90
Proposed (w/detention)	156.4	55	69	71
Difference	+21.4	-114	-87	-19

Overall, with the detention basin, the peak flow rate for the various storm events can be reduced to significantly less than existing conditions even with the larger drainage area tributary to the existing 10' x 3' RCB.

See Appendix "C" for Detention Analysis.

METHODOLOGY

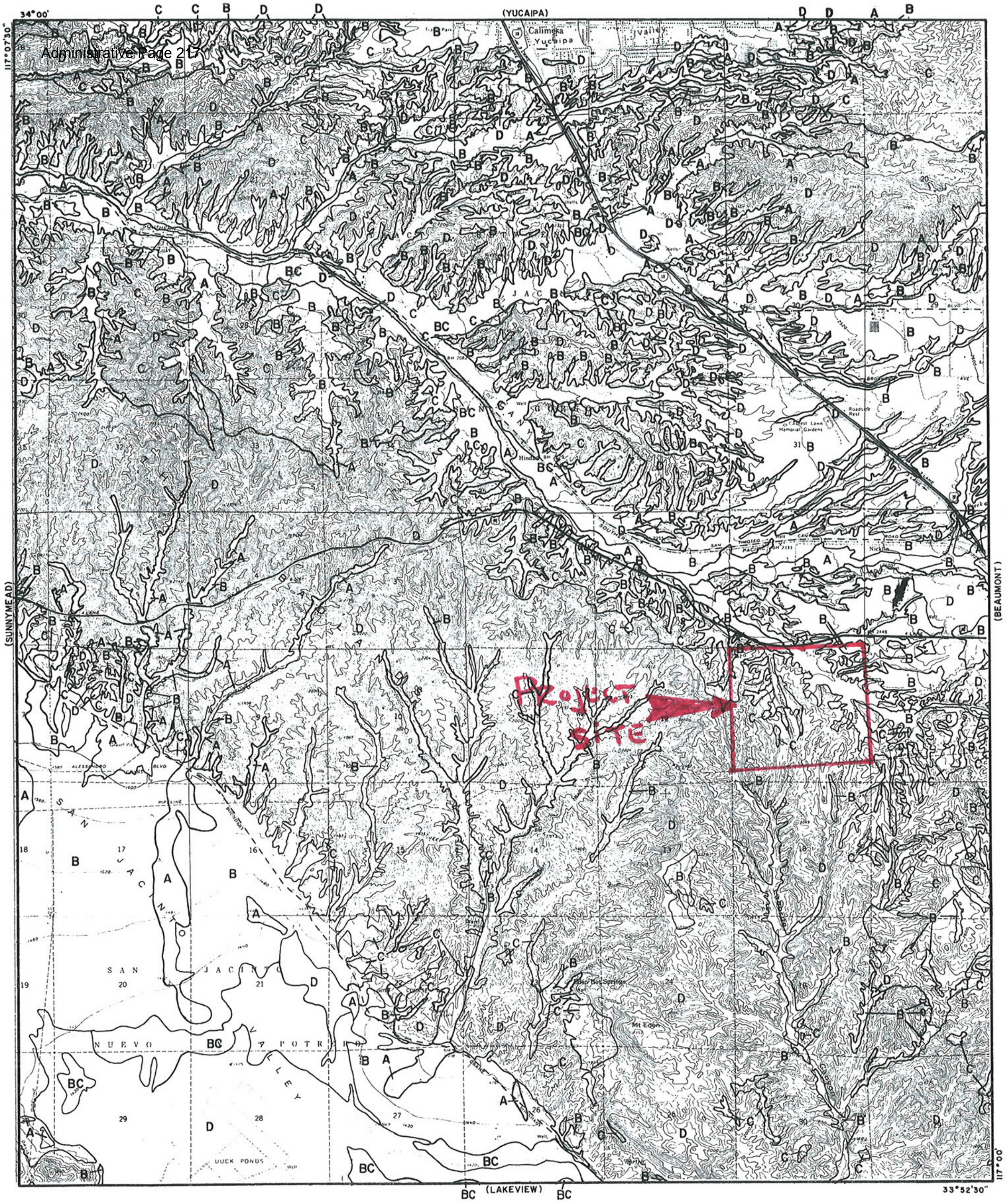
Existing and proposed condition hydrology was calculated using Advanced Engineering Software's Rational Method program. The site primarily consists of soil type "D" with some areas of Type "B". For a conservative estimate of 100-year peak flow rates, soil type "D" was used for all hydrology calculations.

Hydrographs were computed using CivilD Software's Unit Hydrograph program. Once again, soil type "D" was used for the calculations. For the proposed condition unit hydrographs, a lag time of "0" was used to yield the highest possible peak flow rate for a conservative analysis of the detention basin.

APPENDIX	DESCRIPTION
A	EXISTING CONDITION HYDROLOGY CALCULATIONS
B	PROPOSED CONDITION HYDROLOGY CALCULATIONS
C	DETENTION ANALYSIS
D	HYDROLOGY MAP

APPENDIX A

EXISTING CONDITION HYDROLOGY CALCULATIONS



LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC & WCD

HYDROLOGY MANUAL

N

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR EL CASCO

PLATE C-1.18

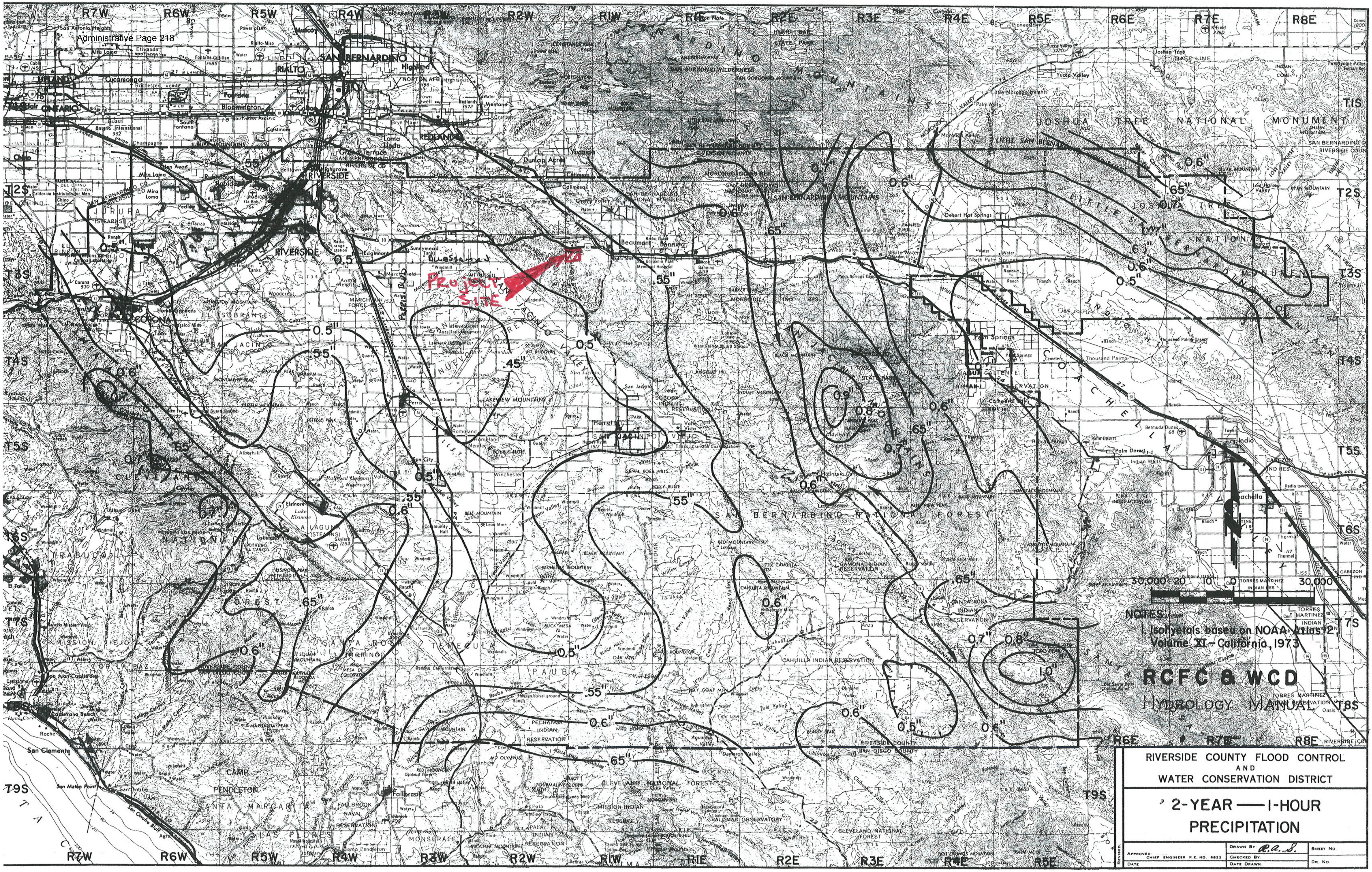
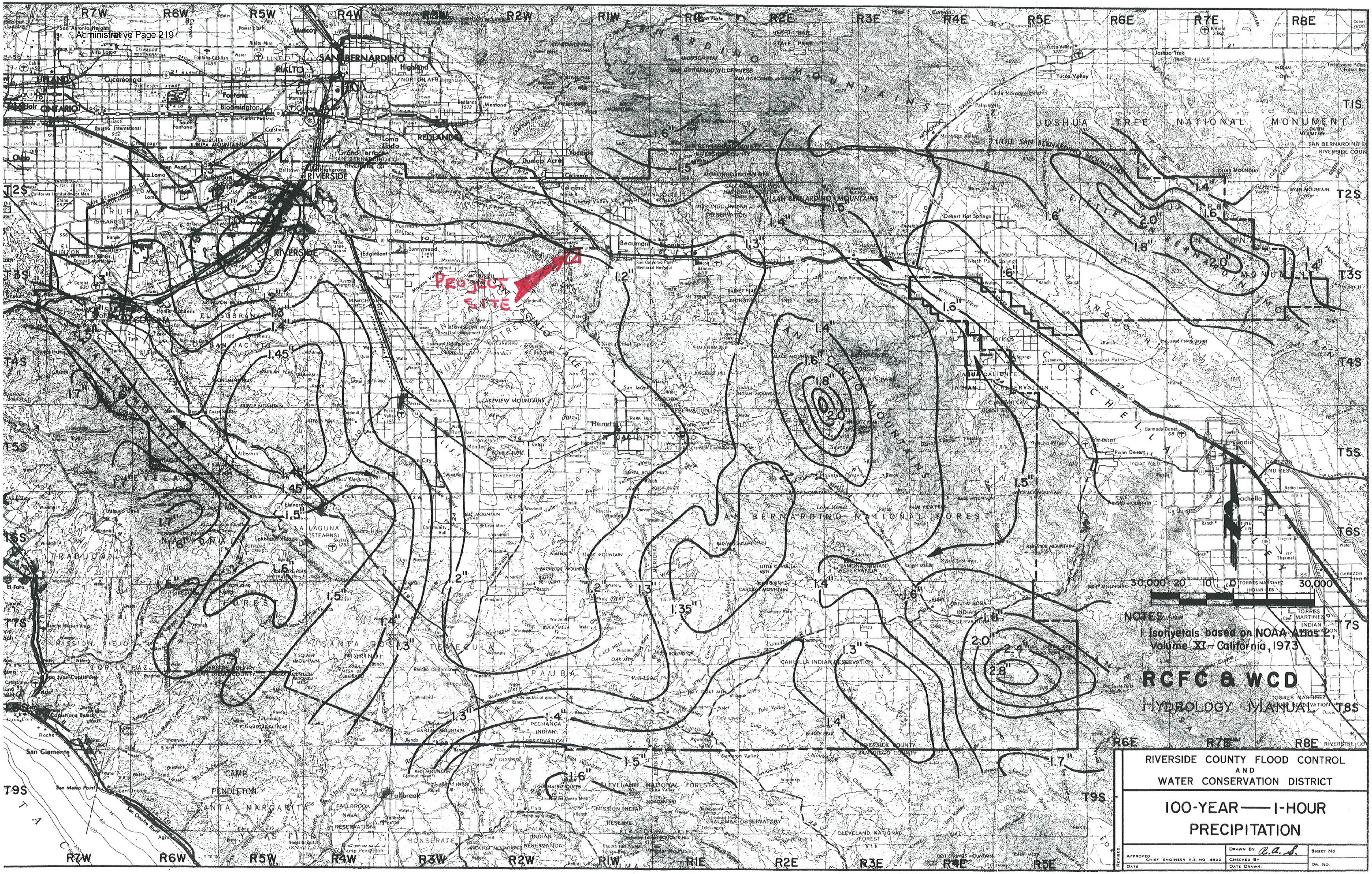

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
2-YEAR — 1-HOUR PRECIPITATION
RCFC & WCD
HYDROLOGY MANUAL
NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973
PROJECT SITE
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E
R3E
R4E
R5E
R6E
R7E
R8E
T2S
T3S
T4S
T5S
T6S
T7S
T8S
T9S
SAN BERNARDINO
RIVERSIDE
CORONA
JOSHUA TREE NATIONAL MONUMENT
SAN BERNARDINO NATIONAL FOREST
CLEVELAND NATIONAL FOREST
CAMP PENDLETON
TEMECULA
Palm Springs
San Clemente
Fallbrook
0.5"
.55"
0.6"
.65"
0.7"
0.8"
0.9"
1.0"
.45"

PLATE D-4.3



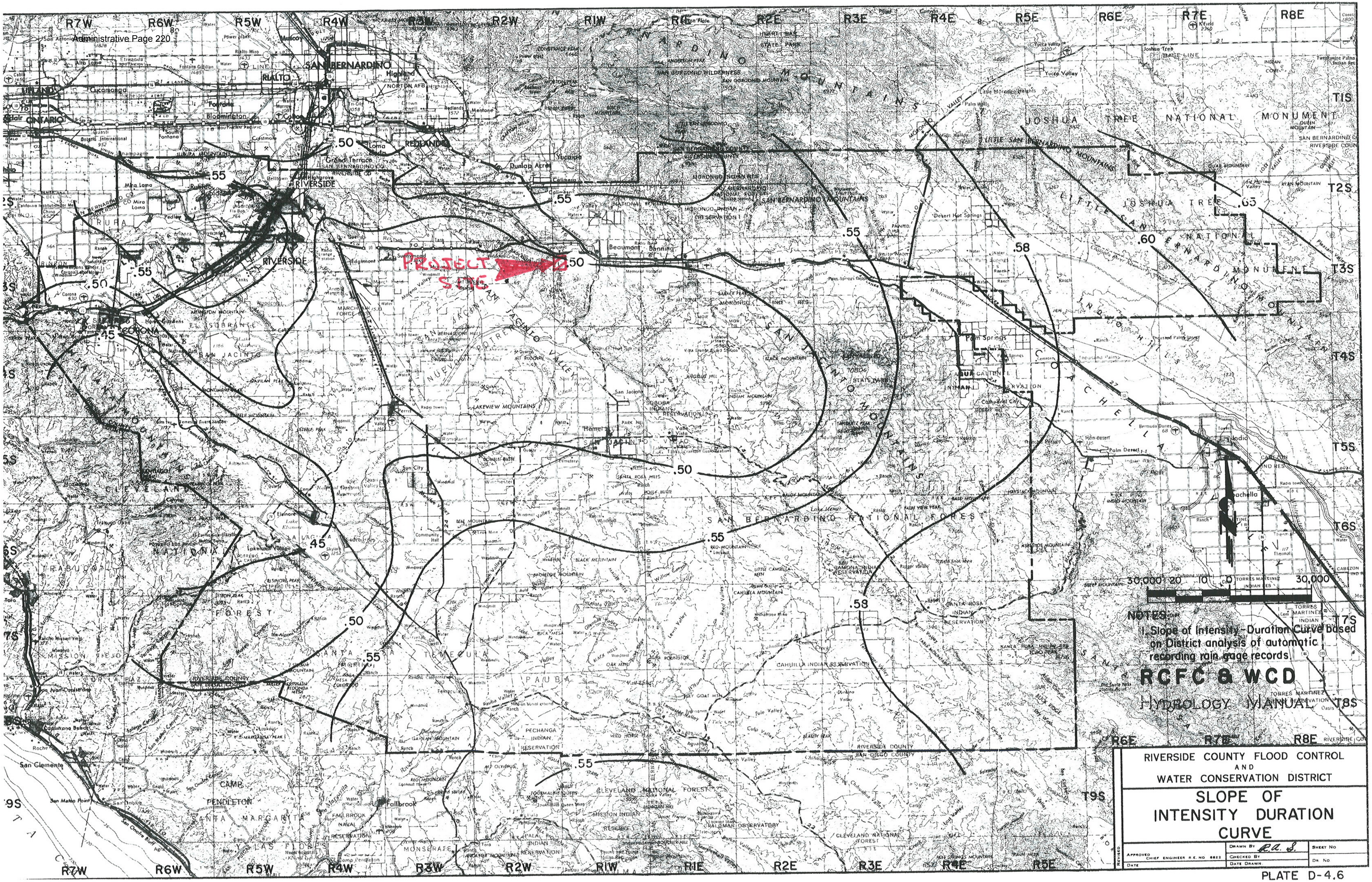
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

100-YEAR —— 1-HOUR
PRECIPITATION

APPROVED CHIEF ENGINEER R.E. NO. 6822	DRAWN BY R.A.S.	SHEET NO
	CHECKED BY	
DATE	DATE DRAWN	DR. NO.

REVISED

PLATE D-4.4


PROJECT SITE
.50
.55
.58
.60
.63
.45
NOTES:
1. Slope of Intensity-Duration Curve based on District analysis of automatic recording rain gage records.
RCFC & WCD
HYDROLOGY MANUAL
30,000 20 10 0 30,000
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
SLOPE OF INTENSITY DURATION CURVE
DRAWN BY
CHECKED BY
SHEET NO
APPROVED CHIEF ENGINEER
DATE
REVISED
SAN BERNARDINO
RIVERSIDE
CORONA
REDLANDS
BEAUMONT
BANNING
JOSHUA TREE NATIONAL MONUMENT
SAN BERNARDINO NATIONAL FOREST
CLEVELAND NATIONAL FOREST
TEMECULA
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E
R3E
R4E
R5E
R6E
R7E
R8E
T1S
T2S
T3S
T4S
T5S
T6S
T7S
T8S
T9S
PLATE D-4.6

```
****************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
      RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                  (RCFC&WCD)  1978 HYDROLOGY MANUAL
       (c) Copyright 1982-99 Advanced Engineering Software (aes)
           Ver. 1.5A Release Date: 01/01/99  License ID 1435

                       Analysis prepared by:

                        THIENES ENGINEERING
                      16800 VALLEY VIEW AVENUE
                         LA MIRADA CA 90638
               PH: (714) 521-4811 FAX: (714) 521-4173

 ************************** DESCRIPTION OF STUDY **************************
 * BAEUMONT 4-TH STREET HYSROLOGY ANALYSIS                                 *
 * 100 YEAR STORM                                                          *
 * EXISTING CONDITION                                                      *
 **************************************************************************

  FILE NAME: 3080E.DAT
  TIME/DATE OF STUDY: 13:56 11/04/2011
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.09
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.530
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.200
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.200
  SLOPE OF INTENSITY DURATION CURVE = 0.6000
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
        FOR ALL DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:  CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =   770.00
  UPSTREAM ELEVATION =   2499.00
  DOWNSTREAM ELEVATION =   2420.00
  ELEVATION DIFFERENCE =     79.00
```

```
 TC = 0.533*[( 770.00**3)/(    79.00)]**.2 =   11.989
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.154
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7888
 SOIL CLASSIFICATION IS "D"
 SUBAREA RUNOFF(CFS) =       8.96
 TOTAL AREA(ACRES) =      3.60   TOTAL RUNOFF(CFS) =      8.96

****************************************************************************
 FLOW PROCESS FROM NODE     11.00 TO NODE     12.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2420.00  DOWNSTREAM(FEET) =   2391.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   494.00   CHANNEL SLOPE =  0.0587
 CHANNEL FLOW THRU SUBAREA(CFS) =      8.96
 FLOW VELOCITY(FEET/SEC) =   2.82 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.92   Tc(MIN.) =  14.91
 LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =  1264.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     12.00 TO NODE     12.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.767
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7754
 SOIL CLASSIFICATION IS "D"
 SUBAREA AREA(ACRES) =    7.70   SUBAREA RUNOFF(CFS) =   16.52
 TOTAL AREA(ACRES) =    11.30   TOTAL RUNOFF(CFS) =   25.47
 TC(MIN) =  14.91

****************************************************************************
 FLOW PROCESS FROM NODE     12.00 TO NODE     13.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2391.00  DOWNSTREAM(FEET) =   2372.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   512.00   CHANNEL SLOPE =  0.0371
 CHANNEL FLOW THRU SUBAREA(CFS) =     25.47
 FLOW VELOCITY(FEET/SEC) =   3.17 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.69   Tc(MIN.) =  17.60
 LONGEST FLOWPATH FROM NODE     10.00 TO NODE     13.00 =  1776.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     13.00 TO NODE     13.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.504
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7644
 SOIL CLASSIFICATION IS "D"
 SUBAREA AREA(ACRES) =   11.70   SUBAREA RUNOFF(CFS) =   22.40
 TOTAL AREA(ACRES) =    23.00   TOTAL RUNOFF(CFS) =   47.87
 TC(MIN) =  17.60

****************************************************************************
 FLOW PROCESS FROM NODE     13.00 TO NODE     17.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
```

```
ELEVATION DATA: UPSTREAM(FEET) =   2372.00  DOWNSTREAM(FEET) =   2364.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   191.00   CHANNEL SLOPE =  0.0419
CHANNEL FLOW THRU SUBAREA(CFS) =     47.87
FLOW VELOCITY(FEET/SEC) =   4.16 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   0.77   Tc(MIN.) =  18.37
LONGEST FLOWPATH FROM NODE     10.00 TO NODE     17.00 =  1967.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE     17.00 TO NODE     17.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  18.37
RAINFALL INTENSITY(INCH/HR) =   2.44
TOTAL STREAM AREA(ACRES) =   23.00
PEAK FLOW RATE(CFS) AT CONFLUENCE =     47.87

****************************************************************************
FLOW PROCESS FROM NODE     14.00 TO NODE     15.00 IS CODE =  21
----------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
       ASSUMED INITIAL SUBAREA UNIFORM
       DEVELOPMENT IS: UNDEVELOPED WITH GOOD COVER
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH =   692.00
UPSTREAM ELEVATION =   2538.00
DOWNSTREAM ELEVATION =   2436.00
ELEVATION DIFFERENCE =    102.00
TC = 0.937*[(  692.00**3)/(   102.00)]**.2 =   18.805
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.407
SOIL CLASSIFICATION IS "D"
SUBAREA RUNOFF(CFS) =       9.33
TOTAL AREA(ACRES) =       5.10   TOTAL RUNOFF(CFS) =       9.33

****************************************************************************
FLOW PROCESS FROM NODE     15.00 TO NODE     16.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   2436.00  DOWNSTREAM(FEET) =   2401.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   646.00   CHANNEL SLOPE =  0.0542
CHANNEL FLOW THRU SUBAREA(CFS) =      9.33
FLOW VELOCITY(FEET/SEC) =   2.74 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   3.93   Tc(MIN.) =  22.73
LONGEST FLOWPATH FROM NODE     14.00 TO NODE     16.00 =  1338.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE     16.00 TO NODE     16.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.148
UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7457
SOIL CLASSIFICATION IS "D"
SUBAREA AREA(ACRES) =   10.10   SUBAREA RUNOFF(CFS) =   16.18
TOTAL AREA(ACRES) =    15.20   TOTAL RUNOFF(CFS) =   25.51
TC(MIN) =  22.73

****************************************************************************
```

```
 FLOW PROCESS FROM NODE      16.00 TO NODE      17.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2401.00  DOWNSTREAM(FEET) =   2364.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =    657.00   CHANNEL SLOPE =  0.0563
 CHANNEL FLOW THRU SUBAREA(CFS) =      25.51
 FLOW VELOCITY(FEET/SEC) =   3.91 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.80   Tc(MIN.) =  25.53
 LONGEST FLOWPATH FROM NODE      14.00 TO NODE      17.00 =  1995.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      17.00 TO NODE      17.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.004
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7366
 SOIL CLASSIFICATION IS "D"
 SUBAREA AREA(ACRES) =     6.90   SUBAREA RUNOFF(CFS) =    10.18
 TOTAL AREA(ACRES) =     22.10   TOTAL RUNOFF(CFS) =    35.69
 TC(MIN) =  25.53

****************************************************************************
 FLOW PROCESS FROM NODE      17.00 TO NODE      17.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =  25.53
 RAINFALL INTENSITY(INCH/HR) =   2.00
 TOTAL STREAM AREA(ACRES) =   22.10
 PEAK FLOW RATE(CFS) AT CONFLUENCE =      35.69

 ** CONFLUENCE DATA **
 STREAM     RUNOFF      Tc       INTENSITY       AREA
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)     (ACRE)
     1       47.87     18.37        2.441          23.00
     2       35.69     25.53        2.004          22.10

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
 STREAM     RUNOFF      Tc       INTENSITY
 NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
     1       73.55     18.37       2.441
     2       74.98     25.53       2.004

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      74.98   Tc(MIN.) =    25.53
 TOTAL AREA(ACRES) =       45.10
 LONGEST FLOWPATH FROM NODE      14.00 TO NODE      17.00 =  1995.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      17.00 TO NODE      18.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
```

```
 ELEVATION DATA: UPSTREAM(FEET) =   2364.00  DOWNSTREAM(FEET) =   2348.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   382.00   CHANNEL SLOPE =  0.0419
 CHANNEL FLOW THRU SUBAREA(CFS) =     74.98
 FLOW VELOCITY(FEET/SEC) =   4.83 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.32   Tc(MIN.) =  26.85
 LONGEST FLOWPATH FROM NODE     14.00 TO NODE     18.00 =  2377.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     18.00 TO NODE     18.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.944
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7325
 SOIL CLASSIFICATION IS "D"
 SUBAREA AREA(ACRES) =    11.60   SUBAREA RUNOFF(CFS) =    16.52
 TOTAL AREA(ACRES) =     56.70   TOTAL RUNOFF(CFS) =    91.50
 TC(MIN) =  26.85
 ** PEAK FLOW RATE TABLE **
 STREAM   RUNOFF       Tc
 NUMBER    (CFS)     (MIN.)
    1       94.09     19.70
    2       91.50     26.85
 NEW PEAK FLOW DATA ARE:
 PEAK FLOW RATE(CFS) =     94.09  Tc(MIN.) =  19.70

****************************************************************************
 FLOW PROCESS FROM NODE     18.00 TO NODE     19.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2348.00  DOWNSTREAM(FEET) =   2327.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   636.00   CHANNEL SLOPE =  0.0330
 CHANNEL FLOW THRU SUBAREA(CFS) =     94.09
 FLOW VELOCITY(FEET/SEC) =   4.62 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   2.29   Tc(MIN.) =  21.99
 LONGEST FLOWPATH FROM NODE     14.00 TO NODE     19.00 =  3013.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     19.00 TO NODE     19.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.191
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7482
 SOIL CLASSIFICATION IS "D"
 SUBAREA AREA(ACRES) =    24.50   SUBAREA RUNOFF(CFS) =    40.17
 TOTAL AREA(ACRES) =     81.20   TOTAL RUNOFF(CFS) =   134.26
 TC(MIN) =  21.99

****************************************************************************
 FLOW PROCESS FROM NODE     19.00 TO NODE     26.00 IS CODE =  53
----------------------------------------------------------------------------
 >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   2327.00  DOWNSTREAM(FEET) =   2317.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   468.00   CHANNEL SLOPE =  0.0214
 CHANNEL FLOW THRU SUBAREA(CFS) =    134.26
 FLOW VELOCITY(FEET/SEC) =   4.18 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
 TRAVEL TIME(MIN.) =   1.86   Tc(MIN.) =  23.86
 LONGEST FLOWPATH FROM NODE     14.00 TO NODE     26.00 =  3481.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE      26.00 TO NODE      26.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.087
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7420
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    14.00   SUBAREA RUNOFF(CFS) =    21.68
  TOTAL AREA(ACRES) =     95.20   TOTAL RUNOFF(CFS) =  155.94
  TC(MIN) =  23.86

****************************************************************************
  FLOW PROCESS FROM NODE      26.00 TO NODE      26.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  23.86
  RAINFALL INTENSITY(INCH/HR) =   2.09
  TOTAL STREAM AREA(ACRES) =   95.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    155.94

****************************************************************************
  FLOW PROCESS FROM NODE      20.00 TO NODE      21.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH GOOD COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =   452.00
  UPSTREAM ELEVATION =   2403.00
  DOWNSTREAM ELEVATION =    2349.00
  ELEVATION DIFFERENCE =      54.00
  TC = 0.937*[(  452.00**3)/(     54.00)]**.2 =   16.540
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.600
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =       4.60
  TOTAL AREA(ACRES) =       2.30   TOTAL RUNOFF(CFS) =       4.60

****************************************************************************
  FLOW PROCESS FROM NODE      21.00 TO NODE      22.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2349.00  DOWNSTREAM(FEET) =   2344.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =    272.00   CHANNEL SLOPE =  0.0184
  CHANNEL FLOW THRU SUBAREA(CFS) =       4.60
  FLOW VELOCITY(FEET/SEC) =   1.26 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.59   Tc(MIN.) =  20.13
  LONGEST FLOWPATH FROM NODE      20.00 TO NODE      22.00 =    724.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      22.00 TO NODE      22.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.311
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7548
```

```
SOIL CLASSIFICATION IS "D"
SUBAREA AREA(ACRES) =     3.90   SUBAREA RUNOFF(CFS) =    6.80
TOTAL AREA(ACRES) =      6.20   TOTAL RUNOFF(CFS) =   11.40
TC(MIN) =  20.13

****************************************************************************
FLOW PROCESS FROM NODE     22.00 TO NODE     23.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   2344.00  DOWNSTREAM(FEET) =   2339.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   308.00   CHANNEL SLOPE =  0.0162
CHANNEL FLOW THRU SUBAREA(CFS) =     11.40
FLOW VELOCITY(FEET/SEC) =   1.60 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   3.20   Tc(MIN.) =  23.33
LONGEST FLOWPATH FROM NODE     20.00 TO NODE     23.00 =  1032.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE     23.00 TO NODE     23.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.115
UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7437
SOIL CLASSIFICATION IS "D"
SUBAREA AREA(ACRES) =     5.10   SUBAREA RUNOFF(CFS) =    8.02
TOTAL AREA(ACRES) =     11.30   TOTAL RUNOFF(CFS) =   19.42
TC(MIN) =  23.33

****************************************************************************
FLOW PROCESS FROM NODE     23.00 TO NODE     24.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   2339.00  DOWNSTREAM(FEET) =   2332.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   524.00   CHANNEL SLOPE =  0.0134
CHANNEL FLOW THRU SUBAREA(CFS) =     19.42
FLOW VELOCITY(FEET/SEC) =   1.74 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
TRAVEL TIME(MIN.) =   5.02   Tc(MIN.) =  28.36
LONGEST FLOWPATH FROM NODE     20.00 TO NODE     24.00 =  1556.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE     24.00 TO NODE     24.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.881
UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7280
SOIL CLASSIFICATION IS "D"
SUBAREA AREA(ACRES) =     9.50   SUBAREA RUNOFF(CFS) =   13.01
TOTAL AREA(ACRES) =     20.80   TOTAL RUNOFF(CFS) =   32.43
TC(MIN) =  28.36

****************************************************************************
FLOW PROCESS FROM NODE     24.00 TO NODE     25.00 IS CODE =  53
----------------------------------------------------------------------------
>>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
>>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =   2332.00  DOWNSTREAM(FEET) =   2325.00
CHANNEL LENGTH THRU SUBAREA(FEET) =   486.00   CHANNEL SLOPE =  0.0144
```

```
  CHANNEL FLOW THRU SUBAREA(CFS) =     32.43
  FLOW VELOCITY(FEET/SEC) =   2.14 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   3.78   Tc(MIN.) =  32.14
  LONGEST FLOWPATH FROM NODE     20.00 TO NODE     25.00 =  2042.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     25.00 TO NODE     25.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.745
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7173
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    8.20   SUBAREA RUNOFF(CFS) =   10.27
  TOTAL AREA(ACRES) =    29.00   TOTAL RUNOFF(CFS) =    42.70
  TC(MIN) =  32.14

****************************************************************************
  FLOW PROCESS FROM NODE     25.00 TO NODE     26.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2325.00  DOWNSTREAM(FEET) =   2317.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   566.00   CHANNEL SLOPE =  0.0141
  CHANNEL FLOW THRU SUBAREA(CFS) =     42.70
  FLOW VELOCITY(FEET/SEC) =   2.32 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   4.06   Tc(MIN.) =  36.20
  LONGEST FLOWPATH FROM NODE     20.00 TO NODE     26.00 =  2608.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     26.00 TO NODE     26.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.625
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7067
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    2.20   SUBAREA RUNOFF(CFS) =    2.53
  TOTAL AREA(ACRES) =    31.20   TOTAL RUNOFF(CFS) =    45.22
  TC(MIN) =  36.20

****************************************************************************
  FLOW PROCESS FROM NODE     26.00 TO NODE     26.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  36.20
  RAINFALL INTENSITY(INCH/HR) =   1.62
  TOTAL STREAM AREA(ACRES) =   31.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     45.22

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc       INTENSITY       AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)     (ACRE)
      1      155.94    23.86         2.087          95.20
      1      142.34    31.08         1.781          95.20
      2       45.22    36.20         1.625          31.20

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
```

```
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
STREAM     RUNOFF      Tc       INTENSITY
NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
    1      185.74    23.86        2.087
    2      181.17    31.08        1.781
    3      175.12    36.20        1.625

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     185.74   Tc(MIN.) =   23.86
TOTAL AREA(ACRES) =    126.40
LONGEST FLOWPATH FROM NODE     14.00 TO NODE     26.00 =  3481.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     26.00 TO NODE     26.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.087
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7420
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =     8.50   SUBAREA RUNOFF(CFS) =    13.16
  TOTAL AREA(ACRES) =   134.90   TOTAL RUNOFF(CFS) =  198.91
  TC(MIN) =  23.86

****************************************************************************
  FLOW PROCESS FROM NODE     26.00 TO NODE     26.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     30.00 TO NODE     31.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =    642.00
  UPSTREAM ELEVATION =   2475.00
  DOWNSTREAM ELEVATION =   2400.00
  ELEVATION DIFFERENCE =     75.00
  TC = 0.533*[(  642.00**3)/(    75.00)]**.2 =   10.862
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.346
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7945
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =     11.16
  TOTAL AREA(ACRES) =      4.20   TOTAL RUNOFF(CFS) =      11.16

****************************************************************************
  FLOW PROCESS FROM NODE     31.00 TO NODE     32.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2400.00  DOWNSTREAM(FEET) =   2370.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   444.00   CHANNEL SLOPE =  0.0676
  CHANNEL FLOW THRU SUBAREA(CFS) =      11.16
  FLOW VELOCITY(FEET/SEC) =   3.25 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   2.28   Tc(MIN.) =  13.14
  LONGEST FLOWPATH FROM NODE     30.00 TO NODE     32.00 =  1086.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     32.00 TO NODE     32.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.985
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7834
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    12.50   SUBAREA RUNOFF(CFS) =   29.23
  TOTAL AREA(ACRES) =     16.70   TOTAL RUNOFF(CFS) =   40.39
  TC(MIN) =  13.14

****************************************************************************
  FLOW PROCESS FROM NODE     32.00 TO NODE     33.00 IS CODE =  53
----------------------------------------------------------------------------
  >>>>>COMPUTE NATURAL MOUNTAIN CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   2370.00  DOWNSTREAM(FEET) =   2356.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   338.00   CHANNEL SLOPE =  0.0414
  CHANNEL FLOW THRU SUBAREA(CFS) =      40.39
  FLOW VELOCITY(FEET/SEC) =   3.91 (PER LACFCD/RCFC&WCD HYDROLOGY MANUAL)
  TRAVEL TIME(MIN.) =   1.44   Tc(MIN.) =  14.58
  LONGEST FLOWPATH FROM NODE     30.00 TO NODE     33.00 =  1424.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     33.00 TO NODE     33.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.804
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7769
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =     9.80   SUBAREA RUNOFF(CFS) =   21.35
  TOTAL AREA(ACRES) =     26.50   TOTAL RUNOFF(CFS) =   61.74
  TC(MIN) =  14.58
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =     26.50  TC(MIN.) =     14.58
  PEAK FLOW RATE(CFS)    =     61.74
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS

1
```

APPENDIX B

PROPOSED CONDITION HYDROLOGY CALCULATIONS

```
****************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD) 1978 HYDROLOGY MANUAL
          (c) Copyright 1982-99 Advanced Engineering Software (aes)
              Ver. 1.5A Release Date: 01/01/99  License ID 1435

                           Analysis prepared by:

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 ************************** DESCRIPTION OF STUDY **************************
 * BEAUMONT 4-TH STREET HYDROLOGY ANALYSIS                                 *
 * 100 YEAR STORM                                                          *
 * PROPOSED CONDITION (FILE C :\MAIN SERVER)                               *
 **************************************************************************

  FILE NAME: 3080P.DAT
  TIME/DATE OF STUDY: 14:28 11/11/2011
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.530
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.200
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.200
  SLOPE OF INTENSITY DURATION CURVE = 0.6000
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
        FOR ALL DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN- / OUT-/PARK-   HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.  (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =   455.00
  UPSTREAM ELEVATION =   2421.00
  DOWNSTREAM ELEVATION =   2415.00
  ELEVATION DIFFERENCE =       6.00
```

```
  TC = 0.303*[(  455.00**3)/(     6.00)]**.2 =    8.332
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.923
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8908
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =     20.27
  TOTAL AREA(ACRES) =       5.80   TOTAL RUNOFF(CFS) =     20.27

****************************************************************************
  FLOW PROCESS FROM NODE     11.00 TO NODE     12.00 IS CODE =   9
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   2415.00
  DOWNSTREAM NODE ELEVATION(FEET) =   2412.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   692.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.170
  PAVEMENT LIP(FEET) =  0.013   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01500
  MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.012
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8884
  SOIL CLASSIFICATION IS "D"
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     32.23
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.50
  AVERAGE FLOW DEPTH(FEET) =   0.60   FLOOD WIDTH(FEET) =   58.03
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   4.61   Tc(MIN.) =  12.94
  SUBAREA AREA(ACRES) =    8.90       SUBAREA RUNOFF(CFS) =   23.81
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =   14.70          PEAK FLOW RATE(CFS) =      44.08

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.65   FLOOD WIDTH(FEET) =   65.70
  FLOW VELOCITY(FEET/SEC.) =   2.68   DEPTH*VELOCITY(FT*FT/SEC) =   1.75
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =  1147.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     12.00 TO NODE     13.00 IS CODE =   9
----------------------------------------------------------------------------
  >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
  UPSTREAM NODE ELEVATION(FEET) =   2412.00
  DOWNSTREAM NODE ELEVATION(FEET) =   2409.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   524.00
  "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.170
  PAVEMENT LIP(FEET) =  0.013   MANNING'S N = .0150
  PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01500
  MAXIMUM DEPTH(FEET) =   1.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.677
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8872
  SOIL CLASSIFICATION IS "D"
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     52.05
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.11
  AVERAGE FLOW DEPTH(FEET) =   0.66   FLOOD WIDTH(FEET) =   66.33
  "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.81   Tc(MIN.) =  15.76
  SUBAREA AREA(ACRES) =    6.70       SUBAREA RUNOFF(CFS) =   15.91
  * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
  * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
  TOTAL AREA(ACRES) =   21.40          PEAK FLOW RATE(CFS) =      59.99

  END OF SUBAREA "V" GUTTER HYDRAULICS:
  DEPTH(FEET) =  0.69   FLOOD WIDTH(FEET) =   70.17
  FLOW VELOCITY(FEET/SEC.) =   3.20   DEPTH*VELOCITY(FT*FT/SEC) =   2.20
```

```
 LONGEST FLOWPATH FROM NODE     10.00 TO NODE     13.00 =  1671.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     13.00 TO NODE     14.00 IS CODE =   9
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   2409.00
 DOWNSTREAM NODE ELEVATION(FEET) =   2407.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   468.00
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.170
 PAVEMENT LIP(FEET) =  0.013   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01500
 MAXIMUM DEPTH(FEET) =   1.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.439
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8861
 SOIL CLASSIFICATION IS "D"
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     66.59
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.95
 AVERAGE FLOW DEPTH(FEET) =   0.74   FLOOD WIDTH(FEET) =   77.19
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.65   Tc(MIN.) =  18.40
 SUBAREA AREA(ACRES) =    6.10       SUBAREA RUNOFF(CFS) =   13.18
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TOTAL AREA(ACRES) =   27.50          PEAK FLOW RATE(CFS) =      73.18

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.76   FLOOD WIDTH(FEET) =   80.17
 FLOW VELOCITY(FEET/SEC.) =   3.00   DEPTH*VELOCITY(FT*FT/SEC) =   2.29
 LONGEST FLOWPATH FROM NODE     10.00 TO NODE     14.00 =  2139.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     14.00 TO NODE     15.00 IS CODE =   9
----------------------------------------------------------------------------
 >>>>>COMPUTE "V" GUTTER FLOW TRAVEL TIME THRU SUBAREA<<<<<
============================================================================
 UPSTREAM NODE ELEVATION(FEET) =   2407.00
 DOWNSTREAM NODE ELEVATION(FEET) =   2404.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   474.00
 "V" GUTTER WIDTH(FEET) =   3.00   GUTTER HIKE(FEET) =  0.170
 PAVEMENT LIP(FEET) =  0.125   MANNING'S N = .0150
 PAVEMENT CROSSFALL(DECIMAL NOTATION) = 0.01500
 MAXIMUM DEPTH(FEET) =   1.00
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.280
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8853
 SOIL CLASSIFICATION IS "D"
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     80.75
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.61
 AVERAGE FLOW DEPTH(FEET) =   0.84   FLOOD WIDTH(FEET) =   76.16
 "V" GUTTER FLOW TRAVEL TIME(MIN.) =   2.19   Tc(MIN.) =  20.59
 SUBAREA AREA(ACRES) =    7.50       SUBAREA RUNOFF(CFS) =   15.14
 * RAINFALL INTENSITY IS LESS THAN AREA-AVERAGED Fp;
 * IMPERVIOUS AREA USED FOR RUNOFF ESTIMATES.
 TOTAL AREA(ACRES) =   35.00          PEAK FLOW RATE(CFS) =      88.31

 END OF SUBAREA "V" GUTTER HYDRAULICS:
 DEPTH(FEET) =  0.86   FLOOD WIDTH(FEET) =   78.92
 FLOW VELOCITY(FEET/SEC.) =   3.69   DEPTH*VELOCITY(FT*FT/SEC) =   3.19
 LONGEST FLOWPATH FROM NODE     10.00 TO NODE     15.00 =  2613.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     15.00 TO NODE     29.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  2400.00  DOWNSTREAM(FEET) =  2380.00
FLOW LENGTH(FEET) =  1036.00   MANNING'S N =  0.012
DEPTH OF FLOW IN  36.0 INCH PIPE IS  26.8 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =  15.67
ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =      88.31
PIPE TRAVEL TIME(MIN.) =   1.10    Tc(MIN.) =  21.69
LONGEST FLOWPATH FROM NODE     10.00 TO NODE     29.00 =  3649.00 FEET.

******************************************************************************
FLOW PROCESS FROM NODE     29.00 TO NODE     29.00 IS CODE =   1
------------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
TIME OF CONCENTRATION(MIN.) =  21.69
RAINFALL INTENSITY(INCH/HR) =   2.21
TOTAL STREAM AREA(ACRES) =   35.00
PEAK FLOW RATE(CFS) AT CONFLUENCE =     88.31

******************************************************************************
FLOW PROCESS FROM NODE     20.00 TO NODE     21.00 IS CODE =  21
------------------------------------------------------------------------------
>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
       ASSUMED INITIAL SUBAREA UNIFORM
       DEVELOPMENT IS COMMERCIAL
TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
INITIAL SUBAREA FLOW-LENGTH =   346.00
UPSTREAM ELEVATION =   2422.00
DOWNSTREAM ELEVATION =   2420.00
ELEVATION DIFFERENCE =      2.00
TC = 0.303*[(  346.00**3)/(     2.00)]**.2 =    8.807
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.795
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8906
SOIL CLASSIFICATION IS "D"
SUBAREA RUNOFF(CFS) =      1.01
TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      1.01

******************************************************************************
FLOW PROCESS FROM NODE     21.00 TO NODE     21.00 IS CODE =  81
------------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
==============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.795
UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .8056
SOIL CLASSIFICATION IS "D"
SUBAREA AREA(ACRES) =     1.30   SUBAREA RUNOFF(CFS) =     3.97
TOTAL AREA(ACRES) =     1.60   TOTAL RUNOFF(CFS) =     4.99
TC(MIN) =   8.81

******************************************************************************
FLOW PROCESS FROM NODE     21.00 TO NODE     22.00 IS CODE =  61
------------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STANDARD CURB SECTION USED)<<<<<
==============================================================================
UPSTREAM ELEVATION(FEET) = 2420.00  DOWNSTREAM ELEVATION(FEET) = 2416.00
STREET LENGTH(FEET) =   689.00   CURB HEIGHT(INCHES) =  6.0
```

```
STREET HALFWIDTH(FEET) = 30.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  25.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0149
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.76
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.44
  HALFSTREET FLOOD WIDTH(FEET) =   15.69
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.23
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.98
STREET FLOW TRAVEL TIME(MIN.) =   5.15   Tc(MIN.) =  13.96
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.879
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8880
SOIL CLASSIFICATION IS "D"
SUBAREA AREA(ACRES) =     0.60      SUBAREA RUNOFF(CFS) =    1.53
TOTAL AREA(ACRES) =     2.20        PEAK FLOW RATE(CFS) =       6.52

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.46   HALFSTREET FLOOD WIDTH(FEET) =  16.47
FLOW VELOCITY(FEET/SEC.) =  2.30   DEPTH*VELOCITY(FT*FT/SEC.) =   1.05
LONGEST FLOWPATH FROM NODE     20.00 TO NODE     22.00 =  1035.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE     22.00 TO NODE     22.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.879
UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7796
SOIL CLASSIFICATION IS "D"
SUBAREA AREA(ACRES) =     4.50   SUBAREA RUNOFF(CFS) =   10.10
TOTAL AREA(ACRES) =      6.70   TOTAL RUNOFF(CFS) =   16.62
TC(MIN) =  13.96

****************************************************************************
FLOW PROCESS FROM NODE     22.00 TO NODE     23.00 IS CODE =  61
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 2416.00  DOWNSTREAM ELEVATION(FEET) = 2414.00
STREET LENGTH(FEET) =   512.00   CURB HEIGHT(INCHES) =  8.0
STREET HALFWIDTH(FEET) = 30.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  25.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0149
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      17.18
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.67
```

```
    HALFSTREET FLOOD WIDTH(FEET) =   26.08
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.52
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.70
  STREET FLOW TRAVEL TIME(MIN.) =   3.39   Tc(MIN.) =  17.34
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.527
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8865
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.50      SUBAREA RUNOFF(CFS) =    1.12
  TOTAL AREA(ACRES) =    7.20        PEAK FLOW RATE(CFS) =      17.74

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.68   HALFSTREET FLOOD WIDTH(FEET) =  26.67
  FLOW VELOCITY(FEET/SEC.) =  2.54   DEPTH*VELOCITY(FT*FT/SEC.) =   1.73
  LONGEST FLOWPATH FROM NODE     20.00 TO NODE     23.00 =  1547.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     23.00 TO NODE     24.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2414.00  DOWNSTREAM ELEVATION(FEET) = 2412.00
  STREET LENGTH(FEET) =   472.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  25.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0149
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.35
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.68
    HALFSTREET FLOOD WIDTH(FEET) =   26.47
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.65
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.79
  STREET FLOW TRAVEL TIME(MIN.) =   2.97   Tc(MIN.) =  20.31
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.298
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8854
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.60      SUBAREA RUNOFF(CFS) =    1.22
  TOTAL AREA(ACRES) =    7.80        PEAK FLOW RATE(CFS) =      18.96

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.69   HALFSTREET FLOOD WIDTH(FEET) =  27.25
  FLOW VELOCITY(FEET/SEC.) =  2.66   DEPTH*VELOCITY(FT*FT/SEC.) =   1.82
  LONGEST FLOWPATH FROM NODE     20.00 TO NODE     24.00 =  2019.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     24.00 TO NODE     25.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2412.00  DOWNSTREAM ELEVATION(FEET) = 2408.00
  STREET LENGTH(FEET) =   548.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  25.00
```

```
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0149
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      19.43
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   23.90
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.29
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.10
  STREET FLOW TRAVEL TIME(MIN.) =   2.77   Tc(MIN.) =  23.09
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.128
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8845
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    0.50      SUBAREA RUNOFF(CFS) =    0.94
  TOTAL AREA(ACRES) =    8.30        PEAK FLOW RATE(CFS) =      19.90

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.64   HALFSTREET FLOOD WIDTH(FEET) =  24.09
  FLOW VELOCITY(FEET/SEC.) =  3.32   DEPTH*VELOCITY(FT*FT/SEC.) =   2.13
  LONGEST FLOWPATH FROM NODE     20.00 TO NODE     25.00 =  2567.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     25.00 TO NODE     25.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.128
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7445
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    1.60   SUBAREA RUNOFF(CFS) =    2.54
  TOTAL AREA(ACRES) =     9.90   TOTAL RUNOFF(CFS) =   22.44
  TC(MIN) =  23.09

****************************************************************************
  FLOW PROCESS FROM NODE     25.00 TO NODE     26.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2408.00  DOWNSTREAM ELEVATION(FEET) = 2398.00
  STREET LENGTH(FEET) =   464.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  25.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0149
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      23.26
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.57
    HALFSTREET FLOOD WIDTH(FEET) =   20.77
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.16
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.96
```

```
STREET FLOW TRAVEL TIME(MIN.) =   1.50   Tc(MIN.) =  24.58
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.050
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8840
SOIL CLASSIFICATION IS "D"
SUBAREA AREA(ACRES) =    0.90      SUBAREA RUNOFF(CFS) =    1.63
TOTAL AREA(ACRES) =   10.80        PEAK FLOW RATE(CFS) =      24.07

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.58   HALFSTREET FLOOD WIDTH(FEET) =  21.06
FLOW VELOCITY(FEET/SEC.) =  5.20   DEPTH*VELOCITY(FT*FT/SEC.) =   3.02
LONGEST FLOWPATH FROM NODE     20.00 TO NODE     26.00 =  3031.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE     26.00 TO NODE     26.00 IS CODE =  81
----------------------------------------------------------------------------
>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.050
UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7396
SOIL CLASSIFICATION IS "D"
SUBAREA AREA(ACRES) =    2.40   SUBAREA RUNOFF(CFS) =    3.64
TOTAL AREA(ACRES) =    13.20   TOTAL RUNOFF(CFS) =   27.71
TC(MIN) =  24.58

****************************************************************************
FLOW PROCESS FROM NODE     26.00 TO NODE     27.00 IS CODE =  61
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 2398.00  DOWNSTREAM ELEVATION(FEET) = 2392.00
STREET LENGTH(FEET) =   392.00   CURB HEIGHT(INCHES) =  8.0
STREET HALFWIDTH(FEET) = 30.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  25.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.020
OUTSIDE STREET CROSSFALL(DECIMAL) =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0149
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      28.76
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.64
  HALFSTREET FLOOD WIDTH(FEET) =   24.09
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    4.80
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.07
STREET FLOW TRAVEL TIME(MIN.) =   1.36   Tc(MIN.) =  25.94
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.984
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8835
SOIL CLASSIFICATION IS "D"
SUBAREA AREA(ACRES) =    1.20      SUBAREA RUNOFF(CFS) =    2.10
TOTAL AREA(ACRES) =   14.40        PEAK FLOW RATE(CFS) =      29.81

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  24.48
FLOW VELOCITY(FEET/SEC.) =  4.82   DEPTH*VELOCITY(FT*FT/SEC.) =   3.12
LONGEST FLOWPATH FROM NODE     20.00 TO NODE     27.00 =  3423.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE     27.00 TO NODE     27.00 IS CODE =  81
```

```
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.984
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7353
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =     2.80   SUBAREA RUNOFF(CFS) =    4.09
  TOTAL AREA(ACRES) =    17.20   TOTAL RUNOFF(CFS) =   33.90
  TC(MIN) =  25.94

****************************************************************************
  FLOW PROCESS FROM NODE     27.00 TO NODE     28.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2392.00  DOWNSTREAM ELEVATION(FEET) = 2389.00
  STREET LENGTH(FEET) =   126.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  25.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.020
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0149
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      35.64
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.64
    HALFSTREET FLOOD WIDTH(FEET) =   24.09
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    5.95
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    3.81
  STREET FLOW TRAVEL TIME(MIN.) =   0.35   Tc(MIN.) =  26.30
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.968
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8834
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =     2.00      SUBAREA RUNOFF(CFS) =    3.48
  TOTAL AREA(ACRES) =   19.20         PEAK FLOW RATE(CFS) =      37.38

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.65   HALFSTREET FLOOD WIDTH(FEET) =  24.48
  FLOW VELOCITY(FEET/SEC.) =  6.04   DEPTH*VELOCITY(FT*FT/SEC.) =   3.92
  LONGEST FLOWPATH FROM NODE     20.00 TO NODE     28.00 =  3549.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     28.00 TO NODE     29.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2385.00  DOWNSTREAM(FEET) =  2384.00
  FLOW LENGTH(FEET) =    14.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  14.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  20.82
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     37.38
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =  26.31
  LONGEST FLOWPATH FROM NODE     20.00 TO NODE     29.00 =  3563.00 FEET.

****************************************************************************
```

```
  FLOW PROCESS FROM NODE     29.00 TO NODE     29.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  26.31
  RAINFALL INTENSITY(INCH/HR) =   1.97
  TOTAL STREAM AREA(ACRES) =   19.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     37.38

  ** CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY      AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)    (ACRE)
     1        88.31    21.69       2.209         35.00
     2        37.38    26.31       1.968         19.20

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
     1       119.13    21.69      2.209
     2       116.03    26.31      1.968

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     119.13   Tc(MIN.) =   21.69
  TOTAL AREA(ACRES) =      54.20
  LONGEST FLOWPATH FROM NODE      10.00 TO NODE     29.00 =  3649.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     29.00 TO NODE     43.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2384.00  DOWNSTREAM(FEET) =  2383.70
  FLOW LENGTH(FEET) =   112.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  57.0 INCH PIPE IS  44.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.98
  ESTIMATED PIPE DIAMETER(INCH) =  57.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     119.13
  PIPE TRAVEL TIME(MIN.) =   0.23    Tc(MIN.) =  21.93
  LONGEST FLOWPATH FROM NODE      10.00 TO NODE     43.00 =  3761.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     43.00 TO NODE     43.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =  21.93
  RAINFALL INTENSITY(INCH/HR) =   2.20
  TOTAL STREAM AREA(ACRES) =   54.20
  PEAK FLOW RATE(CFS) AT CONFLUENCE =    119.13

****************************************************************************
  FLOW PROCESS FROM NODE     30.00 TO NODE     31.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
```

```
================================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =    732.00
  UPSTREAM ELEVATION =   2413.00
  DOWNSTREAM ELEVATION =   2410.00
  ELEVATION DIFFERENCE =      3.00
  TC = 0.303*[(  732.00**3)/(     3.00)]**.2 =   12.731
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.042
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8885
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =      3.24
  TOTAL AREA(ACRES) =      1.20   TOTAL RUNOFF(CFS) =      3.24

****************************************************************************
  FLOW PROCESS FROM NODE     31.00 TO NODE     33.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 2410.00  DOWNSTREAM ELEVATION(FEET) = 2406.00
  STREET LENGTH(FEET) =   704.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.015
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.050

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0149
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.54
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.48
    HALFSTREET FLOOD WIDTH(FEET) =   15.00
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.05
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.99
  STREET FLOW TRAVEL TIME(MIN.) =   5.71   Tc(MIN.) =  18.44
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.435
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8861
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    1.20      SUBAREA RUNOFF(CFS) =    2.59
  TOTAL AREA(ACRES) =    2.40        PEAK FLOW RATE(CFS) =       5.83

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  17.62
  FLOW VELOCITY(FEET/SEC.) =  2.16   DEPTH*VELOCITY(FT*FT/SEC.) =   1.10
  LONGEST FLOWPATH FROM NODE     30.00 TO NODE     33.00 =  1436.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     33.00 TO NODE     34.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
================================================================================
  UPSTREAM ELEVATION(FEET) = 2406.00  DOWNSTREAM ELEVATION(FEET) = 2400.00
  STREET LENGTH(FEET) =   982.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
```

```
INSIDE STREET CROSSFALL(DECIMAL) =  0.015
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.050

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0149
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.42
  ***STREET FLOW SPLITS OVER STREET-CROWN***
  FULL DEPTH(FEET) =    0.53   FLOOD WIDTH(FEET) =   19.31
  FULL HALF-STREET VELOCITY(FEET/SEC.) =    2.28
  SPLIT DEPTH(FEET) =    0.26   SPLIT FLOOD WIDTH(FEET) =    3.48
  SPLIT FLOW(CFS) =    0.66   SPLIT VELOCITY(FEET/SEC.) =    1.70
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.53
  HALFSTREET FLOOD WIDTH(FEET) =   19.31
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.28
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.20
STREET FLOW TRAVEL TIME(MIN.) =   7.18   Tc(MIN.) =  25.63
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.999
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8836
SOIL CLASSIFICATION IS "D"
SUBAREA AREA(ACRES) =    1.80      SUBAREA RUNOFF(CFS) =    3.18
TOTAL AREA(ACRES) =    4.20        PEAK FLOW RATE(CFS) =       9.01

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.53   HALFSTREET FLOOD WIDTH(FEET) =  19.31
FLOW VELOCITY(FEET/SEC.) =  2.28   DEPTH*VELOCITY(FT*FT/SEC.) =   1.20
LONGEST FLOWPATH FROM NODE      30.00 TO NODE      34.00 =  2418.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE      34.00 TO NODE      35.00 IS CODE =  61
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 2400.00  DOWNSTREAM ELEVATION(FEET) = 2391.00
STREET LENGTH(FEET) =   590.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.015
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.050

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0149
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.76
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.51
  HALFSTREET FLOOD WIDTH(FEET) =   17.98
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.54
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.82
STREET FLOW TRAVEL TIME(MIN.) =   2.78   Tc(MIN.) =  28.40
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.880
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8828
SOIL CLASSIFICATION IS "D"
SUBAREA AREA(ACRES) =    0.90      SUBAREA RUNOFF(CFS) =    1.49
TOTAL AREA(ACRES) =    5.10        PEAK FLOW RATE(CFS) =      10.51
```

```
  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.52   HALFSTREET FLOOD WIDTH(FEET) =  19.05
  FLOW VELOCITY(FEET/SEC.) =  3.59   DEPTH*VELOCITY(FT*FT/SEC.) =   1.88
  LONGEST FLOWPATH FROM NODE      30.00 TO NODE      35.00 =  3008.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      35.00 TO NODE      43.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2387.90  DOWNSTREAM(FEET) =  2383.70
  FLOW LENGTH(FEET) =    54.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  15.89
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =     10.51
  PIPE TRAVEL TIME(MIN.) =   0.06    Tc(MIN.) =  28.46
  LONGEST FLOWPATH FROM NODE      30.00 TO NODE      43.00 =  3062.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      43.00 TO NODE      43.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  3
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =  28.46
  RAINFALL INTENSITY(INCH/HR) =   1.88
  TOTAL STREAM AREA(ACRES) =    5.10
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      10.51

****************************************************************************
  FLOW PROCESS FROM NODE      40.00 TO NODE      41.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =   932.00
  UPSTREAM ELEVATION =   2406.00
  DOWNSTREAM ELEVATION =   2400.00
  ELEVATION DIFFERENCE =      6.00
  TC = 0.303*[(  932.00**3)/(      6.00)]**.2 =   12.812
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.030
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8885
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =       2.96
  TOTAL AREA(ACRES) =       1.10   TOTAL RUNOFF(CFS) =       2.96

****************************************************************************
  FLOW PROCESS FROM NODE      41.00 TO NODE      42.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2400.00  DOWNSTREAM ELEVATION(FEET) = 2388.00
  STREET LENGTH(FEET) =   768.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.015
```

```
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.050

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0149
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.98
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.41
  HALFSTREET FLOOD WIDTH(FEET) =   10.13
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.08
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.26
STREET FLOW TRAVEL TIME(MIN.) =   4.15   Tc(MIN.) =  16.96
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.561
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8867
SOIL CLASSIFICATION IS "D"
SUBAREA AREA(ACRES) =    0.90      SUBAREA RUNOFF(CFS) =    2.04
TOTAL AREA(ACRES) =    2.00        PEAK FLOW RATE(CFS) =       5.01

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  11.86
FLOW VELOCITY(FEET/SEC.) =  3.18   DEPTH*VELOCITY(FT*FT/SEC.) =   1.38
LONGEST FLOWPATH FROM NODE     40.00 TO NODE     42.00 =  1700.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE     42.00 TO NODE     43.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) = 2385 .00  DOWNSTREAM(FEET) = 2383.60
FLOW LENGTH(FEET) =   108.00   MANNING'S N =  0.012
DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   8.87
ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       5.01
PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =  17.16
LONGEST FLOWPATH FROM NODE     40.00 TO NODE     43.00 =  1808.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE     43.00 TO NODE     43.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  3
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  3 ARE:
TIME OF CONCENTRATION(MIN.) =  17.16
RAINFALL INTENSITY(INCH/HR) =   2.54
TOTAL STREAM AREA(ACRES) =    2.00
PEAK FLOW RATE(CFS) AT CONFLUENCE =      5.01

** CONFLUENCE DATA **
STREAM      RUNOFF       Tc       INTENSITY      AREA
NUMBER       (CFS)     (MIN.)   (INCH/HOUR)     (ACRE)
   1        119.13     21.93       2.195          54.20
   1        116.03     26.54       1.957          54.20
   2         10.51     28.46       1.877           5.10
   3          5.01     17.16       2.543           2.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  3 STREAMS.
```

```
** PEAK FLOW RATE TABLE **
STREAM      RUNOFF      Tc        INTENSITY
NUMBER       (CFS)     (MIN.)    (INCH/HOUR)
    1        104.60    17.16        2.543
    2        131.55    21.93        2.195
    3        129.69    26.54        1.957
    4        125.48    28.46        1.877

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =     131.55   Tc(MIN.) =   21.93
TOTAL AREA(ACRES) =      61.30
LONGEST FLOWPATH FROM NODE      10.00 TO NODE      43.00 =  3761.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      43.00 TO NODE      44.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2383.60  DOWNSTREAM(FEET) =  2383.00
  FLOW LENGTH(FEET) =   146.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  54.0 INCH PIPE IS  43.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.55
  ESTIMATED PIPE DIAMETER(INCH) =  54.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =    131.55
  PIPE TRAVEL TIME(MIN.) =   0.25    Tc(MIN.) =  22.18
  LONGEST FLOWPATH FROM NODE      10.00 TO NODE      44.00 =  3907.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      44.00 TO NODE      44.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      50.00 TO NODE      51.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =   728.00
  UPSTREAM ELEVATION =   2421.00
  DOWNSTREAM ELEVATION =   2415.00
  ELEVATION DIFFERENCE =       6.00
  TC = 0.303*[(  728.00**3)/(     6.00)]**.2 =   11.047
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.312
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8894
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =       4.71
  TOTAL AREA(ACRES) =       1.60   TOTAL RUNOFF(CFS) =       4.71

****************************************************************************
  FLOW PROCESS FROM NODE      51.00 TO NODE      51.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.312
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7935
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =     4.50   SUBAREA RUNOFF(CFS) =    11.83
```

```
  TOTAL AREA(ACRES) =      6.10   TOTAL RUNOFF(CFS) =   16.54
  TC(MIN) =  11.05

****************************************************************************
  FLOW PROCESS FROM NODE     51.00 TO NODE     52.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 2415.00  DOWNSTREAM ELEVATION(FEET) = 2413.00
  STREET LENGTH(FEET) =   248.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 20.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  15.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.015
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.050

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0149
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      18.45
    ***STREET FLOW SPLITS OVER STREET-CROWN***
    FULL DEPTH(FEET) =    0.56   FLOOD WIDTH(FEET) =   22.81
    FULL HALF-STREET VELOCITY(FEET/SEC.) =    2.72
    SPLIT DEPTH(FEET) =    0.54   SPLIT FLOOD WIDTH(FEET) =   20.86
    SPLIT FLOW(CFS) =    8.67   SPLIT VELOCITY(FEET/SEC.) =    2.68
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.56
    HALFSTREET FLOOD WIDTH(FEET) =   22.81
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.72
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.51
  STREET FLOW TRAVEL TIME(MIN.) =   1.52   Tc(MIN.) =  12.57
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.066
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8886
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    1.40      SUBAREA RUNOFF(CFS) =    3.81
  TOTAL AREA(ACRES) =    7.50        PEAK FLOW RATE(CFS) =      20.35

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.57   HALFSTREET FLOOD WIDTH(FEET) =  23.27
  FLOW VELOCITY(FEET/SEC.) =  2.62   DEPTH*VELOCITY(FT*FT/SEC.) =   1.48
  LONGEST FLOWPATH FROM NODE     50.00 TO NODE     52.00 =   976.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     52.00 TO NODE     52.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.066
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7860
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    4.10   SUBAREA RUNOFF(CFS) =    9.88
  TOTAL AREA(ACRES) =    11.60   TOTAL RUNOFF(CFS) =   30.23
  TC(MIN) =  12.57

****************************************************************************
  FLOW PROCESS FROM NODE     52.00 TO NODE     53.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =  2407.00  DOWNSTREAM(FEET) =  2404.00
  FLOW LENGTH(FEET) =    726.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  33.0 INCH PIPE IS  23.2 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.78
  ESTIMATED PIPE DIAMETER(INCH) =  33.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      30.23
  PIPE TRAVEL TIME(MIN.) =   1.79    Tc(MIN.) =  14.35
  LONGEST FLOWPATH FROM NODE      50.00 TO NODE      53.00 =  1702.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     53.00 TO NODE     53.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.831
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8878
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =     5.20   SUBAREA RUNOFF(CFS) =    13.07
  TOTAL AREA(ACRES) =     16.80   TOTAL RUNOFF(CFS) =    43.30
  TC(MIN) =  14.35

****************************************************************************
  FLOW PROCESS FROM NODE     53.00 TO NODE     54.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2404.00  DOWNSTREAM(FEET) =  2401.70
  FLOW LENGTH(FEET) =    744.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  39.0 INCH PIPE IS  28.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.61
  ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      43.30
  PIPE TRAVEL TIME(MIN.) =   1.88    Tc(MIN.) =  16.23
  LONGEST FLOWPATH FROM NODE      50.00 TO NODE      54.00 =  2446.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     54.00 TO NODE     54.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.630
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8870
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =     7.80   SUBAREA RUNOFF(CFS) =    18.19
  TOTAL AREA(ACRES) =     24.60   TOTAL RUNOFF(CFS) =    61.50
  TC(MIN) =  16.23

****************************************************************************
  FLOW PROCESS FROM NODE     54.00 TO NODE     55.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2401.70  DOWNSTREAM(FEET) =  2400.00
  FLOW LENGTH(FEET) =    522.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  45.0 INCH PIPE IS  31.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.40
  ESTIMATED PIPE DIAMETER(INCH) =  45.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      61.50
  PIPE TRAVEL TIME(MIN.) =   1.18    Tc(MIN.) =  17.40
  LONGEST FLOWPATH FROM NODE      50.00 TO NODE      55.00 =  2968.00 FEET.
```

```
****************************************************************************
  FLOW PROCESS FROM NODE     55.00 TO NODE     55.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.522
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8865
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =     5.80   SUBAREA RUNOFF(CFS) =   12.97
  TOTAL AREA(ACRES) =     30.40   TOTAL RUNOFF(CFS) =   74.46
  TC(MIN) =  17.40

****************************************************************************
  FLOW PROCESS FROM NODE     55.00 TO NODE     58.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2400.00  DOWNSTREAM(FEET) =  2395.60
  FLOW LENGTH(FEET) =   748.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  42.0 INCH PIPE IS  31.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.61
  ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      74.46
  PIPE TRAVEL TIME(MIN.) =   1.30    Tc(MIN.) =  18.70
  LONGEST FLOWPATH FROM NODE     50.00 TO NODE     58.00 =  3716.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     57.00 TO NODE     58.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.415
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8860
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    11.40   SUBAREA RUNOFF(CFS) =   24.39
  TOTAL AREA(ACRES) =     41.80   TOTAL RUNOFF(CFS) =   98.85
  TC(MIN) =  18.70

****************************************************************************
  FLOW PROCESS FROM NODE     58.00 TO NODE     59.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2395.60  DOWNSTREAM(FEET) =  2390.00
  FLOW LENGTH(FEET) =   192.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  36.0 INCH PIPE IS  24.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.00
  ESTIMATED PIPE DIAMETER(INCH) =  36.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      98.85
  PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =  18.87
  LONGEST FLOWPATH FROM NODE     50.00 TO NODE     59.00 =  3908.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     59.00 TO NODE     59.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 2 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE     60.00 TO NODE     61.00 IS CODE =  21
----------------------------------------------------------------------------
```

```
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==========================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =   474.00
  UPSTREAM ELEVATION =   2413.00
  DOWNSTREAM ELEVATION =   2406.00
  ELEVATION DIFFERENCE =      7.00
  TC = 0.303*[(  474.00**3)/(     7.00)]**.2 =    8.280
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.938
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8909
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =     14.73
  TOTAL AREA(ACRES) =      4.20   TOTAL RUNOFF(CFS) =     14.73

****************************************************************************
  FLOW PROCESS FROM NODE     61.00 TO NODE     62.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
==========================================================================
  UPSTREAM ELEVATION(FEET) = 2406.00  DOWNSTREAM ELEVATION(FEET) = 2404.00
  STREET LENGTH(FEET) =   332.00   CURB HEIGHT(INCHES) =  6.0
  STREET HALFWIDTH(FEET) = 18.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.015
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.050

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0149
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      21.92
    ***STREET FLOWING FULL***
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.59
    HALFSTREET FLOOD WIDTH(FEET) =   22.27
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.60
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.52
  STREET FLOW TRAVEL TIME(MIN.) =   2.13   Tc(MIN.) =  10.41
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.433
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8897
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =    4.70      SUBAREA RUNOFF(CFS) =   14.35
  TOTAL AREA(ACRES) =    8.90        PEAK FLOW RATE(CFS) =      29.09

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.63   HALFSTREET FLOOD WIDTH(FEET) =  24.29
  FLOW VELOCITY(FEET/SEC.) =  2.82   DEPTH*VELOCITY(FT*FT/SEC.) =   1.77
  *NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
         AND L =  332.0 FT WITH ELEVATION-DROP =   2.0 FT, IS   16.1 CFS,
         WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE     62.00
  LONGEST FLOWPATH FROM NODE     60.00 TO NODE     62.00 =   806.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     62.00 TO NODE     63.00 IS CODE =  61
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STANDARD CURB SECTION USED)<<<<<
==========================================================================
```

```
UPSTREAM ELEVATION(FEET) = 2404.00  DOWNSTREAM ELEVATION(FEET) = 2402.00
STREET LENGTH(FEET) =   341.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.015
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.020

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0149
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      34.65
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.57
  HALFSTREET FLOOD WIDTH(FEET) =   21.36
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.24
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.84
STREET FLOW TRAVEL TIME(MIN.) =   1.75   Tc(MIN.) =  12.16
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.126
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8888
SOIL CLASSIFICATION IS "D"
SUBAREA AREA(ACRES) =    4.00      SUBAREA RUNOFF(CFS) =   11.11
TOTAL AREA(ACRES) =   12.90        PEAK FLOW RATE(CFS) =      40.20

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  22.70
FLOW VELOCITY(FEET/SEC.) =  3.38   DEPTH*VELOCITY(FT*FT/SEC.) =   2.01
LONGEST FLOWPATH FROM NODE     60.00 TO NODE     63.00 =  1147.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE     63.00 TO NODE     64.00 IS CODE =  61
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 2402.00  DOWNSTREAM ELEVATION(FEET) = 2401.00
STREET LENGTH(FEET) =   354.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.015
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.050

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0149
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      46.18
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.78
  HALFSTREET FLOOD WIDTH(FEET) =   32.04
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.42
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.89
STREET FLOW TRAVEL TIME(MIN.) =   2.43   Tc(MIN.) =  14.60
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.802
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8877
SOIL CLASSIFICATION IS "D"
SUBAREA AREA(ACRES) =    4.80      SUBAREA RUNOFF(CFS) =   11.94
```

```
TOTAL AREA(ACRES) =   17.70         PEAK FLOW RATE(CFS) =      52.14

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.81   HALFSTREET FLOOD WIDTH(FEET) =  33.44
FLOW VELOCITY(FEET/SEC.) =  2.50   DEPTH*VELOCITY(FT*FT/SEC.) =   2.02
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  354.0 FT WITH ELEVATION-DROP =   1.0 FT, IS   14.8 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE     64.00
LONGEST FLOWPATH FROM NODE     60.00 TO NODE     64.00 =  1501.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE     64.00 TO NODE     65.00 IS CODE =  61
----------------------------------------------------------------------------
>>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>(STANDARD CURB SECTION USED)<<<<<
============================================================================
UPSTREAM ELEVATION(FEET) = 2401.00  DOWNSTREAM ELEVATION(FEET) = 2399.00
STREET LENGTH(FEET) =   256.00   CURB HEIGHT(INCHES) =  6.0
STREET HALFWIDTH(FEET) = 18.00

DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  13.00
INSIDE STREET CROSSFALL(DECIMAL) =  0.015
OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.050

SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0149
Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

  **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      57.25
  ***STREET FLOWING FULL***
  STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
  STREET FLOW DEPTH(FEET) =  0.72
  HALFSTREET FLOOD WIDTH(FEET) =   28.99
  AVERAGE FLOW VELOCITY(FEET/SEC.) =    3.74
  PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    2.69
STREET FLOW TRAVEL TIME(MIN.) =   1.14   Tc(MIN.) =  15.74
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.679
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8872
SOIL CLASSIFICATION IS "D"
SUBAREA AREA(ACRES) =    4.30       SUBAREA RUNOFF(CFS) =   10.22
TOTAL AREA(ACRES) =   22.00         PEAK FLOW RATE(CFS) =      62.36

END OF SUBAREA STREET FLOW HYDRAULICS:
DEPTH(FEET) = 0.74   HALFSTREET FLOOD WIDTH(FEET) =  29.84
FLOW VELOCITY(FEET/SEC.) =  3.82   DEPTH*VELOCITY(FT*FT/SEC.) =   2.81
*NOTE: INITIAL SUBAREA NOMOGRAPH WITH SUBAREA PARAMETERS,
       AND L =  256.0 FT WITH ELEVATION-DROP =   2.0 FT, IS   16.2 CFS,
       WHICH EXCEEDS THE TOP-OF-CURB STREET CAPACITY AT NODE     65.00
LONGEST FLOWPATH FROM NODE     60.00 TO NODE     65.00 =  1757.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE     65.00 TO NODE     66.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =  2391.00  DOWNSTREAM(FEET) =  2388.00
FLOW LENGTH(FEET) =   422.00   MANNING'S N =  0.012
DEPTH OF FLOW IN  39.0 INCH PIPE IS  27.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   9.95
ESTIMATED PIPE DIAMETER(INCH) =  39.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =     62.36
```

```
  PIPE TRAVEL TIME(MIN.) =   0.71    Tc(MIN.) =  16.45
  LONGEST FLOWPATH FROM NODE      60.00 TO NODE      66.00 =  2179.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      66.00 TO NODE      66.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 3 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE      70.00 TO NODE      71.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =   582.00
  UPSTREAM ELEVATION =   2411.00
  DOWNSTREAM ELEVATION =   2407.00
  ELEVATION DIFFERENCE =      4.00
  TC = 0.303*[(  582.00**3)/(     4.00)]**.2 =   10.474
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.420
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8896
  SOIL CLASSIFICATION IS "D"
  SUBAREA RUNOFF(CFS) =       3.35
  TOTAL AREA(ACRES) =       1.10   TOTAL RUNOFF(CFS) =       3.35

****************************************************************************
  FLOW PROCESS FROM NODE      71.00 TO NODE      72.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2400.00  DOWNSTREAM(FEET) =  2386.20
  FLOW LENGTH(FEET) =   612.00   MANNING'S N =  0.012
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.50
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.35
  PIPE TRAVEL TIME(MIN.) =   1.36    Tc(MIN.) =  11.83
  LONGEST FLOWPATH FROM NODE      70.00 TO NODE      72.00 =  1194.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE      72.00 TO NODE      72.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.178
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8890
  SOIL CLASSIFICATION IS "D"
  SUBAREA AREA(ACRES) =     1.60   SUBAREA RUNOFF(CFS) =     4.52
  TOTAL AREA(ACRES) =      2.70   TOTAL RUNOFF(CFS) =     7.87
  TC(MIN) =  11.83

****************************************************************************
  FLOW PROCESS FROM NODE      72.00 TO NODE      73.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  2386.20  DOWNSTREAM(FEET) =  2384.00
  FLOW LENGTH(FEET) =   502.00   MANNING'S N =  0.012
```

```
 DEPTH OF FLOW IN  21.0 INCH PIPE IS  13.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.00
 ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       7.87
 PIPE TRAVEL TIME(MIN.) =   1.67    Tc(MIN.) =  13.51
 LONGEST FLOWPATH FROM NODE      70.00 TO NODE      73.00 =  1696.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      73.00 TO NODE      73.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.936
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8882
 SOIL CLASSIFICATION IS "D"
 SUBAREA AREA(ACRES) =     6.90   SUBAREA RUNOFF(CFS) =    17.99
 TOTAL AREA(ACRES) =      9.60   TOTAL RUNOFF(CFS) =    25.86
 TC(MIN) =  13.51

****************************************************************************
 FLOW PROCESS FROM NODE      73.00 TO NODE      73.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.936
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8882
 SOIL CLASSIFICATION IS "D"
 SUBAREA AREA(ACRES) =     4.10   SUBAREA RUNOFF(CFS) =    10.69
 TOTAL AREA(ACRES) =     13.70   TOTAL RUNOFF(CFS) =    36.55
 TC(MIN) =  13.51

****************************************************************************
 FLOW PROCESS FROM NODE      73.00 TO NODE      74.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  2384.00  DOWNSTREAM(FEET) =  2383.00
 FLOW LENGTH(FEET) =   746.00   MANNING'S N =  0.012
 DEPTH OF FLOW IN  42.0 INCH PIPE IS  32.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.60
 ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      36.55
 PIPE TRAVEL TIME(MIN.) =   2.70    Tc(MIN.) =  16.21
 LONGEST FLOWPATH FROM NODE      70.00 TO NODE      74.00 =  2442.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE      74.00 TO NODE      74.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.631
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8870
 SOIL CLASSIFICATION IS "D"
 SUBAREA AREA(ACRES) =     7.00   SUBAREA RUNOFF(CFS) =    16.34
 TOTAL AREA(ACRES) =     20.70   TOTAL RUNOFF(CFS) =    52.89
 TC(MIN) =  16.21

****************************************************************************
 FLOW PROCESS FROM NODE      74.00 TO NODE      75.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
```

```
================================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  2383.00  DOWNSTREAM(FEET) =  2382.20
 FLOW LENGTH(FEET) =   826.00   MANNING'S N =  0.012
 DEPTH OF FLOW IN  51.0 INCH PIPE IS  39.8 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.45
 ESTIMATED PIPE DIAMETER(INCH) =  51.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      52.89
 PIPE TRAVEL TIME(MIN.) =   3.09    Tc(MIN.) =  19.30
 LONGEST FLOWPATH FROM NODE      70.00 TO NODE      75.00 =  3268.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     75.00 TO NODE     75.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.370
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8858
 SOIL CLASSIFICATION IS "D"
 SUBAREA AREA(ACRES) =     3.60   SUBAREA RUNOFF(CFS) =     7.56
 TOTAL AREA(ACRES) =     24.30   TOTAL RUNOFF(CFS) =    60.44
 TC(MIN) =  19.30

****************************************************************************
 FLOW PROCESS FROM NODE     75.00 TO NODE     76.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
 ELEVATION DATA: UPSTREAM(FEET) =  2382.20  DOWNSTREAM(FEET) =  2382.00
 FLOW LENGTH(FEET) =    60.00   MANNING'S N =  0.012
 DEPTH OF FLOW IN  42.0 INCH PIPE IS  33.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.27
 ESTIMATED PIPE DIAMETER(INCH) =  42.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      60.44
 PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =  19.44
 LONGEST FLOWPATH FROM NODE      70.00 TO NODE      76.00 =  3328.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     76.00 TO NODE     77.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
 ELEVATION DATA: UPSTREAM(FEET) =   3076.00 DOWNSTREAM(FEET) =   3075.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   500.00   CHANNEL SLOPE =  0.0020
 CHANNEL BASE(FEET) =   50.00   "Z" FACTOR =   3.000
 MANNING'S FACTOR = 0.030   MAXIMUM DEPTH(FEET) =   5.00
 CHANNEL FLOW THRU SUBAREA(CFS) =      60.44
 FLOW VELOCITY(FEET/SEC) =   1.68   FLOW DEPTH(FEET) =   0.69
 TRAVEL TIME(MIN.) =   4.95   Tc(MIN.) =  24.39
 LONGEST FLOWPATH FROM NODE      70.00 TO NODE      77.00 =  3828.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE     77.00 TO NODE     77.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
================================================================================
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.059
 UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7402
 SOIL CLASSIFICATION IS "D"
 SUBAREA AREA(ACRES) =     7.00   SUBAREA RUNOFF(CFS) =    10.67
 TOTAL AREA(ACRES) =     31.30   TOTAL RUNOFF(CFS) =    71.12
 TC(MIN) =  24.39
```

```
****************************************************************************
  FLOW PROCESS FROM NODE      77.00 TO NODE      77.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM      RUNOFF      Tc       INTENSITY     AREA
  NUMBER       (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
     1         71.12    24.39        2.059       31.30
  LONGEST FLOWPATH FROM NODE      70.00 TO NODE      77.00 =  3828.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM      RUNOFF      Tc       INTENSITY     AREA
  NUMBER       (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
     1        104.60    17.43        2.519       61.30
     2        131.55    22.18        2.180       61.30
     3        129.69    26.80        1.946       61.30
     4        125.48    28.72        1.867       61.30
  LONGEST FLOWPATH FROM NODE       0.00 TO NODE      77.00 =     0.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF        Tc       INTENSITY
  NUMBER      (CFS)      (MIN.)    (INCH/HOUR)
     1       155.42      17.43        2.519
     2       196.22      22.18        2.180
     3       195.38      24.39        2.059
     4       196.89      26.80        1.946
     5       189.96      28.72        1.867

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     196.89   Tc(MIN.) =   26.80
  TOTAL AREA(ACRES) =      92.60

****************************************************************************
  FLOW PROCESS FROM NODE      77.00 TO NODE      77.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 2 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM      RUNOFF      Tc       INTENSITY     AREA
  NUMBER       (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
     1        155.42    17.43        2.519       92.60
     2        196.22    22.18        2.180       92.60
     3        195.38    24.39        2.059       92.60
     4        196.89    26.80        1.946       92.60
     5        189.96    28.72        1.867       92.60
  LONGEST FLOWPATH FROM NODE      70.00 TO NODE      77.00 =  3828.00 FEET.

  ** MEMORY BANK #  2 CONFLUENCE DATA **
  STREAM      RUNOFF      Tc       INTENSITY     AREA
  NUMBER       (CFS)    (MIN.)    (INCH/HOUR)   (ACRE)
     1         98.85    18.87        2.402       41.80
  LONGEST FLOWPATH FROM NODE      50.00 TO NODE      77.00 =  3908.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF        Tc       INTENSITY
  NUMBER      (CFS)      (MIN.)    (INCH/HOUR)
     1       246.72      17.43        2.519
     2       265.79      18.87        2.402
     3       285.94      22.18        2.180
```

```
     4     280.13      24.39          2.059
     5     276.99      26.80          1.946
     6     266.80      28.72          1.867

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     285.94   Tc(MIN.) =   22.18
  TOTAL AREA(ACRES) =     134.40

****************************************************************************
  FLOW PROCESS FROM NODE      77.00 TO NODE      77.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 3 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM      RUNOFF      Tc       INTENSITY     AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1        246.72     17.43        2.519       134.40
     2        265.79     18.87        2.402       134.40
     3        285.94     22.18        2.180       134.40
     4        280.13     24.39        2.059       134.40
     5        276.99     26.80        1.946       134.40
     6        266.80     28.72        1.867       134.40
  LONGEST FLOWPATH FROM NODE      50.00 TO NODE      77.00 =  3908.00 FEET.

  ** MEMORY BANK #  3 CONFLUENCE DATA **
  STREAM      RUNOFF      Tc       INTENSITY     AREA
  NUMBER       (CFS)     (MIN.)    (INCH/HOUR)    (ACRE)
     1         62.36     16.45        2.609        22.00
  LONGEST FLOWPATH FROM NODE      60.00 TO NODE      77.00 =  2179.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF        Tc        INTENSITY
  NUMBER      (CFS)       (MIN.)    (INCH/HOUR)
     1       295.14       16.45         2.609
     2       306.95       17.43         2.519
     3       323.21       18.87         2.402
     4       338.05       22.18         2.180
     5       329.36       24.39         2.059
     6       323.51       26.80         1.946
     7       311.44       28.72         1.867

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     338.05   Tc(MIN.) =   22.18
  TOTAL AREA(ACRES) =     156.40
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)       =    156.40  TC(MIN.) =      22.18
  PEAK FLOW RATE(CFS)     =    338.05
  *** PEAK FLOW RATE TABLE ***
          Q(CFS)    Tc(MIN.)
  1       295.14      16.45
  2       306.95      17.43
  3       323.21      18.87
  4       338.05      22.18
  5       329.36      24.39
  6       323.51      26.80
  7       311.44      28.72
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

1

```
****************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
       RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                  (RCFC&WCD) 1978 HYDROLOGY MANUAL
        (c) Copyright 1982-99 Advanced Engineering Software (aes)
            Ver. 1.5A Release Date: 01/01/99  License ID 1435

                         Analysis prepared by:

                          THIENES ENGINEERING
                        16800 VALLEY VIEW AVENUE
                           LA MIRADA CA 90638
                  PH: (714) 521-4811 FAX: (714) 521-4173

 ************************* DESCRIPTION OF STUDY *************************
 * BAEUMONT DISTRIBUTION CENTER                                           *
 * OFF-SITE AREA                                                          *
 * Q100                                                                   *
 **************************************************************************

  FILE NAME: 3080T.DAT
  TIME/DATE OF STUDY: 13:34 11/04/2011
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.530
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.200
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.200
  SLOPE OF INTENSITY DURATION CURVE = 0.6000
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
        FOR ALL DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:  CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.  (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)   (FT)  (FT)   (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
        ASSUMED INITIAL SUBAREA UNIFORM
        DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH =   986.00
  UPSTREAM ELEVATION =   2409.00
  DOWNSTREAM ELEVATION =   2359.00
  ELEVATION DIFFERENCE =     50.00
```

```
 TC = 0.303*[(  986.00**3)/(    50.00)]**.2 =    8.672
  100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.830
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8906
 SOIL CLASSIFICATION IS "D"
 SUBAREA RUNOFF(CFS) =     13.99
 TOTAL AREA(ACRES) =      4.10   TOTAL RUNOFF(CFS) =     13.99
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)     =      4.10  TC(MIN.) =      8.67
 PEAK FLOW RATE(CFS)   =     13.99
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS

1
```

APPENDIX C

DETENTION ANALYSIS

Administrative Page 262

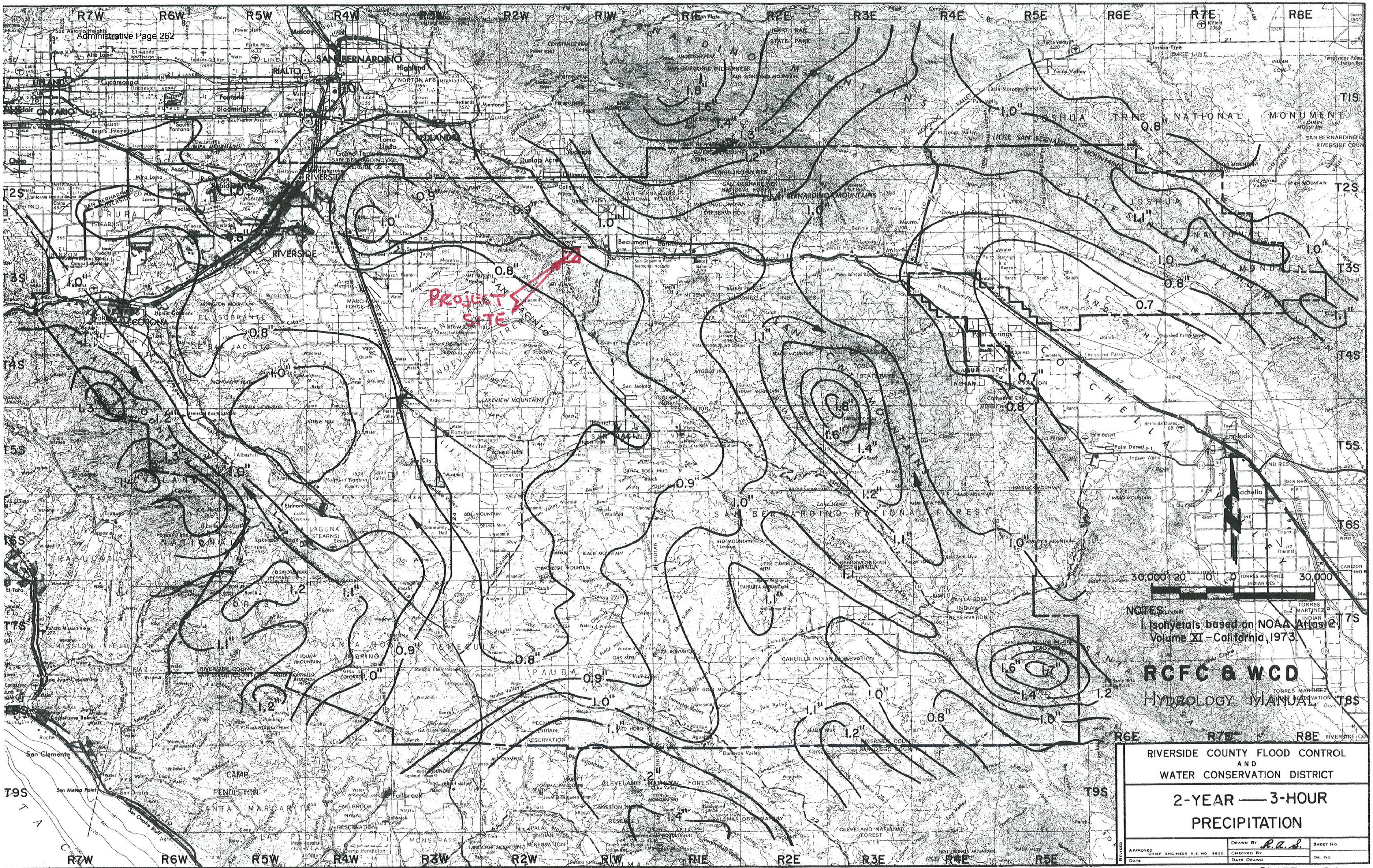


PLATE E-5.1

Administrative Page 263

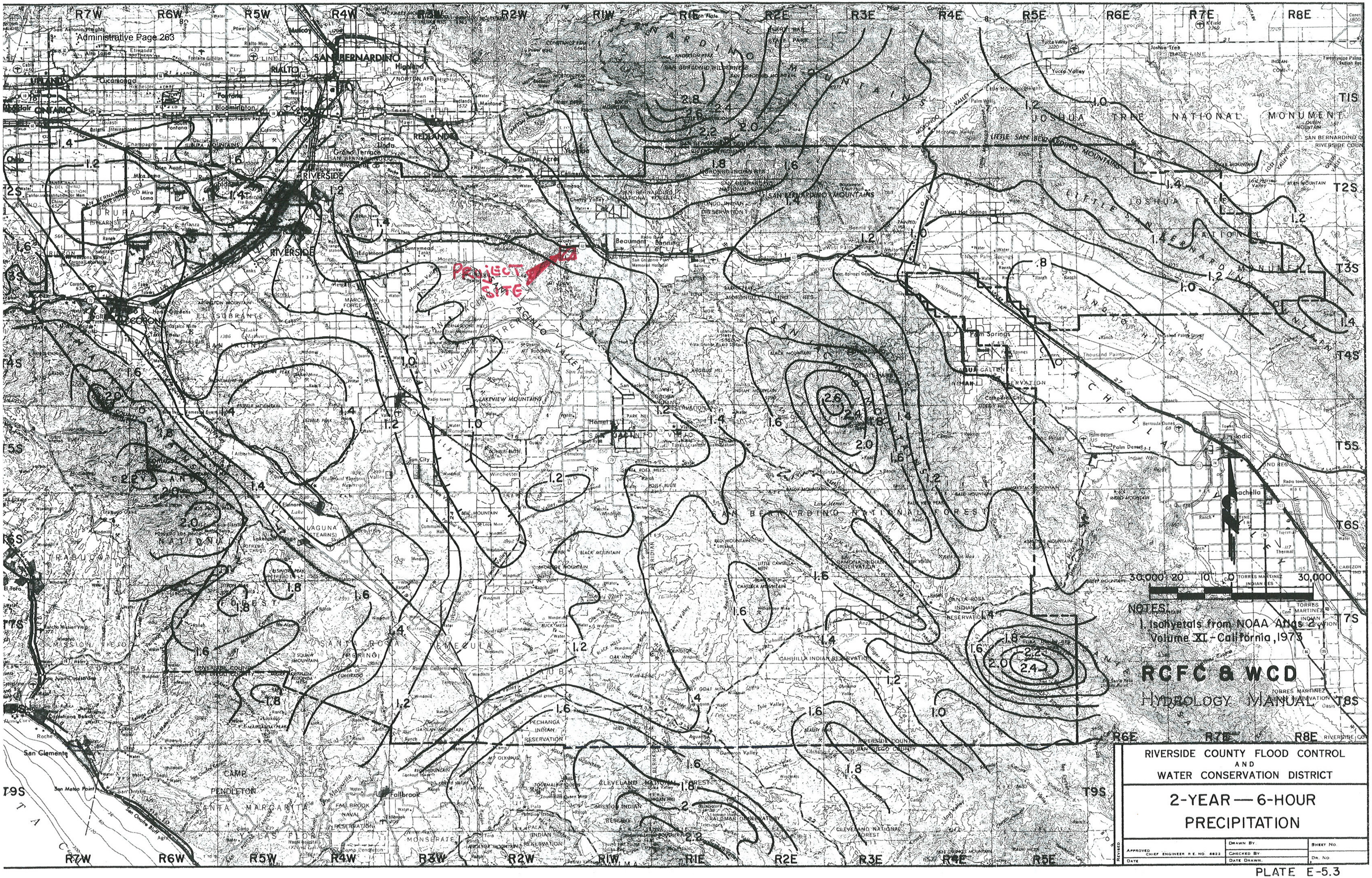


PLATE E-5.3

Administrative Page 264

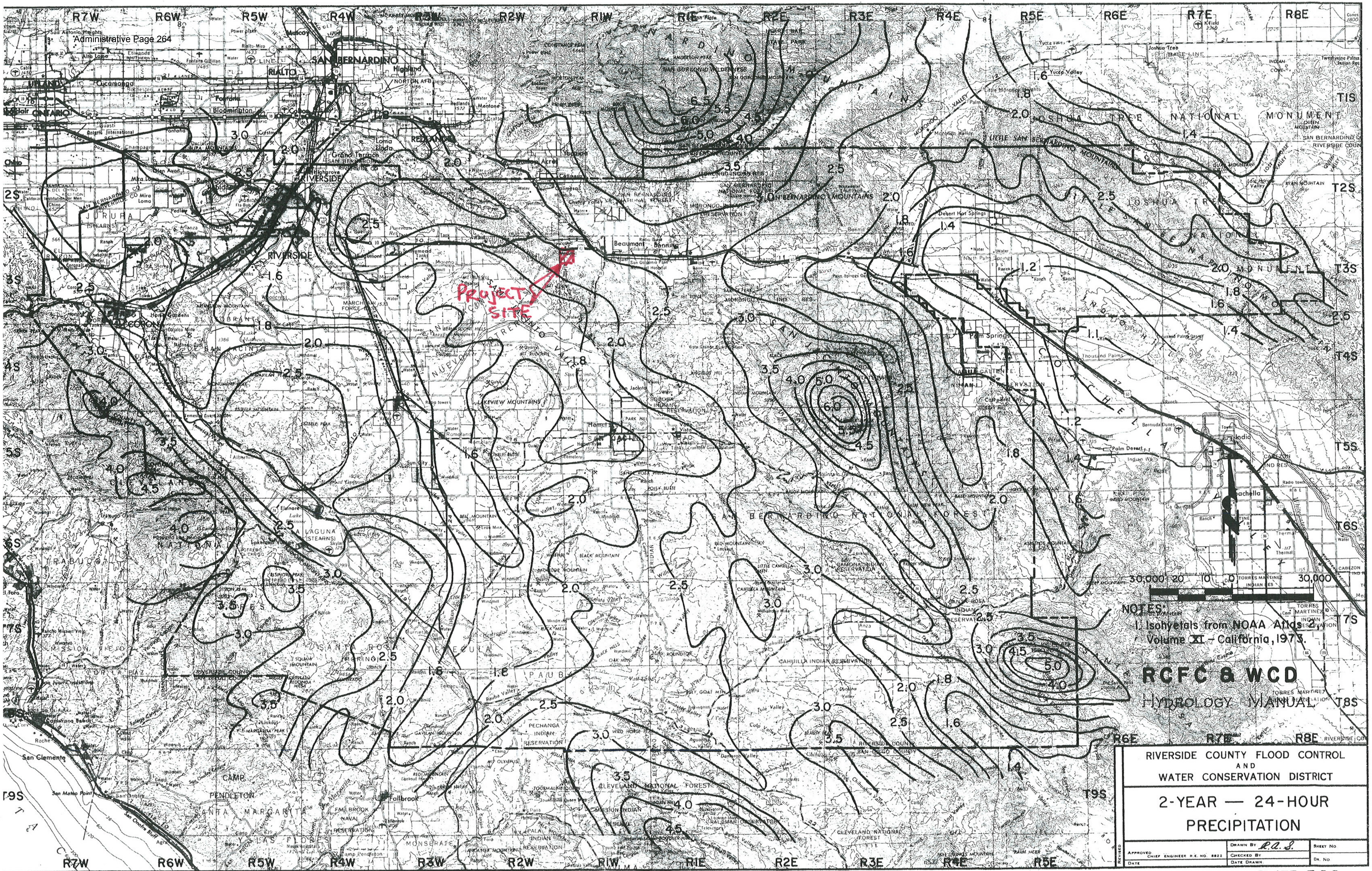
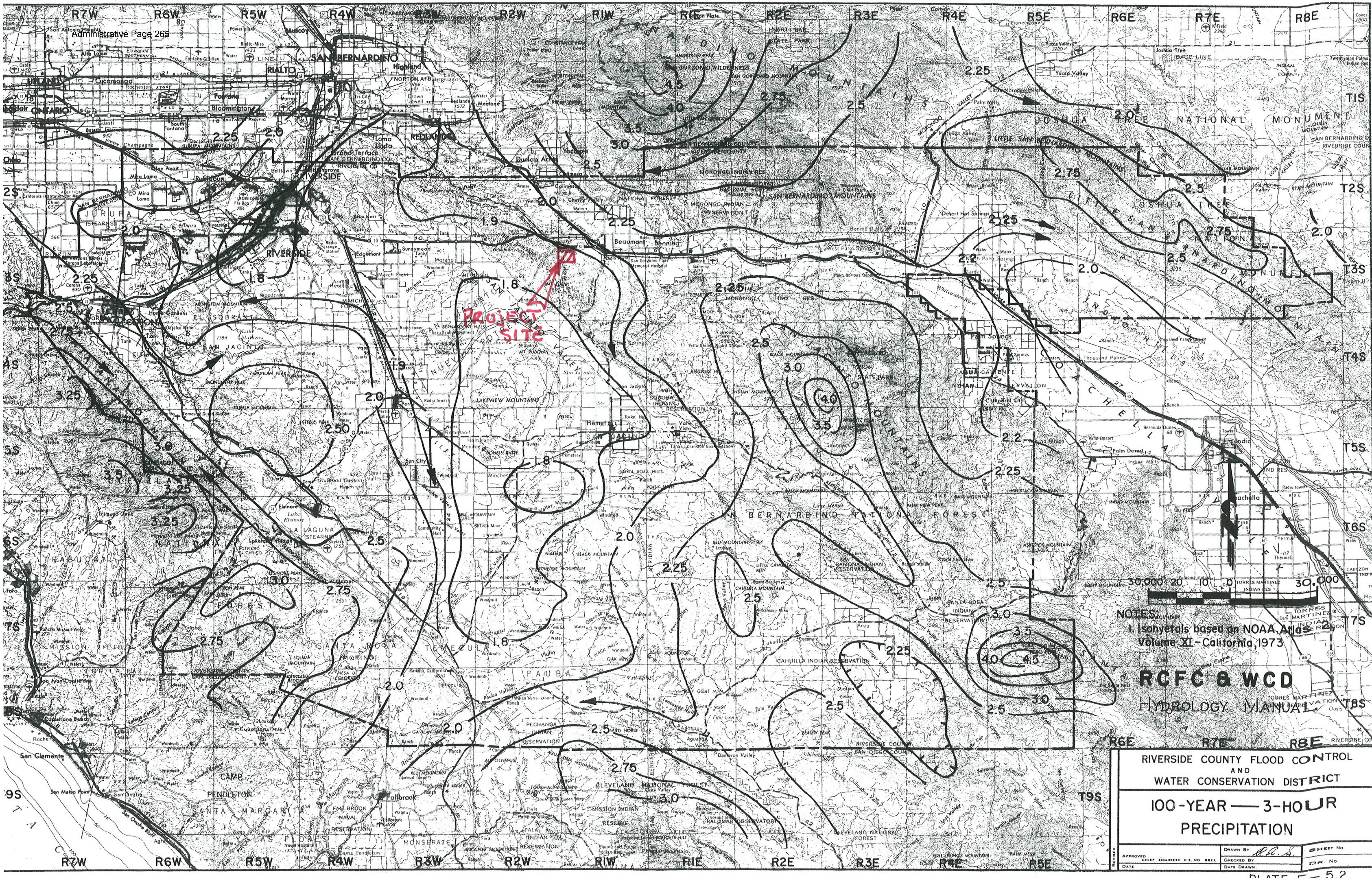
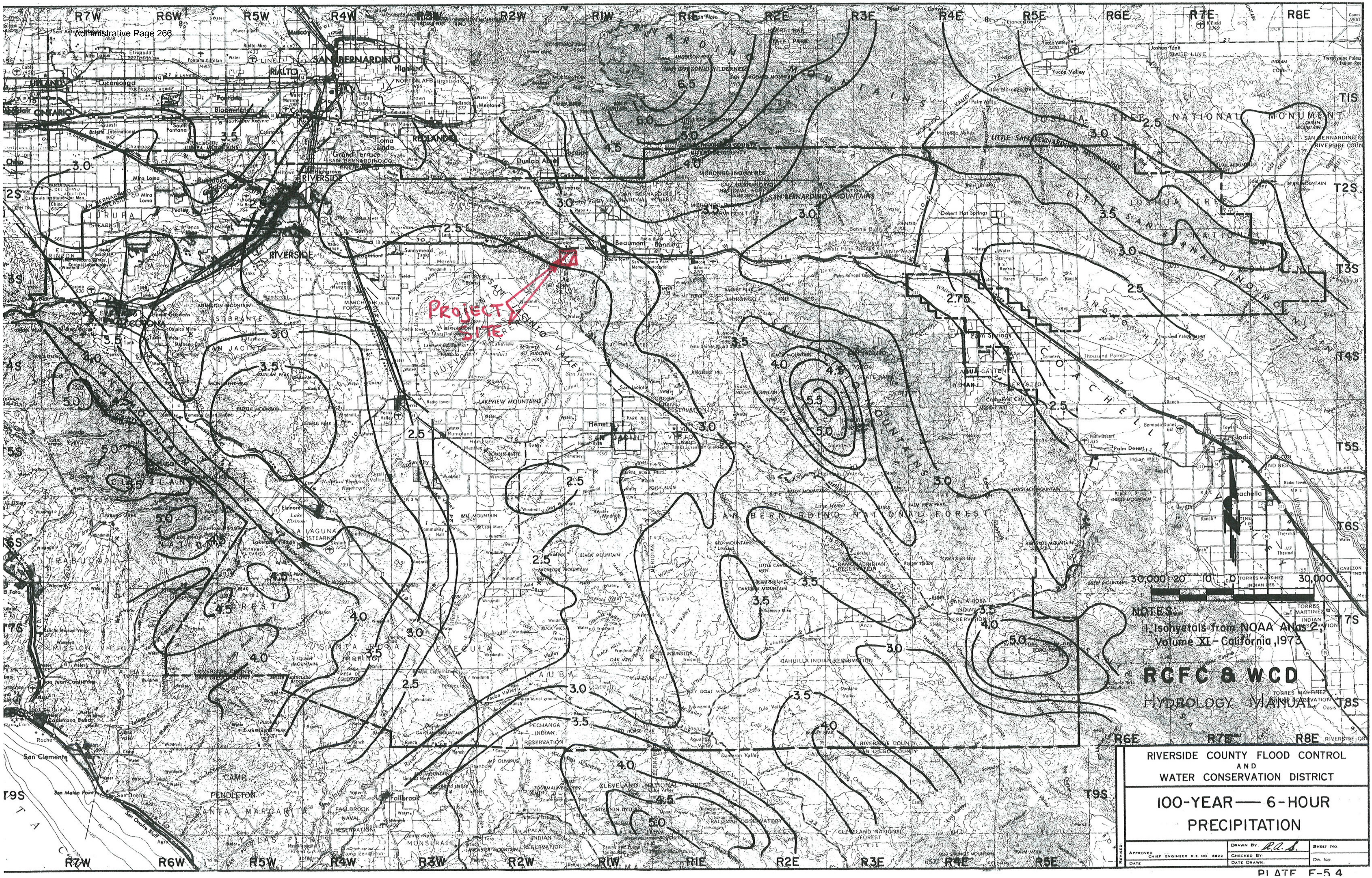


PLATE E-5.5

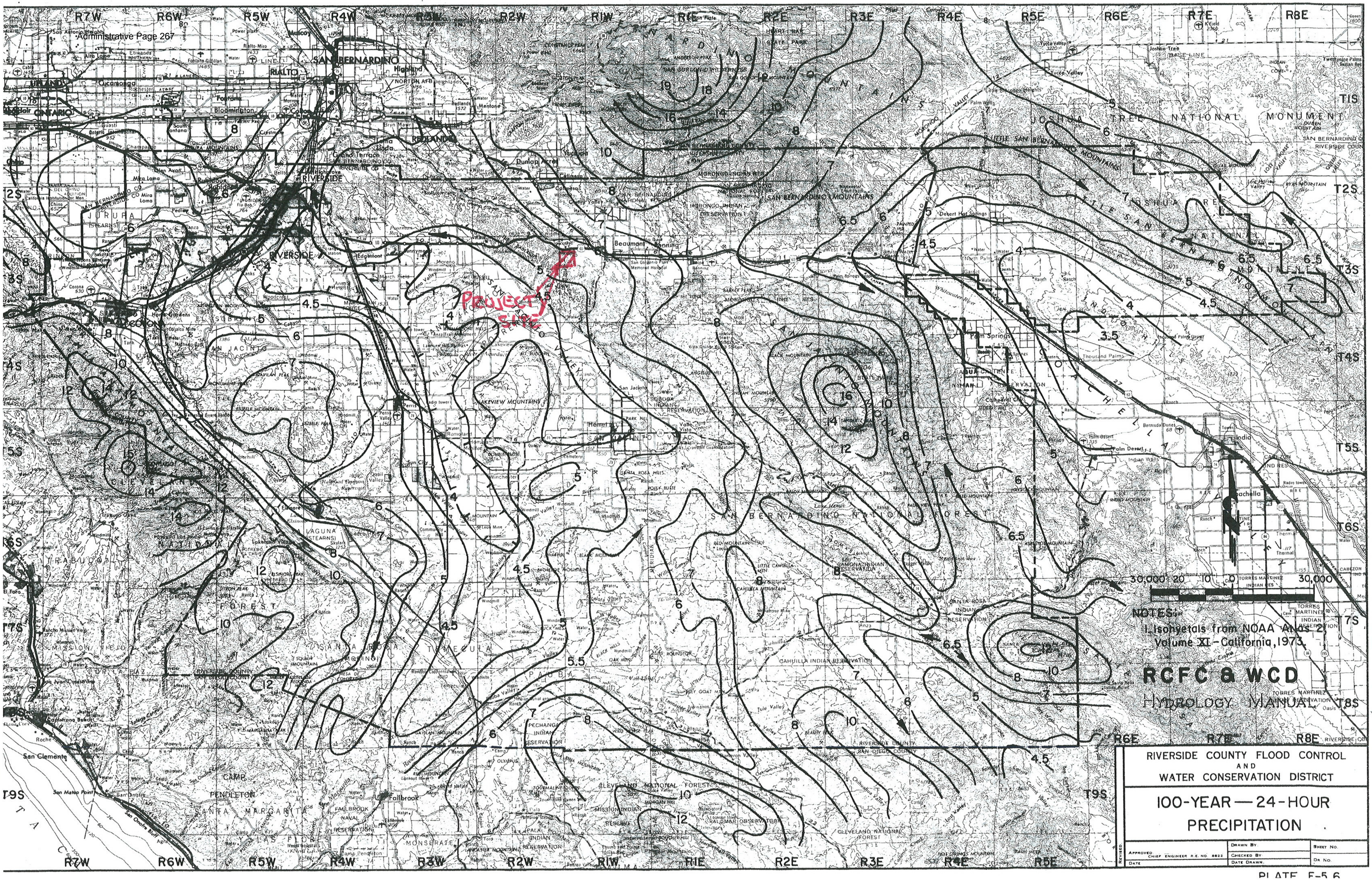
Administrative Page 265





PROJECT SITE
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E
R3E
R4E
R5E
R6E
R7E
R8E
T1S
T2S
T3S
T4S
T5S
T6S
T7S
T8S
T9S
SAN BERNARDINO
RIVERSIDE
CORONA
Beaumont
Banning
Hemet
San Jacinto
Palm Springs
Indio
Coachella
Temecula
Fallbrook
San Clemente
LAKEVIEW MOUNTAINS
JOSHUA TREE NATIONAL MONUMENT
SAN BERNARDINO NATIONAL FOREST
CLEVELAND NATIONAL FOREST
PECHANGA INDIAN RESERVATION
CAHUILLA INDIAN RESERVATION
CAMP PENDLETON
2.5
2.75
3.0
3.5
4.0
4.5
5.0
5.5
6.0
6.5
30,000 20 10 0 30,000
NOTES:
1. Isohyetals from NOAA Atlas 2, Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 6-HOUR PRECIPITATION
DRAWN BY
CHECKED BY
DATE DRAWN
SHEET NO.
DR. NO.
APPROVED

PLATE E-5.4


PROJECT SITE
NOTES:
1. Isohyetals from NOAA Atlas 2 Volume XI - California, 1973.
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 24-HOUR PRECIPITATION
R7W R6W R5W R4W R3W R2W R1W R1E R2E R3E R4E R5E R6E R7E R8E
T1S T2S T3S T4S T5S T6S T7S T8S T9S
SAN BERNARDINO
RIVERSIDE
Beaumont
Palm Springs
JOSHUA TREE NATIONAL MONUMENT
SAN BERNARDINO NATIONAL FOREST
CLEVELAND NATIONAL FOREST
San Clemente
Fallbrook
Hemet
Indio
Coachella

EXISTING CONDITION HYDROGRAPHS

U n i t   H y d r o g r a p h   A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004, Version 7.0
Study date 11/04/11 File: 3080E33100.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6061

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

BEAUMENT DISTRIBUTION CENTER
EXISTING CONDITION
3 HR'S 5 MIN. STROM
FILE: 3080E3.DAT

Drainage Area = 135.00(Ac.) = 0.211 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 135.00(Ac.) = 0.211 Sq. Mi.

USER Entry of lag time in hours
Lag time = 0.320 Hr.
Lag time = 19.20 Min.
25% of lag time = 4.80 Min.
40% of lag time = 7.68 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
135.00	0.90	121.50

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
135.00	1.90	256.50

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.900(In)
Area Averaged 100-Year Rainfall = 1.900(In)

Point rain (area averaged) = 1.900(In)
Areal adjustment factor = 99.94 %
Adjusted average point rain = 1.899(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
135.000	85.00	0.000

Total Area Entered = 135.00(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
85.0	94.0	0.078	0.000	0.078	1.000	0.078
					Sum (F) =	0.078

Area averaged mean soil loss (F) (In/Hr) = 0.078
Minimum soil loss rate ((In/Hr)) = 0.039
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	26.042	1.798	2.447
2	0.167	52.083	5.476	7.450
3	0.250	78.125	9.559	13.005
4	0.333	104.167	20.854	28.373
5	0.417	130.208	22.309	30.353
6	0.500	156.250	9.795	13.326
7	0.583	182.292	6.603	8.984
8	0.667	208.333	5.089	6.924
9	0.750	234.375	3.950	5.375
10	0.833	260.417	3.203	4.358
11	0.917	286.458	2.572	3.500
12	1.000	312.500	2.101	2.858
13	1.083	338.542	1.667	2.268
14	1.167	364.583	1.265	1.722
15	1.250	390.625	1.006	1.368
16	1.333	416.667	0.669	0.910
17	1.417	442.708	0.340	0.462
18	1.500	468.750	0.299	0.407
19	1.583	494.792	0.262	0.357
20	1.667	520.833	0.227	0.309
21	1.750	546.875	0.158	0.215
22	1.833	572.917	0.176	0.240
23	1.917	598.958	0.208	0.283
24	2.000	625.000	0.160	0.218
25	2.083	651.042	0.104	0.142
26	2.167	677.083	0.076	0.104
27	2.250	703.125	0.072	0.098
			Sum = 100.000	Sum= 136.055

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.296	0.078	---	0.22
2	0.17	1.30	0.296	0.078	---	0.22
3	0.25	1.10	0.251	0.078	---	0.17
4	0.33	1.50	0.342	0.078	---	0.26
5	0.42	1.50	0.342	0.078	---	0.26
6	0.50	1.80	0.410	0.078	---	0.33
7	0.58	1.50	0.342	0.078	---	0.26
8	0.67	1.80	0.410	0.078	---	0.33
9	0.75	1.80	0.410	0.078	---	0.33
10	0.83	1.50	0.342	0.078	---	0.26
11	0.92	1.60	0.365	0.078	---	0.29

12	1.00	1.80	0.410	0.078	---	0.33
13	1.08	2.20	0.501	0.078	---	0.42
14	1.17	2.20	0.501	0.078	---	0.42
15	1.25	2.20	0.501	0.078	---	0.42
16	1.33	2.00	0.456	0.078	---	0.38
17	1.42	2.60	0.592	0.078	---	0.51
18	1.50	2.70	0.615	0.078	---	0.54
19	1.58	2.40	0.547	0.078	---	0.47
20	1.67	2.70	0.615	0.078	---	0.54
21	1.75	3.30	0.752	0.078	---	0.67
22	1.83	3.10	0.706	0.078	---	0.63
23	1.92	2.90	0.661	0.078	---	0.58
24	2.00	3.00	0.684	0.078	---	0.61
25	2.08	3.10	0.706	0.078	---	0.63
26	2.17	4.20	0.957	0.078	---	0.88
27	2.25	5.00	1.139	0.078	---	1.06
28	2.33	3.50	0.798	0.078	---	0.72
29	2.42	6.80	1.549	0.078	---	1.47
30	2.50	7.30	1.663	0.078	---	1.59
31	2.58	8.20	1.868	0.078	---	1.79
32	2.67	5.90	1.344	0.078	---	1.27
33	2.75	2.00	0.456	0.078	---	0.38
34	2.83	1.80	0.410	0.078	---	0.33
35	2.92	1.80	0.410	0.078	---	0.33
36	3.00	0.60	0.137	0.078	---	0.06
	Sum =	100.0			Sum =	20.0

```
   Flood volume = Effective rainfall      1.66(In)
    times area     135.0(Ac.)/[(In)/(Ft.)] =      18.7(Ac.Ft)
   Total soil loss =      0.23(In)
   Total soil loss =     2.633(Ac.Ft)
   Total rainfall =      1.90(In)
   Flood volume =      815873.4 Cubic Feet
   Total soil loss =      114671.7 Cubic Feet
   --------------------------------------------------------------------
    Peak flow rate of this hydrograph =    168.702(CFS)
   --------------------------------------------------------------------
   ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                       3 - H O U R    S T O R M
                    R u n o f f     H y d r o g r a p h
   --------------------------------------------------------------------
               Hydrograph in   5   Minute intervals ((CFS))

   --------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        50.0      100.0     150.0      200.0
-----------------------------------------------------------------------------
  0+ 5       0.0037      0.53  Q          |         |         |         |
  0+10       0.0186      2.16  Q          |         |         |         |
  0+15       0.0522      4.89  Q          |         |         |         |
  0+20       0.1278     10.97  V Q        |         |         |         |
  0+25       0.2495     17.68  V  Q       |         |         |         |
  0+30       0.3918     20.65  V   Q      |         |         |         |
  0+35       0.5581     24.16  |V   Q     |         |         |         |
  0+40       0.7536     28.38  |V    Q    |         |         |         |
  0+45       0.9734     31.92  | V    Q   |         |         |         |
  0+50       1.2091     34.23  | V    Q   |         |         |         |
  0+55       1.4550     35.70  |  V    Q  |         |         |         |
  1+ 0       1.7152     37.79  |  V    Q  |         |         |         |
  1+ 5       1.9784     38.21  |   V   Q  |         |         |         |
  1+10       2.2479     39.13  |   V   Q  |         |         |         |
  1+15       2.5388     42.25  |    V   Q |         |         |         |
  1+20       2.8586     46.43  |     V   Q|         |         |         |
  1+25       3.2028     49.98  |     V   Q|         |         |         |
  1+30       3.5627     52.25  |      V   Q         |         |         |
  1+35       3.9346     54.00  |       V Q          |         |         |
  1+40       4.3300     57.41  |        V|Q         |         |         |
```

```
 1+45      4.7589     62.28  |         V Q       |         |         |
 1+50      5.2055     64.84  |         |VQ       |         |         |
 1+55      5.6722     67.77  |         | VQ      |         |         |
 2+ 0      6.1767     73.24  |         |  VQ     |         |         |
 2+ 5      6.7073     77.05  |         |   VQ    |         |         |
 2+10      7.2461     78.24  |         |    Q    |         |         |
 2+15      7.8073     81.49  |         |     Q   |         |         |
 2+20      8.4071     87.10  |         |      Q  |         |         |
 2+25      9.0773     97.30  |         |        Q|         |         |
 2+30      9.8514    112.41  |         |         |VQ       |         |
 2+35     10.7012    123.39  |         |         | V Q     |         |
 2+40     11.6742    141.28  |         |         |   V   Q |         |
 2+45     12.7976    163.11  |         |         |      V  | Q       |
 2+50     13.9594    168.70  |         |         |        V|  Q      |
 2+55     15.0365    156.39  |         |         |         |QV       |
 3+ 0     15.8833    122.95  |         |         |   Q     |  V      |
 3+ 5     16.5179     92.14  |         |       Q |         |    V    |
 3+10     17.0379     75.51  |         |    Q    |         |     V   |
 3+15     17.4441     58.97  |         |Q        |         |      V  |
 3+20     17.7403     43.01  |       Q |         |         |      V  |
 3+25     17.9667     32.87  |     Q   |         |         |       V |
 3+30     18.1435     25.68  |    Q    |         |         |       V |
 3+35     18.2817     20.06  |   Q     |         |         |        V|
 3+40     18.3885     15.52  |  Q      |         |         |        V|
 3+45     18.4692     11.71  | Q       |         |         |        V|
 3+50     18.5290      8.69  |Q        |         |         |        V|
 3+55     18.5727      6.35  |Q        |         |         |        V|
 4+ 0     18.6061      4.84  Q         |         |         |        V|
 4+ 5     18.6327      3.87  Q         |         |         |        V|
 4+10     18.6539      3.08  Q         |         |         |        V|
 4+15     18.6712      2.51  Q         |         |         |        V|
 4+20     18.6862      2.17  Q         |         |         |        V|
 4+25     18.6990      1.87  Q         |         |         |        V|
 4+30     18.7093      1.48  Q         |         |         |        V|
 4+35     18.7169      1.11  Q         |         |         |        V|
 4+40     18.7224      0.79  Q         |         |         |        V|
 4+45     18.7261      0.54  Q         |         |         |        V|
 4+50     18.7281      0.30  Q         |         |         |        V|
 4+55     18.7291      0.13  Q         |         |         |        V|
 5+ 0     18.7296      0.08  Q         |         |         |        V|
 5+ 5     18.7298      0.04  Q         |         |         |        V|
 5+10     18.7299      0.01  Q         |         |         |         V
-----------------------------------------------------------------------
```

U n i t   H y d r o g r a p h   A n a l y s i s

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Study date 11/04/11 File: 3080E36100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6061

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

BEAUMENT DISTRIBUTION CENTER
EXISTING CONDITION
6 HR'S 5 MIN. STORM

Drainage Area = 135.00(Ac.) = 0.211 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 135.00(Ac.) = 0.211 Sq. Mi.

USER Entry of lag time in hours
Lag time = 0.320 Hr.
Lag time = 19.20 Min.
25% of lag time = 4.80 Min.
40% of lag time = 7.68 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
135.00	1.30	175.50

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
135.00	2.70	364.50

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.300(In)
Area Averaged 100-Year Rainfall = 2.700(In)

Point rain (area averaged) = 2.700(In)
Areal adjustment factor = 99.95 %
Adjusted average point rain = 2.699(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
135.000	85.00	0.000

Total Area Entered = 135.00(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
85.0	94.0	0.078	0.000	0.078	1.000	0.078
					Sum (F) =	0.078

Area averaged mean soil loss (F) (In/Hr) = 0.078
Minimum soil loss rate ((In/Hr)) = 0.039
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	26.042	1.798	2.447
2	0.167	52.083	5.476	7.450
3	0.250	78.125	9.559	13.005
4	0.333	104.167	20.854	28.373
5	0.417	130.208	22.309	30.353
6	0.500	156.250	9.795	13.326
7	0.583	182.292	6.603	8.984
8	0.667	208.333	5.089	6.924
9	0.750	234.375	3.950	5.375
10	0.833	260.417	3.203	4.358
11	0.917	286.458	2.572	3.500
12	1.000	312.500	2.101	2.858
13	1.083	338.542	1.667	2.268
14	1.167	364.583	1.265	1.722
15	1.250	390.625	1.006	1.368
16	1.333	416.667	0.669	0.910
17	1.417	442.708	0.340	0.462
18	1.500	468.750	0.299	0.407
19	1.583	494.792	0.262	0.357
20	1.667	520.833	0.227	0.309
21	1.750	546.875	0.158	0.215
22	1.833	572.917	0.176	0.240
23	1.917	598.958	0.208	0.283
24	2.000	625.000	0.160	0.218
25	2.083	651.042	0.104	0.142
26	2.167	677.083	0.076	0.104
27	2.250	703.125	0.072	0.098
			Sum = 100.000	Sum= 136.055

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.162	0.078	---	0.08
2	0.17	0.60	0.194	0.078	---	0.12
3	0.25	0.60	0.194	0.078	---	0.12
4	0.33	0.60	0.194	0.078	---	0.12
5	0.42	0.60	0.194	0.078	---	0.12
6	0.50	0.70	0.227	0.078	---	0.15
7	0.58	0.70	0.227	0.078	---	0.15
8	0.67	0.70	0.227	0.078	---	0.15
9	0.75	0.70	0.227	0.078	---	0.15
10	0.83	0.70	0.227	0.078	---	0.15
11	0.92	0.70	0.227	0.078	---	0.15

12	1.00	0.80	0.259	0.078	---	0.18
13	1.08	0.80	0.259	0.078	---	0.18
14	1.17	0.80	0.259	0.078	---	0.18
15	1.25	0.80	0.259	0.078	---	0.18
16	1.33	0.80	0.259	0.078	---	0.18
17	1.42	0.80	0.259	0.078	---	0.18
18	1.50	0.80	0.259	0.078	---	0.18
19	1.58	0.80	0.259	0.078	---	0.18
20	1.67	0.80	0.259	0.078	---	0.18
21	1.75	0.80	0.259	0.078	---	0.18
22	1.83	0.80	0.259	0.078	---	0.18
23	1.92	0.80	0.259	0.078	---	0.18
24	2.00	0.90	0.291	0.078	---	0.21
25	2.08	0.80	0.259	0.078	---	0.18
26	2.17	0.90	0.291	0.078	---	0.21
27	2.25	0.90	0.291	0.078	---	0.21
28	2.33	0.90	0.291	0.078	---	0.21
29	2.42	0.90	0.291	0.078	---	0.21
30	2.50	0.90	0.291	0.078	---	0.21
31	2.58	0.90	0.291	0.078	---	0.21
32	2.67	0.90	0.291	0.078	---	0.21
33	2.75	1.00	0.324	0.078	---	0.25
34	2.83	1.00	0.324	0.078	---	0.25
35	2.92	1.00	0.324	0.078	---	0.25
36	3.00	1.00	0.324	0.078	---	0.25
37	3.08	1.00	0.324	0.078	---	0.25
38	3.17	1.10	0.356	0.078	---	0.28
39	3.25	1.10	0.356	0.078	---	0.28
40	3.33	1.10	0.356	0.078	---	0.28
41	3.42	1.20	0.389	0.078	---	0.31
42	3.50	1.30	0.421	0.078	---	0.34
43	3.58	1.40	0.453	0.078	---	0.38
44	3.67	1.40	0.453	0.078	---	0.38
45	3.75	1.50	0.486	0.078	---	0.41
46	3.83	1.50	0.486	0.078	---	0.41
47	3.92	1.60	0.518	0.078	---	0.44
48	4.00	1.60	0.518	0.078	---	0.44
49	4.08	1.70	0.551	0.078	---	0.47
50	4.17	1.80	0.583	0.078	---	0.50
51	4.25	1.90	0.615	0.078	---	0.54
52	4.33	2.00	0.648	0.078	---	0.57
53	4.42	2.10	0.680	0.078	---	0.60
54	4.50	2.10	0.680	0.078	---	0.60
55	4.58	2.20	0.712	0.078	---	0.63
56	4.67	2.30	0.745	0.078	---	0.67
57	4.75	2.40	0.777	0.078	---	0.70
58	4.83	2.40	0.777	0.078	---	0.70
59	4.92	2.50	0.810	0.078	---	0.73
60	5.00	2.60	0.842	0.078	---	0.76
61	5.08	3.10	1.004	0.078	---	0.93
62	5.17	3.60	1.166	0.078	---	1.09
63	5.25	3.90	1.263	0.078	---	1.19
64	5.33	4.20	1.360	0.078	---	1.28
65	5.42	4.70	1.522	0.078	---	1.44
66	5.50	5.60	1.814	0.078	---	1.74
67	5.58	1.90	0.615	0.078	---	0.54
68	5.67	0.90	0.291	0.078	---	0.21
69	5.75	0.60	0.194	0.078	---	0.12
70	5.83	0.50	0.162	0.078	---	0.08
71	5.92	0.30	0.097	0.078	---	0.02
72	6.00	0.20	0.065	0.078	0.058	0.01
	Sum =	100.0			Sum =	26.8

Flood volume = Effective rainfall 2.23(In)
times area 135.0(Ac.)/[(In)/(Ft.)] = 25.1(Ac.Ft)
Total soil loss = 0.47(In)

```
Total soil loss =      5.247(Ac.Ft)
Total rainfall =       2.70(In)
Flood volume =     1093982.4 Cubic Feet
Total soil loss =       228538.6 Cubic Feet
---------------------------------------------------------------------
 Peak flow rate of this hydrograph =    156.100(CFS)
---------------------------------------------------------------------
+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    6 - H O U R   S T O R M
               R u n o f f     H y d r o g r a p h
---------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

---------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0       50.0     100.0     150.0     200.0
---------------------------------------------------------------------
  0+ 5       0.0014      0.21  Q          |         |         |         |
  0+10       0.0077      0.91  Q          |         |         |         |
  0+15       0.0231      2.24  Q          |         |         |         |
  0+20       0.0579      5.05  VQ         |         |         |         |
  0+25       0.1165      8.52  VQ         |         |         |         |
  0+30       0.1902     10.70  V Q        |         |         |         |
  0+35       0.2737     12.12  V Q        |         |         |         |
  0+40       0.3661     13.42  V Q        |         |         |         |
  0+45       0.4695     15.01  V   Q      |         |         |         |
  0+50       0.5834     16.54  V   Q      |         |         |         |
  0+55       0.7033     17.40  |V  Q      |         |         |         |
  1+ 0       0.8281     18.13  |V  Q      |         |         |         |
  1+ 5       0.9582     18.88  |V  Q      |         |         |         |
  1+10       1.0938     19.69  |V  Q      |         |         |         |
  1+15       1.2379     20.92  |V   Q     |         |         |         |
  1+20       1.3903     22.14  | V  Q     |         |         |         |
  1+25       1.5469     22.73  | V  Q     |         |         |         |
  1+30       1.7063     23.15  | V  Q     |         |         |         |
  1+35       1.8679     23.47  | V  Q     |         |         |         |
  1+40       2.0313     23.72  |   VQ     |         |         |         |
  1+45       2.1961     23.92  |   VQ     |         |         |         |
  1+50       2.3619     24.08  |   VQ     |         |         |         |
  1+55       2.5287     24.22  |    Q     |         |         |         |
  2+ 0       2.6968     24.41  |    Q     |         |         |         |
  2+ 5       2.8666     24.66  |    Q     |         |         |         |
  2+10       3.0386     24.98  |    Q     |         |         |         |
  2+15       3.2161     25.77  |     Q    |         |         |         |
  2+20       3.3971     26.28  |     Q    |         |         |         |
  2+25       3.5807     26.67  |     Q    |         |         |         |
  2+30       3.7703     27.53  |     QV   |         |         |         |
  2+35       3.9625     27.91  |     QV   |         |         |         |
  2+40       4.1564     28.16  |     QV   |         |         |         |
  2+45       4.3522     28.43  |     QV   |         |         |         |
  2+50       4.5508     28.83  |     Q V  |         |         |         |
  2+55       4.7532     29.38  |     Q V  |         |         |         |
  3+ 0       4.9625     30.40  |      QV  |         |         |         |
  3+ 5       5.1792     31.46  |      Q V |         |         |         |
  3+10       5.3998     32.04  |      Q V |         |         |         |
  3+15       5.6244     32.61  |      Q V |         |         |         |
  3+20       5.8536     33.29  |      Q  V|         |         |         |
  3+25       6.0912     34.49  |      Q  V|         |         |         |
  3+30       6.3387     35.94  |       Q  V        |         |         |
  3+35       6.5952     37.24  |       Q  V        |         |         |
  3+40       6.8653     39.22  |       Q  V        |         |         |
  3+45       7.1541     41.93  |        Q |V       |         |         |
  3+50       7.4622     44.74  |        Q |V       |         |         |
  3+55       7.7869     47.14  |         Q| V      |         |         |
  4+ 0       8.1271     49.40  |         Q| V      |         |         |
  4+ 5       8.4831     51.69  |          Q  V     |         |         |
```

```
 4+10        8.8550     53.99  |         Q   V     |         |         |
 4+15        9.2441     56.50  |         |Q  V     |         |         |
 4+20        9.6520     59.23  |         |Q   V    |         |         |
 4+25       10.0835     62.65  |         | Q   V   |         |         |
 4+30       10.5398     66.26  |         |  Q  V   |         |         |
 4+35       11.0210     69.87  |         |  Q   V  |         |         |
 4+40       11.5266     73.42  |         |   Q   V |         |         |
 4+45       12.0539     76.56  |         |    Q   V|         |         |
 4+50       12.6023     79.62  |         |    Q    V         |         |
 4+55       13.1748     83.14  |         |     Q   V         |         |
 5+ 0       13.7717     86.67  |         |      Q  |V        |         |
 5+ 5       14.3924     90.12  |         |       Q |  V       |         |
 5+10       15.0436     94.56  |         |       Q |   V      |         |
 5+15       15.7402    101.14  |         |         Q    V     |         |
 5+20       16.5054    111.11  |         |         | Q   V    |         |
 5+25       17.3622    124.41  |         |         |   Q  V   |         |
 5+30       18.3160    138.49  |         |         |      Q V |         |
 5+35       19.3489    149.97  |         |         |        QV         |
 5+40       20.4239    156.10  |         |         |         |QV       |
 5+45       21.4963    155.71  |         |         |         |Q  V     |
 5+50       22.3999    131.21  |         |         |     Q   |    V    |
 5+55       23.0341     92.08  |         |       Q |         |     V   |
 6+ 0       23.5060     68.52  |         |  Q      |         |      V  |
 6+ 5       23.8729     53.27  |         Q         |         |       V |
 6+10       24.1581     41.41  |       Q |         |         |       V |
 6+15       24.3781     31.94  |     Q   |         |         |       V |
 6+20       24.5495     24.89  |   Q     |         |         |        V|
 6+25       24.6829     19.37  |  Q      |         |         |        V|
 6+30       24.7857     14.92  | Q       |         |         |        V|
 6+35       24.8637     11.32  | Q       |         |         |        V|
 6+40       24.9222      8.50  |Q        |         |         |        V|
 6+45       24.9650      6.20  |Q        |         |         |        V|
 6+50       24.9962      4.53  Q         |         |         |        V|
 6+55       25.0211      3.62  Q         |         |         |        V|
 7+ 0       25.0416      2.98  Q         |         |         |        V|
 7+ 5       25.0585      2.46  Q         |         |         |        V|
 7+10       25.0725      2.02  Q         |         |         |        V|
 7+15       25.0845      1.75  Q         |         |         |        V|
 7+20       25.0946      1.47  Q         |         |         |        V|
 7+25       25.1022      1.10  Q         |         |         |        V|
 7+30       25.1074      0.75  Q         |         |         |        V|
 7+35       25.1108      0.50  Q         |         |         |        V|
 7+40       25.1130      0.31  Q         |         |         |        V|
 7+45       25.1138      0.12  Q         |         |         |        V|
 7+50       25.1141      0.05  Q         |         |         |        V|
 7+55       25.1143      0.02  Q         |         |         |        V|
 8+ 0       25.1144      0.01  Q         |         |         |        V|
 8+ 5       25.1144      0.00  Q         |         |         |        V|
 8+10       25.1144      0.00  Q         |         |         |        V|
-----------------------------------------------------------------------
```

```
U n i t   H y d r o g r a p h   A n a l y s i s

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     Study date  11/04/11 File: 3080E324100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 6061

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



--------------------------------------------------------------------
BEAUMENT DISTRIBUTION CENTER
EXISTING CONDITION
24 HR'S  5 MIN. STROM

-------------------------------------------------------------------
Drainage Area =     135.00(Ac.)  =      0.211 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =     135.00(Ac.)  =      0.211 Sq.
Mi.
USER Entry of lag time in hours
Lag time =    0.320 Hr.
Lag time =    19.20 Min.
25% of lag time =     4.80 Min.
40% of lag time =     7.68 Min.
Unit time =     5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow =     0.00(CFS)

2 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
      135.00              2.40                 324.00

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
      135.00              5.65                 762.75

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    2.400(In)
Area Averaged 100-Year Rainfall =    5.650(In)

Point rain (area averaged) =    5.650(In)
Areal adjustment factor =   99.97 %
Adjusted average point rain =    5.649(In)

Sub-Area Data:
Area(Ac.)          Runoff Index   Impervious %
   135.000            85.00         0.000
```

Total Area Entered =   135.00(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
85.0	94.0	0.078	0.000	0.078	1.000	0.078
					Sum (F) =	0.078

Area averaged mean soil loss (F) (In/Hr) = 0.078
Minimum soil loss rate ((In/Hr)) = 0.039
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.900

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	26.042	1.798	2.447
2	0.167	52.083	5.476	7.450
3	0.250	78.125	9.559	13.005
4	0.333	104.167	20.854	28.373
5	0.417	130.208	22.309	30.353
6	0.500	156.250	9.795	13.326
7	0.583	182.292	6.603	8.984
8	0.667	208.333	5.089	6.924
9	0.750	234.375	3.950	5.375
10	0.833	260.417	3.203	4.358
11	0.917	286.458	2.572	3.500
12	1.000	312.500	2.101	2.858
13	1.083	338.542	1.667	2.268
14	1.167	364.583	1.265	1.722
15	1.250	390.625	1.006	1.368
16	1.333	416.667	0.669	0.910
17	1.417	442.708	0.340	0.462
18	1.500	468.750	0.299	0.407
19	1.583	494.792	0.262	0.357
20	1.667	520.833	0.227	0.309
21	1.750	546.875	0.158	0.215
22	1.833	572.917	0.176	0.240
23	1.917	598.958	0.208	0.283
24	2.000	625.000	0.160	0.218
25	2.083	651.042	0.104	0.142
26	2.167	677.083	0.076	0.104
27	2.250	703.125	0.072	0.098
			Sum = 100.000	Sum= 136.055

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.045	0.138	0.041	0.00
2	0.17	0.07	0.045	0.138	0.041	0.00
3	0.25	0.07	0.045	0.137	0.041	0.00
4	0.33	0.10	0.068	0.137	0.061	0.01
5	0.42	0.10	0.068	0.136	0.061	0.01
6	0.50	0.10	0.068	0.136	0.061	0.01
7	0.58	0.10	0.068	0.135	0.061	0.01
8	0.67	0.10	0.068	0.135	0.061	0.01
9	0.75	0.10	0.068	0.134	0.061	0.01
10	0.83	0.13	0.090	0.133	0.081	0.01
11	0.92	0.13	0.090	0.133	0.081	0.01

12	1.00	0.13	0.090	0.132	0.081	0.01
13	1.08	0.10	0.068	0.132	0.061	0.01
14	1.17	0.10	0.068	0.131	0.061	0.01
15	1.25	0.10	0.068	0.131	0.061	0.01
16	1.33	0.10	0.068	0.130	0.061	0.01
17	1.42	0.10	0.068	0.130	0.061	0.01
18	1.50	0.10	0.068	0.129	0.061	0.01
19	1.58	0.10	0.068	0.129	0.061	0.01
20	1.67	0.10	0.068	0.128	0.061	0.01
21	1.75	0.10	0.068	0.128	0.061	0.01
22	1.83	0.13	0.090	0.127	0.081	0.01
23	1.92	0.13	0.090	0.127	0.081	0.01
24	2.00	0.13	0.090	0.126	0.081	0.01
25	2.08	0.13	0.090	0.126	0.081	0.01
26	2.17	0.13	0.090	0.125	0.081	0.01
27	2.25	0.13	0.090	0.125	0.081	0.01
28	2.33	0.13	0.090	0.124	0.081	0.01
29	2.42	0.13	0.090	0.124	0.081	0.01
30	2.50	0.13	0.090	0.123	0.081	0.01
31	2.58	0.17	0.113	0.123	0.102	0.01
32	2.67	0.17	0.113	0.122	0.102	0.01
33	2.75	0.17	0.113	0.122	0.102	0.01
34	2.83	0.17	0.113	0.121	0.102	0.01
35	2.92	0.17	0.113	0.121	0.102	0.01
36	3.00	0.17	0.113	0.120	0.102	0.01
37	3.08	0.17	0.113	0.120	0.102	0.01
38	3.17	0.17	0.113	0.119	0.102	0.01
39	3.25	0.17	0.113	0.119	0.102	0.01
40	3.33	0.17	0.113	0.118	0.102	0.01
41	3.42	0.17	0.113	0.118	0.102	0.01
42	3.50	0.17	0.113	0.117	0.102	0.01
43	3.58	0.17	0.113	0.117	0.102	0.01
44	3.67	0.17	0.113	0.116	0.102	0.01
45	3.75	0.17	0.113	0.116	0.102	0.01
46	3.83	0.20	0.136	0.115	---	0.02
47	3.92	0.20	0.136	0.115	---	0.02
48	4.00	0.20	0.136	0.114	---	0.02
49	4.08	0.20	0.136	0.114	---	0.02
50	4.17	0.20	0.136	0.113	---	0.02
51	4.25	0.20	0.136	0.113	---	0.02
52	4.33	0.23	0.158	0.112	---	0.05
53	4.42	0.23	0.158	0.112	---	0.05
54	4.50	0.23	0.158	0.111	---	0.05
55	4.58	0.23	0.158	0.111	---	0.05
56	4.67	0.23	0.158	0.110	---	0.05
57	4.75	0.23	0.158	0.110	---	0.05
58	4.83	0.27	0.181	0.109	---	0.07
59	4.92	0.27	0.181	0.109	---	0.07
60	5.00	0.27	0.181	0.109	---	0.07
61	5.08	0.20	0.136	0.108	---	0.03
62	5.17	0.20	0.136	0.108	---	0.03
63	5.25	0.20	0.136	0.107	---	0.03
64	5.33	0.23	0.158	0.107	---	0.05
65	5.42	0.23	0.158	0.106	---	0.05
66	5.50	0.23	0.158	0.106	---	0.05
67	5.58	0.27	0.181	0.105	---	0.08
68	5.67	0.27	0.181	0.105	---	0.08
69	5.75	0.27	0.181	0.104	---	0.08
70	5.83	0.27	0.181	0.104	---	0.08
71	5.92	0.27	0.181	0.103	---	0.08
72	6.00	0.27	0.181	0.103	---	0.08

Sum = 100.0 Sum = 47.5

Flood volume = Effective rainfall 3.96(In)

```
 times area     135.0(Ac.)/[(In)/(Ft.)] =      44.5(Ac.Ft)
Total soil loss =       1.69(In)
Total soil loss =     19.001(Ac.Ft)
Total rainfall =       5.65(In)
Flood volume =     1940361.2 Cubic Feet
Total soil loss =      827691.2 Cubic Feet
--------------------------------------------------------------------
 Peak flow rate of this hydrograph =     90.057(CFS)
--------------------------------------------------------------------
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                    24 - H O U R    S T O R M
               R u n o f f     H y d r o g r a p h
--------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

--------------------------------------------------------------------
```

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	25.0	50.0	75.0	100.0
0+ 5	0.0001	0.01	Q	|	|	|	|
0+10	0.0004	0.04	Q	|	|	|	|
0+15	0.0011	0.10	Q	|	|	|	|
0+20	0.0027	0.24	Q	|	|	|	|
0+25	0.0054	0.39	Q	|	|	|	|
0+30	0.0087	0.48	Q	|	|	|	|
0+35	0.0128	0.59	Q	|	|	|	|
0+40	0.0175	0.69	Q	|	|	|	|
0+45	0.0226	0.74	Q	|	|	|	|
0+50	0.0280	0.79	Q	|	|	|	|
0+55	0.0338	0.83	Q	|	|	|	|
1+ 0	0.0399	0.89	Q	|	|	|	|
1+ 5	0.0465	0.97	Q	|	|	|	|
1+10	0.0537	1.03	Q	|	|	|	|
1+15	0.0609	1.05	Q	|	|	|	|
1+20	0.0679	1.01	Q	|	|	|	|
1+25	0.0745	0.97	Q	|	|	|	|
1+30	0.0811	0.95	Q	|	|	|	|
1+35	0.0876	0.95	Q	|	|	|	|
1+40	0.0941	0.94	Q	|	|	|	|
1+45	0.1005	0.94	Q	|	|	|	|
1+50	0.1070	0.94	Q	|	|	|	|
1+55	0.1136	0.96	Q	|	|	|	|
2+ 0	0.1204	0.98	Q	|	|	|	|
2+ 5	0.1276	1.04	Q	|	|	|	|
2+10	0.1352	1.11	Q	|	|	|	|
2+15	0.1431	1.14	Q	|	|	|	|
2+20	0.1511	1.16	Q	|	|	|	|
2+25	0.1592	1.18	Q	|	|	|	|
2+30	0.1673	1.19	Q	|	|	|	|
2+35	0.1756	1.20	Q	|	|	|	|
2+40	0.1841	1.23	Q	|	|	|	|
2+45	0.1928	1.26	Q	|	|	|	|
2+50	0.2019	1.33	Q	|	|	|	|
2+55	0.2116	1.40	Q	|	|	|	|
3+ 0	0.2215	1.44	Q	|	|	|	|
3+ 5	0.2316	1.46	Q	|	|	|	|
3+10	0.2417	1.48	Q	|	|	|	|
3+15	0.2520	1.49	Q	|	|	|	|
3+20	0.2623	1.50	Q	|	|	|	|
3+25	0.2727	1.51	Q	|	|	|	|
3+30	0.2831	1.51	Q	|	|	|	|
3+35	0.2936	1.52	Q	|	|	|	|
3+40	0.3041	1.52	Q	|	|	|	|
3+45	0.3146	1.53	Q	|	|	|	|
3+50	0.3253	1.55	Q	|	|	|	|
3+55	0.3365	1.62	Q	|	|	|	|

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 4+ 0      0.3485      1.75  Q         |         |         |         |
 4+ 5      0.3624      2.01  Q         |         |         |         |
 4+10      0.3783      2.31  Q         |         |         |         |
 4+15      0.3953      2.47  Q         |         |         |         |
 4+20      0.4136      2.66  VQ        |         |         |         |
 4+25      0.4339      2.94  VQ        |         |         |         |
 4+30      0.4569      3.34  VQ        |         |         |         |
 4+35      0.4849      4.07  VQ        |         |         |         |
 4+40      0.5183      4.85  VQ        |         |         |         |
 4+45      0.5543      5.24  V Q       |         |         |         |
 4+50      0.5927      5.57  V Q       |         |         |         |
 4+55      0.6339      5.98  V Q       |         |         |         |
 5+ 0      0.6784      6.47  V Q       |         |         |         |
 5+ 5      0.7278      7.17  V Q       |         |         |         |
 5+10      0.7806      7.66  V  Q      |         |         |         |
 5+15      0.8323      7.51  V  Q      |         |         |         |
 5+20      0.8778      6.60  V Q       |         |         |         |
 5+25      0.9168      5.66  V Q       |         |         |         |
 5+30      0.9551      5.57  V Q       |         |         |         |
 5+35      0.9968      6.05  V Q       |         |         |         |
 5+40      1.0432      6.74  V Q       |         |         |         |
 5+45      1.0930      7.23  V Q       |         |         |         |
 5+50      1.1482      8.01  |V Q      |         |         |         |
 5+55      1.2088      8.80  |V Q      |         |         |         |
 6+ 0      1.2721      9.19  |V Q      |         |         |         |
 6+ 5      1.3377      9.54  |V Q      |         |         |         |
 6+10      1.4062      9.94  |V Q      |         |         |         |
 6+15      1.4781     10.44  |V  Q     |         |         |         |
 6+20      1.5557     11.26  |V  Q     |         |         |         |
 6+25      1.6391     12.12  |V  Q     |         |         |         |
 6+30      1.7256     12.56  |V   Q    |         |         |         |
 6+35      1.8148     12.95  |V   Q    |         |         |         |
 6+40      1.9069     13.37  |V   Q    |         |         |         |
 6+45      2.0026     13.89  |V   Q    |         |         |         |
 6+50      2.1039     14.71  |V   Q    |         |         |         |
 6+55      2.2109     15.54  |V    Q   |         |         |         |
 7+ 0      2.3209     15.98  | V   Q   |         |         |         |
 7+ 5      2.4332     16.30  | V   Q   |         |         |         |
 7+10      2.5473     16.56  | V   Q   |         |         |         |
 7+15      2.6629     16.78  | V   Q   |         |         |         |
 7+20      2.7801     17.03  | V   Q   |         |         |         |
 7+25      2.8997     17.35  | V   Q   |         |         |         |
 7+30      3.0222     17.79  | V    Q  |         |         |         |
 7+35      3.1503     18.61  | V    Q  |         |         |         |
 7+40      3.2851     19.57  | V    Q  |         |         |         |
 7+45      3.4247     20.26  |  V    Q |         |         |         |
 7+50      3.5710     21.25  |  V    Q |         |         |         |
 7+55      3.7249     22.34  |  V    Q |         |         |         |
 8+ 0      3.8842     23.13  |  V     Q|         |         |         |
 8+ 5      4.0512     24.25  |  V     Q|         |         |         |
 8+10      4.2274     25.58  |  V      Q         |         |         |
 8+15      4.4114     26.72  |  V      Q         |         |         |
 8+20      4.6071     28.42  |   V     |Q        |         |         |
 8+25      4.8146     30.13  |   V     | Q       |         |         |
 8+30      5.0282     31.01  |   V     | Q       |         |         |
 8+35      5.2466     31.71  |   V     | Q       |         |         |
 8+40      5.4696     32.38  |   V     | Q       |         |         |
 8+45      5.6974     33.08  |    V    |  Q      |         |         |
 8+50      5.9324     34.11  |    V    |  Q      |         |         |
 8+55      6.1750     35.24  |    V    |   Q     |         |         |
 9+ 0      6.4234     36.06  |    V    |   Q     |         |         |
 9+ 5      6.6797     37.21  |    V    |   Q     |         |         |
 9+10      6.9452     38.55  |     V   |    Q    |         |         |
 9+15      7.2186     39.70  |     V   |    Q    |         |         |
 9+20      7.5041     41.45  |     V   |     Q   |         |         |
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 9+25      7.8025     43.32   |      V  |      Q  |         |         |
 9+30      8.1089     44.49   |      V  |      Q  |         |         |
 9+35      8.4246     45.83   |      V  |       Q |         |         |
 9+40      8.7496     47.19   |      V  |       Q |         |         |
 9+45      9.0815     48.20   |       V |        Q|         |         |
 9+50      9.4220     49.44   |       V |        Q|         |         |
 9+55      9.7713     50.73   |       V |         Q         |         |
10+ 0     10.1272     51.68   |        V|         Q         |         |
10+ 5     10.4883     52.43   |        V|         Q         |         |
10+10     10.8487     52.33   |        V|         Q         |         |
10+15     11.1992     50.89   |         V         Q         |         |
10+20     11.5219     46.86   |         V       Q |         |         |
10+25     11.8141     42.42   |         V     Q   |         |         |
10+30     12.0938     40.61   |         V     Q   |         |         |
10+35     12.3673     39.72   |         |V   Q    |         |         |
10+40     12.6405     39.67   |         |V   Q    |         |         |
10+45     12.9192     40.46   |         |V    Q   |         |         |
10+50     13.2162     43.13   |         |V     Q  |         |         |
10+55     13.5339     46.13   |         | V     Q |         |         |
11+ 0     13.8596     47.29   |         | V     Q |         |         |
11+ 5     14.1901     47.99   |         | V      Q|         |         |
11+10     14.5235     48.41   |         |  V     Q|         |         |
11+15     14.8581     48.59   |         |  V     Q|         |         |
11+20     15.1912     48.36   |         |  V     Q|         |         |
11+25     15.5222     48.07   |         |  V     Q|         |         |
11+30     15.8534     48.09   |         |   V    Q|         |         |
11+35     16.1842     48.03   |         |   V    Q|         |         |
11+40     16.5131     47.75   |         |   V    Q|         |         |
11+45     16.8382     47.22   |         |    V  Q |         |         |
11+50     17.1551     46.01   |         |    V  Q |         |         |
11+55     17.4636     44.79   |         |    V Q  |         |         |
12+ 0     17.7699     44.48   |         |    V Q  |         |         |
12+ 5     18.0806     45.12   |         |     V Q |         |         |
12+10     18.4023     46.70   |         |     V Q |         |         |
12+15     18.7387     48.85   |         |     V  Q|         |         |
12+20     19.1068     53.45   |         |      V  |Q        |         |
12+25     19.5097     58.49   |         |      V  |  Q      |         |
12+30     19.9295     60.96   |         |      V  |   Q     |         |
12+35     20.3646     63.18   |         |       V |    Q    |         |
12+40     20.8147     65.36   |         |       V |     Q   |         |
12+45     21.2772     67.15   |         |        V|     Q   |         |
12+50     21.7554     69.44   |         |        V|      Q  |         |
12+55     22.2496     71.75   |         |        V|       Q |         |
13+ 0     22.7543     73.28   |         |         V        Q|         |
13+ 5     23.2715     75.11   |         |         V         Q         |
13+10     23.8042     77.34   |         |         |V        Q         |
13+15     24.3530     79.68   |         |         |V        |Q        |
13+20     24.9283     83.53   |         |         | V       |  Q      |
13+25     25.5304     87.43   |         |         | V       |   Q     |
13+30     26.1456     89.33   |         |         |  V      |    Q    |
13+35     26.7658     90.06   |         |         |   V     |     Q   |
13+40     27.3805     89.25   |         |         |   V     |    Q    |
13+45     27.9786     86.84   |         |         |    V    |   Q     |
13+50     28.5328     80.47   |         |         |    V    | Q       |
13+55     29.0388     73.48   |         |         |     V  Q|         |
14+ 0     29.5252     70.62   |         |         |     V Q |         |
14+ 5     30.0003     68.98   |         |         |     VQ  |         |
14+10     30.4701     68.22   |         |         |      Q  |         |
14+15     30.9405     68.30   |         |         |      Q  |         |
14+20     31.4218     69.89   |         |         |      QV |         |
14+25     31.9158     71.72   |         |         |       Q |         |
14+30     32.4118     72.03   |         |         |       QV|         |
14+35     32.9058     71.73   |         |         |       QV|         |
14+40     33.3971     71.33   |         |         |       QV|         |
14+45     33.8879     71.26   |         |         |       Q V         |
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14+50	34.3785	71.24
14+55	34.8688	71.20
15+ 0	35.3579	71.01
15+ 5	35.8426	70.39
15+10	36.3219	69.59
15+15	36.7975	69.05
15+20	37.2670	68.17
15+25	37.7293	67.13
15+30	38.1867	66.41
15+35	38.6361	65.26
15+40	39.0749	63.70
15+45	39.5023	62.07
15+50	39.9101	59.20
15+55	40.2974	56.24
16+ 0	40.6754	54.88
16+ 5	41.0412	53.12
16+10	41.3847	49.88
16+15	41.6941	44.92
16+20	41.9342	34.86
16+25	42.1011	24.24
16+30	42.2351	19.45
16+35	42.3463	16.15
16+40	42.4392	13.49
16+45	42.5169	11.27
16+50	42.5795	9.10
16+55	42.6291	7.20
17+ 0	42.6699	5.92
17+ 5	42.7048	5.06
17+10	42.7369	4.66
17+15	42.7690	4.67
17+20	42.8073	5.56
17+25	42.8535	6.71
17+30	42.9025	7.12
17+35	42.9533	7.38
17+40	43.0055	7.57
17+45	43.0588	7.74
17+50	43.1126	7.82
17+55	43.1659	7.74
18+ 0	43.2177	7.52
18+ 5	43.2657	6.96
18+10	43.3094	6.35
18+15	43.3515	6.11
18+20	43.3926	5.97
18+25	43.4330	5.87
18+30	43.4729	5.79
18+35	43.5120	5.68
18+40	43.5498	5.48
18+45	43.5854	5.16
18+50	43.6162	4.48
18+55	43.6416	3.69
19+ 0	43.6637	3.20
19+ 5	43.6817	2.62
19+10	43.6965	2.15
19+15	43.7105	2.04
19+20	43.7265	2.31
19+25	43.7456	2.78
19+30	43.7674	3.16
19+35	43.7935	3.79
19+40	43.8235	4.35
19+45	43.8537	4.39
19+50	43.8808	3.94
19+55	43.9037	3.32
20+ 0	43.9240	2.95
20+ 5	43.9408	2.43
20+10	43.9545	1.99

20+15	43.9680	1.96	Q	V|
20+20	43.9837	2.28	Q	V|
20+25	44.0022	2.69	|Q	V|
20+30	44.0216	2.82	|Q	V|
20+35	44.0416	2.90	|Q	V|
20+40	44.0619	2.95	|Q	V|
20+45	44.0826	3.00	|Q	V|
20+50	44.1032	3.00	|Q	V|
20+55	44.1231	2.89	|Q	V|
21+ 0	44.1413	2.64	|Q	V|
21+ 5	44.1558	2.10	Q	V|
21+10	44.1671	1.63	Q	V|
21+15	44.1786	1.67	Q	V|
21+20	44.1929	2.08	Q	V|
21+25	44.2099	2.47	Q	V|
21+30	44.2263	2.38	Q	V|
21+35	44.2395	1.92	Q	V|
21+40	44.2498	1.50	Q	V|
21+45	44.2606	1.57	Q	V|
21+50	44.2746	2.02	Q	V|
21+55	44.2914	2.45	Q	V|
22+ 0	44.3079	2.39	Q	V|
22+ 5	44.3214	1.96	Q	V|
22+10	44.3322	1.57	Q	V|
22+15	44.3437	1.67	Q	V|
22+20	44.3584	2.13	Q	V|
22+25	44.3759	2.55	|Q	V|
22+30	44.3931	2.49	Q	V|
22+35	44.4070	2.01	Q	V|
22+40	44.4169	1.45	Q	V|
22+45	44.4255	1.24	Q	V|
22+50	44.4332	1.12	Q	V|
22+55	44.4402	1.03	Q	V|
23+ 0	44.4468	0.96	Q	V|
23+ 5	44.4531	0.91	Q	V|
23+10	44.4592	0.88	Q	V|
23+15	44.4651	0.85	Q	V|
23+20	44.4708	0.83	Q	V|
23+25	44.4764	0.81	Q	V|
23+30	44.4819	0.80	Q	V|
23+35	44.4874	0.80	Q	V|
23+40	44.4930	0.80	Q	V|
23+45	44.4985	0.81	Q	V|
23+50	44.5041	0.81	Q	V|
23+55	44.5098	0.82	Q	V|
24+ 0	44.5154	0.82	Q	V|
24+ 5	44.5210	0.81	Q	V|
24+10	44.5263	0.77	Q	V|
24+15	44.5311	0.69	Q	V|
24+20	44.5347	0.52	Q	V|
24+25	44.5369	0.33	Q	V|
24+30	44.5386	0.25	Q	V|
24+35	44.5400	0.19	Q	V|
24+40	44.5410	0.15	Q	V|
24+45	44.5418	0.12	Q	V|
24+50	44.5425	0.09	Q	V|
24+55	44.5430	0.07	Q	V|
25+ 0	44.5434	0.05	Q	V|
25+ 5	44.5436	0.04	Q	V|
25+10	44.5439	0.03	Q	V|
25+15	44.5440	0.02	Q	V|
25+20	44.5441	0.02	Q	V|
25+25	44.5442	0.01	Q	V|
25+30	44.5443	0.01	Q	V|
25+35	44.5444	0.01	Q	V|

25+40	44.5444	0.01	Q	|	|	|	V|
25+45	44.5445	0.01	Q	|	|	|	V|
25+50	44.5445	0.01	Q	|	|	|	V|
25+55	44.5445	0.00	Q	|	|	|	V|
26+ 0	44.5446	0.00	Q	|	|	|	V|
26+ 5	44.5446	0.00	Q	|	|	|	V|
26+10	44.5446	0.00	Q	|	|	|	V

PROPOSED CONDITION HYDROGRAPHS

U n i t   H y d r o g r a p h   A n a l y s i s

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Study date 11/04/11 File: 3080U3P3100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6061

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

NAEUMONT DISTRIBUTION CENTER
3 HR'S, 5 MIN. STROM
100 - YEAR STROM
MAX. Q_{100} = 290.1 CFS

Drainage Area = 156.40(Ac.) = 0.244 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 156.40(Ac.) = 0.244 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.000 Hr.
Lag time = 0.00 Min.
25% of lag time = 0.00 Min.
40% of lag time = 0.00 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
156.40	0.90	140.76

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
156.40	1.90	297.16

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 0.900(In)
Area Averaged 100-Year Rainfall = 1.900(In)

Point rain (area averaged) = 1.900(In)
Areal adjustment factor = 99.93 %
Adjusted average point rain = 1.899(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
156.400	75.00	0.900

Total Area Entered = 156.40(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
75.0	88.0	0.153	0.900	0.029	1.000	0.029
					Sum (F) =	0.029

Area averaged mean soil loss (F) (In/Hr) = 0.029
Minimum soil loss rate ((In/Hr)) = 0.015
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	1.#IO	100.000	157.622
			Sum = 100.000	Sum= 157.622

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.296	0.029	---	0.27
2	0.17	1.30	0.296	0.029	---	0.27
3	0.25	1.10	0.251	0.029	---	0.22
4	0.33	1.50	0.342	0.029	---	0.31
5	0.42	1.50	0.342	0.029	---	0.31
6	0.50	1.80	0.410	0.029	---	0.38
7	0.58	1.50	0.342	0.029	---	0.31
8	0.67	1.80	0.410	0.029	---	0.38
9	0.75	1.80	0.410	0.029	---	0.38
10	0.83	1.50	0.342	0.029	---	0.31
11	0.92	1.60	0.365	0.029	---	0.34
12	1.00	1.80	0.410	0.029	---	0.38
13	1.08	2.20	0.501	0.029	---	0.47
14	1.17	2.20	0.501	0.029	---	0.47
15	1.25	2.20	0.501	0.029	---	0.47
16	1.33	2.00	0.456	0.029	---	0.43
17	1.42	2.60	0.592	0.029	---	0.56
18	1.50	2.70	0.615	0.029	---	0.59
19	1.58	2.40	0.547	0.029	---	0.52
20	1.67	2.70	0.615	0.029	---	0.59
21	1.75	3.30	0.752	0.029	---	0.72
22	1.83	3.10	0.706	0.029	---	0.68
23	1.92	2.90	0.661	0.029	---	0.63
24	2.00	3.00	0.684	0.029	---	0.65
25	2.08	3.10	0.706	0.029	---	0.68
26	2.17	4.20	0.957	0.029	---	0.93
27	2.25	5.00	1.139	0.029	---	1.11
28	2.33	3.50	0.797	0.029	---	0.77
29	2.42	6.80	1.549	0.029	---	1.52
30	2.50	7.30	1.663	0.029	---	1.63
31	2.58	8.20	1.868	0.029	---	1.84
32	2.67	5.90	1.344	0.029	---	1.32
33	2.75	2.00	0.456	0.029	---	0.43
34	2.83	1.80	0.410	0.029	---	0.38
35	2.92	1.80	0.410	0.029	---	0.38
36	3.00	0.60	0.137	0.029	---	0.11
Sum =		100.0			Sum =	21.7

```
 Flood volume = Effective rainfall      1.81(In)
  times area     156.4(Ac.)/[(In)/(Ft.)] =      23.6(Ac.Ft)
 Total soil loss =      0.09(In)
 Total soil loss =     1.135(Ac.Ft)
 Total rainfall =     1.90(In)
 Flood volume =     1028505.5 Cubic Feet
 Total soil loss =       49447.2 Cubic Feet
 --------------------------------------------------------------------
  Peak flow rate of this hydrograph =    290.062(CFS)
 --------------------------------------------------------------------
 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                     3 - H O U R   S T O R M
                Runoff      Hydrograph
 --------------------------------------------------------------------
             Hydrograph in   5   Minute intervals ((CFS))

 --------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        75.0     150.0     225.0     300.0
-----------------------------------------------------------------------
  0+ 5       0.2902      42.13  V    Q    |         |         |         |
  0+10       0.5803      42.13  V    Q    |         |         |         |
  0+15       0.8210      34.95  |V  Q     |         |         |         |
  0+20       1.1607      49.32  |V    Q   |         |         |         |
  0+25       1.5003      49.32  | V   Q   |         |         |         |
  0+30       1.9143      60.10  |  V    Q |         |         |         |
  0+35       2.2539      49.32  |  V  Q   |         |         |         |
  0+40       2.6678      60.10  |   V   Q |         |         |         |
  0+45       3.0817      60.10  |    V  Q |         |         |         |
  0+50       3.4214      49.32  |    VQ   |         |         |         |
  0+55       3.7858      52.91  |     VQ  |         |         |         |
  1+ 0       4.1997      60.10  |      VQ |         |         |         |
  1+ 5       4.7126      74.47  |      V Q|         |         |         |
  1+10       5.2255      74.47  |       VQ|         |         |         |
  1+15       5.7384      74.47  |        Q|         |         |         |
  1+20       6.2018      67.29  |       Q V         |         |         |
  1+25       6.8136      88.84  |         |Q        |         |         |
  1+30       7.4503      92.44  |         | Q       |         |         |
  1+35       8.0126      81.66  |         Q  V      |         |         |
  1+40       8.6493      92.44  |         | Q V     |         |         |
  1+45       9.4344     114.00  |         |    Q    |         |         |
  1+50      10.1700     106.81  |         |   Q  V  |         |         |
  1+55      10.8561      99.62  |         |  Q    V |         |         |
  2+ 0      11.5669     103.22  |         |  Q     V|         |         |
  2+ 5      12.3025     106.81  |         |   Q     V         |         |
  2+10      13.3104     146.33  |         |        Q| V       |         |
  2+15      14.5161     175.08  |         |         |  QV     |         |
  2+20      15.3507     121.18  |         |     Q   |     V   |         |
  2+25      17.0020     239.76  |         |         |       V |Q        |
  2+30      18.7769     257.72  |         |         |         |V  Q     |
  2+35      20.7746     290.06  |         |         |         |    V  Q |
  2+40      22.2031     207.42  |         |         |      Q  |      V  |
  2+45      22.6665      67.29  |       Q |         |         |       V |
  2+50      23.0804      60.10  |       Q |         |         |        V|
  2+55      23.4943      60.10  |       Q |         |         |        V|
  3+ 0      23.6112      16.98  | Q       |         |         |        V|
-----------------------------------------------------------------------
```

U n i t   H y d r o g r a p h   A n a l y s i s

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Study date 11/04/11 File: 3080U66100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6061

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

BAEUMONT DISTRIBUTION CENTER
100- YEAR STORM
6 HR'S , 5 MIN. STROM
MAX. Q100 = 286.7 CFS

Drainage Area = 156.40(Ac.) = 0.244 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 156.40(Ac.) = 0.244 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.000 Hr.
Lag time = 0.00 Min.
25% of lag time = 0.00 Min.
40% of lag time = 0.00 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
156.40	1.30	203.32

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
156.40	2.75	430.10

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 1.300(In)
Area Averaged 100-Year Rainfall = 2.750(In)

Point rain (area averaged) = 2.750(In)
Areal adjustment factor = 99.95 %
Adjusted average point rain = 2.749(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
156.400	75.00	0.900

Total Area Entered = 156.40(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
75.0	88.0	0.153	0.900	0.029	1.000	0.029
					Sum (F) =	0.029

Area averaged mean soil loss (F) (In/Hr) = 0.029
Minimum soil loss rate ((In/Hr)) = 0.015
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	1.#IO	100.000	157.622
			Sum = 100.000	Sum= 157.622

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.50	0.165	0.029	---	0.14
2	0.17	0.60	0.198	0.029	---	0.17
3	0.25	0.60	0.198	0.029	---	0.17
4	0.33	0.60	0.198	0.029	---	0.17
5	0.42	0.60	0.198	0.029	---	0.17
6	0.50	0.70	0.231	0.029	---	0.20
7	0.58	0.70	0.231	0.029	---	0.20
8	0.67	0.70	0.231	0.029	---	0.20
9	0.75	0.70	0.231	0.029	---	0.20
10	0.83	0.70	0.231	0.029	---	0.20
11	0.92	0.70	0.231	0.029	---	0.20
12	1.00	0.80	0.264	0.029	---	0.23
13	1.08	0.80	0.264	0.029	---	0.23
14	1.17	0.80	0.264	0.029	---	0.23
15	1.25	0.80	0.264	0.029	---	0.23
16	1.33	0.80	0.264	0.029	---	0.23
17	1.42	0.80	0.264	0.029	---	0.23
18	1.50	0.80	0.264	0.029	---	0.23
19	1.58	0.80	0.264	0.029	---	0.23
20	1.67	0.80	0.264	0.029	---	0.23
21	1.75	0.80	0.264	0.029	---	0.23
22	1.83	0.80	0.264	0.029	---	0.23
23	1.92	0.80	0.264	0.029	---	0.23
24	2.00	0.90	0.297	0.029	---	0.27
25	2.08	0.80	0.264	0.029	---	0.23
26	2.17	0.90	0.297	0.029	---	0.27
27	2.25	0.90	0.297	0.029	---	0.27
28	2.33	0.90	0.297	0.029	---	0.27
29	2.42	0.90	0.297	0.029	---	0.27
30	2.50	0.90	0.297	0.029	---	0.27
31	2.58	0.90	0.297	0.029	---	0.27
32	2.67	0.90	0.297	0.029	---	0.27
33	2.75	1.00	0.330	0.029	---	0.30
34	2.83	1.00	0.330	0.029	---	0.30
35	2.92	1.00	0.330	0.029	---	0.30
36	3.00	1.00	0.330	0.029	---	0.30
37	3.08	1.00	0.330	0.029	---	0.30

38	3.17	1.10	0.363	0.029	---	0.33
39	3.25	1.10	0.363	0.029	---	0.33
40	3.33	1.10	0.363	0.029	---	0.33
41	3.42	1.20	0.396	0.029	---	0.37
42	3.50	1.30	0.429	0.029	---	0.40
43	3.58	1.40	0.462	0.029	---	0.43
44	3.67	1.40	0.462	0.029	---	0.43
45	3.75	1.50	0.495	0.029	---	0.47
46	3.83	1.50	0.495	0.029	---	0.47
47	3.92	1.60	0.528	0.029	---	0.50
48	4.00	1.60	0.528	0.029	---	0.50
49	4.08	1.70	0.561	0.029	---	0.53
50	4.17	1.80	0.594	0.029	---	0.56
51	4.25	1.90	0.627	0.029	---	0.60
52	4.33	2.00	0.660	0.029	---	0.63
53	4.42	2.10	0.693	0.029	---	0.66
54	4.50	2.10	0.693	0.029	---	0.66
55	4.58	2.20	0.726	0.029	---	0.70
56	4.67	2.30	0.759	0.029	---	0.73
57	4.75	2.40	0.792	0.029	---	0.76
58	4.83	2.40	0.792	0.029	---	0.76
59	4.92	2.50	0.825	0.029	---	0.80
60	5.00	2.60	0.858	0.029	---	0.83
61	5.08	3.10	1.022	0.029	---	0.99
62	5.17	3.60	1.187	0.029	---	1.16
63	5.25	3.90	1.286	0.029	---	1.26
64	5.33	4.20	1.385	0.029	---	1.36
65	5.42	4.70	1.550	0.029	---	1.52
66	5.50	5.60	1.847	0.029	---	1.82
67	5.58	1.90	0.627	0.029	---	0.60
68	5.67	0.90	0.297	0.029	---	0.27
69	5.75	0.60	0.198	0.029	---	0.17
70	5.83	0.50	0.165	0.029	---	0.14
71	5.92	0.30	0.099	0.029	---	0.07
72	6.00	0.20	0.066	0.029	---	0.04
Sum =		100.0			Sum =	30.9

```
 Flood volume = Effective rainfall      2.57(In)
  times area     156.4(Ac.)/[(In)/(Ft.)] =      33.6(Ac.Ft)
 Total soil loss =       0.17(In)
 Total soil loss =      2.270(Ac.Ft)
 Total rainfall =      2.75(In)
 Flood volume =     1461529.3 Cubic Feet
 Total soil loss =       98894.4 Cubic Feet
 --------------------------------------------------------------------
  Peak flow rate of this hydrograph =     286.701(CFS)
 --------------------------------------------------------------------
 ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                     6 - H O U R    S T O R M
                R u n o f f     H y d r o g r a p h
 --------------------------------------------------------------------
            Hydrograph in   5   Minute intervals ((CFS))

 --------------------------------------------------------------------
Time(h+m) Volume Ac.Ft   Q(CFS)  0        75.0      150.0      225.0      300.0
-----------------------------------------------------------------------------
  0+ 5       0.1476     21.43  V Q        |          |          |          |
  0+10       0.3310     26.63  V  Q       |          |          |          |
  0+15       0.5144     26.63  V  Q       |          |          |          |
  0+20       0.6978     26.63  V  Q       |          |          |          |
  0+25       0.8812     26.63  |V Q       |          |          |          |
  0+30       1.1004     31.83  |V   Q     |          |          |          |
  0+35       1.3196     31.83  |V   Q     |          |          |          |
  0+40       1.5389     31.83  |V   Q     |          |          |          |
  0+45       1.7581     31.83  | V Q      |          |          |          |
  0+50       1.9773     31.83  | V Q      |          |          |          |
```

```
  0+55     2.1965    31.83  | V Q     |         |         |         |
  1+ 0     2.4516    37.03  | V Q     |         |         |         |
  1+ 5     2.7066    37.03  |  VQ     |         |         |         |
  1+10     2.9617    37.03  |  VQ     |         |         |         |
  1+15     3.2167    37.03  |  VQ     |         |         |         |
  1+20     3.4718    37.03  |   Q     |         |         |         |
  1+25     3.7268    37.03  |   Q     |         |         |         |
  1+30     3.9819    37.03  |   Q     |         |         |         |
  1+35     4.2369    37.03  |   QV    |         |         |         |
  1+40     4.4920    37.03  |   QV    |         |         |         |
  1+45     4.7470    37.03  |   QV    |         |         |         |
  1+50     5.0021    37.03  |   QV    |         |         |         |
  1+55     5.2571    37.03  |   Q V   |         |         |         |
  2+ 0     5.5480    42.23  |    QV   |         |         |         |
  2+ 5     5.8030    37.03  |   Q V   |         |         |         |
  2+10     6.0939    42.23  |    Q V  |         |         |         |
  2+15     6.3848    42.23  |    Q V  |         |         |         |
  2+20     6.6756    42.23  |    Q V  |         |         |         |
  2+25     6.9665    42.23  |    Q  V |         |         |         |
  2+30     7.2574    42.23  |    Q  V |         |         |         |
  2+35     7.5482    42.23  |    Q  V |         |         |         |
  2+40     7.8391    42.23  |    Q   V|         |         |         |
  2+45     8.1658    47.44  |     Q  V|         |         |         |
  2+50     8.4925    47.44  |     Q   V         |         |         |
  2+55     8.8192    47.44  |     Q   V         |         |         |
  3+ 0     9.1459    47.44  |     Q   V         |         |         |
  3+ 5     9.4726    47.44  |     Q   |V        |         |         |
  3+10     9.8351    52.64  |      Q  |V        |         |         |
  3+15    10.1976    52.64  |      Q  | V       |         |         |
  3+20    10.5601    52.64  |      Q  | V       |         |         |
  3+25    10.9584    57.84  |      Q  |  V      |         |         |
  3+30    11.3926    63.04  |       Q |  V      |         |         |
  3+35    11.8626    68.24  |        Q|   V     |         |         |
  3+40    12.3326    68.24  |        Q|   V     |         |         |
  3+45    12.8384    73.44  |        Q|    V    |         |         |
  3+50    13.3442    73.44  |        Q|    V    |         |         |
  3+55    13.8858    78.64  |         Q     V   |         |         |
  4+ 0    14.4274    78.64  |         Q      V  |         |         |
  4+ 5    15.0049    83.85  |         |Q     V  |         |         |
  4+10    15.6182    89.05  |         |Q      V |         |         |
  4+15    16.2672    94.25  |         | Q      V|         |         |
  4+20    16.9522    99.45  |         |  Q      V         |         |
  4+25    17.6729   104.65  |         |  Q      |V        |         |
  4+30    18.3936   104.65  |         |  Q      |V        |         |
  4+35    19.1502   109.85  |         |   Q     | V       |         |
  4+40    19.9426   115.05  |         |    Q    |  V      |         |
  4+45    20.7708   120.26  |         |     Q   |   V     |         |
  4+50    21.5990   120.26  |         |     Q   |    V    |         |
  4+55    22.4630   125.46  |         |     Q   |     V   |         |
  5+ 0    23.3629   130.66  |         |      Q  |      V  |         |
  5+ 5    24.4418   156.67  |         |         Q        V|         |
  5+10    25.6999   182.67  |         |         |   Q     V         |
  5+15    27.0654   198.28  |         |         |     Q   | V       |
  5+20    28.5385   213.88  |         |         |       Q |   V     |
  5+25    30.1906   239.89  |         |         |         |Q   V    |
  5+30    32.1651   286.70  |         |         |         |       Q |
  5+35    32.8142    94.25  |         | Q       |         |        V|
  5+40    33.1051    42.23  |    Q    |         |         |        V|
  5+45    33.2885    26.63  |  Q      |         |         |        V|
  5+50    33.4360    21.43  | Q       |         |         |        V|
  5+55    33.5120    11.03  |Q        |         |         |        V|
  6+ 0    33.5521     5.82  Q         |         |         |         V
-----------------------------------------------------------------------
```

U n i t   H y d r o g r a p h   A n a l y s i s

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Study date 11/04/11 File: 3080U2424100.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6061

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

BAEUMONT DISTRIBUTION CENTER
24 HR'S 5 MIN. STROM
100 YEAR STROM
MAX. Q_{100} = 117.2 CFS

Drainage Area = 156.40(Ac.) = 0.244 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 156.40(Ac.) = 0.244 Sq. Mi.

USER Entry of lag time in hours
Lag time = 0.000 Hr.
Lag time = 0.00 Min.
25% of lag time = 0.00 Min.
40% of lag time = 0.00 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
156.40	2.25	351.90

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
156.40	5.65	883.66

STORM EVENT (YEAR) = 100.00
Area Averaged 2-Year Rainfall = 2.250(In)
Area Averaged 100-Year Rainfall = 5.650(In)

Point rain (area averaged) = 5.650(In)
Areal adjustment factor = 99.97 %
Adjusted average point rain = 5.648(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
156.400	75.00	0.900

Total Area Entered = 156.40(Ac.)

RI AMC2	RI AMC-3	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
75.0	88.0	0.153	0.900	0.029	1.000	0.029
					Sum (F) =	0.029

Area averaged mean soil loss (F) (In/Hr) = 0.029
Minimum soil loss rate ((In/Hr)) = 0.015
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.180

U n i t H y d r o g r a p h
FOOTHILL S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %		Unit Hydrograph (CFS)
1	0.083	1.#IO	100.000		157.622
			Sum = 100.000	Sum=	157.622

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.045	0.051	0.008	0.04
2	0.17	0.07	0.045	0.051	0.008	0.04
3	0.25	0.07	0.045	0.051	0.008	0.04
4	0.33	0.10	0.068	0.051	---	0.02
5	0.42	0.10	0.068	0.051	---	0.02
6	0.50	0.10	0.068	0.050	---	0.02
7	0.58	0.10	0.068	0.050	---	0.02
8	0.67	0.10	0.068	0.050	---	0.02
9	0.75	0.10	0.068	0.050	---	0.02
10	0.83	0.13	0.090	0.050	---	0.04
11	0.92	0.13	0.090	0.049	---	0.04
12	1.00	0.13	0.090	0.049	---	0.04
13	1.08	0.10	0.068	0.049	---	0.02
14	1.17	0.10	0.068	0.049	---	0.02
15	1.25	0.10	0.068	0.049	---	0.02
	Sum =	100.0			Sum =	59.5

Flood volume = Effective rainfall 4.96(In)
times area 156.4(Ac.)/[(In)/(Ft.)] = 64.7(Ac.Ft)
Total soil loss = 0.69(In)
Total soil loss = 8.945(Ac.Ft)
Total rainfall = 5.65(In)
Flood volume = 2817071.6 Cubic Feet
Total soil loss = 389634.3 Cubic Feet

Peak flow rate of this hydrograph = 117.221(CFS)

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24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	50.0	100.0	150.0	200.0
0+ 5	0.0402	5.84	VQ	|	|	|	|
0+10	0.0805	5.84	VQ	|	|	|	|

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0+15      0.1207     5.84  VQ        |         |         |         |
0+20      0.1391     2.67  Q         |         |         |         |
0+25      0.1577     2.70  Q         |         |         |         |
0+30      0.1765     2.73  Q         |         |         |         |
0+35      0.1955     2.76  Q         |         |         |         |
0+40      0.2147     2.79  Q         |         |         |         |
0+45      0.2341     2.82  Q         |         |         |         |
0+50      0.2783     6.42  VQ        |         |         |         |
0+55      0.3227     6.45  VQ        |         |         |         |
1+ 0      0.3673     6.48  VQ        |         |         |         |
1+ 5      0.3876     2.95  Q         |         |         |         |
1+10      0.4081     2.98  Q         |         |         |         |
1+15      0.4288     3.01  Q         |         |         |         |
1+20      0.4497     3.04  Q         |         |         |         |
1+25      0.4709     3.07  Q         |         |         |         |
1+30      0.4922     3.10  Q         |         |         |         |
1+35      0.5137     3.13  Q         |         |         |         |
1+40      0.5355     3.16  Q         |         |         |         |
1+45      0.5575     3.19  Q         |         |         |         |
1+50      0.6042     6.78  VQ        |         |         |         |
1+55      0.6511     6.81  VQ        |         |         |         |
2+ 0      0.6982     6.84  VQ        |         |         |         |
2+ 5      0.7455     6.87  VQ        |         |         |         |
2+10      0.7931     6.90  VQ        |         |         |         |
2+15      0.8408     6.93  VQ        |         |         |         |
2+20      0.8888     6.96  VQ        |         |         |         |
2+25      0.9369     6.99  VQ        |         |         |         |
2+30      0.9853     7.02  VQ        |         |         |         |
2+35      1.0584    10.61  V Q       |         |         |         |
2+40      1.1317    10.64  V Q       |         |         |         |
2+45      1.2052    10.67  V Q       |         |         |         |
2+50      1.2789    10.70  V Q       |         |         |         |
2+55      1.3528    10.73  V Q       |         |         |         |
3+ 0      1.4269    10.76  V Q       |         |         |         |
3+ 5      1.5012    10.79  V Q       |         |         |         |
3+10      1.5757    10.82  V Q       |         |         |         |
3+15      1.6504    10.85  |VQ       |         |         |         |
3+20      1.7253    10.88  |VQ       |         |         |         |
3+25      1.8005    10.91  |VQ       |         |         |         |
3+30      1.8758    10.94  |VQ       |         |         |         |
3+35      1.9513    10.96  |VQ       |         |         |         |
3+40      2.0270    10.99  |VQ       |         |         |         |
3+45      2.1029    11.02  |VQ       |         |         |         |
3+50      2.2035    14.61  |VQ       |         |         |         |
3+55      2.3044    14.64  |VQ       |         |         |         |
4+ 0      2.4054    14.67  |VQ       |         |         |         |
4+ 5      2.5066    14.70  |VQ       |         |         |         |
4+10      2.6081    14.73  |VQ       |         |         |         |
4+15      2.7097    14.76  |VQ       |         |         |         |
4+20      2.8360    18.35  |V Q      |         |         |         |
4+25      2.9626    18.37  |V Q      |         |         |         |
4+30      3.0893    18.40  |V Q      |         |         |         |
4+35      3.2162    18.43  |V Q      |         |         |         |
4+40      3.3434    18.46  | VQ      |         |         |         |
4+45      3.4707    18.49  | VQ      |         |         |         |
4+50      3.6227    22.08  | V Q     |         |         |         |
4+55      3.7750    22.11  | V Q     |         |         |         |
5+ 0      3.9274    22.13  | V Q     |         |         |         |
5+ 5      4.0310    15.03  | VQ      |         |         |         |
5+10      4.1347    15.06  | VQ      |         |         |         |
5+15      4.2386    15.09  | VQ      |         |         |         |
5+20      4.3673    18.68  | VQ      |         |         |         |
5+25      4.4961    18.71  | VQ      |         |         |         |
5+30      4.6251    18.74  | VQ      |         |         |         |
5+35      4.7789    22.33  | V Q     |         |         |         |
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 5+40      4.9328    22.35  |  VQ     |         |         |         |
 5+45      5.0870    22.38  |  VQ     |         |         |         |
 5+50      5.2413    22.41  |  VQ     |         |         |         |
 5+55      5.3958    22.43  |  VQ     |         |         |         |
 6+ 0      5.5505    22.46  |  VQ     |         |         |         |
 6+ 5      5.7299    26.05  |  V Q    |         |         |         |
 6+10      5.9095    26.08  |  V Q    |         |         |         |
 6+15      6.0893    26.10  |  V Q    |         |         |         |
 6+20      6.2692    26.13  |  V Q    |         |         |         |
 6+25      6.4494    26.16  |  V Q    |         |         |         |
 6+30      6.6297    26.18  |   VQ    |         |         |         |
 6+35      6.8348    29.77  |   VQ    |         |         |         |
 6+40      7.0400    29.80  |   VQ    |         |         |         |
 6+45      7.2454    29.83  |   VQ    |         |         |         |
 6+50      7.4510    29.85  |   VQ    |         |         |         |
 6+55      7.6568    29.88  |   VQ    |         |         |         |
 7+ 0      7.8627    29.90  |   VQ    |         |         |         |
 7+ 5      8.0688    29.93  |   VQ    |         |         |         |
 7+10      8.2752    29.96  |    Q    |         |         |         |
 7+15      8.4816    29.98  |    Q    |         |         |         |
 7+20      8.7128    33.57  |    VQ   |         |         |         |
 7+25      8.9442    33.60  |    VQ   |         |         |         |
 7+30      9.1758    33.62  |    VQ   |         |         |         |
 7+35      9.4321    37.21  |    V Q  |         |         |         |
 7+40      9.6885    37.24  |    V Q  |         |         |         |
 7+45      9.9451    37.26  |     VQ  |         |         |         |
 7+50     10.2265    40.85  |     V Q |         |         |         |
 7+55     10.5080    40.88  |     V Q |         |         |         |
 8+ 0     10.7897    40.90  |     V Q |         |         |         |
 8+ 5     11.1206    48.05  |     V  Q|         |         |         |
 8+10     11.4517    48.08  |      V Q|         |         |         |
 8+15     11.7830    48.10  |      V Q|         |         |         |
 8+20     12.1144    48.13  |      V Q|         |         |         |
 8+25     12.4461    48.15  |      V Q|         |         |         |
 8+30     12.7779    48.18  |      V Q|         |         |         |
 8+35     13.1344    51.76  |       V Q         |         |         |
 8+40     13.4910    51.79  |       V Q         |         |         |
 8+45     13.8479    51.81  |       V Q         |         |         |
 8+50     14.2294    55.40  |       V |Q        |         |         |
 8+55     14.6111    55.43  |        V|Q        |         |         |
 9+ 0     14.9930    55.45  |        V|Q        |         |         |
 9+ 5     15.4242    62.60  |        V| Q       |         |         |
 9+10     15.8555    62.62  |        V| Q       |         |         |
 9+15     16.2869    62.65  |         V Q       |         |         |
 9+20     16.7431    66.24  |         V  Q      |         |         |
 9+25     17.1994    66.26  |         V  Q      |         |         |
 9+30     17.6559    66.28  |         V  Q      |         |         |
 9+35     18.1371    69.87  |         |V Q      |         |         |
 9+40     18.6185    69.89  |         |V Q      |         |         |
 9+45     19.1000    69.92  |         |V Q      |         |         |
 9+50     19.6062    73.50  |         | V Q     |         |         |
 9+55     20.1126    73.53  |         | V Q     |         |         |
10+ 0     20.6192    73.55  |         | V Q     |         |         |
10+ 5     20.9541    48.63  |        Q| V       |         |         |
10+10     21.2892    48.66  |        Q|  V      |         |         |
10+15     21.6245    48.68  |        Q|  V      |         |         |
10+20     21.9599    48.70  |        Q|  V      |         |         |
10+25     22.2955    48.73  |        Q|  V      |         |         |
10+30     22.6312    48.75  |        Q|  V      |         |         |
10+35     23.0898    66.59  |         |  QV     |         |         |
10+40     23.5486    66.61  |         |  QV     |         |         |
10+45     24.0075    66.63  |         |  QV     |         |         |
10+50     24.4665    66.66  |         |  Q V    |         |         |
10+55     24.9257    66.68  |         |  Q V    |         |         |
11+ 0     25.3851    66.70  |         |  Q V    |         |         |
```

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11+ 5      25.8201     63.16  |         | Q  V    |         |         |
11+10      26.2552     63.18  |         | Q   V   |         |         |
11+15      26.6905     63.20  |         | Q   V   |         |         |
11+20      27.1260     63.23  |         | Q   V   |         |         |
11+25      27.5616     63.25  |         | Q    V  |         |         |
11+30      27.9973     63.27  |         | Q    V  |         |         |
11+35      28.3842     56.17  |         |Q     V  |         |         |
11+40      28.7711     56.19  |         |Q     V  |         |         |
11+45      29.1583     56.21  |         |Q      V |         |         |
11+50      29.5701     59.80  |         |Q      V |         |         |
11+55      29.9821     59.82  |         |Q      V |         |         |
12+ 0      30.3942     59.84  |         |Q      V |         |         |
12+ 5      30.9782     84.80  |         |     Q  V|         |         |
12+10      31.5624     84.82  |         |     Q  V|         |         |
12+15      32.1467     84.84  |         |     Q  V|         |         |
12+20      32.7557     88.43  |         |      Q  V         |         |
12+25      33.3649     88.45  |         |      Q  V         |         |
12+30      33.9742     88.47  |         |      Q  |V        |         |
12+35      34.6327     95.62  |         |        Q|V        |         |
12+40      35.2914     95.64  |         |        Q|V        |         |
12+45      35.9502     95.66  |         |        Q| V       |         |
12+50      36.6337     99.24  |         |        Q| V       |         |
12+55      37.3173     99.26  |         |        Q|  V      |         |
13+ 0      38.0011     99.28  |         |        Q|  V      |         |
13+ 5      38.8077    117.12  |         |         |  QV     |         |
13+10      39.6144    117.14  |         |         |  QV     |         |
13+15      40.4213    117.16  |         |         |  Q V    |         |
13+20      41.2283    117.18  |         |         |  Q V    |         |
13+25      42.0355    117.20  |         |         |  Q V    |         |
13+30      42.8428    117.22  |         |         |  Q  V   |         |
13+35      43.3803     78.05  |         |    Q    |     V   |         |
13+40      43.9180     78.07  |         |    Q    |      V  |         |
13+45      44.4558     78.09  |         |    Q    |      V  |         |
13+50      44.9937     78.11  |         |    Q    |      V  |         |
13+55      45.5318     78.13  |         |    Q    |       V |         |
14+ 0      46.0700     78.15  |         |    Q    |       V |         |
14+ 5      46.7064     92.42  |         |       Q |       V |         |
14+10      47.3431     92.44  |         |       Q |        V|         |
14+15      47.9798     92.46  |         |       Q |        V|         |
14+20      48.5922     88.91  |         |      Q  |         V         |
14+25      49.2046     88.93  |         |      Q  |         V         |
14+30      49.8172     88.95  |         |      Q  |         V         |
14+35      50.4300     88.97  |         |      Q  |         |V        |
14+40      51.0428     88.99  |         |      Q  |         |V        |
14+45      51.6558     89.01  |         |      Q  |         |V        |
14+50      52.2444     85.46  |         |      Q  |         | V       |
14+55      52.8331     85.48  |         |      Q  |         | V       |
15+ 0      53.4220     85.50  |         |      Q  |         |  V      |
15+ 5      53.9864     81.95  |         |     Q   |         |  V      |
15+10      54.5509     81.97  |         |     Q   |         |  V      |
15+15      55.1156     81.99  |         |     Q   |         |   V     |
15+20      55.6559     78.45  |         |    Q    |         |   V     |
15+25      56.1963     78.46  |         |    Q    |         |   V     |
15+30      56.7368     78.48  |         |    Q    |         |    V    |
15+35      57.1792     64.25  |         | Q       |         |    V    |
15+40      57.6218     64.27  |         | Q       |         |    V    |
15+45      58.0646     64.28  |         | Q       |         |    V    |
15+50      58.5074     64.30  |         | Q       |         |     V   |
15+55      58.9504     64.32  |         | Q       |         |     V   |
16+ 0      59.3934     64.33  |         | Q       |         |     V   |
16+ 5      59.4686     10.91  | Q       |         |         |     V   |
16+10      59.5438     10.92  | Q       |         |         |     V   |
16+15      59.6191     10.94  | Q       |         |         |     V   |
16+20      59.6946     10.96  | Q       |         |         |     V   |
16+25      59.7702     10.97  | Q       |         |         |     V   |
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16+30      59.8459    10.99   | Q      |       |       |      V   |
16+35      59.8972     7.45   |Q       |       |       |      V   |
16+40      59.9486     7.46   |Q       |       |       |      V   |
16+45      60.0001     7.48   |Q       |       |       |      V   |
16+50      60.0517     7.49   |Q       |       |       |      V   |
16+55      60.1034     7.51   |Q       |       |       |      V   |
17+ 0      60.1552     7.53   |Q       |       |       |      V   |
17+ 5      60.2562    14.67   | Q      |       |       |      V   |
17+10      60.3574    14.68   | Q      |       |       |      V   |
17+15      60.4586    14.70   | Q      |       |       |      V   |
17+20      60.5600    14.72   | Q      |       |       |      V   |
17+25      60.6614    14.73   | Q      |       |       |      V   |
17+30      60.7630    14.75   | Q      |       |       |      V   |
17+35      60.8647    14.76   | Q      |       |       |      V   |
17+40      60.9664    14.78   | Q      |       |       |      V   |
17+45      61.0683    14.79   | Q      |       |       |      V   |
17+50      61.1457    11.24   | Q      |       |       |      V   |
17+55      61.2233    11.26   | Q      |       |       |      V   |
18+ 0      61.3009    11.27   | Q      |       |       |      V   |
18+ 5      61.3787    11.29   | Q      |       |       |      V   |
18+10      61.4565    11.30   | Q      |       |       |       V  |
18+15      61.5345    11.32   | Q      |       |       |       V  |
18+20      61.6125    11.33   | Q      |       |       |       V  |
18+25      61.6906    11.35   | Q      |       |       |       V  |
18+30      61.7689    11.36   | Q      |       |       |       V  |
18+35      61.8227     7.81   |Q       |       |       |       V  |
18+40      61.8766     7.83   |Q       |       |       |       V  |
18+45      61.9306     7.84   |Q       |       |       |       V  |
18+50      61.9601     4.29   Q        |       |       |       V  |
18+55      61.9897     4.30   Q        |       |       |       V  |
19+ 0      62.0195     4.32   Q        |       |       |       V  |
19+ 5      62.0738     7.89   |Q       |       |       |       V  |
19+10      62.1283     7.91   |Q       |       |       |       V  |
19+15      62.1828     7.92   |Q       |       |       |       V  |
19+20      62.2620    11.49   | Q      |       |       |       V  |
19+25      62.3412    11.51   | Q      |       |       |       V  |
19+30      62.4206    11.52   | Q      |       |       |       V  |
19+35      62.4755     7.97   |Q       |       |       |       V  |
19+40      62.5304     7.98   |Q       |       |       |       V  |
19+45      62.5855     7.99   |Q       |       |       |       V  |
19+50      62.6161     4.44   Q        |       |       |       V  |
19+55      62.6468     4.46   Q        |       |       |       V  |
20+ 0      62.6775     4.47   Q        |       |       |       V  |
20+ 5      62.7329     8.04   |Q       |       |       |       V  |
20+10      62.7884     8.05   |Q       |       |       |       V  |
20+15      62.8439     8.07   |Q       |       |       |       V  |
20+20      62.8996     8.08   |Q       |       |       |       V  |
20+25      62.9553     8.09   |Q       |       |       |       V  |
20+30      63.0110     8.10   |Q       |       |       |       V  |
20+35      63.0669     8.11   |Q       |       |       |         V|
20+40      63.1228     8.12   |Q       |       |       |         V|
20+45      63.1788     8.13   |Q       |       |       |         V|
20+50      63.2104     4.58   Q        |       |       |         V|
20+55      63.2420     4.59   Q        |       |       |         V|
21+ 0      63.2736     4.60   Q        |       |       |         V|
21+ 5      63.3299     8.17   |Q       |       |       |         V|
21+10      63.3863     8.18   |Q       |       |       |         V|
21+15      63.4427     8.19   |Q       |       |       |         V|
21+20      63.4746     4.64   Q        |       |       |         V|
21+25      63.5066     4.65   Q        |       |       |         V|
21+30      63.5387     4.66   Q        |       |       |         V|
21+35      63.5954     8.23   |Q       |       |       |         V|
21+40      63.6521     8.24   |Q       |       |       |         V|
21+45      63.7089     8.25   |Q       |       |       |         V|
21+50      63.7412     4.69   Q        |       |       |         V|
```

21+55	63.7736	4.70	Q	|	|	|	V|
22+ 0	63.8060	4.71	Q	|	|	|	V|
22+ 5	63.8630	8.28	|Q	|	|	|	V|
22+10	63.9201	8.29	|Q	|	|	|	V|
22+15	63.9773	8.30	|Q	|	|	|	V|
22+20	64.0099	4.74	Q	|	|	|	V|
22+25	64.0426	4.75	Q	|	|	|	V|
22+30	64.0753	4.75	Q	|	|	|	V|
22+35	64.1081	4.76	Q	|	|	|	V|
22+40	64.1409	4.77	Q	|	|	|	V|
22+45	64.1738	4.77	Q	|	|	|	V|
22+50	64.2067	4.78	Q	|	|	|	V|
22+55	64.2397	4.79	Q	|	|	|	V|
23+ 0	64.2727	4.79	Q	|	|	|	V|
23+ 5	64.3057	4.80	Q	|	|	|	V|
23+10	64.3388	4.80	Q	|	|	|	V|
23+15	64.3719	4.81	Q	|	|	|	V|
23+20	64.4051	4.81	Q	|	|	|	V|
23+25	64.4382	4.82	Q	|	|	|	V|
23+30	64.4714	4.82	Q	|	|	|	V|
23+35	64.5047	4.82	Q	|	|	|	V|
23+40	64.5379	4.83	Q	|	|	|	V|
23+45	64.5712	4.83	Q	|	|	|	V|
23+50	64.6045	4.83	Q	|	|	|	V|
23+55	64.6378	4.84	Q	|	|	|	V|
24+ 0	64.6711	4.84	Q	|	|	|	V

BASIN ROUTING

BEAUMONT CA - DISTRIBUTION CENTER
100 YEAR STORM

DETENTION BASIN "A" (HYDROLOGY NODE 77)						
Elevation	Depth (feet)	Area (sq. ft.)	Volume (c.f.)	Σ Volume (c.f.)	Σ Volume (ac-ft)	Qdischarge (cfs)
						(36" DIA.RISER)
2376.00	**0.00**	0				
			1750	1750	**0.04**	**0.1**
2377.00	**1.00**	3500				
			16250	18000	**0.41**	**0.2**
2378.00	**2.00**	29000				
			53250	71250	**1.64**	**0.3**
2379.00	**3.00**	77500				
			100800	172050	**3.95**	**0.4**
2380.00	**4.00**	124100				
			141100	313150	**7.19**	**0.5**
2381.00	**5.00**	158100				
			169000	482150	**11.07**	**0.6**
2382.00	**6.00**	179900				
			184800	666950	**15.31**	**37.7**
2383.00	**7.00**	189700				
			192950	859900	**19.74**	**53.3**
2384.00	**8.00**	196200				
			199450	1059350	**24.32**	**65.3**
2385.00	**9.00**	202700				
			205850	1265200	**29.04**	**75.4**
2386.00	**10.00**	209000				
			212500	1477700	**33.92**	**84.3**
2387.00	**11.00**	216000				
			108825	1586525	**36.42**	**92.4**
2387.50	**11.50**	219300				
			110500	1697025	**38.96**	**99.8**
2388.00	**12.00**	222700				
			226100	1923125	**44.15**	**106.7**
2389.00	**13.00**	229500				
			232900	2156025	**49.50**	**113**
2390.00	**14.00**	236300				

FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 11/04/11

BEAUMONT DISTRIBUTION CENTER
100 YEAR STORM
3 HR'S 5 MIN. STROM
PROPOSED CONDITION

Program License Serial Number 6061

******************** HYDROGRAPH INFORMATION ********************

From study/file name: 3080U3P3100.rte

**************************HYDROGRAPH DATA**************************

Number of intervals = 36
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 290.062 (CFS)
Total volume = 23.611 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 36
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.040	0.100	0.040	0.040
2.000	0.410	0.200	0.409	0.411
3.000	1.640	0.300	1.639	1.641
4.000	3.950	0.400	3.949	3.951
5.000	7.190	0.500	7.188	7.192
6.000	11.070	0.600	11.068	11.072
7.000	15.310	37.700	15.180	15.440
8.000	19.700	53.300	19.516	19.884

9.000	24.300	65.300	24.075	24.525
10.000	29.000	75.400	28.740	29.260
11.000	33.900	84.300	33.610	34.190
11.500	36.400	92.400	36.082	36.718
12.000	38.900	100.000	38.556	39.244
13.000	44.200	107.000	43.832	44.568
14.000	49.500	113.000	49.111	49.889

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-----------------------------------------------------------------------
                Hydrograph Detention Basin Routing
-----------------------------------------------------------------------

Graph values: 'I'= unit inflow; 'O'=outflow at time shown
-----------------------------------------------------------------------
 Time    Inflow  Outflow   Storage                                 Depth
(Hours)  (CFS)   (CFS)    (Ac.Ft) .0      72.5  145.03  217.55  290.06 (Ft.)
 0.083   42.13    0.13     0.145  O   I   |       |       |       |    1.28
 0.167   42.13    0.20     0.434  O   I   |       |       |       |    2.02
 0.250   34.95    0.22     0.698  O  I    |       |       |       |    2.23
 0.333   49.32    0.25     0.986  O    I  |       |       |       |    2.47
 0.417   49.32    0.27     1.324  O    I  |       |       |       |    2.74
 0.500   60.10    0.30     1.699  O     I |       |       |       |    3.03
 0.583   49.32    0.32     2.073  O    I  |       |       |       |    3.19
 0.667   60.10    0.33     2.448  O     I |       |       |       |    3.35
 0.750   60.10    0.35     2.860  O     I |       |       |       |    3.53
 0.833   49.32    0.37     3.234  O    I  |       |       |       |    3.69
 0.917   52.91    0.38     3.583  O    I  |       |       |       |    3.84
 1.000   60.10    0.40     3.970  O     I |       |       |       |    4.01
 1.083   74.47    0.41     4.430  O       I       |       |       |    4.15
 1.167   74.47    0.43     4.940  O       I       |       |       |    4.31
 1.250   74.47    0.45     5.450  O       I       |       |       |    4.46
 1.333   67.29    0.46     5.935  O      I|       |       |       |    4.61
 1.417   88.84    0.48     6.470  O       |I      |       |       |    4.78
 1.500   92.44    0.50     7.091  O       | I     |       |       |    4.97
 1.583   81.66    0.51     7.687  O       |I      |       |       |    5.13
 1.667   92.44    0.53     8.282  O       | I     |       |       |    5.28
 1.750  114.00    0.55     8.990  O       |   I   |       |       |    5.46
 1.833  106.81    0.57     9.746  O       |  I    |       |       |    5.66
 1.917   99.62    0.58    10.453  O       | I     |       |       |    5.84
 2.000  103.22    1.26    11.145  O       |  I    |       |       |    6.02
 2.083  106.81    7.33    11.839  O       |  I    |       |       |    6.18
 2.167  146.33   14.30    12.636  |O      |       I       |       |    6.37
 2.250  175.08   22.87    13.615  | O     |       |  I    |       |    6.60
 2.333  121.18   30.20    14.452  |  O    |    I  |       |       |    6.80
 2.417  239.76   38.23    15.460  |   O   |       |       | I     |    7.03
 2.500  257.72   43.32    16.892  |   O   |       |       |   I   |    7.36
 2.583  290.06   48.90    18.461  |    O  |       |       |       I    7.72
 2.667  207.42   53.61    19.821  |    O  |       |     I |       |    8.03
 2.750   67.29   55.11    20.392  |     OI|       |       |       |    8.15
 2.833   60.10   55.26    20.451  |     O |       |       |       |    8.16
 2.917   60.10   55.35    20.484  |     O |       |       |       |    8.17
 3.000   16.98   55.05    20.369  |I    O |       |       |       |    8.15
 3.083    0.00   54.22    20.051  I    O  |       |       |       |    8.08
 3.167    0.00   53.23    19.681  I    O  |       |       |       |    8.00
 3.250    0.00   51.95    19.319  I    O  |       |       |       |    7.91
 3.333    0.00   50.69    18.966  I    O  |       |       |       |    7.83
 3.417    0.00   49.47    18.621  I    O  |       |       |       |    7.75
 3.500    0.00   48.27    18.284  I    O  |       |       |       |    7.68
 3.583    0.00   47.10    17.956  I    O  |       |       |       |    7.60
 3.667    0.00   45.96    17.635  I    O  |       |       |       |    7.53
 3.750    0.00   44.85    17.323  I   O   |       |       |       |    7.46
 3.833    0.00   43.77    17.018  I   O   |       |       |       |    7.39
 3.917    0.00   42.71    16.720  I   O   |       |       |       |    7.32
 4.000    0.00   41.68    16.429  I   O   |       |       |       |    7.25
 4.083    0.00   40.67    16.146  I   O   |       |       |       |    7.19
 4.167    0.00   39.69    15.869  I   O   |       |       |       |    7.13
```

4.250	0.00	38.73	15.599	I O	7.07
4.333	0.00	37.79	15.335	I O	7.01
4.417	0.00	35.71	15.082	I O	6.95
4.500	0.00	33.62	14.844	I O	6.89
4.583	0.00	31.65	14.619	I O	6.84
4.667	0.00	29.80	14.407	I O	6.79
4.750	0.00	28.06	14.208	I O	6.74
4.833	0.00	26.42	14.020	I O	6.70
4.917	0.00	24.87	13.844	I O	6.65
5.000	0.00	23.42	13.678	I O	6.61
5.083	0.00	22.05	13.521	I O	6.58
5.167	0.00	20.76	13.374	I O	6.54
5.250	0.00	19.54	13.235	I O	6.51
5.333	0.00	18.40	13.104	I O	6.48
5.417	0.00	17.32	12.981	IO	6.45
5.500	0.00	16.31	12.865	IO	6.42
5.583	0.00	15.36	12.756	IO	6.40
5.667	0.00	14.46	12.654	IO	6.37
5.750	0.00	13.61	12.557	IO	6.35
5.833	0.00	12.81	12.466	IO	6.33
5.917	0.00	12.07	12.380	IO	6.31
6.000	0.00	11.36	12.300	IO	6.29
6.083	0.00	10.69	12.224	IO	6.27
6.167	0.00	10.07	12.152	IO	6.26
6.250	0.00	9.48	12.085	IO	6.24
6.333	0.00	8.93	12.022	O	6.22
6.417	0.00	8.40	11.962	O	6.21
6.500	0.00	7.91	11.906	O	6.20
6.583	0.00	7.45	11.853	O	6.18
6.667	0.00	7.01	11.803	O	6.17
6.750	0.00	6.60	11.756	O	6.16
6.833	0.00	6.22	11.712	O	6.15
6.917	0.00	5.85	11.670	O	6.14
7.000	0.00	5.51	11.631	O	6.13
7.083	0.00	5.19	11.594	O	6.12
7.167	0.00	4.88	11.560	O	6.12
7.250	0.00	4.60	11.527	O	6.11
7.333	0.00	4.33	11.496	O	6.10
7.417	0.00	4.08	11.467	O	6.09
7.500	0.00	3.84	11.440	O	6.09
7.583	0.00	3.61	11.414	O	6.08
7.667	0.00	3.40	11.390	O	6.08
7.750	0.00	3.20	11.368	O	6.07
7.833	0.00	3.02	11.346	O	6.07
7.917	0.00	2.84	11.326	O	6.06
8.000	0.00	2.67	11.307	O	6.06
8.083	0.00	2.52	11.289	O	6.05
8.167	0.00	2.37	11.272	O	6.05
8.250	0.00	2.23	11.256	O	6.04
8.333	0.00	2.10	11.241	O	6.04
8.417	0.00	1.98	11.227	O	6.04
8.500	0.00	1.86	11.214	O	6.03
8.583	0.00	1.75	11.202	O	6.03

Remaining water in basin = 4.50 (Ac.Ft)

****************************HYDROGRAPH DATA****************************

Number of intervals = 2001
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 55.345 (CFS)
Total volume = 19.106 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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FLOOD HYDROGRAPH ROUTING PROGRAM
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Study date: 11/04/11

BAUMENT DISTRIBUTION CENTER
100 YEAR STORM
6 HR'S 5 MIN. STORM
PROPOSED CONDITION

Program License Serial Number 6061

******************** HYDROGRAPH INFORMATION ********************

From study/file name: 3080U66100.rte

**************************HYDROGRAPH DATA**************************

Number of intervals = 72
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 286.701 (CFS)
Total volume = 33.552 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 72
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.040	0.100	0.040	0.040
2.000	0.410	0.200	0.409	0.411
3.000	1.640	0.300	1.639	1.641
4.000	3.950	0.400	3.949	3.951
5.000	7.190	0.500	7.188	7.192
6.000	11.070	0.600	11.068	11.072
7.000	15.310	37.700	15.180	15.440
8.000	19.700	53.300	19.516	19.884

9.000	24.300	65.300	24.075	24.525
10.000	29.000	75.400	28.740	29.260
11.000	33.900	84.300	33.610	34.190
11.500	36.400	92.400	36.082	36.718
12.000	38.900	100.000	38.556	39.244
13.000	44.200	107.000	43.832	44.568
14.000	49.500	113.000	49.111	49.889

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

```
 Time    Inflow  Outflow   Storage                                    Depth
(Hours)   (CFS)   (CFS)    (Ac.Ft) .0      71.7   143.35  215.03  286.70 (Ft.)
 0.083   21.43    0.11      0.073  O I     |       |       |       |     1.09
 0.167   26.63    0.15      0.238  O I     |       |       |       |     1.54
 0.250   26.63    0.20      0.420  O I     |       |       |       |     2.01
 0.333   26.63    0.22      0.602  O I     |       |       |       |     2.16
 0.417   26.63    0.23      0.784  O I     |       |       |       |     2.30
 0.500   31.83    0.25      0.984  O  I    |       |       |       |     2.47
 0.583   31.83    0.26      1.201  O  I    |       |       |       |     2.64
 0.667   31.83    0.28      1.418  O  I    |       |       |       |     2.82
 0.750   31.83    0.30      1.636  O  I    |       |       |       |     3.00
 0.833   31.83    0.31      1.853  O  I    |       |       |       |     3.09
 0.917   31.83    0.32      2.070  O  I    |       |       |       |     3.19
 1.000   37.03    0.33      2.305  O   I   |       |       |       |     3.29
 1.083   37.03    0.34      2.558  O   I   |       |       |       |     3.40
 1.167   37.03    0.35      2.810  O   I   |       |       |       |     3.51
 1.250   37.03    0.36      3.063  O   I   |       |       |       |     3.62
 1.333   37.03    0.37      3.315  O   I   |       |       |       |     3.73
 1.417   37.03    0.38      3.568  O   I   |       |       |       |     3.83
 1.500   37.03    0.39      3.820  O   I   |       |       |       |     3.94
 1.583   37.03    0.40      4.072  O   I   |       |       |       |     4.04
 1.667   37.03    0.41      4.325  O   I   |       |       |       |     4.12
 1.750   37.03    0.42      4.577  O   I   |       |       |       |     4.19
 1.833   37.03    0.43      4.829  O   I   |       |       |       |     4.27
 1.917   37.03    0.43      5.081  O   I   |       |       |       |     4.35
 2.000   42.23    0.44      5.351  O   I   |       |       |       |     4.43
 2.083   37.03    0.45      5.621  O   I   |       |       |       |     4.52
 2.167   42.23    0.46      5.891  O   I   |       |       |       |     4.60
 2.250   42.23    0.47      6.178  O   I   |       |       |       |     4.69
 2.333   42.23    0.48      6.466  O   I   |       |       |       |     4.78
 2.417   42.23    0.49      6.754  O   I   |       |       |       |     4.87
 2.500   42.23    0.50      7.041  O   I   |       |       |       |     4.95
 2.583   42.23    0.50      7.328  O   I   |       |       |       |     5.04
 2.667   42.23    0.51      7.616  O   I   |       |       |       |     5.11
 2.750   47.44    0.52      7.921  O    I  |       |       |       |     5.19
 2.833   47.44    0.53      8.244  O    I  |       |       |       |     5.27
 2.917   47.44    0.54      8.567  O    I  |       |       |       |     5.35
 3.000   47.44    0.54      8.890  O    I  |       |       |       |     5.44
 3.083   47.44    0.55      9.213  O    I  |       |       |       |     5.52
 3.167   52.64    0.56      9.554  O    I  |       |       |       |     5.61
 3.250   52.64    0.57      9.912  O    I  |       |       |       |     5.70
 3.333   52.64    0.58     10.271  O    I  |       |       |       |     5.79
 3.417   57.84    0.59     10.647  O     I |       |       |       |     5.89
 3.500   63.04    0.60     11.060  O      I|       |       |       |     6.00
 3.583   68.24    4.32     11.495  O      I|       |       |       |     6.10
 3.667   68.24    8.06     11.922  O      I|       |       |       |     6.20
 3.750   73.44   11.73     12.342  |O      I       |       |       |     6.30
 3.833   73.44   15.34     12.754  |O      I       |       |       |     6.40
 3.917   78.64   18.89     13.160  | O     I       |       |       |     6.49
 4.000   78.64   22.39     13.560  | O     I       |       |       |     6.59
 4.083   83.85   25.83     13.953  | O     |I      |       |       |     6.68
 4.167   89.05   29.38     14.359  |  O    |I      |       |       |     6.78
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4.250   94.25   33.02   14.775  |  O    | I     |       |       |   6.87
4.333   99.45   36.75   15.202  |   O   |  I    |       |       |   6.97
4.417  104.65   38.89   15.644  |   O   |  I    |       |       |   7.08
4.500  104.65   40.48   16.091  |   O   |  I    |       |       |   7.18
4.583  109.85   42.09   16.546  |   O   |   I   |       |       |   7.28
4.667  115.05   43.79   17.025  |   O   |   I   |       |       |   7.39
4.750  120.26   45.58   17.527  |    O  |    I  |       |       |   7.51
4.833  120.26   47.38   18.035  |    O  |    I  |       |       |   7.62
4.917  125.46   49.21   18.549  |    O  |     I |       |       |   7.74
5.000  130.66   51.12   19.085  |    O  |     I |       |       |   7.86
5.083  156.67   53.34   19.715  |    O  |       |I      |       |   8.00
5.167  182.67   55.41   20.509  |     O |       |   I   |       |   8.18
5.250  198.28   57.82   21.431  |     O |       |     I |       |   8.38
5.333  213.88   60.46   22.443  |     O |       |      I|       |   8.60
5.417  239.89   63.42   23.579  |      O|       |       | I     |   8.84
5.500  286.70   66.68   24.944  |      O|       |       |       I   9.14
5.583   94.25   68.50   25.790  |      O| I     |       |       |   9.32
5.667   42.23   68.50   25.789  |   I  O|       |       |       |   9.32
5.750   26.63   68.00   25.556  | I    O|       |       |       |   9.27
5.833   21.43   67.35   25.255  | I    O|       |       |       |   9.20
5.917   11.03   66.60   24.906  |I     O|       |       |       |   9.13
6.000    5.82   65.75   24.508  I      O|       |       |       |   9.04
6.083    0.00   64.72   24.079  I      O|       |       |       |   8.95
6.167    0.00   63.57   23.637  I      O|       |       |       |   8.86
6.250    0.00   62.44   23.203  I     O |       |       |       |   8.76
6.333    0.00   61.33   22.777  I     O |       |       |       |   8.67
6.417    0.00   60.23   22.358  I     O |       |       |       |   8.58
6.500    0.00   59.16   21.947  I     O |       |       |       |   8.49
6.583    0.00   58.11   21.543  I     O |       |       |       |   8.40
6.667    0.00   57.07   21.147  I     O |       |       |       |   8.31
6.750    0.00   56.06   20.757  I     O |       |       |       |   8.23
6.833    0.00   55.06   20.374  I     O |       |       |       |   8.15
6.917    0.00   54.08   19.999  I     O |       |       |       |   8.06
7.000    0.00   53.05   19.630  I    O  |       |       |       |   7.98
7.083    0.00   51.77   19.269  I    O  |       |       |       |   7.90
7.167    0.00   50.52   18.917  I    O  |       |       |       |   7.82
7.250    0.00   49.29   18.573  I    O  |       |       |       |   7.74
7.333    0.00   48.10   18.237  I    O  |       |       |       |   7.67
7.417    0.00   46.94   17.910  I    O  |       |       |       |   7.59
7.500    0.00   45.80   17.591  I    O  |       |       |       |   7.52
7.583    0.00   44.70   17.279  I   O   |       |       |       |   7.45
7.667    0.00   43.62   16.975  I   O   |       |       |       |   7.38
7.750    0.00   42.56   16.678  I   O   |       |       |       |   7.31
7.833    0.00   41.53   16.389  I   O   |       |       |       |   7.25
7.917    0.00   40.53   16.106  I   O   |       |       |       |   7.18
8.000    0.00   39.55   15.830  I   O   |       |       |       |   7.12
8.083    0.00   38.59   15.561  I   O   |       |       |       |   7.06
8.167    0.00   37.60   15.299  I   O   |       |       |       |   7.00
8.250    0.00   35.40   15.047  I  O    |       |       |       |   6.94
8.333    0.00   33.33   14.811  I  O    |       |       |       |   6.88
8.417    0.00   31.38   14.588  I  O    |       |       |       |   6.83
8.500    0.00   29.55   14.378  I  O    |       |       |       |   6.78
8.583    0.00   27.82   14.181  I  O    |       |       |       |   6.73
8.667    0.00   26.19   13.995  I O     |       |       |       |   6.69
8.750    0.00   24.66   13.820  I O     |       |       |       |   6.65
8.833    0.00   23.22   13.655  I O     |       |       |       |   6.61
8.917    0.00   21.86   13.499  I O     |       |       |       |   6.57
9.000    0.00   20.58   13.353  I O     |       |       |       |   6.54
9.083    0.00   19.38   13.216  I O     |       |       |       |   6.51
9.167    0.00   18.24   13.086  I O     |       |       |       |   6.48
9.250    0.00   17.17   12.964  IO      |       |       |       |   6.45
9.333    0.00   16.17   12.849  IO      |       |       |       |   6.42
9.417    0.00   15.22   12.741  IO      |       |       |       |   6.39
9.500    0.00   14.33   12.640  IO      |       |       |       |   6.37
9.583    0.00   13.49   12.544  IO      |       |       |       |   6.35
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9.667	0.00	12.71	12.453	IO	6.33
9.750	0.00	11.96	12.369	IO	6.31
9.833	0.00	11.26	12.289	IO	6.29
9.917	0.00	10.60	12.213	IO	6.27
10.000	0.00	9.98	12.142	IO	6.25
10.083	0.00	9.40	12.076	IO	6.24
10.167	0.00	8.85	12.013	O	6.22
10.250	0.00	8.33	11.954	O	6.21
10.333	0.00	7.84	11.898	O	6.20
10.417	0.00	7.39	11.845	O	6.18
10.500	0.00	6.95	11.796	O	6.17
10.583	0.00	6.55	11.750	O	6.16
10.667	0.00	6.16	11.706	O	6.15
10.750	0.00	5.80	11.665	O	6.14
10.833	0.00	5.46	11.626	O	6.13
10.917	0.00	5.14	11.589	O	6.12
11.000	0.00	4.84	11.555	O	6.11
11.083	0.00	4.56	11.523	O	6.11
11.167	0.00	4.29	11.492	O	6.10
11.250	0.00	4.04	11.463	O	6.09
11.333	0.00	3.81	11.436	O	6.09
11.417	0.00	3.58	11.411	O	6.08
11.500	0.00	3.37	11.387	O	6.07
11.583	0.00	3.18	11.364	O	6.07
11.667	0.00	2.99	11.343	O	6.06
11.750	0.00	2.82	11.323	O	6.06
11.833	0.00	2.65	11.304	O	6.06
11.917	0.00	2.50	11.287	O	6.05
12.000	0.00	2.35	11.270	O	6.05
12.083	0.00	2.21	11.254	O	6.04
12.167	0.00	2.08	11.239	O	6.04
12.250	0.00	1.96	11.226	O	6.04
12.333	0.00	1.85	11.212	O	6.03
12.417	0.00	1.74	11.200	O	6.03
12.500	0.00	1.64	11.188	O	6.03
12.583	0.00	1.54	11.178	O	6.03
12.667	0.00	1.45	11.167	O	6.02
12.750	0.00	1.37	11.158	O	6.02
12.833	0.00	1.29	11.148	O	6.02
12.917	0.00	1.21	11.140	O	6.02
13.000	0.00	1.14	11.132	O	6.01
13.083	0.00	1.07	11.124	O	6.01
13.167	0.00	1.01	11.117	O	6.01
13.250	0.00	0.95	11.110	O	6.01
13.333	0.00	0.90	11.104	O	6.01
13.417	0.00	0.84	11.098	O	6.01
13.500	0.00	0.79	11.092	O	6.01
13.583	0.00	0.75	11.087	O	6.00
13.667	0.00	0.70	11.082	O	6.00
13.750	0.00	0.66	11.077	O	6.00
13.833	0.00	0.62	11.073	O	6.00
13.917	0.00	0.60	11.069	O	6.00
14.000	0.00	0.60	11.064	O	6.00
14.083	0.00	0.60	11.060	O	6.00
14.167	0.00	0.60	11.056	O	6.00

Remaining water in basin = 4.64 (Ac.Ft)

****************************HYDROGRAPH DATA****************************

Number of intervals = 2001

Time interval = 5.0 (Min.)

Maximum/Peak flow rate = 68.503 (CFS)

```
          Total volume =       28.915 (Ac.Ft)
     Status of hydrographs being held in storage
              Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
     Peak (CFS)      0.000     0.000     0.000     0.000     0.000
     Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************

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FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 11/04/11

BEAUMONT DISTRIBUTION CENTER
100 YEAR STORM
24 HR'S 5 MIN. STROM
PROPOSED CONDITION

Program License Serial Number 6061

******************** HYDROGRAPH INFORMATION ********************

From study/file name: 3080U2424100.rte
**************************HYDROGRAPH DATA**************************
Number of intervals = 288
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 117.221 (CFS)
Total volume = 64.671 (Ac.Ft)
Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

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Process from Point/Station 1.000 to Point/Station 2.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 288
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
1.000	0.040	0.100	0.040	0.040
2.000	0.410	0.200	0.409	0.411
3.000	1.640	0.300	1.639	1.641
4.000	3.950	0.400	3.949	3.951
5.000	7.190	0.500	7.188	7.192
6.000	11.070	0.600	11.068	11.072
7.000	15.310	37.700	15.180	15.440
8.000	19.700	53.300	19.516	19.884

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       9.000       24.300      65.300      24.075       24.525
      10.000       29.000      75.400      28.740       29.260
      11.000       33.900      84.300      33.610       34.190
      11.500       36.400      92.400      36.082       36.718
      12.000       38.900     100.000      38.556       39.244
      13.000       44.200     107.000      43.832       44.568
      14.000       49.500     113.000      49.111       49.889
--------------------------------------------------------------------
            Hydrograph Detention Basin Routing
--------------------------------------------------------------------

 Graph values: 'I'= unit inflow; 'O'=outflow at time shown
--------------------------------------------------------------------
 Time    Inflow  Outflow    Storage                                         Depth
(Hours)  (CFS)    (CFS)     (Ac.Ft) .0        29.3    58.61    87.92  117.22 (Ft.)
 0.083    5.84    0.05       0.020  OI          |        |        |        |     0.50
 0.167    5.84    0.11       0.060  OI          |        |        |        |     1.05
 0.250    5.84    0.12       0.099  OI          |        |        |        |     1.16
 0.333    2.67    0.12       0.128  O           |        |        |        |     1.24
 0.417    2.70    0.13       0.145  O           |        |        |        |     1.28
 0.500    2.73    0.13       0.163  O           |        |        |        |     1.33
 0.583    2.76    0.14       0.181  O           |        |        |        |     1.38
 0.667    2.79    0.14       0.199  O           |        |        |        |     1.43
 0.750    2.82    0.15       0.217  O           |        |        |        |     1.48
 0.833    6.42    0.16       0.248  OI          |        |        |        |     1.56
 0.917    6.45    0.17       0.291  OI          |        |        |        |     1.68
 1.000    6.48    0.18       0.335  OI          |        |        |        |     1.80
 1.083    2.95    0.19       0.366  O           |        |        |        |     1.88
 1.167    2.98    0.19       0.385  O           |        |        |        |     1.93
 1.250    3.01    0.20       0.404  O           |        |        |        |     1.98
 1.333    3.04    0.20       0.424  O           |        |        |        |     2.01
 1.417    3.07    0.20       0.443  O           |        |        |        |     2.03
 1.500    3.10    0.20       0.463  O           |        |        |        |     2.04
 1.583    3.13    0.21       0.483  O           |        |        |        |     2.06
 1.667    3.16    0.21       0.503  O           |        |        |        |     2.08
 1.750    3.19    0.21       0.524  O           |        |        |        |     2.09
 1.833    6.78    0.21       0.557  OI          |        |        |        |     2.12
 1.917    6.81    0.22       0.602  OI          |        |        |        |     2.16
 2.000    6.84    0.22       0.648  OI          |        |        |        |     2.19
 2.083    6.87    0.22       0.693  OI          |        |        |        |     2.23
 2.167    6.90    0.23       0.739  OI          |        |        |        |     2.27
 2.250    6.93    0.23       0.785  OI          |        |        |        |     2.31
 2.333    6.96    0.23       0.831  OI          |        |        |        |     2.34
 2.417    6.99    0.24       0.878  OI          |        |        |        |     2.38
 2.500    7.02    0.24       0.924  OI          |        |        |        |     2.42
 2.583   10.61    0.25       0.983  O I         |        |        |        |     2.47
 2.667   10.64    0.25       1.055  O I         |        |        |        |     2.52
 2.750   10.67    0.26       1.127  O I         |        |        |        |     2.58
 2.833   10.70    0.26       1.198  O I         |        |        |        |     2.64
 2.917   10.73    0.27       1.270  O I         |        |        |        |     2.70
 3.000   10.76    0.28       1.343  O I         |        |        |        |     2.76
 3.083   10.79    0.28       1.415  O I         |        |        |        |     2.82
 3.167   10.82    0.29       1.487  O I         |        |        |        |     2.88
 3.250   10.85    0.29       1.560  O I         |        |        |        |     2.93
 3.333   10.88    0.30       1.633  O I         |        |        |        |     2.99
 3.417   10.91    0.30       1.706  O I         |        |        |        |     3.03
 3.500   10.94    0.31       1.779  O I         |        |        |        |     3.06
 3.583   10.96    0.31       1.852  O I         |        |        |        |     3.09
 3.667   10.99    0.31       1.925  O  I        |        |        |        |     3.12
 3.750   11.02    0.32       1.999  O  I        |        |        |        |     3.16
 3.833   14.61    0.32       2.085  O  I        |        |        |        |     3.19
 3.917   14.64    0.32       2.184  O  I        |        |        |        |     3.24
 4.000   14.67    0.33       2.282  O   I       |        |        |        |     3.28
 4.083   14.70    0.33       2.381  O   I       |        |        |        |     3.32
 4.167   14.73    0.34       2.480  O   I       |        |        |        |     3.36
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4.250   14.76     0.34      2.579   O   I   |       |       |       |    3.41
4.333   18.35     0.35      2.691   O    I  |       |       |       |    3.46
4.417   18.37     0.35      2.815   O    I  |       |       |       |    3.51
4.500   18.40     0.36      2.939   O    I  |       |       |       |    3.56
4.583   18.43     0.36      3.064   O    I  |       |       |       |    3.62
4.667   18.46     0.37      3.188   O    I  |       |       |       |    3.67
4.750   18.49     0.37      3.313   O    I  |       |       |       |    3.72
4.833   22.08     0.38      3.450   O     I |       |       |       |    3.78
4.917   22.11     0.38      3.600   O     I |       |       |       |    3.85
5.000   22.13     0.39      3.749   O     I |       |       |       |    3.91
5.083   15.03     0.40      3.874   O   I   |       |       |       |    3.97
5.167   15.06     0.40      3.975   O   I   |       |       |       |    4.01
5.250   15.09     0.40      4.076   O   I   |       |       |       |    4.04
5.333   18.68     0.41      4.190   O    I  |       |       |       |    4.07
5.417   18.71     0.41      4.316   O    I  |       |       |       |    4.11
5.500   18.74     0.42      4.442   O    I  |       |       |       |    4.15
5.583   22.33     0.42      4.580   O     I |       |       |       |    4.19
5.667   22.35     0.42      4.731   O     I |       |       |       |    4.24
5.750   22.38     0.43      4.883   O     I |       |       |       |    4.29
5.833   22.41     0.43      5.034   O     I |       |       |       |    4.33
5.917   22.43     0.44      5.185   O     I |       |       |       |    4.38
6.000   22.46     0.44      5.337   O     I |       |       |       |    4.43
6.083   26.05     0.45      5.501   O      I|       |       |       |    4.48
6.167   26.08     0.45      5.677   O      I|       |       |       |    4.53
6.250   26.10     0.46      5.854   O      I|       |       |       |    4.59
6.333   26.13     0.46      6.030   O      I|       |       |       |    4.64
6.417   26.16     0.47      6.207   O      I|       |       |       |    4.70
6.500   26.18     0.48      6.384   O      I|       |       |       |    4.75
6.583   29.77     0.48      6.574   O       I       |       |       |    4.81
6.667   29.80     0.49      6.775   O       I       |       |       |    4.87
6.750   29.83     0.49      6.977   O       I       |       |       |    4.93
6.833   29.85     0.50      7.179   O       I       |       |       |    5.00
6.917   29.88     0.50      7.382   O       I       |       |       |    5.05
7.000   29.90     0.51      7.584   O       I       |       |       |    5.10
7.083   29.93     0.52      7.787   O       I       |       |       |    5.15
7.167   29.96     0.52      7.989   O       I       |       |       |    5.21
7.250   29.98     0.53      8.192   O       I       |       |       |    5.26
7.333   33.57     0.53      8.407   O       |I      |       |       |    5.31
7.417   33.60     0.54      8.635   O       |I      |       |       |    5.37
7.500   33.62     0.54      8.863   O       |I      |       |       |    5.43
7.583   37.21     0.55      9.103   O       | I     |       |       |    5.49
7.667   37.24     0.56      9.355   O       | I     |       |       |    5.56
7.750   37.26     0.56      9.608   O       | I     |       |       |    5.62
7.833   40.85     0.57      9.873   O       |  I    |       |       |    5.69
7.917   40.88     0.58     10.150   O       |  I    |       |       |    5.76
8.000   40.90     0.58     10.428   O       |  I    |       |       |    5.83
8.083   48.05     0.59     10.730   O       |    I  |       |       |    5.91
8.167   48.08     0.60     11.057   O       |    I  |       |       |    6.00
8.250   48.10     3.27     11.375   O       |    I  |       |       |    6.07
8.333   48.13     5.89     11.675   |O      |    I  |       |       |    6.14
8.417   48.15     8.36     11.957   | O     |    I  |       |       |    6.21
8.500   48.18    10.69     12.223   | O     |    I  |       |       |    6.27
8.583   51.76    12.99     12.486   |  O    |     I |       |       |    6.33
8.667   51.79    15.26     12.745   |   O   |     I |       |       |    6.40
8.750   51.81    17.40     12.990   |   O   |     I |       |       |    6.45
8.833   55.40    19.52     13.232   |    O  |      I|       |       |    6.51
8.917   55.43    21.62     13.472   |    O  |      I|       |       |    6.57
9.000   55.45    23.59     13.698   |     O |      I|       |       |    6.62
9.083   62.60    25.67     13.935   |      O|       |I      |       |    6.68
9.167   62.62    27.83     14.182   |      O|       |I      |       |    6.73
9.250   62.65    29.86     14.414   |       O       |I      |       |    6.79
9.333   66.24    31.89     14.646   |       O       | I     |       |    6.84
9.417   66.26    33.90     14.875   |       |O      | I     |       |    6.90
9.500   66.28    35.79     15.092   |       |O      | I     |       |    6.95
9.583   69.87    37.68     15.308   |       | O     |  I    |       |    7.00
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 9.667   69.89   38.47    15.527  |       | O     |  I     |       |     7.05
 9.750   69.92   39.23    15.741  |       | O     |  I     |       |     7.10
 9.833   73.50   40.02    15.962  |       | O     |   I    |       |     7.15
 9.917   73.53   40.83    16.190  |       |  O    |   I    |       |     7.20
10.000   73.55   41.62    16.412  |       |  O    |   I    |       |     7.25
10.083   48.63   42.09    16.545  |       |  O I  |        |       |     7.28
10.167   48.66   42.25    16.589  |       |  O I  |        |       |     7.29
10.250   48.68   42.40    16.633  |       |  O I  |        |       |     7.30
10.333   48.70   42.55    16.676  |       |  O I  |        |       |     7.31
10.417   48.73   42.70    16.718  |       |  O I  |        |       |     7.32
10.500   48.75   42.85    16.759  |       |  O I  |        |       |     7.33
10.583   66.59   43.21    16.860  |       |  O    | I      |       |     7.35
10.667   66.61   43.77    17.019  |       |  O    | I      |       |     7.39
10.750   66.63   44.32    17.174  |       |   O   | I      |       |     7.42
10.833   66.66   44.86    17.326  |       |   O   | I      |       |     7.46
10.917   66.68   45.39    17.474  |       |   O   | I      |       |     7.49
11.000   66.70   45.91    17.619  |       |   O   | I      |       |     7.53
11.083   63.16   46.37    17.749  |       |   O   |I       |       |     7.56
11.167   63.18   46.77    17.863  |       |   O   |I       |       |     7.58
11.250   63.20   47.17    17.975  |       |   O   |I       |       |     7.61
11.333   63.23   47.56    18.084  |       |   O   |I       |       |     7.63
11.417   63.25   47.94    18.191  |       |    O  |I       |       |     7.66
11.500   63.27   48.31    18.295  |       |    O  |I       |       |     7.68
11.583   56.17   48.58    18.373  |       |    O I|        |       |     7.70
11.667   56.19   48.77    18.424  |       |    O I|        |       |     7.71
11.750   56.21   48.95    18.475  |       |    O I|        |       |     7.72
11.833   59.80   49.17    18.536  |       |    O  I        |       |     7.73
11.917   59.82   49.42    18.609  |       |    O  I        |       |     7.75
12.000   59.84   49.67    18.680  |       |    O  I        |       |     7.77
12.083   84.80   50.22    18.834  |       |    O  |       I|       |     7.80
12.167   84.82   51.06    19.069  |       |    O  |       I|       |     7.86
12.250   84.84   51.87    19.299  |       |     O |       I|       |     7.91
12.333   88.43   52.72    19.535  |       |     O |        I       |     7.96
12.417   88.45   53.51    19.779  |       |     O |        I       |     8.02
12.500   88.47   54.13    20.017  |       |     O |        I       |     8.07
12.583   95.62   54.80    20.276  |       |     O |        | I     |     8.13
12.667   95.64   55.53    20.555  |       |      O|        | I     |     8.19
12.750   95.66   56.24    20.829  |       |      O|        | I     |     8.25
12.833   99.24   56.98    21.110  |       |      O|        |  I    |     8.31
12.917   99.26   57.73    21.398  |       |      O|        |  I    |     8.37
13.000   99.28   58.47    21.682  |       |      O|        |  I    |     8.43
13.083  117.12   59.36    22.021  |       |       O        |      I|     8.50
13.167  117.14   60.38    22.416  |       |       O        |      I|     8.59
13.250  117.16   61.40    22.803  |       |       O        |      I|     8.67
13.333  117.18   62.39    23.184  |       |       |O       |      I|     8.76
13.417  117.20   63.36    23.558  |       |       |O       |      I|     8.84
13.500  117.22   64.32    23.926  |       |       |O       |       I     8.92
13.583   78.05   64.92    24.153  |       |       |O    I  |       |     8.97
13.667   78.07   65.15    24.243  |       |       |O    I  |       |     8.99
13.750   78.09   65.37    24.331  |       |       |O    I  |       |     9.01
13.833   78.11   65.55    24.418  |       |       |O    I  |       |     9.03
13.917   78.13   65.74    24.504  |       |       |O    I  |       |     9.04
14.000   78.15   65.92    24.589  |       |       |O    I  |       |     9.06
14.083   92.42   66.20    24.721  |       |       |  O     |I      |     9.09
14.167   92.44   66.59    24.900  |       |       |  O     |I      |     9.13
14.250   92.46   66.97    25.077  |       |       |  O     |I      |     9.17
14.333   88.91   67.32    25.239  |       |       |  O      I       |     9.20
14.417   88.93   67.64    25.387  |       |       |  O      I       |     9.23
14.500   88.95   67.95    25.532  |       |       |  O      I       |     9.26
14.583   88.97   68.26    25.676  |       |       |  O      I       |     9.29
14.667   88.99   68.56    25.818  |       |       |  O      I       |     9.32
14.750   89.01   68.86    25.957  |       |       |  O      I       |     9.35
14.833   85.46   69.13    26.083  |       |       |  O    I|       |     9.38
14.917   85.48   69.37    26.195  |       |       |  O    I|       |     9.40
15.000   85.50   69.61    26.305  |       |       |   O   I|       |     9.43
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15.083	81.95	69.82	26.401	9.45
15.167	81.97	69.99	26.485	9.46
15.250	81.99	70.17	26.566	9.48
15.333	78.45	70.32	26.635	9.50
15.417	78.46	70.44	26.691	9.51
15.500	78.48	70.56	26.746	9.52
15.583	64.25	70.57	26.751	9.52
15.667	64.27	70.47	26.708	9.51
15.750	64.28	70.38	26.666	9.50
15.833	64.30	70.29	26.624	9.49
15.917	64.32	70.21	26.583	9.49
16.000	64.33	70.12	26.543	9.48
16.083	10.91	69.64	26.321	9.43
16.167	10.92	68.78	25.919	9.34
16.250	10.94	67.93	25.524	9.26
16.333	10.96	67.09	25.134	9.18
16.417	10.97	66.27	24.751	9.10
16.500	10.99	65.46	24.373	9.02
16.583	7.45	64.49	23.989	8.93
16.667	7.46	63.47	23.599	8.85
16.750	7.48	62.48	23.217	8.76
16.833	7.49	61.50	22.842	8.68
16.917	7.51	60.53	22.473	8.60
17.000	7.53	59.59	22.111	8.52
17.083	14.67	58.73	21.780	8.45
17.167	14.68	57.94	21.480	8.39
17.250	14.70	57.17	21.184	8.32
17.333	14.72	56.42	20.895	8.26
17.417	14.73	55.67	20.610	8.20
17.500	14.75	54.95	20.331	8.14
17.583	14.76	54.23	20.056	8.08
17.667	14.78	53.53	19.787	8.02
17.750	14.79	52.67	19.523	7.96
17.833	11.24	51.71	19.253	7.90
17.917	11.26	50.73	18.978	7.84
18.000	11.27	49.78	18.709	7.77
18.083	11.29	48.85	18.448	7.71
18.167	11.30	47.94	18.192	7.66
18.250	11.32	47.06	17.943	7.60
18.333	11.33	46.19	17.700	7.54
18.417	11.35	45.35	17.463	7.49
18.500	11.36	44.53	17.231	7.44
18.583	7.81	43.68	16.994	7.38
18.667	7.83	42.82	16.749	7.33
18.750	7.84	41.97	16.511	7.27
18.833	4.29	41.10	16.267	7.22
18.917	4.30	40.21	16.017	7.16
19.000	4.32	39.34	15.772	7.11
19.083	7.89	38.54	15.546	7.05
19.167	7.91	37.80	15.338	7.01
19.250	7.92	36.19	15.138	6.96
19.333	11.49	34.64	14.961	6.92
19.417	11.51	33.29	14.806	6.88
19.500	11.52	32.01	14.660	6.85
19.583	7.97	30.71	14.511	6.81
19.667	7.98	29.38	14.359	6.78
19.750	7.99	28.13	14.216	6.74
19.833	4.44	26.85	14.070	6.71
19.917	4.46	25.54	13.920	6.67
20.000	4.47	24.31	13.779	6.64
20.083	8.04	23.25	13.658	6.61
20.167	8.05	22.36	13.557	6.59
20.250	8.07	21.52	13.461	6.56
20.333	8.08	20.74	13.371	6.54
20.417	8.09	20.00	13.287	6.52

20.500	8.10	19.30	13.207	I O	6.50
20.583	8.11	18.64	13.132	I O	6.49
20.667	8.12	18.03	13.062	I O	6.47
20.750	8.13	17.45	12.996	I O	6.45
20.833	4.58	16.80	12.921	I O	6.44
20.917	4.59	16.09	12.840	I O	6.42
21.000	4.60	15.41	12.763	I O	6.40
21.083	8.17	14.89	12.703	I O	6.39
21.167	8.18	14.49	12.658	IO	6.37
21.250	8.19	14.12	12.616	IO	6.36
21.333	4.64	13.67	12.564	I O	6.35
21.417	4.65	13.14	12.504	I O	6.34
21.500	4.66	12.65	12.447	I O	6.32
21.583	8.23	12.29	12.405	IO	6.31
21.667	8.24	12.05	12.378	IO	6.31
21.750	8.25	11.83	12.353	IO	6.30
21.833	4.69	11.51	12.317	I O	6.29
21.917	4.70	11.11	12.272	I O	6.28
22.000	4.71	10.74	12.229	IO	6.27
22.083	8.28	10.49	12.200	O	6.27
22.167	8.29	10.36	12.186	O	6.26
22.250	8.30	10.24	12.172	O	6.26
22.333	4.74	10.02	12.147	IO	6.25
22.417	4.75	9.71	12.112	IO	6.25
22.500	4.75	9.42	12.078	IO	6.24
22.583	4.76	9.15	12.047	IO	6.23
22.667	4.77	8.89	12.018	IO	6.22
22.750	4.77	8.65	11.990	IO	6.22
22.833	4.78	8.43	11.964	IO	6.21
22.917	4.79	8.21	11.940	IO	6.21
23.000	4.79	8.01	11.917	IO	6.20
23.083	4.80	7.82	11.896	IO	6.19
23.167	4.80	7.65	11.875	IO	6.19
23.250	4.81	7.48	11.856	IO	6.19
23.333	4.81	7.32	11.839	O	6.18
23.417	4.82	7.18	11.822	O	6.18
23.500	4.82	7.04	11.806	O	6.17
23.583	4.82	6.91	11.791	O	6.17
23.667	4.83	6.79	11.777	O	6.17
23.750	4.83	6.67	11.764	O	6.16
23.833	4.83	6.57	11.752	O	6.16
23.917	4.84	6.46	11.740	O	6.16
24.000	4.84	6.37	11.729	O	6.16
24.083	0.00	6.14	11.703	IO	6.15
24.167	0.00	5.78	11.662	IO	6.14
24.250	0.00	5.44	11.623	IO	6.13
24.333	0.00	5.12	11.587	IO	6.12
24.417	0.00	4.82	11.553	IO	6.11
24.500	0.00	4.54	11.520	IO	6.11
24.583	0.00	4.28	11.490	IO	6.10
24.667	0.00	4.03	11.461	IO	6.09
24.750	0.00	3.79	11.435	IO	6.09
24.833	0.00	3.57	11.409	O	6.08
24.917	0.00	3.36	11.385	O	6.07
25.000	0.00	3.16	11.363	O	6.07
25.083	0.00	2.98	11.342	O	6.06
25.167	0.00	2.80	11.322	O	6.06
25.250	0.00	2.64	11.303	O	6.05
25.333	0.00	2.49	11.285	O	6.05
25.417	0.00	2.34	11.269	O	6.05
25.500	0.00	2.20	11.253	O	6.04
25.583	0.00	2.07	11.238	O	6.04
25.667	0.00	1.95	11.225	O	6.04
25.750	0.00	1.84	11.212	O	6.03
25.833	0.00	1.73	11.199	O	6.03

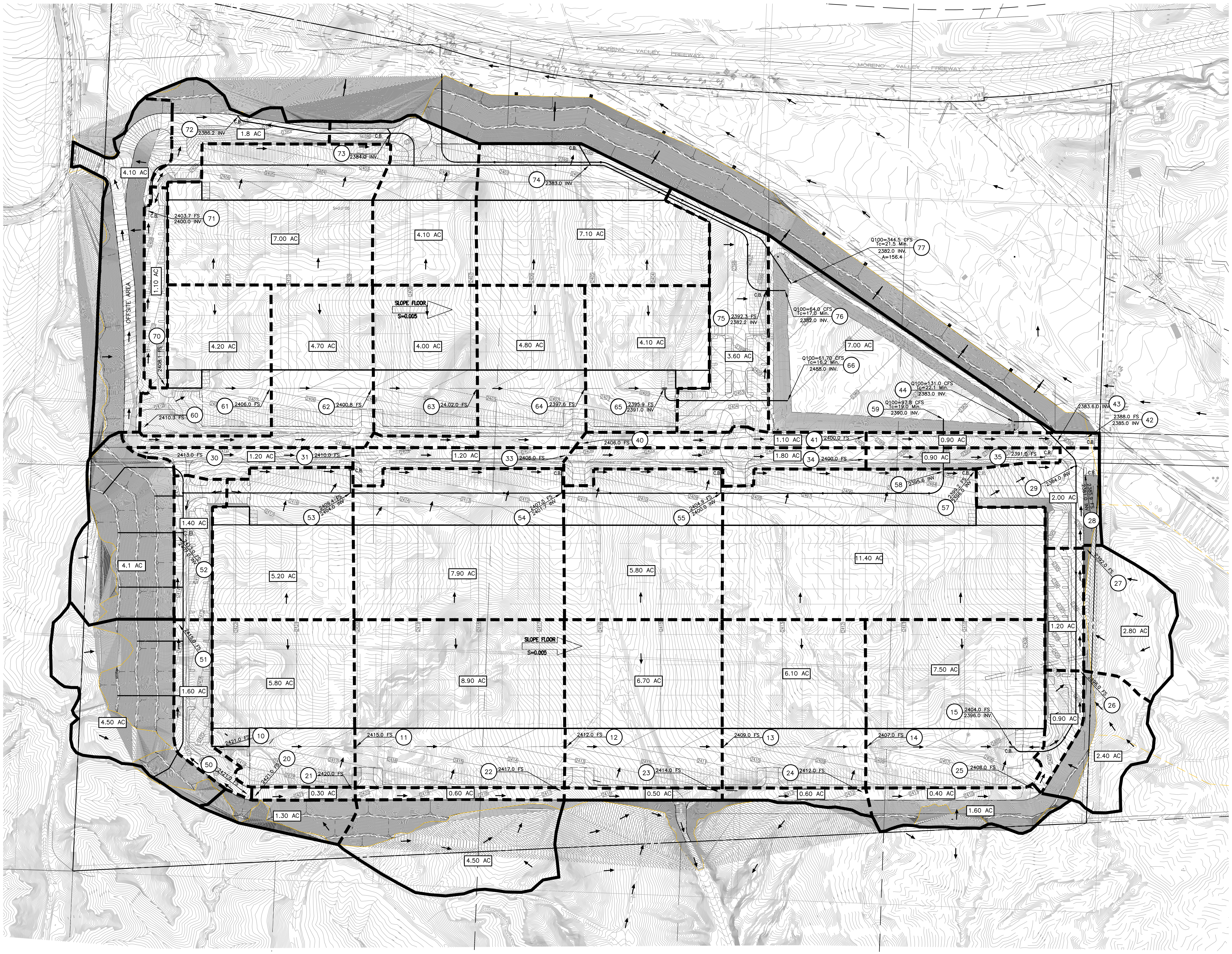
25.917	0.00	1.63	11.188	O	|	|	|	|	6.03
26.000	0.00	1.53	11.177	O	|	|	|	|	6.03
26.083	0.00	1.44	11.167	O	|	|	|	|	6.02
26.167	0.00	1.36	11.157	O	|	|	|	|	6.02
26.250	0.00	1.28	11.148	O	|	|	|	|	6.02
26.333	0.00	1.21	11.139	O	|	|	|	|	6.02
26.417	0.00	1.14	11.131	O	|	|	|	|	6.01
26.500	0.00	1.07	11.124	O	|	|	|	|	6.01
26.583	0.00	1.01	11.116	O	|	|	|	|	6.01
26.667	0.00	0.95	11.110	O	|	|	|	|	6.01
26.750	0.00	0.89	11.103	O	|	|	|	|	6.01
26.833	0.00	0.84	11.097	O	|	|	|	|	6.01
26.917	0.00	0.79	11.092	O	|	|	|	|	6.01
27.000	0.00	0.74	11.086	O	|	|	|	|	6.00
27.083	0.00	0.70	11.082	O	|	|	|	|	6.00
27.167	0.00	0.66	11.077	O	|	|	|	|	6.00
27.250	0.00	0.62	11.072	O	|	|	|	|	6.00
27.333	0.00	0.60	11.068	O	|	|	|	|	6.00
27.417	0.00	0.60	11.064	O	|	|	|	|	6.00
27.500	0.00	0.60	11.060	O	|	|	|	|	6.00
27.583	0.00	0.60	11.056	O	|	|	|	|	6.00
27.667	0.00	0.60	11.052	O	|	|	|	|	6.00
27.750	0.00	0.60	11.048	O	|	|	|	|	5.99
27.833	0.00	0.60	11.043	O	|	|	|	|	5.99
27.917	0.00	0.60	11.039	O	|	|	|	|	5.99
28.000	0.00	0.60	11.035	O	|	|	|	|	5.99
28.083	0.00	0.60	11.031	O	|	|	|	|	5.99
28.167	0.00	0.60	11.027	O	|	|	|	|	5.99
28.250	0.00	0.60	11.023	O	|	|	|	|	5.99
28.333	0.00	0.60	11.019	O	|	|	|	|	5.99
28.417	0.00	0.60	11.015	O	|	|	|	|	5.99
28.500	0.00	0.60	11.010	O	|	|	|	|	5.98
28.583	0.00	0.60	11.006	O	|	|	|	|	5.98
28.667	0.00	0.60	11.002	O	|	|	|	|	5.98
28.750	0.00	0.60	10.998	O	|	|	|	|	5.98
28.833	0.00	0.60	10.994	O	|	|	|	|	5.98
28.917	0.00	0.60	10.990	O	|	|	|	|	5.98
29.000	0.00	0.60	10.986	O	|	|	|	|	5.98
29.083	0.00	0.60	10.982	O	|	|	|	|	5.98
29.167	0.00	0.60	10.977	O	|	|	|	|	5.98
29.250	0.00	0.60	10.973	O	|	|	|	|	5.98
29.333	0.00	0.60	10.969	O	|	|	|	|	5.97
29.417	0.00	0.60	10.965	O	|	|	|	|	5.97
29.500	0.00	0.60	10.961	O	|	|	|	|	5.97
29.583	0.00	0.60	10.957	O	|	|	|	|	5.97
29.667	0.00	0.60	10.953	O	|	|	|	|	5.97
29.750	0.00	0.60	10.949	O	|	|	|	|	5.97

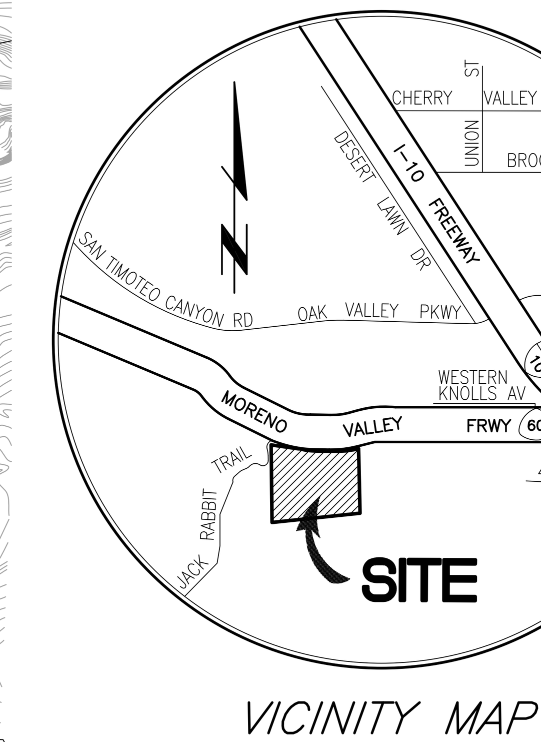
Remaining water in basin = 5.11 (Ac.Ft)

```
***************************HYDROGRAPH DATA****************************
          Number of intervals =  2001
          Time interval =     5.0 (Min.)
          Maximum/Peak flow rate =       70.568 (CFS)
          Total volume =      59.559 (Ac.Ft)
     Status of hydrographs being held in storage
               Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
     Peak (CFS)      0.000     0.000     0.000     0.000     0.000
     Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
**********************************************************************
```

APPENDIX D

HYDROLOGY MAP





VICINITY MAP
N.T.S.

LEGEND	
	PROJECT BOUNDARY
	SUBAREA BOUNDARY
1.00 AC.	SUBAREA AREA
100	NODE NUMBER
	DRAINAGE FLOW

0 60 120 240 360
SCALE:1"= 120'

Last Update: 11/11/11
O:\3000-3099\3080\3080HYD.dwg

CITY OF BEAUMONT
PUBLIC WORKS DEPARTMENT

PROPOSED CONDITION HYDROLOGY MAP

BEAUMONT DISTRIBUTION PARK
4TH STREET

PREPARED FOR:
TIMOTEO LAND DEVELOPMENT, LLC
1300 QUAIL STREET, SUITE 100
NEWPORT BEACH CA 92660
PHONE: (949) 833-0222

Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH.(714)521-4811 FAX(714)521-4173

Designed by ______ Date
Checked by ______ Date
Designed by ______ Date
Checked by ______ Date

Aproved by ______ Date ______
Public Works Director R.C.E. 28129

Sheet 1 of 1 Sheets

3080/1 OF 1 SHEET

REPORT OF WATER SERVICE
AND FIRE FLOW ANALYSIS

TIMOTEO INDUSTRIAL PARK

CITY OF BEAUMONT

BEAUMONT CHERRY VALLEY WATER DISTRICT

PARSONS FILE NUMBER 723185.01000

October 20, 2011

PARSONS

J. C. REICHENBERGER
DISTRICT ENGINEER

BEAUMONT CHERRY VALLEY WATER DISTRICT

TIMOTEO INDUSTRIAL PARK

October 20, 2011

INTRODUCTION

Timoteo Industrial Park (Project) is requesting domestic and recycled water service and fire service from Beaumont Cherry Valley Water District (District) to serve a large distribution center. Presently, there are no existing facilities within the Project area. In order for the District to provide domestic and recycled water and fire service to the property, the Applicant will be required to install certain domestic and recycled water facilities, as discussed below.

The project area consists of approximately 200 acres of currently undeveloped dry agricultural land and open space traversed by several natural runoff gullies. The property was formally referred to as Hidden Canyon I (Tract 31843) and Hidden Canyon II (Tract 32747). The planned development for Hidden Canyon I and II was originally for 426 residential units, which equates to an average day demand of approximately 170 gpm or 275 acre-feet/yr. The property has been annexed to the District under LAFCO No. 2004-48-5. The proposed Project will consist of three (3) industrial distribution warehouses with a total area of approximately 3,135,000 s.f. The Riverside County Fire Department has identified a fire flow requirement for the Project of 4,000 gpm for 4 hours at 20 psi residual.

The general location of the Project is in a portion of northwest quarter of Section 7, T3S, R1W S.B.M and a portion of the southwest quarter of Section 6, T3S, R1W S.B.M., within the city of Beaumont. The Project is south of State Highway 60 and west of future Potrero Blvd. Fourth St. will be extended to the west and will pass through the Project and tie into Jack Rabbit Trail. Domestic and fire service to the Project will ultimately be served from the District's 2650 Pressure Zone.

This Report of Water Service utilizes information from the District's most recent Water System Master Plan Update, which addresses water demands and master planned facilities for the Project. This master plan is currently being updated. The average daily water demand is based on information from the District's Water System Master Plan, which is equal to 0.40 gpm per EDU (equivalent dwelling units). The average day domestic water demand for the Project, estimated by the Project's Engineer, is estimated to be 50 gpm or approximately 80 acre-feet/year.

The tentative schedule for the Project has a construction start date of 2012-2013.

EXISTING POTABLE WATER FACILITIES

As stated above the District presently has no existing domestic or recycled water facilities near the Project site. The District presently has an existing 24-inch potable water line in Fourth Street, which "dead-ends" approximately 4,800 feet east of Project site. The existing facilities are within the District's 2750 (Beaumont) Pressure Zone. In order to provide water to the Project a pressure reducing station shall be constructed to reduce system head to an equivalent hydraulic grade line (HGL) of the 2650 Pressure Zone. Also, to provide reliable fire service to the Project, additional water transmission facilities may be required by the Riverside County Fire Department. This is discussed below in "Redundancy Requirements".

The District's Water Master Plan recommends that the 2650 Pressure Zone ultimately serve the Project. The 2650 Pressure Zone has a system hydraulic grade line elevation of 2650.

Initially, the 2750 Pressure Zone is adequate to provide pressure and water supply for domestic service and fire flow to the Project.

EXPECTED PRESSURES AND PIPE VELOCITIES

As indicated above, the proposed Project is ultimately in the District's 2650 Pressure Zone service area. In the interim the Project will be served from the 2750 (Beaumont) Zone through a proposed pressure regulator in Fourth St., which will be located at the westerly boundary of the former WinCo Foods' project. The average Project site elevation is approximate 2420. Based on this site elevation, the static water pressure for the Project is estimated to be 100 psi based on a downstream pressure setting of 85 psi at the proposed pressure regulating station. The District's hydraulic model was used to predict system pressures for the Project under various scenarios. The results of the modeling are based on ultimate facilities and the future development of the Jack Rabbit Trail Specific Plan. The hydraulic modeling results indicate that during maximum day the estimated mainline water pressure adjacent to the Project site is 99 psi. During peak hour the estimated water main pressure at the Project site is 93 psi. The estimated water main pressure at project site, during maximum day plus a fire flow of 4,000 gpm is estimated to be 90 psi. During a fire flow event, the maximum flow velocity in the 18-inch water main in Fourth St., within the Project site, is approximately 8 ft/sec.

REDUNDANCY REQUIREMENTS

Currently there is only one "feed" to the proposed Project from a 24-inch ductile iron pipe in Fourth Street, adjacent to the former WinCo Foods property. Ultimately, there will be another 24-inch feed from the north in future Potrero Blvd. – yet to be constructed. This will provide a second feed.

If the Fire Marshall requires a secondary supply source, the Applicant may be required to construct a 24-inch potable water line in Potrero Blvd. from Oak Valley Parkway to Fourth Street, approximately 6,300 feet. This would entail a bore and jack under Union Pacific Railroad tracks, San Timoteo Creek, and a bore under State Highway 60. It is important to note that the fire flow can be met without these facilities in place.

REQUIRED POTABLE WATER FACILITY IMPROVEMENTS

The Applicant shall install a 24-inch potable water line from a connection point at the existing 24-inch potable water line adjacent to the former WinCo Foods property located east of the Project site, to the future Potrero Blvd. The Applicant shall then install an 18-inch water line in Fourth Street from the future Potrero Blvd. to a termination point at Jack Rabbit Trail, at the westerly Project boundary. The Applicant shall bore and jack under an existing creek just east of the Project site. Coordination with the Army Corps of Engineers and Department of Fish and Game may be required.

As stated above, the Riverside County Fire Department may require additional facilities to be installed to ensure reliability of fire flow service to the Project. If service redundancy is required by the Fire Department, the Applicant shall install a 24-inch potable water line (2650 Zone) in the future right-of-way for Potrero Blvd. from Oak Valley Parkway to Fourth St.

The Applicant shall also construct a pressure reducing station at the southwesterly boundary corner of the former WinCo Foods project. The pressure reducing station shall be designed to handle the minimum domestic demand flow and the planned fire flow of 4,000 gpm on a maximum day. A minimum of three (3) pressure reducing valves will be required for the PRV station.

The Applicant shall also install the required fire service meter assembly as required by the District and Riverside County Fire Department. All pipes shall be ductile iron pipe with push-on joints. The minimum pressure class of the pipe shall be Class 150.

RECYCLED WATER FACILITIES

The Applicant shall install all recycled water lines in accordance with District policies and design standards, obtain all necessary permits, easement documents, and prepare all required environmental documents. A recycled water system shall be installed for all on-site and off-site landscape irrigation within the Project boundaries. Coordination with Department of Fish and Game may be required when work is performed in and around existing “blue-line” creeks and streams.

Design and construction of all facilities shall be in accordance with drawings approved and signed by the District.

All recycled water pipes shall be ductile iron pipe with push-on joints and bagged with purple polyethylene bags per AWWA standards. The minimum pressure class of the pipe shall be Class 150. All above-ground appurtenances shall be color coded per AWWA standards. Signs shall be posted around the use area stating that recycled water is being used and it is unsafe to drink. All signage shall be installed in accordance with AWWA standards. The irrigation service connections shall be made with proper reduced-pressure (RP) devices. The on-site recycled water system for landscape irrigation shall be connected to the recycled water system in Fourth St near the former WinCo Foods property.

REQUIRED RECYCLED WATER FACILITY IMPROVEMENTS

The Applicant shall install a 24-inch recycled water line in Fourth Street from a connection point at the existing 24-inch recycled water line adjacent to the former WinCo Foods property located east of the Project site, to the future Potrero Blvd. The Applicant shall then install an 18-inch recycled water line in Fourth Street from the future Potrero Blvd. to a termination point at Jack Rabbit Trail, at the westerly Project boundary. The Applicant shall bore and jack under an existing creek just east of the Project site. Coordination with the Army Corps of Engineers and Department of Fish and Game may be required.

The Applicant shall also construct a pressure reducing station at the southwesterly boundary corner of the former WinCo Foods project. The pressure reducing station shall be designed to handle the future peak hour recycled water demand flow, which is estimated to be 2,100 gpm. A minimum of three (3) pressure reducing valves will be required for the PRV station.

REQUIRED ENGINEERING

The Applicant shall perform all necessary calculations, and prepare construction drawings fully describing the work required, including fire service assemblies, pressure reducing station, and connection(s) to the existing 24-inch potable and recycled water lines.

The construction drawings, calculations, and other work, shall be prepared by, or under the direct supervision of, a Civil Engineer registered in the State of California.

All design work shall conform to District's standards and be subject to the approval of the District.

REQUIRED WATER SERVICES

The Applicant shall install minimum 2" copper service including backflow device, angle meter stop, and coupling fitting in accordance with District's standard drawings and specifications.

REQUIRED FIRE HYDRANTS

The Applicant shall install standard one 4" and two 2 1/2" outlet “super head” fire hydrants in accordance with District standards. Fire hydrants shall be located generally behind curbs or sidewalks if sidewalks are adjacent to curbs. Where fire hydrants are located in parking areas, bollards shall be installed (minimum 4) around fire hydrant heads in accordance with Riverside County Fire Department standards.

The Riverside County Fire Department shall approve all fire hydrant locations.

MAINLINE EXTENSION AGREEMENT

As a result of additional mainline pipe facilities, the Applicant shall execute a mainline extension agreement with the District. All applicable reimbursements (if any) shall be in accordance with the District's adopted policies and procedures.

REQUIRED FEES

The Applicant shall pay all applicable deposits, District charges, and facility fees prior to construction of any off-site water system improvements. Monthly service charges will be in accordance with applicable District rules and regulations.

WASTEWATER SERVICE

BCVWD does not have authority to provide wastewater collection or treatment services. Wastewater for this Project would be provided through the city of Beaumont.

WATER QUALITY MANAGEMENT PLAN

FOR

BEAUMONT DISTRIBUTION PARK
4[TH] STREET
BEAUMONT, CALIFORNIA 92223
A.P.N. # 421-020-001 and 421-020-006

PREPARED FOR:

TIMOTEO LAND DEVELOPMENT LLC
1300 QUAIL STREET, SUITE #100
NEWPORT BEACH, CA. 92660
CONTACT: STEVEN T. ST. CLAIR
P. (949) 833-0222
FAX. (949) 833-1960
EMAIL: sstclair@stclaircompany.com

JOB NO. 3080

NOVEMBER 4, 2011

PREPARED BY

THIENES ENGINEERING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
P. (714) 521-4811 FAX. (714) 521-4173
EMAIL: shelly@thieneseng.com
CONTACT: SHELLY McMASTERS

WATER QUALITY MANAGEMENT PLAN

FOR

BEAUMONT DISTRIBUTION PARK

PREPARED BY SHELLY McMASTERS
UNDER THE SUPERVISION OF

REINHARD STENZEL DATE:
R.C.E. 56155
EXP. 12/31/12

Project Specific
Water Quality Management Plan

For: **Beaumont Distribution Park**

4th Street Beaumont, Ca. 92223

DEVELOPMENT NO. **A.P.N. #421-020-001 AND 421-020-006**
DESIGN REVIEW NO.

Prepared for:

Timoteo Land Development LLC
1300 Quail Street, Suite #100
Newport Beach, Ca. 92660
Telephone: P. (949) 833-0222

Prepared by:
Shelly McMasters-Water Quality Specialist
Thienes Engineering, Inc.
14349 Firestone Boulevard
La Mirada, Ca. 90638
Telephone: P. (714) 521-4811 Fax. (714) 521-4173
Email: shelly@thieneseng.com

WQMP Preparation/Revision Date: 11/04/2011

OWNER'S CERTIFICATION

This project-specific Water Quality Management Plan (WQMP) has been prepared for:

Timoteo Land Development LLC By Thienes Engineering, Inc. for the project known as Beaumont Distribution Park at 4TH Street Beaumont, Ca. 92223.

This WQMP is intended to comply with the requirements of City of Beaumont for **A.P.N. #421-020-001 AND 421-020-006**, which includes the requirement for the preparation and implementation of a project-specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity.

The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under City of Beaumont Water Quality Ordinance (Municipal Code Section).

If the undersigned transfers its interest in the subject property/project, its successor in interest the undersigned shall notify the successor in interest of its responsibility to implement this WQMP.

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

Timoteo Land Development LLC
1300 Quail Street, Suite #100
Newport Beach, Ca. 92660
P. (949) 833-0222

Contents

I. Project Description

Project Owner:

Timoteo Land Development LLC
1300 Quail Street, Suite #100
Newport Beach, Ca. 92660
Telephone: (949) 833-0222

WQMP Preparer:

Shelly McMasters-Water Quality Specialist
Thienes Engineering, Inc.
14349 Firestone Boulevard
La Mirada, Ca. 90638
P. (714) 521-4811 Fax. (714) 521-4173
Email: shelly@thieneseng.com

Project Site Address:	4th Street Beaumont, Ca. 92223
Planning Area/ Community Name/ Development Name:	Beaumont
APN Number(s):	**A.P.N. #421-020-001 AND 421-020-006**
Thomas Bros. Map:	Page 720 Grid F-3- The Thomas Guide 2004 Edition
Project Watershed:	Santa Ana Watershed
Sub-watershed:	Coopers Creek to the San Timoteo River
Project Site Size:	196.0 Acres

Standard Industrial Classification (SIC) Code: 1541

Formation of Home Owners' Association (HOA) or Property Owners Association (POA):

Y ☐ N ☒

Additional Permits/Approvals required for the Project

AGENCY	Permit required
State Department of Fish and Game, 1601 Streambed Alteration Agreement	Y ☐ N ☒
State Water Resources Control Board, Clean Water Act (CWA) section 401 Water Quality Certification	Y ☒ N ☐
US Army Corps of Engineers, CWA section 404 permit	Y ☒ N ☐
US Fish and Wildlife, Endangered Species Act section 7 biological opinion	Y ☐ N ☒
Other *(please list in the space below as required)*	

The project site encompasses approximately 196.0 acres and is located on 4TH Street, south of the 60 Freeway in the City of Beaumont.

Under existing conditions the project site is currently a combination of dirt, weeds and small brush.

Proposed improvements to the site consist of the construction of two industrial type buildings. Building 1 will be approximately 1,824,600 square feet and building 2 approximately 936,630 square feet. Loading/unloading truck docks will be located on the north and south sides of each building. There will be landscaping throughout the site, please see Appendix "B" BMP Site Map for locations. The remainder of the site will be paved for truck and vehicle parking.

The typical pollutants from an industrial site are trash, debris, oil and grease. The typical pollutants that are expected from uncovered parking lot runoff are metals, organic compounds, trash, debris, oil and grease. Bacteria/virus is detected in pavement runoff and is a potential pollutant. Additional pollutants specific to tenant's use may also be expected. Tenant usage will dictate the expected materials to be stored onsite. Regardless of use, all materials will be required to be stored within the building. There will be no outdoor storage of any materials.

A proposed infiltration basin for the treatment of stormwater runoff. Proposed Flo-Gard Plus inserts in the catch basins for pre-treatment of runoff before discharging into the infiltration basin. The site will discharge into Coopers Creek directly to the east of the project site and ultimately discharging into the San Timoteo Creek and traveling west to the Santa Ana River.

Appendix A of this project-specific WQMP includes a complete copy of the final Conditions of Approval. Appendix B of this project-specific WQMP shall include:

1. A Vicinity Map identifying the project site and surrounding planning areas in sufficient detail to allow the project site to be plotted on Co-Permittee base mapping; and
2. A Site Plan for the project. The Site Plan included as part of Appendix B depicts the following project features:
   - Location and identification of all structural BMPs, including Treatment Control BMPs.
   - Landscaped areas.
   - Paved areas and intended uses (i.e., parking, outdoor work area, outdoor material storage area, sidewalks, patios, tennis courts, etc.).
   - Number and type of structures and intended uses (i.e., buildings, tenant spaces, dwelling units, community facilities such as pools, recreation facilities, tot lots, etc.).
   - Infrastructure (i.e., streets, storm drains, etc.) that will revert to public agency ownership and operation.
   - Location of existing and proposed public and private storm drainage facilities (i.e., storm drains, channels, basins, etc.), including catch basins and other inlets/outlet structures. Existing and proposed drainage facilities should be clearly differentiated.
   - Location(s) of Receiving Waters to which the project directly or indirectly discharges.

- Location of points where onsite (or tributary offsite) flows exit the property/project site.
- Proposed drainage areas boundaries, including tributary offsite areas, for each location where flows exits the property/project site. Each tributary area should be clearly denoted.
- Pre- and post-project topography.

Appendix G of this project-specific WQMP shall include copies of CC&Rs, Covenant and Agreements, and/or other mechanisms used to ensure the ongoing operation, maintenance, funding, transfer and implementation of the project-specific WQMP requirements.

II. Site Characterization

Land Use Designation or Zoning: Industrial

Current Property Use: Undeveloped

Proposed Property Use: Industrial

Availability of Soils Report: Y ☐ N ☒ *Note: A soils report is required if infiltration BMPs are utilized. Attach report in Appendix E.*

Phase 1 Site Assessment: Y ☐ N ☒ *Note: If prepared, attached remediation summary and use restrictions in Appendix H.*

Receiving Waters for Urban Runoff from Site

Receiving Waters	303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Coopers Creek	None	None	
San Timoteo Creek	None	None	Not Designated as RARE
Santa Ana River (Reach 5)	None	None	Not Designated as RARE
Santa Ana River (Reach 4)	Pathogens	MUN AGR, GWR, REC1, REC2, WARM, WILD	Not Designated as RARE
Santa Ana River (Reach 3)	Pathogens	AGR, GWR, REC1, REC2, WARM, WILD, RARE	Approx. 51 miles
Santa Ana River (Reach 2)	None	None	Not Designated as RARE
Santa Ana River Reach 1	None	REC1, REC2, WARM, WILD	Not Designated as RARE
Tidal Prism of Santa Ana River(to within 1000' of Victoria Street) and Newport Slough	None	REC1, REC2, COMM, WILD, RARE, MAR	Approx. 67 m
Pacific Ocean Nearshore	None	IND, NAV, REC1, REC2, COMM, WILD, RARE, SPWN, MAR, SHEL	Approx. 72 m
Pacific Ocean Offshore Zone	None	IND, NAV, REC1, REC2, COMM, WILD, RARE, SPWN, MAR	Approx. 72 m

III. Pollutants of Concern

Potential pollutants associated with Urban Runoff from the proposed project must be identified. Exhibit B of the WQMP provides brief descriptions of typical pollutants associated with Urban Runoff and a table that associates typical potential pollutants with types of development (land use). It should be noted that at the Co-Permittees discretion, the Co-Permittees may also accept updated studies from the California Association of Stormwater Quality Agencies (CASQA), USEPA, SWRCB and/or other commonly accepted agencies/associations acceptable to the Co-Permittee for determination of Pollutants of Concern associated with given land use. Additionally, in identifying Pollutants of Concern, the presence of legacy pesticides, nutrients, or hazardous substances in the site's soils as a result of past uses and their potential for exposure to Urban Runoff must be addressed in project-specific WQMPs. The Co-Permittee may also require specific pollutants commonly associated with urban runoff to be addressed based on known problems in the watershed. The list of potential Urban Runoff pollutants identified for the project must be compared with the pollutants identified as causing an impairment of Receiving Waters, if any. To identify pollutants impairing proximate Receiving Waters, each project proponent preparing a project-specific WQMP shall, at a minimum, do the following:

1. For each of the proposed project discharge points, identify the proximate Receiving Water for each discharge point, using hydrologic unit basin numbers as identified in the most recent version of the Water Quality Control Plan for the Santa Ana River Basin or the San Diego Region.
2. Identify each proximate identified above that is listed on the most recent list of Clean Water Act Section 303(d) list of impaired water bodies, which can be found at website www.swrcb.ca.gov/tmdl/303d_lists.html. List all pollutants for which the proximate Receiving Waters are impaired.
3. Compare the list of pollutants for which the proximate Receiving Waters are impaired with the pollutants expected to be generated by the project.

Urban Runoff Pollutants:

Project Pollutants:

- Sediment/Turbidity, Nutrients, Organic Compounds, Trash and Debris, Oxygen Demanding Substances, Oil and Grease, Pesticides, Metals, and Bacteria and Viruses

Pollutants Impairing Proximate Receiving Waters:

- Santa Ana River (Reach 4)-Impaired by Pathogens.
- Santa Ana River (Reach 3)-Impaired by Pathogens.

Pollutants of Concern:

- Nutrients, Oxygen Demanding Substances, Bacteria and Viruses.

IV. Hydrologic Conditions of Concern

Impacts to the hydrologic regime resulting from the Project may include increased runoff volume and velocity; reduced infiltration; increased flow frequency, duration, and peaks; faster time to reach peak flow; and water quality degradation. Under certain circumstances, changes could also result in the reduction in the amount of available sediment for transport; storm flows could fill this sediment-carrying capacity by eroding the downstream channel. These changes have the potential to permanently impact downstream channels and habitat integrity. A change to the hydrologic regime of a Project's site would be considered a hydrologic condition of concern if the change would have a significant impact on downstream erosion compared to the pre-development condition or have significant impacts on stream habitat, alone or as part of a cumulative impact from development in the watershed.

This project-specific WQMP <u>must</u> address the issue of Hydrologic Conditions of Concern <u>unless</u> one of the following conditions are met:

- **Condition A:** Runoff from the Project is discharged directly to a publicly-owned, operated and maintained MS4; the discharge is in full compliance with Co-Permittee requirements for connections and discharges to the MS4 (including both quality and quantity requirements); the discharge would not significantly impact stream habitat in proximate Receiving Waters; and the discharge is authorized by the Co-Permittee.
- **Condition B:** The project disturbs less than 1 acre. The disturbed area calculation should include all disturbances associated with larger plans of development.
- **Condition C:** The project's runoff flow rate, volume, velocity and duration for the post-development condition do not exceed the pre-development condition for the 2-year, 24-hour and 10-year 24-hour rainfall events. This condition can be achieved by minimizing impervious area on a site and incorporating other site-design concepts that mimic pre-development conditions. This condition must be substantiated by hydrologic modeling methods acceptable to the Co-Permittee.

  This Project meets the following condition: A

  Supporting engineering studies, calculations, and reports are included in Appendix C.

	2 year – 24 hour		10 year – 24 hour	
	Precondition	**Post-condition**	**Precondition**	**Post-condition**
Discharge (cfs)				
Velocity (fps)				
Volume (cubic feet)				
Duration (minutes)				

V. Best Management Practices

V.1 Site Design BMPs

Project proponents shall implement Site Design concepts that achieve each of the following:

1) Minimize Urban Runoff
2) Minimize Impervious Footprint
3) Conserve Natural Areas
4) Minimize Directly Connected Impervious Areas (DCIAs)

The project proponent should identify the specific BMPs implemented to achieve each Site Design concept and provide a brief explanation for those Site Design concepts considered not applicable.

- Efficient building layout leaves permeable area at locations where they are best used and incorporated for BMP's. Areas not used for building or parking have been landscaped to maximize the permeable area.
- Onsite infiltration basin will treat all of the sites runoff and will be maintained and inspected at least twice a year and prior to October 1.
- Sidewalk, drive and parking lot aisles are at the minimum widths necessary for safety and appropriate vehicle use.
- Required landscaped areas will not use decorating concrete or impervious surfaces.
- Landscape plans incorporate native and drought tolerant plants, trees, and shrubs. Landscaping will be maintained weekly and maintenance contractor will properly dispose of all landscape wastes.
- Outdoor Loading/Unloading truck docks will be kept in a clean and orderly condition with weekly inspections, continuous monitoring and immediate clean up of spills.
- Parking area maintenance will include the parking areas will be swept or vacuumed at least quarterly, if there is any trash or debris in between the routine sweeping it will be swept or vacuumed immediately.
- Drainage system maintenance will include the catch basins, storm drain system and infiltration basin will be cleaned at least twice a year and prior to October 1.
- Irrigation system will be inspected monthly by the landscape contractor to check for over-watering, leaks, or excessive runoff to paved areas. Timers will be used to prevent over watering.
- Signage will be inspected and maintained twice a year for legibility.
- Trash enclosures will be inspected and maintained weekly or as needed by maintenance contractor.
- Drain inserts will be inspected and maintained at least twice a year and prior to October 1.

The owner will be required to inspect, maintain and fund all BMP's above.

Table 1. Site Design BMPs

Design Concept	Technique	Specific BMP	Included Yes	Included No	Included N/A
Site Design Concept 1	*Minimize Urban Runoff*	Maximize the permeable area (See Section 4.5.1 of the WQMP).	☒C	☐	☐
		Incorporate landscaped buffer areas between sidewalks and streets.	☒A	☐	☐
		Maximize canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs.	☒B	☐	☐
		Use natural drainage systems.	☐	☐	☒1
		Where soils conditions are suitable, use perforated pipe or gravel filtration pits for low flow infiltration.	☐	☒2	☐
		Construct onsite ponding areas or retention facilities to increase opportunities for infiltration consistent with vector control objectives.	☒D	☐	☐
		Other comparable and equally effective site design concepts as approved by the Co-Permittee (Note: Additional narrative required to describe BMP and how it addresses Site Design concept).	☐	☐	☒

1 .There is no natural drainage on site. The property will be cleared of weeds and brush.

2. As an alternative, the infiltration basin will be used for treating low flows.

A. There will be landscaping adjacent to the streets.

B. Landscaping will include the planting of native and drought tolerant trees and shrubs.

C. Areas not used for building or parking areas have been landscaped to maximize the permeable area.

D. The infiltration basin will be utilized to treat and infiltrate stormwater runoff.

Table 1. Site Design BMPs (Cont.)

Design Concept	Technique	Specific BMP	Included: Yes	Included: No	Included: N/A
Site Design Concept 2	*Minimize Impervious Footprint*	Maximize the permeable area (See Section 4.5.1 of the WQMP).	☒A	☐	☐
		Construct walkways, trails, patios, overflow parking lots, alleys, driveways, low-traffic streets and other low -traffic areas with open-jointed paving materials or permeable surfaces, such as pervious concrete, porous asphalt, unit pavers, and granular materials.	☐	☒3	☐
		Construct streets, sidewalks and parking lot aisles to the minimum widths necessary, provided that public safety and a walk able environment for pedestrians are not compromised.	☒B	☐	☐
		Reduce widths of street where off-street parking is available.	☒C	☐	☐
		Minimize the use of impervious surfaces, such as decorative concrete, in the landscape design.	☒D	☐	☐
Site Design Concept 3	*Conserve Natural Areas*	Other comparable and equally effective site design concepts as approved by the Co-Permittee (Note: Additional narrative required describing BMP and how it addresses Site Design concept).	☐	☐	☒
		Conserve natural areas (See WQMP Section 4.5.1).	☐	☒1	☐
		Maximize canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs.	☒E	☐	☐
		Use natural drainage systems.	☐	☐	☒2
		Other comparable and equally effective site design concepts as approved by the Co-Permittee (Note: Additional narrative required describing BMP and how it addresses Site Design concept).	☐	☐	☒

1. The property will be cleared of weeds and brush.

2. There is no natural drainage on site. The property will be cleared of weeds and brush.

3. Pervious pavement was not considered, as an alternative an infiltration basin is utilized.

A. Areas not used for building or parking areas have been landscaped to maximize the permeable area.

B. Sidewalks, drive isles are per city standards.

C. A new street will be constructed for this project.

D. No decorative concrete was used in the landscape design.

E. Landscaping will include the planting of native and drought tolerant trees and shrubs.

Table 1. Site Design BMPs (Cont.)

Design Concept	Technique	Specific BMP	Included: Yes	No	N/A
Site Design Concept 4	*Minimize Directly Connected Impervious Areas (DCIAs)*	Residential and commercial sites must be designed to contain and infiltrate roof runoff, or direct roof runoff to vegetative swales or buffer areas, where feasible.	☒A	☐	☐
		Where landscaping is proposed, drain impervious sidewalks, walkways, trails, and patios into adjacent landscaping.	☒B	☐	☐
		Increase the use of vegetated drainage swales in lieu of underground piping or imperviously lined swales.	☐	☒7	☐
		Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings.	☐	☒1	☐
		Urban curb/swale system: street slopes to curb; periodic swale inlets drain to vegetated swale/biofilter.	☐	☒8	☐
		Dual drainage system: First flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, high flows connect directly to MS4s.	☐	☒2	☐
		Design driveways with shared access, flared (single lane at street) or wheel strips (paving only under tires); or, drain into landscaping prior to discharging to the MS4.	☐	☒3	☐
		Uncovered temporary or guest parking on private residential lots may be paved with a permeable surface, or designed to drain into landscaping prior to discharging to the MS4.	☐	☒4	☐
		Where landscaping is proposed in parking areas, incorporate landscape areas into the drainage design.	☐	☒5	☐
		Overflow parking (parking stalls provided in excess of the Co-Permittee's minimum parking requirements) may be constructed with permeable paving.	☐	☒6	☐
		Other comparable and equally effective design concepts as approved by the Co-Permittee (Note: Additional narrative required describing BMP and how it addresses Site Design concept).	☐	☐	☒

1. Rural swale system will not be used. Instead a combination of catch basins and storm drain will deliver drainage to the infiltration basin.
2. A combination of catch basins and storm drain will deliver drainage to the infiltration basin.
3. The proposed project will be designed for industrial uses. Driveways will not be designed for shared or flared access. Runoff will drain to catch basins and a storm drain that will deliver runoff to the infiltration basin.
4. Uncovered temporary or guest parking on private residential lots with permeable surface is not proposed as there are no private residential lots.
5. Landscape areas will not be incorporated into the drainage design. Instead runoff will drain to catch basins and storm drain that will deliver drainage to the infiltration basin.
6. Parking is designed per City of Beaumont standards.
7. As an alternative, the infiltration basin is being utilized.

8. There are no private streets on the project site.
A. Roof runoff will be directed to the catch basins and then treated in the infiltration basin.
B. Sidewalks will be graded to drain to landscaping.

V.2 SOURCE CONTROL BMPS

Table 2. Source Control BMPs

BMP Name	Check One		If not applicable, state brief reason
	Included	Not Applicable	
Non-Structural Source Control BMPs			
Education for Property Owners, Operators, Tenants, Occupants, or Employees	☒	☐	
Activity Restrictions	☒	☐	
Irrigation System and Landscape Maintenance	☒	☐	
Common Area Litter Control	☒	☐	
Street Sweeping Private Streets and Parking Lots	☒	☐	
Drainage Facility Inspection and Maintenance	☒	☐	
Structural Source Control BMPs			
MS4 Stenciling and Signage	☒	☐	
Landscape and Irrigation System Design	☒	☐	
Protect Slopes and Channels	☒	☐	
Provide Community Car Wash Racks	☐	☒	No car wash on site.
Properly Design:	☐	☐	
Fueling Areas	☐	☒	No fueling on site.
Air/Water Supply Area Drainage	☐	☒	No air drainage supply area on site.
Trash Storage Areas	☒	☐	
Loading Docks	☒	☐	
Maintenance Bays	☐	☒	No maintenance bays on site.
Vehicle and Equipment Wash Areas	☐	☒	No wash areas on site.
Outdoor Material Storage Areas	☐	☒	No outdoor storage areas on site.
Outdoor Work Areas or Processing Areas	☐	☒	No processing areas on site.
Provide Wash Water Controls for Food Preparation Areas	☐	☒	No food preparation on site.

Please see below for required text on each item above.

Non-Structural Source Control BMPs.

__Education of Property Owners, Operators, Tenants, Occupants, and Employees.__ The property owner will familiarize themselves with the educational materials and BMP fact sheets in Appendix "D". The owner will ensure that each of the tenants is trained about all onsite BMP's and necessary maintenance required of the tenants. Employees shall be trained to clean up spills and participate in ongoing maintenance. Employees will have to inspect site daily for spills and clean up immediately.

- BMP implementation: Start up to begin immediately after construction is completed. Leasing of the building maybe long after construction is completed
- Maintenance Schedule: The owner will check with City and County at least once a year to obtain new or updated educational materials and provide these materials to tenants. Employees shall be trained to clean

up spills and participate in ongoing maintenance. The project site will have annual employee training and new hires within 6 months.

- The owner is responsible for the tenants, employee's etc. being trained.
- See Appendix "D" for educational material, BMP fact sheets.

Activity Restrictions. Any activity restrictions shall be included in the CC & R's. Lease agreements with tenant shall also include certain restrictions. All "NO" activities will be listed in the CC&Rs. The owner will discuss "activity restrictions" with tenants annually. Such activities include, but not limited to the following:

1. Hosing down of paved surfaces as a method of cleaning is prohibited.
2. Blowing or sweeping of debris into streets or storm drains is prohibited.
3. Outdoor storage of materials or liquids is prohibited.
4. Food preparation establishments are prohibited.

- BMP implementation: Start up to begin immediately after construction is completed. Leasing of the building maybe long after construction is completed.
- The owner will be responsible for inspections of the site to ensure that no prohibited activities are being practiced.

Irrigation System and Landscape Maintenance. The landscaping areas are grouped with plants that have similar water requirements. Native or drought tolerant species shall also be used to reduce excess irrigation runoff and promote surface filtration. Timers will be used to prevent over watering. Landscaped areas shall include small swales to promote conservation of rainwater, irrigation water, fertilizer, and pesticides. Fertilizer and pesticide usage shall be consistent with the instructions contained on product labels and with regulations administered by California's Department of Pesticide Regulation.

- BMP Implementation: Start up upon completion of landscaping.
- Maintenance Schedule: Irrigation system shall be inspected monthly by landscape contractor to check for over-watering, leaks, or excessive runoff to paved areas and landscaping shall be maintained weekly and maintenance contractor shall properly dispose of all landscape wastes.
- The owner will be responsible for inspection and maintenance of the landscaping and irrigation system.
- BMP Fact Sheets: SD-10, SD-12 and SC-73. See Appendix "D".

Common Area Litter Control. The site will be kept clean through a regular program of sweeping and cleaning. No wet cleaning allowed, only dry cleaning methods as in sweeping and vacuuming. A spill kit will be kept on the site and one will be kept in the loading/unloading truck dock area for any spills or oil leaks. Please see Appendix "D" for sample spill kits.

Maintenance Schedule: The site shall be inspected weekly with trash emptied weekly with ongoing maintenance.

- BMP Implementation: Start up upon completion of the site.
- Maintenance Schedule: Weekly inspections and maintenance and immediate dry clean up of any trash or debris.
- The tenants will be responsible for common area litter control.
- BMP Fact Sheets: SC-41, SC-43 and SC-60. See Appendix "D".

Street Sweeping Private Streets and Parking Lots. Parking lots and drive aisles will be swept or vacuumed to prevent sediment, garden waste, and trash from entering the storm drain systems. Hosing of parking areas will not be allowed as a method of cleaning.

- BMP Implementation: Start up upon completion of the paving.

- Maintenance Schedule: Parking lots and drive isles will be swept or vacuumed at least quarterly, October 1, January 1, April 1 and July 1 and as necessary. If there is any trash or debris in between the routine sweeping it will be swept or vacuumed immediately.
- The owner will be responsible for inspection and maintenance of parking lots and drive isles.
- BMP Fact Sheet: SC-43. See Appendix "D".

Drainage Facility Inspection and Maintenance. The infiltration basin shall be inspected for clogging after storm events. Maintenance activities include repair undercut and eroded areas at the inflow and outflow structures. Remove trash, debris, grass clippings, and other large vegetation from catch basins and infiltration basin and dispose of properly. Catch basins (filters) and storm drain inlets will be inspected at least twice a year for trash, debris and clogging.

- BMP Implementation: Maintenance to begin upon completion of storm drain system and infiltration basin.
- Maintenance Schedule: Catch basins and storm drain system will be cleaned at least twice a year and prior to October 1. Catch basin filters will be inspected at least twice a year and prior, during and following a rain event, and serviced by a qualified technician. Service contractor will properly dispose of all wastes.
- The owner will be responsible for inspections and maintenance of all drainage facilities.
- BMP Fact Sheets: SC-74, TC-1 and TC-30. See Appendix "D".

Structural Source Control BMPs

MS4 Stenciling and Signage. All storm drain catch basins shall have stenciling or labeling "NO DUMPING ONLY RAIN IN THE DRAIN" to alert the public to the destination of pollutants discharged into storm water. In addition, legibility of stencils and signs must be maintained.

- BMP Implementation: Maintenance to begin upon completion of catch basins.
- Maintenance Schedule: Stenciling will be inspected monthly for legibility.
- The owner is responsible for inspection and maintenance of stenciling.
- BMP Fact Sheet: SD-13. See Appendix "D".

Landscape and irrigation System Design. Required landscaping has been incorporated into the project plan. There is no significant environmentally sensitive natural areas/vegetation to preserve. Rain shutoff devices to prevent irrigation during and after precipitation events will be incorporated into the project design.

Designing irrigation systems to each landscape area's specific water requirements and using flow reducers or shutoff valves triggered by a pressure drop to control water loss due to broken sprinkler heads or lines will be implemented into the landscape design.

The timing and application methods of irrigation water shall be designed to minimize the runoff of excess irrigation water into the MS4.

Other comparable, equally effective, methods to reduce irrigation water runoff, which may include the use of water sensors, programmable irrigation times (for short cycles), etc.

Preparation and implementation of a landscape plan that:

Utilizes plants with low irrigation requirements (native or drought tolerant species) and group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface infiltration will be in the landscape design.

Install appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant material where possible and/or as recommended by landscape architect.

Maintaining or creating a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible.

Choose plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth.

- BMP Implementation: Maintenance shall begin immediately after landscaping is complete.
- Maintenance Schedule: Landscaping shall be maintained weekly and maintenance contractor shall properly dispose of all landscape wastes.
- The owner will be responsible for all landscaping and irrigation inspections and maintenance.
- BMP Fact Sheets: SD-10, SD-12 & SC-73. See Appendix "D".

Protect Slopes and Channels. Slopes are around the perimeter of the project site.

Provide Community Car Wash Racks. Not applicable. This activity will be prohibited onsite. Mobile car wash will be prohibited.

Properly Design Fueling Areas. Not applicable. No fueling on site.

Properly Design Air/Water Supply Area Drainage. Not applicable. This activity will be prohibited onsite.

Trash Container (Dumpster) Areas. The trash enclosures will be paved with an impervious surface to mitigate spills and walled to prevent off-site trash and debris from entering the trash enclosure. The trash enclosure will not be below grade. The trash enclosure will have an awning to prevent rainfall from entering the trash area and the trash bins will have attached lids. In addition, storm water runoff from the roofs and pavement must be diverted around the trash area and signs should be posted informing users that hazardous materials are not to be disposed of therein. Connection of trash area drains to a MS4 is PROHIBITED.

- BMP Implementation: Maintenance and inspection to begin immediately upon completion of enclosure area.
- Maintenance Schedule: Enclosure shall be inspected, cleaned (future tenants) and trash picked up (by the City) at least once a week.
- The owner/tenants responsible for inspection and maintenance of the trash enclosures.
- BMP Fact Sheet: SD-32. See Appendix "D".

Properly Design Loading Docks. Loading/unloading docks will be kept in a clean and orderly condition through a regular program of sweeping and litter control and immediate cleanup of spills and broken containers. Cleanup procedures will eliminate or minimize the use of water. There will be an absorbent and spill kit in the loading/unloading truck docks at all times for spills and oil leaks. Direct connection to a MS4 from below grade loading docks is prohibited.

- BMP Implementation: Maintenance and inspection to begin immediately upon completion of truck dock areas.
- Maintenance Schedule: Weekly inspections and continuous monitoring during loading and unloading of materials by the future tenants.
- The tenants or owner (if building is not occupied) will be responsible for inspection and maintenance of the loading dock area.
- BMP Fact Sheet: SC-11. See Appendix "D".

Properly Design Maintenance Bays. Not applicable. This activity will be prohibited onsite.

Properly Design Vehicle and Equipment Wash Areas.

Appendix D includes copies of the educational materials that will be used in implementing this project-specific WQMP.

V.3 TREATMENT CONTROL BMPS

Note: Projects that will utilize infiltration-based Treatment Control BMPs (e.g., Infiltration Basins, Infiltration Trenches, Porous Pavement) must include a copy of the property/project soils report as Appendix E to the project-specific WQMP. The selection of a Treatment Control BMP (or BMPs) for the project must specifically consider the effectiveness of the Treatment Control BMP for pollutants identified as causing an impairment of Receiving Waters to which the project will discharge Urban Runoff.

Infiltration Basin. Infiltration basin shall be inspected for clogging after storm events. Maintenance activities include repair undercut and eroded areas at the inflow and outflow structures. Remove trash, debris, grass clippings, and other large vegetation from the infiltration basin and dispose of properly.

- Maintenance Schedule: The infiltration basin shall be inspected and maintained semi-annually or more often as needed.
- BMP Implementation shall begin immediately after basins are complete.
- Responsible party for implementation, maintenance and inspections: Owner
- BMP Fact sheet: TC-11. See Appendix "D"

Drain Insert: Flogard Plus inserts are proposed for the catch basins. Catch basins will be serviced by a qualified technician. All waste from the filters will be properly disposed of by the service contractor.

- Maintenance Schedule: Catch basin will be inspected at least twice a year, October 1 and April 1, and with a change of filter medium once per year or more often as necessary. Inspection and maintenance to begin shortly after installation.
- BMP Implementation shall begin immediately after storm drain system is completed.
- Responsible party for implementation, maintenance and inspections: Owner
- BMP Fact sheets: MP-52. See Appendix "D"

Table 3: Treatment Control BMP Selection Matrix [1]

Pollutant of Concern	Treatment Control BMP Categories[2]							
	Veg. Swale & Veg. Filter Strips[3]	Detention Basins[4]	Infiltration Basins, Infiltration Trenches, & Porous Pavement[5]	Wet Ponds or Wetlands[6]	Sand Filter or Media Filters	Water Quality Inlets	Hydrodynamic Separator Systems[7]	Manufactured / Proprietary Devices[8]
Sediment/Turbidity Y ☒ N ☐	H/M ☐	M ☐	H/M ☒	H/M ☐	H/M ☐	L ☐	H/M (L for turbidity) ☐	U ☒
Nutrients Y ☒ N ☐	L ☐	M ☐	H/M ☒	H/M ☐	L/M ☐	L ☐	L ☐	U ☒
Organic Compounds Y ☐ N ☒	U ☐	U ☐	U ☒	U ☐	H/M ☐	L ☐	L ☐	U ☒
Trash & Debris Y ☐ N ☒	L ☐	M ☐	U ☒	U ☐	H/M ☐	M ☐	H/M ☐	U ☒
Oxygen Demanding Substances Y ☒ N ☐	L ☐	M ☐	H/M ☒	H/M ☐	H/M ☐	L ☐	L ☐	U ☒
Bacteria & Viruses Y ☒ N ☐	U ☐	U ☐	H/M ☒	U ☐	H/M ☐	L ☐	L ☐	U ☒
Oils & Grease Y ☐ N ☒	H/M ☐	M ☐	U ☒	U ☐	H/M ☐	M ☐	L/M ☐	U ☒
Pesticides (non-soil bound) Y ☐ N ☒	U ☐	U ☐	U ☒	U ☐	U ☐	L ☐	L ☐	U ☒
Metals Y ☐ N ☒	H/M ☐	M ☐	H ☒	H ☐	H ☐	L ☐	L ☐	U ☒

Abbreviations:

L: Low removal efficiency   H/M: High or medium removal efficiency   U: Unknown removal efficiency

Notes:

(1) Periodic performance assessment and updating of the guidance provided by this table may be necessary.

(2) Project applicants should base BMP designs on the Riverside County Stormwater Quality Best Management Practice Design Handbook. However, project applicants may also wish to reference the California Stormwater BMP Handbook – New Development and Redevelopment (www.cabmphandbooks.com). The Handbook contains additional information on BMP operation and maintenance.

(3) Includes grass swales, grass strips, wetland vegetation swales, and bioretention.

(4) Includes extended/dry detention basins with grass lining and extended/dry detention basins with impervious lining. Effectiveness based upon minimum 36-48-hour drawdown time.

(5) Projects that will utilize infiltration-based Treatment Control BMPs (e.g., Infiltration Basins, Infiltration Trenches, Porous Pavement, etc.) must include a copy of the property/project soils report as Appendix E to the project-specific WQMP. The selection of a Treatment Control BMP (or BMPs) for the project must specifically consider the effectiveness of the Treatment Control BMP for pollutants identified as causing an impairment of Receiving Waters to which the project will discharge Urban Runoff.

(6) Includes permanent pool wet ponds and constructed wetlands.

(7) Also known as hydrodynamic devices, baffle boxes, swirl concentrators, or cyclone separators.

(8) Includes proprietary stormwater treatment devices as listed in the CASQA Stormwater Best Management Practices Handbooks, other stormwater treatment BMPs not specifically listed in this WQMP, or newly developed/emerging stormwater treatment technologies.

V.4 Equivalent Treatment Control Alternatives

Not applicable

V.5 Regionally-Based Treatment Control BMPs

Not applicable

VI. Operation and Maintenance Responsibility for Treatment Control BMPs

See page A-18 that describes onsite BMP's, maintenance responsibility and scheduling.

At this time, the proposed buildings do not have a prospective tenant. Ongoing maintenance and inspection of BMP's will be the owner's responsibility. The owner's information is below. Certain BMP's will require tenant responsibility. Owner/tenant responsibilities will need to be outlined in any future lease agreements.

The owner information is as follows:
Timoteo Land Development LLC
1300 Quail Street, Suite #100
Newport Beach, Ca. 92660
Contact: Steven T. St. Clair
P. (949) 833-0222
Fax. (949) 833-1960
Email: sstclair@stclaircompany.com

A schedule will be established for all maintenance and a log for all cleanups shall be recorded. All documents relating to site maintenance and BMP's will be kept on site and be made available to Federal, State, County, or City inspectors upon request. Future tenant use may require additional industrial permits and storm water monitoring. Records shall be kept onsite for at least three years.

TREATMENT CONTROL BMPS:

Infiltration Basin. The infiltration basin shall be inspected for clogging after storm events. Maintenance activities include repair undercut and eroded areas at the inflow and outflow structures. Remove trash, debris, grass clippings, and other large vegetation from the infiltration basin and dispose of properly.

- Maintenance Schedule: The infiltration basin shall be inspected and maintained semi-annually or more often as needed.
- BMP Implementation shall begin immediately after the basin are complete.
- Responsible party for implementation, maintenance and inspections: Owner
- BMP Fact sheet, see Appendix "D"

Drain Insert: Flogard Plus inserts are proposed for the catch basins. Catch basins will be serviced by a qualified technician. All waste from the filters will be properly disposed of by the service contractor.

- Maintenance Schedule: Catch basin will be inspected four times a year, October 1 and April 1 with a change of filter medium once per year or more often as necessary. Inspection and maintenance to begin shortly after installation.
- BMP Implementation shall begin immediately after storm drain system is completed.

- Responsible party for implementation, maintenance and inspections: Owner
- BMP Fact sheets: MP-52. See Appendix "D"

Structural Source Control BMPs

MS4 Stenciling and Signage. All storm drain catch basins shall have stenciling or labeling "NO DUMPING ONLY RAIN IN THE DRAIN" to alert the public to the destination of pollutants discharged into storm water. In addition, legibility of stencils and signs must be maintained.

- BMP Implementation: Maintenance to begin upon completion of catch basins.
- Maintenance Schedule: Stenciling will be inspected monthly for legibility.
- The owner is responsible for inspection and maintenance of stenciling.
- BMP Fact Sheet: SD-13. See Appendix "D".

Landscape and irrigation System Design. Required landscaping has been incorporated into the project plan. There is no significant environmentally sensitive natural areas/vegetation to preserve. Rain shutoff devices to prevent irrigation during and after precipitation events will be incorporated into the project design.

Designing irrigation systems to each landscape area's specific water requirements and using flow reducers or shutoff valves triggered by a pressure drop to control water loss due to broken sprinkler heads or lines will be implemented into the landscape design.

The timing and application methods of irrigation water shall be designed to minimize the runoff of excess irrigation water into the MS4.

Other comparable, equally effective, methods to reduce irrigation water runoff, which may include the use of water sensors, programmable irrigation times (for short cycles), etc.

Preparation and implementation of a landscape plan that:

Utilizes plants with low irrigation requirements (native or drought tolerant species) and group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface infiltration will be in the landscape design.

Install appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant material where possible and/or as recommended by landscape architect.

Maintaining or creating a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible.

Choose plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth.

- BMP Implementation: Maintenance shall begin immediately after landscaping is complete.
- Maintenance Schedule: Landscaping shall be maintained weekly and maintenance contractor shall properly dispose of all landscape wastes.
- The owner will be responsible for all landscaping and irrigation inspections and maintenance.
- BMP Fact Sheets: SD-10, SD-12 & SC-73. See Appendix "D".

Trash Container (Dumpster) Areas. The trash enclosures will be paved with an impervious surface to mitigate spills and walled to prevent off-site trash and debris from entering the trash enclosure. The trash enclosure will not be below grade. The trash enclosure will have an awning to prevent rainfall from entering the trash area and the trash bins will have attached lids. In addition, storm water runoff from the roofs and pavement must be diverted around the trash area and signs should be posted informing users that hazardous materials are not to be disposed of therein. Connection of trash area drains to a MS4 is PROHIBITED.

- BMP Implementation: Maintenance and inspection to begin immediately upon completion of enclosure area.
- Maintenance Schedule: Enclosure shall be inspected, cleaned (future tenants) and trash picked up (by the City) at least once a week.
- The owner/tenants responsible for inspection and maintenance of the trash enclosures.
- BMP Fact Sheet: SD-32. See Appendix "D".

Properly Design Loading Docks. Loading/unloading docks will be kept in a clean and orderly condition through a regular program of sweeping and litter control and immediate cleanup of spills and broken containers. Cleanup procedures will eliminate or minimize the use of water. There will be an absorbent and spill kit in the loading/unloading truck docks at all times for spills and oil leaks. Direct connection to a MS4 from below grade loading docks is prohibited.

- BMP Implementation: Maintenance and inspection to begin immediately upon completion of truck dock areas.
- Maintenance Schedule: Weekly inspections and continuous monitoring during loading and unloading of materials by the future tenants.
- The tenants or owner (if building is not occupied) will be responsible for inspection and maintenance of the loading dock area.
- BMP Fact Sheet: SC-11. See Appendix "D".

VII. Funding

A funding source or sources for the O&M of each Treatment Control BMP identified in the project-specific WQMP must be identified. By certifying the project-specific WQMP, the Project applicant is certifying that the funding responsibilities have been addressed and will be transferred to future owners. One example of how to adhere to the requirement to transfer O&M responsibilities is to record the project-specific WQMP against the title to the property.

TREATMENT CONTROL BMPS:

Infiltration Basin. The infiltration basin shall be inspected for clogging after storm events. Maintenance activities include repair undercut and eroded areas at the inflow and outflow structures. Remove trash, debris, grass clippings, and other large vegetation from the infiltration basin and dispose of properly.

- Maintenance Schedule: The infiltration basin shall be inspected and maintained semi-annually or more often as needed.
- BMP Implementation shall begin immediately after the basin is complete.
- Responsible party for implementation, maintenance and inspections: Owner
- BMP Fact sheet: TC-11. See Appendix "D"

Drain Insert: Flogard Plus inserts are proposed for the catch basins. Catch basins will be serviced by a qualified technician. All waste from the filters will be properly disposed of by the service contractor.

- Maintenance Schedule: Catch basin will be inspected four times a year, October 1 and April 1 with a change of filter medium once per year or more often as necessary. Inspection and maintenance to begin shortly after installation.
- BMP Implementation shall begin immediately after storm drain system is completed.
- Responsible party for implementation, maintenance and inspections: Owner
- BMP Fact sheets: MP-52. See Appendix "D"

The owner information is as follows:
Timoteo Land Development LLC
1300 Quail Street, Suite #100
Newport Beach, Ca. 92660
Contact: Steven T. St. Clair
P. (949) 833-0222
Fax. (949) 833-1960
Email: sstclair@stclaircompany.com

Appendix A

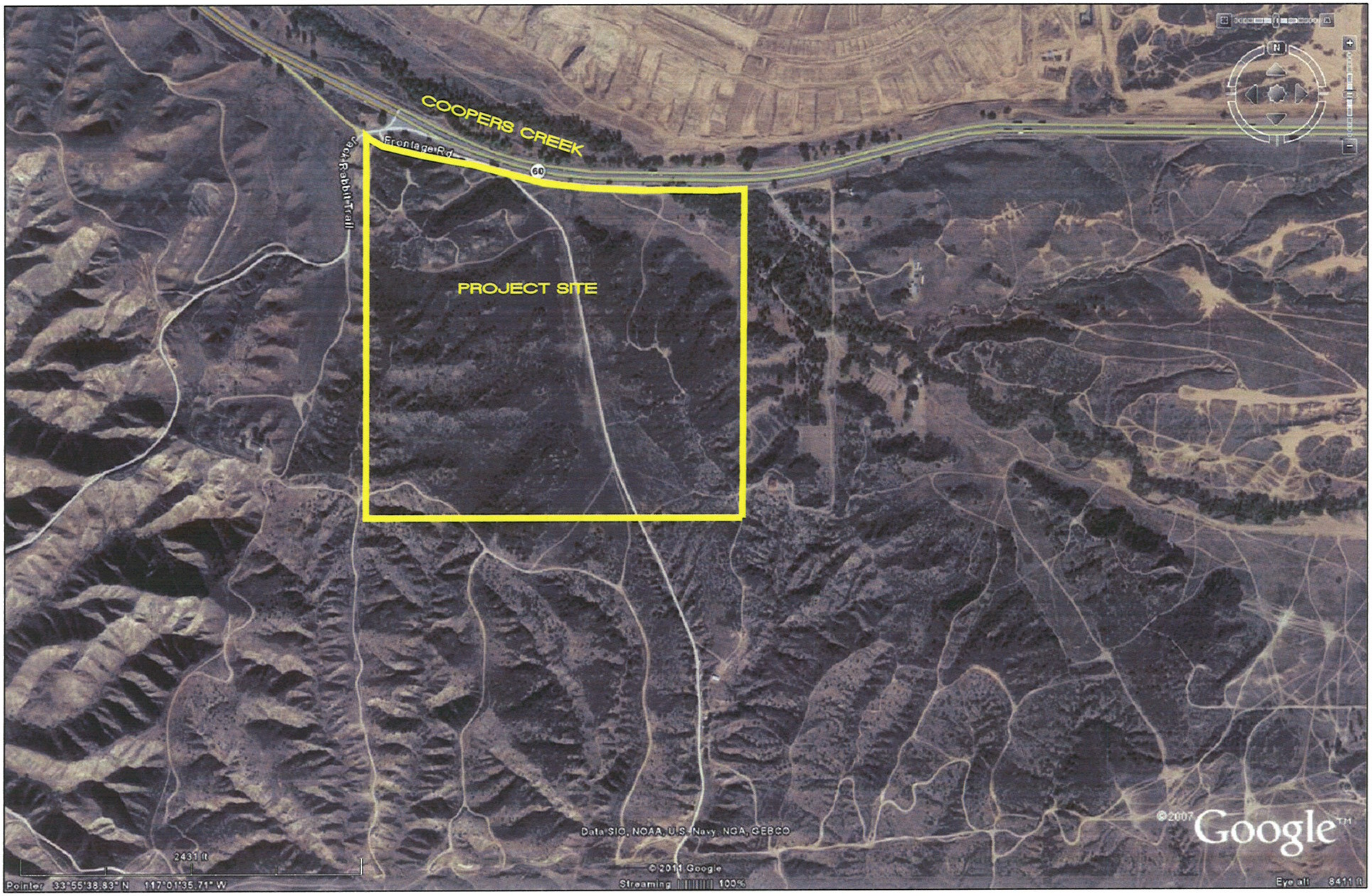
Conditions of Approval

Planning Commission Resolution ______

Dated ______

Appendix B

Vicinity Map, WQMP Site Plan, and Receiving Waters Map

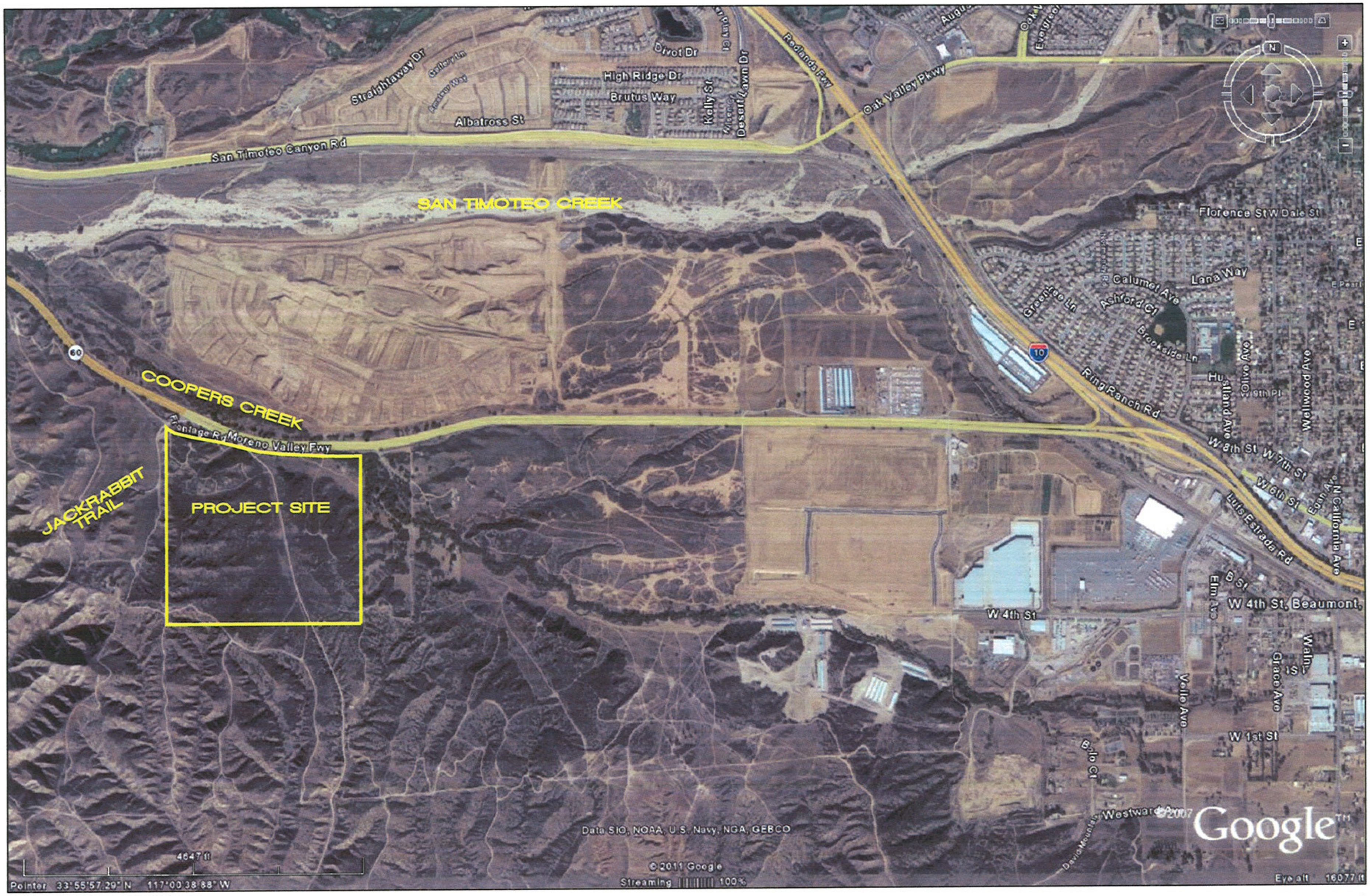


"VICINITY MAP"

FOR

200 DISTRIBUTION FACILITY, BEAUMONT

Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH.(714)521-4811 FAX(714)521-4173

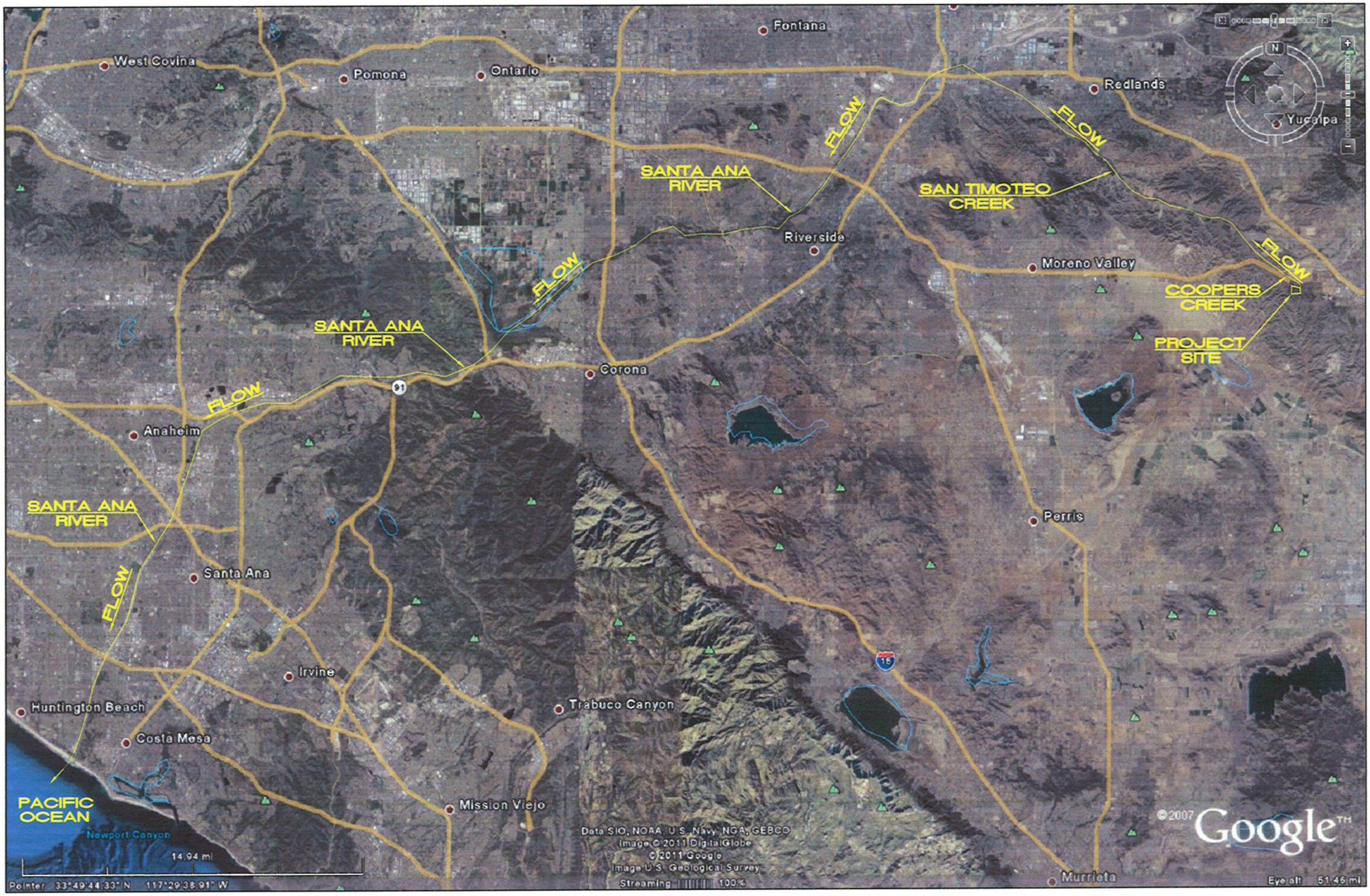


"VICINITY MAP"

FOR

200 DISTRIBUTION FACILITY, BEAUMONT

Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH.(714)521-4811 FAX(714)521-4173



"RECEIVING WATERS MAP"

FOR

200 DISTRIBUTION FACILITY, BEAUMONT

Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING
14349 FIRESTONE BOULEVARD
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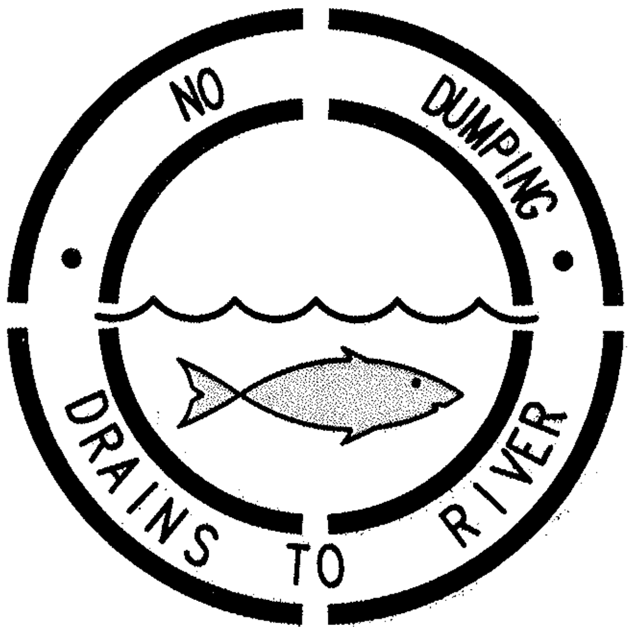
Appendix C

Supporting Detail Related to Hydraulic Conditions of Concern

Appendix D

Educational Materials



SAMPLE STENCIL TO BE USED NEAR GRATE AND CURB OPENING INLETS

SYMBOL TO BE 24" IN DIAMETER

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SAMPLE CATCH BASIN STENCIL
PER BMP SD-13

Infiltration Basin

TC-11

Design Considerations

- Soil for Infiltration
- Slope
- Aesthetics

Targeted Constituents

☑	Sediment	■
☑	Nutrients	■
☑	Trash	■
☑	Metals	■
☑	Bacteria	■
☑	Oil and Grease	■
☑	Organics	■

Legend *(Removal Effectiveness)*

● Low ■ High

▲ Medium

Description

An infiltration basin is a shallow impoundment that is designed to infiltrate stormwater. Infiltration basins use the natural filtering ability of the soil to remove pollutants in stormwater runoff. Infiltration facilities store runoff until it gradually exfiltrates through the soil and eventually into the water table. This practice has high pollutant removal efficiency and can also help recharge groundwater, thus helping to maintain low flows in stream systems. Infiltration basins can be challenging to apply on many sites, however, because of soils requirements. In addition, some studies have shown relatively high failure rates compared with other management practices.

California Experience

Infiltration basins have a long history of use in California, especially in the Central Valley. Basins located in Fresno were among those initially evaluated in the National Urban Runoff Program and were found to be effective at reducing the volume of runoff, while posing little long-term threat to groundwater quality (EPA, 1983; Schroeder, 1995). Proper siting of these devices is crucial as underscored by the experience of Caltrans in siting two basins in Southern California. The basin with marginal separation from groundwater and soil permeability failed immediately and could never be rehabilitated.

Advantages

- Provides 100% reduction in the load discharged to surface waters.
- The principal benefit of infiltration basins is the approximation of pre-development hydrology during which a

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significant portion of the average annual rainfall runoff is infiltrated and evaporated rather than flushed directly to creeks.

- If the water quality volume is adequately sized, infiltration basins can be useful for providing control of channel forming (erosion) and high frequency (generally less than the 2-year) flood events.

Limitations

- May not be appropriate for industrial sites or locations where spills may occur.
- Infiltration basins require a minimum soil infiltration rate of 0.5 inches/hour, not appropriate at sites with Hydrologic Soil Types C and D.
- If infiltration rates exceed 2.4 inches/hour, then the runoff should be fully treated prior to infiltration to protect groundwater quality.
- Not suitable on fill sites or steep slopes.
- Risk of groundwater contamination in very coarse soils.
- Upstream drainage area must be completely stabilized before construction.
- Difficult to restore functioning of infiltration basins once clogged.

Design and Sizing Guidelines

- Water quality volume determined by local requirements or sized so that 85% of the annual runoff volume is captured.
- Basin sized so that the entire water quality volume is infiltrated within 48 hours.
- Vegetation establishment on the basin floor may help reduce the clogging rate.

Construction/Inspection Considerations

- Before construction begins, stabilize the entire area draining to the facility. If impossible, place a diversion berm around the perimeter of the infiltration site to prevent sediment entrance during construction or remove the top 2 inches of soil after the site is stabililized. Stabilize the entire contributing drainage area, including the side slopes, before allowing any runoff to enter once construction is complete.
- Place excavated material such that it can not be washed back into the basin if a storm occurs during construction of the facility.
- Build the basin without driving heavy equipment over the infiltration surface. Any equipment driven on the surface should have extra-wide ("low pressure") tires. Prior to any construction, rope off the infiltration area to stop entrance by unwanted equipment.
- After final grading, till the infiltration surface deeply.
- Use appropriate erosion control seed mix for the specific project and location.

Performance

As water migrates through porous soil and rock, pollutant attenuation mechanisms include precipitation, sorption, physical filtration, and bacterial degradation. If functioning properly, this approach is presumed to have high removal efficiencies for particulate pollutants and moderate removal of soluble pollutants. Actual pollutant removal in the subsurface would be expected to vary depending upon site-specific soil types. This technology eliminates discharge to surface waters except for the very largest storms; consequently, complete removal of all stormwater constituents can be assumed.

There remain some concerns about the potential for groundwater contamination despite the findings of the NURP and Nightingale (1975; 1987a,b,c; 1989). For instance, a report by Pitt et al. (1994) highlighted the potential for groundwater contamination from intentional and unintentional stormwater infiltration. That report recommends that infiltration facilities not be sited in areas where high concentrations are present or where there is a potential for spills of toxic material. Conversely, Schroeder (1995) reported that there was no evidence of groundwater impacts from an infiltration basin serving a large industrial catchment in Fresno, CA.

Siting Criteria

The key element in siting infiltration basins is identifying sites with appropriate soil and hydrogeologic properties, which is critical for long term performance. In one study conducted in Prince George's County, Maryland (Galli, 1992), all of the infiltration basins investigated clogged within 2 years. It is believed that these failures were for the most part due to allowing infiltration at sites with rates of less than 0.5 in/hr, basing siting on soil type rather than field infiltration tests, and poor construction practices that resulted in soil compaction of the basin invert.

A study of 23 infiltration basins in the Pacific Northwest showed better long-term performance in an area with highly permeable soils (Hilding, 1996). In this study, few of the infiltration basins had failed after 10 years. Consequently, the following guidelines for identifying appropriate soil and subsurface conditions should be rigorously adhered to.

- Determine soil type (consider RCS soil type 'A, B or C' only) from mapping and consult USDA soil survey tables to review other parameters such as the amount of silt and clay, presence of a restrictive layer or seasonal high water table, and estimated permeability. The soil should not have more than 30% clay or more than 40% of clay and silt combined. Eliminate sites that are clearly unsuitable for infiltration.

- Groundwater separation should be at least 3 m from the basin invert to the measured ground water elevation. There is concern at the state and regional levels of the impact on groundwater quality from infiltrated runoff, especially when the separation between groundwater and the surface is small.

- Location away from buildings, slopes and highway pavement (greater than 6 m) and wells and bridge structures (greater than 30 m). Sites constructed of fill, having a base flow or with a slope greater than 15% should not be considered.

- Ensure that adequate head is available to operate flow splitter structures (to allow the basin to be offline) without ponding in the splitter structure or creating backwater upstream of the splitter.

- Base flow should not be present in the tributary watershed.

Secondary Screening Based on Site Geotechnical Investigation

- At least three in-hole conductivity tests shall be performed using USBR 7300-89 or Bouwer-Rice procedures (the latter if groundwater is encountered within the boring), two tests at different locations within the proposed basin and the third down gradient by no more than approximately 10 m. The tests shall measure permeability in the side slopes and the bed within a depth of 3 m of the invert.

- The minimum acceptable hydraulic conductivity as measured in any of the three required test holes is 13 mm/hr. If any test hole shows less than the minimum value, the site should be disqualified from further consideration.

- Exclude from consideration sites constructed in fill or partially in fill unless no silts or clays are present in the soil boring. Fill tends to be compacted, with clays in a dispersed rather than flocculated state, greatly reducing permeability.

- The geotechnical investigation should be such that a good understanding is gained as to how the stormwater runoff will move in the soil (horizontally or vertically) and if there are any geological conditions that could inhibit the movement of water.

Additional Design Guidelines

(1) Basin Sizing - The required water quality volume is determined by local regulations or sufficient to capture 85% of the annual runoff.

(2) Provide pretreatment if sediment loading is a maintenance concern for the basin.

(3) Include energy dissipation in the inlet design for the basins. Avoid designs that include a permanent pool to reduce opportunity for standing water and associated vector problems.

(4) Basin invert area should be determined by the equation:

$$A = \frac{WQV}{kt}$$

where A = Basin invert area (m^2)

WQV = water quality volume (m^3)

k = 0.5 times the lowest field-measured hydraulic conductivity (m/hr)

t = drawdown time (48 hr)

(5) The use of vertical piping, either for distribution or infiltration enhancement shall not be allowed to avoid device classification as a Class V injection well per 40 CFR146.5(e)(4).

Maintenance

Regular maintenance is critical to the successful operation of infiltration basins. Recommended operation and maintenance guidelines include:

- Inspections and maintenance to ensure that water infiltrates into the subsurface completely (recommended infiltration rate of 72 hours or less) and that vegetation is carefully managed to prevent creating mosquito and other vector habitats.
- Observe drain time for the design storm after completion or modification of the facility to confirm that the desired drain time has been obtained.
- Schedule semiannual inspections for beginning and end of the wet season to identify potential problems such as erosion of the basin side slopes and invert, standing water, trash and debris, and sediment accumulation.
- Remove accumulated trash and debris in the basin at the start and end of the wet season.
- Inspect for standing water at the end of the wet season.
- Trim vegetation at the beginning and end of the wet season to prevent establishment of woody vegetation and for aesthetic and vector reasons.
- Remove accumulated sediment and regrade when the accumulated sediment volume exceeds 10% of the basin.
- If erosion is occurring within the basin, revegetate immediately and stabilize with an erosion control mulch or mat until vegetation cover is established.
- To avoid reversing soil development, scarification or other disturbance should only be performed when there are actual signs of clogging, rather than on a routine basis. Always remove deposited sediments before scarification, and use a hand-guided rotary tiller, if possible, or a disc harrow pulled by a very light tractor.

Cost

Infiltration basins are relatively cost-effective practices because little infrastructure is needed when constructing them. One study estimated the total construction cost at about $2 per ft (adjusted for inflation) of storage for a 0.25-acre basin (SWRPC, 1991). As with other BMPs, these published cost estimates may deviate greatly from what might be incurred at a specific site. For instance, Caltrans spent about $18/ft³ for the two infiltration basins constructed in southern California, each of which had a water quality volume of about 0.34 ac.-ft. Much of the higher cost can be attributed to changes in the storm drain system necessary to route the runoff to the basin locations.

Infiltration basins typically consume about 2 to 3% of the site draining to them, which is relatively small. Additional space may be required for buffer, landscaping, access road, and fencing. Maintenance costs are estimated at 5 to 10% of construction costs.

One cost concern associated with infiltration practices is the maintenance burden and longevity. If improperly maintained, infiltration basins have a high failure rate. Thus, it may be necessary to replace the basin with a different technology after a relatively short period of time.

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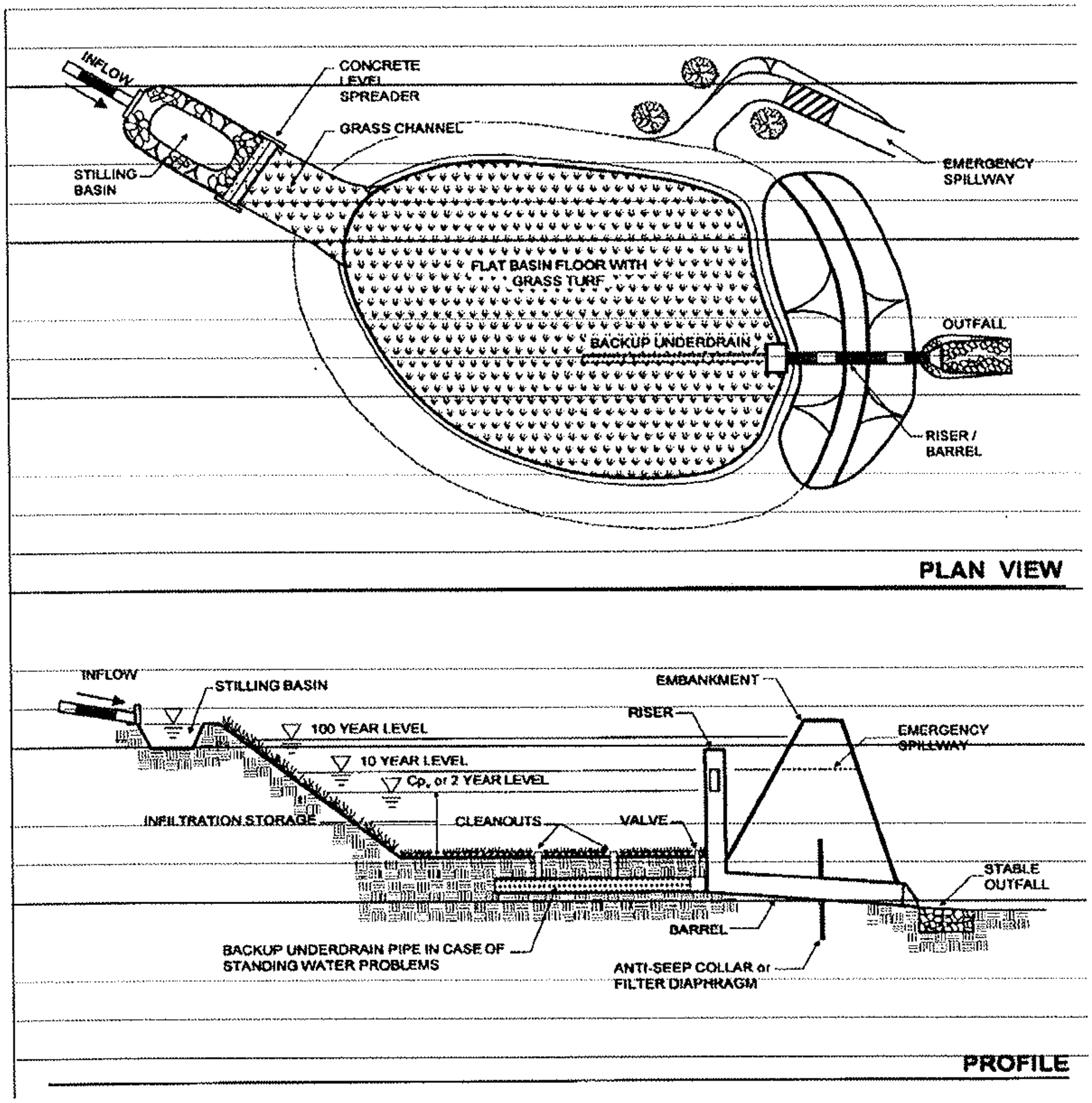
INFLOW
CONCRETE LEVEL SPREADER
GRASS CHANNEL
STILLING BASIN
EMERGENCY SPILLWAY
FLAT BASIN FLOOR WITH GRASS TURF
OUTFALL
BACKUP UNDERDRAIN
RISER / BARREL
PLAN VIEW
INFLOW
STILLING BASIN
EMBANKMENT
RISER
EMERGENCY SPILLWAY
100 YEAR LEVEL
10 YEAR LEVEL
Cp, or 2 YEAR LEVEL
INFILTRATION STORAGE
CLEANOUTS
VALVE
STABLE OUTFALL
BARREL
BACKUP UNDERDRAIN PIPE IN CASE OF STANDING WATER PROBLEMS
ANTI-SEEP COLLAR or FILTER DIAPHRAGM
PROFILE

Infiltration Basin Operation and Maintenance Agreement

I will keep a maintenance record on this BMP. This maintenance record will be kept in a log in a known set location. Any deficient BMP elements noted in the inspection will be corrected, repaired or replaced immediately. These deficiencies can affect the integrity of structures, safety of the public, and the removal efficiency of the BMP.

Important maintenance procedures:
- The drainage area will be carefully managed to reduce the sediment load to the infiltration basin.
- Immediately after the infiltration basin is established, the vegetation will be watered twice weekly if needed until the plants become established (commonly six weeks).
- No portion of the infiltration basin will be fertilized after the initial fertilization that is required to establish the vegetation.
- The vegetation in and around the basin will be maintained at a height of approximately six inches.

After the infiltration basin is established, it will be inspected **once a quarter and within 24 hours after every storm event greater than 1.0 inches (or 1.5 inches if in a Coastal County)**. Records of operation and maintenance will be kept in a known set location and will be available upon request.

Inspection activities shall be performed as follows. Any problems that are found shall be repaired immediately.

BMP element:	**Potential problem:**	**How I will remediate the problem:**
The entire BMP	Trash/debris is present.	Remove the trash/debris.
The perimeter of the infiltration basin	Areas of bare soil and/or erosive gullies have formed.	Regrade the soil if necessary to remove the gully, and then plant a ground cover and water until it is established. Provide lime and a one-time fertilizer application.
The inlet device: pipe or swale	The pipe is clogged (if applicable).	Unclog the pipe. Dispose of the sediment off-site.
	The pipe is cracked or otherwise damaged (if applicable).	Replace the pipe.
	Erosion is occurring in the swale (if applicable).	Regrade the swale if necessary to smooth it over and provide erosion control devices such as reinforced turf matting or riprap to avoid future problems with erosion.

BMP element:	Potential problem:	How I will remediate the problem:
The forebay	Sediment has accumulated and reduced the depth to 75% of the original design depth.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and dispose of it in a location where it will not cause impacts to streams or the BMP.
	Erosion has occurred or riprap is displaced.	Provide additional erosion protection such as reinforced turf matting or riprap if needed to prevent future erosion problems.
	Weeds are present.	Remove the weeds, preferably by hand. If pesticides are used, wipe them on the plants rather than spraying.
The main treatment area	A visible layer of sediment has accumulated.	Search for the source of the sediment and remedy the problem if possible. Remove the sediment and dispose of it in a location where it will not cause impacts to streams or the BMP. Replace any media that was removed in the process. Revegetate disturbed areas immediately.
	Water is standing more than 5 days after a storm event.	Replace the top few inches of filter media and see if this corrects the standing water problem. If so, revegetate immediately. If not, consult an appropriate professional for a more extensive repair.
	Weeds and noxious plants are growing in the main treatment area.	Remove the plants by hand or by wiping them with pesticide (do not spray).
The embankment	Shrubs or trees have started to grow on the embankment.	Remove shrubs or trees immediately.
	An annual inspection by an appropriate professional shows that the embankment needs repair.	Make all needed repairs.
The outlet device	Clogging has occurred.	Clean out the outlet device. Dispose of the sediment off-site.
	The outlet device is damaged	Repair or replace the outlet device.
The receiving water	Erosion or other signs of damage have occurred at the outlet.	Contact the NC Division of Water Quality 401 Oversight Unit at 919-733-1786.

Infiltration Basin
Inspection and Maintenance Checklist

Property Address: ______________________ Property Owner: ______________________

Treatment Measure No.: __________ Date of Inspection: __________ Type of Inspection: ☐ Monthly ☐ Pre-Wet Season ☐ After heavy runoff ☐ End of Wet Season ☐ Other: __________

Inspector(s): ______________________

Defect	Conditions When Maintenance Is Needed	Maintenance Needed? (Y/N)	**Comments** (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	Results Expected When Maintenance Is Performed
1. Standing Water	When water stands in the infiltration basin between storms and does not drain within 5 days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of infiltration basin, removed clogging at check dams, or added underdrains.
2. Trash and Debris Accumulation	Trash and debris accumulated in the infiltration basin.			Trash and debris removed from infiltration basin and disposed of properly.
3. Sediment	Evidence of sedimentation in basin. Less than 50% storage volume remaining in sediment traps, forebays or pretreatment swales.			Material removed and disposed of properly so that there is no clogging or blockage.
4. Inlet/Outlet	Inlet/outlet areas clogged with sediment or debris, and/or eroded.			Material removed and disposed of properly so that there is no clogging or blockage in the inlet and outlet areas.
5. Overflow Spillway	Clogged with sediment or debris, and/or eroded.			Material removed and disposed of properly so that there is no clogging or blockage, and trench is restored to design condition.
6. Filter Fabric	Annual inspection, by removing a small section of the top layer, shows sediment accumulation that may lead to basin failure.			Replace filter fabric, as needed, to restore infiltration basin to design condition.
7. Observation Well	Routine monitoring of observation well indicates that basin is not draining within specified time or observation well cap is missing.			Restore basin to design conditions. Observation well cap is sealed.
8. Miscellaneous	Any condition not covered above that needs attention in order for the infiltration basin to function as designed.			Meet the design specifications.

Drain Inserts MP-52

Design Considerations

- Use with other BMPs
- Fit and Seal Capacity within Inlet

Targeted Constituents

- ☑ Sediment
- ☑ Nutrients
- ☑ Trash
- ☑ Metals
- Bacteria
- ☑ Oil and Grease
- ☑ Organics

Removal Effectiveness

See New Development and Redevelopment Handbook-Section 5.

Description

Drain inserts are manufactured filters or fabric placed in a drop inlet to remove sediment and debris. There are a multitude of inserts of various shapes and configurations, typically falling into one of three different groups: socks, boxes, and trays. The sock consists of a fabric, usually constructed of polypropylene. The fabric may be attached to a frame or the grate of the inlet holds the sock. Socks are meant for vertical (drop) inlets. Boxes are constructed of plastic or wire mesh. Typically a polypropylene "bag" is placed in the wire mesh box. The bag takes the form of the box. Most box products are one box; that is, the setting area and filtration through media occur in the same box. Some products consist of one or more trays or mesh grates. The trays may hold different types of media. Filtration media vary by manufacturer. Types include polypropylene, porous polymer, treated cellulose, and activated carbon.

California Experience

The number of installations is unknown but likely exceeds a thousand. Some users have reported that these systems require considerable maintenance to prevent plugging and bypass.

Advantages

- Does not require additional space as inserts as the drain inlets are already a component of the standard drainage systems.
- Easy access for inspection and maintenance.
- As there is no standing water, there is little concern for mosquito breeding.
- A relatively inexpensive retrofit option.

Limitations

Performance is likely significantly less than treatment systems that are located at the end of the drainage system such as ponds and vaults. Usually not suitable for large areas or areas with trash or leaves than can plug the insert.

Design and Sizing Guidelines

Refer to manufacturer's guidelines. Drain inserts come any many configurations but can be placed into three general groups: socks, boxes, and trays. The sock consists of a fabric, usually constructed of polypropylene. The fabric may be attached to a frame or the grate of the inlet holds the sock. Socks are meant for vertical (drop) inlets. Boxes are constructed of plastic or wire mesh. Typically a polypropylene "bag" is placed in the wire mesh box. The bag takes the form of the box. Most box products are

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one box; that is, the setting area and filtration through media occurs in the same box. One manufacturer has a double-box. Stormwater enters the first box where setting occurs. The stormwater flows into the second box where the filter media is located. Some products consist of one or more trays or mesh grates. The trays can hold different types of media. Filtration media vary with the manufacturer: types include polypropylene, porous polymer, treated cellulose, and activated carbon.

Construction/Inspection Considerations

Be certain that installation is done in a manner that makes certain that the stormwater enters the unit and does not leak around the perimeter. Leakage between the frame of the insert and the frame of the drain inlet can easily occur with vertical (drop) inlets.

Performance

Few products have performance data collected under field conditions.

Siting Criteria

It is recommended that inserts be used only for retrofit situations or as pretreatment where other treatment BMPs presented in this section area used.

Additional Design Guidelines

Follow guidelines provided by individual manufacturers.

Maintenance

Likely require frequent maintenance, on the order of several times per year.

Cost

- The initial cost of individual inserts ranges from less than $100 to about $2,000. The cost of using multiple units in curb inlet drains varies with the size of the inlet.
- The low cost of inserts may tend to favor the use of these systems over other, more effective treatment BMPs. However, the low cost of each unit may be offset by the number of units that are required, more frequent maintenance, and the shorter structural life (and therefore replacement).

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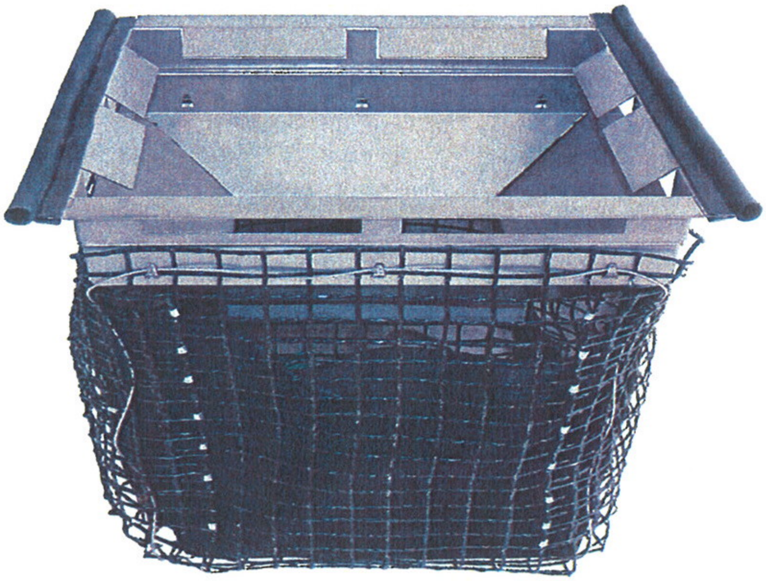
Innovative stormwater management products



KriStar

FloGard®
+PLUS
Catch Basin Insert Filter

FloGard®+PLUS Catch Basin Insert Filter

GENERAL FILTER CONFIGURATION

FloGard®+PLUS catch basin insert filter shall provide solids filtration through a filter screen or filter liner, and hydrocarbon capture shall be effected using a non-leaching absorbent material contained in a pouch or similar removable restraint. Hydrocarbon absorbent shall not be placed at an exposed location at the entry to the filter that would allow blinding by debris and sediment without provision for self-cleaning in operation.

Filter shall conform to the dimensions of the inlet in which it is applied, allow removal and replacement of all internal components, and allow complete inspection and cleaning in the field.

FLOW CAPACITY

Filter shall provide two internal high-flow bypass locations that in total exceed the inlet peak flow capacity. Filter shall provide filtered flow capacity in excess of the required "first flush" treatment flow. Unit shall not impede flow into or through the catch basin when properly sized and installed.

MATERIALS

Filter support frame shall be constructed of type 304 stainless steel. Filter screen, when used in place of filter liner, shall be type 304 or 316 stainless steel, with an apparent opening size of not less than 4 U.S. mesh. Filter liner, when used in place of filter screen, shall be woven polypropylene geotextile fabric liner with an apparent opening size (AOS) of not less than 40 U.S. mesh as determined by ASTM D 4751. Filter liner shall include a support basket of polypropylene geogrid with stainless steel cable reinforcement.

Filter frame shall be rated at a minimum 25-year service life. All other materials, with the exception of the hydrocarbon absorbent, shall have a rated service life in excess of 2 years.

FloGard®+PLUS TEST RESULTS SUMMARY

Testing Agency	% TSS Removal	% Oil and Grease Removal	% PAH Removal
UCLA	80	70 to 80	
U of Auckland Tonking & Taylor Ltd. (for city of Auckland)	78 to 95		
U of Hawaii (for city of Honolulu)	80		20 to 40

FEATURES

- Easy to install, inspect and maintain
- Can be retrofitted to existing drain catch basins – or used in new projects
- Economical and efficient
- Catches pollutants where they are easiest to catch (at the inlet)
- No standing water – minimizes vector, bacteria and odor problems
- Can be incorporated as part of a "Treatment Train"

BENEFITS

- Lower installation, inspection and maintenance costs
- Versatile installation applications
- Higher return on investment
- Allows for installation on small and confined sites
- Minimizes vector, bacteria and odor problems
- Allows user to target specific pollutants

GENERAL SPECIFICATIONS FOR FLO-GARD AND FLO-GARD "PLUS" CATCH BASIN INSERTS

Scope:

This specification describes a **Catch Basin Filtration Device** that removes sediment, debris, trash and petroleum hydrocarbons (oil and grease) from water flowing into the drainage inlets during low flows (first flush) without impeding the inlet's maximum design flow. Hydraulic bypass calculations shall be supplied upon request.

The filtration device shall incorporate a silicate adsorbent filter medium capable of collecting and containing non-soluble pollutants including, but not limited to, petroleum hydrocarbons (oil and grease). Filter medium shall be contained in separate removable containers that can easily be replaced without removing the filter liner. Filtration device shall not rely on collected sediment, debris, trash or filter liner as the medium for hydrocarbon collection.

High capacity filtration devices shall incorporate a debris trap, designed to retain floatable pollutants during high flow periods and both an initial filtering bypass for moderate flows and an ultimate bypass for peak design flows. The installed device "shall not" impede drainage inlet's peak design flow prior to or after the device has reached its pollutant storage capacity.

Material Properties:

Filtration device support frame and hardware shall be manufactured from Type 304 stainless steel. It shall be designed to support maximum anticipated loads from the collected pollutants and water. Structural calculations or laboratory tests shall be supplied upon request.

Field modifications, welding or painting of the device shall not be allowed.

Device shall incorporate a removable filter liner made from a woven polypropolene monofilament geotextile with a clean flow rate of 140 gallons per minute (gpm) per square foot. The use of a non-woven geotextile filter liner shall not be allowed.

Filter medium shall be hydrophobic silicate adsorbent material treated to attract and retain petroleum hydrocarbons and other non-soluble pollutants. It shall be non-biodegradable and non-leaching and contain no hazardous ingredients as defined by the

U.S. Environmental Protection Agency (EPA), U.S. Occupational Safety and Health Administration (OSHA), and the World Health Organization (WHO).

Installation:

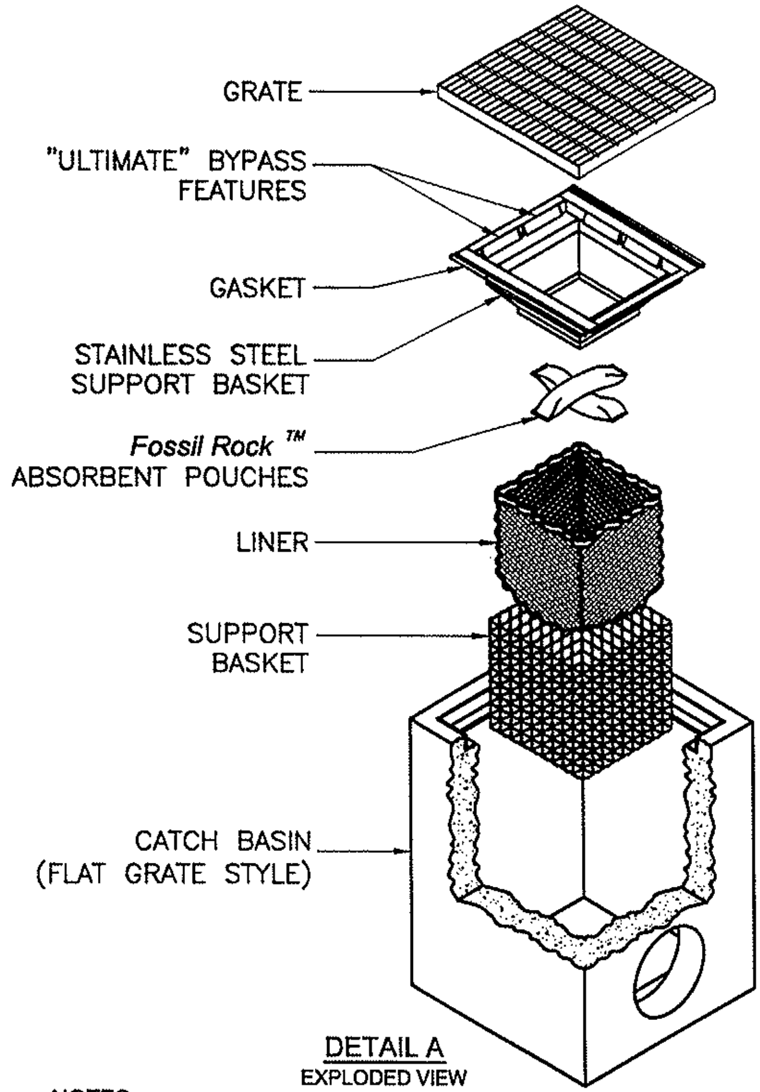
Installation of filtration device shall not require extensive modification of the catch basin and shall be performed by a manufacturer-approved installation contractor. Installation contractor shall be licensed and insured in accordance with agency requirements.

Filtration devices installed into grated, or combination grate with curb opening inlets shall be either supported by resting the support brackets on the grate bearing ledge (installed without the use bolts or other anchoring devices) or mounted to the catch basin wall with easily removable separate wall mount brackets to allow for quick access to the piping system in the event of an emergency.

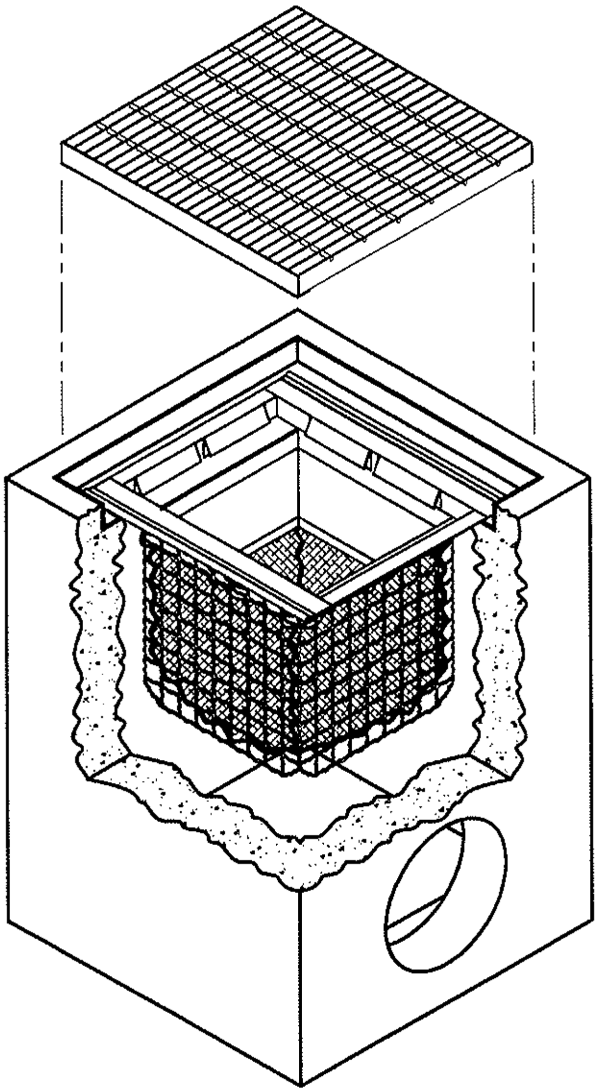
Devices for curb opening style inlets (no grate) shall be installed across the entire width of the curb opening and shall be secured to inlet wall, across and beneath the curb opening, using corrosion-resistant anchors (Type 304 stainless steel). The use of chains or cable to secure the device shall not be allowed.

Filtration devices shall be installed in such a manner as to direct all flows into the device. Distance (gaps) between the inlet wall and the device shall not exceed 1inch. Gaps of less than 1inch shall be sealed with a flexible weatherproof sealant, as approved by agency.

Installation contractor shall supply agency (engineer) with an installation record, denoting the date of installation, drainage inlet location, type of drainage inlet and type and/or size of filtration device.



DETAIL A
EXPLODED VIEW



FLOGARD+PLUS® FILTER
-INSTALLED INTO CATCH BASIN-

NOTES:

1. FloGard®+Plus (frame mount) high capacity catch basin inserts are available in most sizes and styles (see specifier chart, sheet 2 of 2). Refer to the FloGard®+Plus (wall mount) insert for devices to fit non-standard, or combination style catch basins.
2. Filter insert shall have both an "initial" filtering bypass and "ultimate" high flow bypass feature.
3. Filter support frame shall be constructed from stainless steel Type 304.
4. Allow a minimum of 2.0 feet, of clearance between the bottom of the grate and top of outlet pipe(s), or refer to the FloGard® insert for "shallow" installations.
5. Filter medium shall be *Fossil Rock* ™, installed and maintained in accordance with manufacturer specifications.
6. Storage capacity reflects 80% of maximum solids collection prior to impeding filtering bypass.
7. Filtered flow r\rate includes a safety factor of two.

U.S. PATENT # 6,00,023 & 6,877,029

TITLE

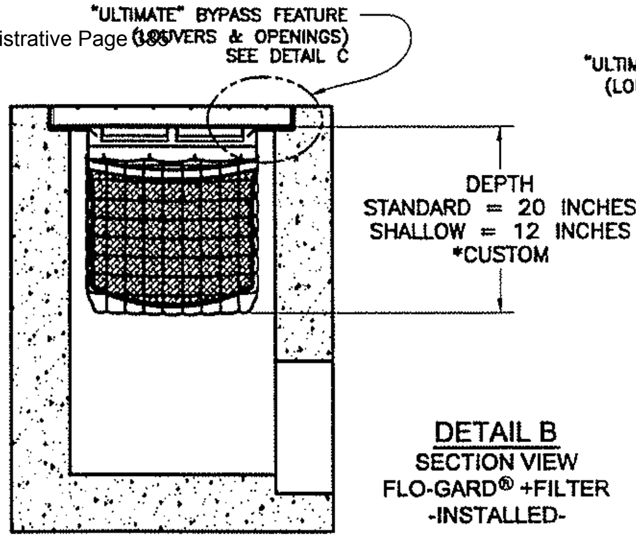
FloGard®+PLUS
CATCH BASIN FILTER INSERT
(Frame Mount)
FLAT GRATED INLET

KRISTAR
KriStar Enterprises, Inc.
P.O. Box 6419, Santa Rosa, CA 95406
Ph: 800.579.8819, Fax: 707.524.8186, www.kristar.com

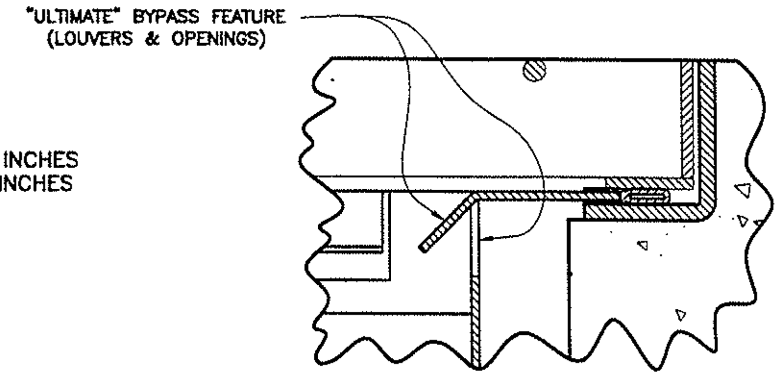
DRAWING NO.	REV	ECO	DATE	
FGP-0001	A	0001	JPR 09/01/06	SHEET 1 OF 2

FGP-0001

U.S. PATENT # 6,00,023 & 6,877,029



DETAIL B
SECTION VIEW
FLO-GARD® +FILTER
-INSTALLED-



DETAIL C
"ULTIMATE"
BYPASS FEATURES

* MANY OTHER STANDARD & CUSTOM SIZES & DEPTHS AVAILABLE UPON REQUEST.

SPECIFIER CHART

MODEL NO. STANDARD DEPTH	STANDARD & SHALLOW DEPTH (Data in these columns is the same for both STANDARD & SHALLOW versions)			STANDARD DEPTH -20 Inches-		MODEL NO. SHALLOW DEPTH	SHALLOW DEPTH -12 Inches-	
	INLET ID Inside Dimension (inch x inch)	GRATE OD Outside Dimension (inch x inch)	TOTAL BYPASS CAPACITY (cu. ft.)	SOLIDS STORAGE CAPACITY (cu. ft.)	FILTERED FLOW (cu. ft. / sec.)		SOLIDS STORAGE CAPACITY (cu. ft.)	FILTERED FLOW (cu. ft. / sec.)
FGP-12F	12 X 12	12 X 14	2.8	0.3	0.4	FGP-12F8	.15	.25
FGP-1530F	15 X 30	15 X 35	6.9	2.3	1.6	FGP-1530F8	1.3	.9
FGP-16F	16 X 16	16 X 19	4.7	0.8	0.7	FGP-16F8	.45	.4
FGP-1624F	16 X 24	16 X 26	5.0	1.5	1.2	FGP-1624F8	.85	.7
FGP-18F	18 X 18	18 X 20	4.7	0.8	0.7	FGP-18F8	.45	.4
FGP-1820F	16 X 19	18 X 21	5.9	2.1	1.4	FGP-1820F8	1.2	.8
FGP-1824F	16 X 22	18 X 24	5.0	1.5	1.2	FGP-1824F8	.85	.7
FGP-1836F	18 X 36	18 X 40	6.9	2.3	1.6	FGP-1836F8	1.3	.9
FGP-2024F	18 X 22	20 X 24	5.9	1.2	1.0	FGP-2024F8	.7	.55
FGP-21F	22 X 22	22 X 24	6.1	2.2	1.5	FGP-21F8	1.25	.85
FGP-2142F	21 X 40	24 X 40	9.1	4.3	2.4	FGP-2142F8	2.45	1.35
FGP-2148F	19 X 46	22 X 48	9.8	4.7	2.6	FGP-2148F8	2.7	1.5
FGP-24F	24 X 24	24 X 27	6.1	2.2	1.5	FGP-24F8	1.25	.85
FGP-2430F	24 X 30	26 X 30	7.0	2.8	1.8	FGP-2430F8	1.6	1.05
FGP-2436F	24 X 36	24 X 40	8.0	3.4	2.0	FGP-2436F8	1.95	1.15
FGP-2448F	24 X 48	26 X 48	9.3	4.4	2.4	FGP-2448F8	2.5	1.35
FGP-28F	28 X 28	32 X 32	6.3	2.2	1.5	FGP-28F8	1.25	.85
FGP-2440F	24 X 36	28 X 40	8.3	4.2	2.3	FGP-2440F8	2.4	1.3
FGP-30F	30 X 30	30 X 34	8.1	3.6	2.0	FGP-30F8	2.05	1.15
FGP-36F	36 X 36	36 X 40	9.1	4.6	2.4	FGP-36F8	2.65	1.35
FGP-3648F	36 X 48	40 X 48	11.5	6.8	3.2	FGP-3648F8	3.9	1.85
FGP-48F	48 X 48	48 X 54	13.2	9.5	3.9	FGP-48F8	5.45	2.25
FGP-SD24F	24 X 24	28 X 28	6.1	2.2	1.5	FGP-SD24F8	1.25	.85
FGP-1836FGO	18 X 36	20 X 40	6.9	2.3	1.6	FGP-1836F8GO	1.3	.9
FGP-2436FGO	20 X 36	24 X 40	8.0	3.4	2.0	FGP-2436F8GO	1.95	1.15
FGP-48FGO	18 X 48	20 X 54	6.3	2.2	1.5	FGP-48F8GO	1.25	.85

TITLE

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DRAWING NO.	REV	ECO	DATE	
FGP-0001	A	0001	JPR 09/01/06	SHEET 2 OF 2

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BEST MANAGEMENT PRACTICE (BMP) FOR THE REMOVAL OF PETROLEUM HYDROCARBONS, SILT AND DEBRIS FROM STORMWATER RUNOFF THROUGH THE USE OF CATCH BASIN INSERT (CBI) FILTRATION

The concept of Stormwater Catch Basin Insert (CBI) Filtration:
Essentially, catch basin filtration is the placement of devices that contain a filtering medium (a sorbent) and a silt and debris containment area just under the grates of the stormwater system's catch basins. Placement of the devices at the entrance of the storm drain system provides the capability of removing all manner of pollutants from the runoff before they even enter the drainage system and have a chance to go underground and become saturated or emulsified. The water runoff flows into the inlet, through the filter where the sorbent's target contaminants, sediment and debris are removed, and then into the drainage system. The devices must be capable of effectively filtering the first flush (first 15 minutes) of a rain event and provide an overflow capability sufficient to prevent the system from becoming clogged. The sorbent filter medium must be an inert blend of minerals that contain non-hazardous ingredients, as defined by the Federal EPA, OSHA and WHO (World Health Organization). Further, the medium should be non-leaching, contain no reactive chemicals, be non-carcinogenic, non-biodegradable, non-toxic, non-inflammable and non-injurious to asphalt, cement, carpet, file, soil or plant life.

Target Pollutants:
The Catch Basin Filters should have a capability of capturing and retaining petroleum hydrocarbons and silt and debris. The sorbent's primary target contaminants are petroleum hydrocarbons, to include most oil-based products generated by motor vehicles powered by fossil fuel or lubricated with any of the fossil fuel by-products. These include gasoline, oil, grease, some anti-freezes, and other such products plus other types of contaminants (i.e. heavy metals) that may become attached, through incidental capture, to the hydrocarbon, silt and debris. The structure of the device should be capable of capturing and retaining silt, debris, litter, vegetation and other pollutants that may be borne by the runoff. The device should have at least one bypass capability in the event of heavy flows but yet be capable of retaining floatables.

Current Technology:
Of the catch basin insert filtration systems currently on the market that target petroleum hydrocarbons, the Flo-Gard and Flo-Gard Plus, products of KriStar Enterprises of Sonoma County, California, are the most prominent. The concept of catch basin filtration, as with the Flo-Gard and Flo-Gard Plus, introduced a concept that was unique enough to qualify for a U.S. patent. Prior to the introduction of Flo-Gard and its predecessors, the leading technology for separating oil from water runoff was large underground precast concrete oil/water separators. They were expensive to purchase and install and could be used only on new construction projects. Generally, because the devices were underground (and out of sight), inspection was very difficult, maintenance expensive and virtually nonexistent. Consequently, they were usually forgotten and any pollutants collected were either transported to the receiving body of water or remained in the system to become emulsified into harmful nutrients and then flushed to the receiving body of water with a future rain event. Also, absent regular maintenance, and if standing water is allowed, water-bearing systems can become a habitat for bacteria and insects (mosquitoes).

Flo-Gard and Flo-Gard Plus, on the other hand, cost but a fraction of the concrete units to purchase and installation usually consists of removing the inlet grate, inserting the filter and replacing the grate. They can be used in both new and post-construction projects; visual inspection is simple; and maintenance can be performed usually in a matter of minutes.

Flo-Gard and Flo-Gard Plus are available off the shelf for common size/shape inlets or can be fabricated for non-standard inlets. Models of the devices are available for square, rectangular, round and curb or combination inlets and trench drains. According to the manufacturer, a device to fit almost any situation is possible.

Device Construction:
The catch basin insert (CBI) filtration system structure should be constructed so as to cause the water to flow through the unit's filter medium (sorbent) and be of a fit that prevents leakage around the exterior of the filter. The device should have sediment and debris removal capabilities and include a containment area. To prevent corrosion and the release of oxidized metals into the system, all of the device's construction materials should be of high-density polyethylene (HDPE), petroleum-resistant fiberglass, stainless steel, or woven polypropylene monofilament geotextile. ***The use of galvanized steel should not be allowed.*** The CBI should provide at least one bypass in the event of high flows; yet should have a built-in capability of retaining floatables during bypass.

Recommended Effectiveness:
Manufacturers of Catch Basin Insert Filtration Systems, acceptable for installation, should be able to produce proof of appropriate laboratory or field testing of both the installed sorbent and the structure itself. The tests should be able to demonstrate a capability of removing petroleum hydrocarbons and for containing other pollutants that enter the inlet and that the device will not clog up the drainage system.

Applicability of Devices to EPA's NPDES and SWPPP's:
The Federal EPA's NPDES program, designed to control the discharge of pollutants to waters of the United States, cites a definition of oil/water separator as, "*A device installed usually at the entrance to a drain, which removes oil and grease from water flows entering the drain*".

CBI's acceptable for installation in petroleum hydrocarbon-generating areas should fit the federal EPA's definition of oil/water separator (above). Flo-Gard and Flo-Gard Plus meet the EPA description plus they meet the EPA mandate of BAT (Best Available Technology) while being "economically feasible". Based on the foregoing, Flo-Gard and Flo-Gard Plus are suitable for inclusion as a BMP in local SWPPP'S. Plus, they have an added capability of removing sediment and debris from the runoff.

Recommended Uses:
Catch Basin Insert Filtration Systems should be required for all locations where petroleum hydrocarbons and sediment and debris are major sources of pollution to stormwater runoff and the water can be directed into a drainage inlet. Employee and customer parking lots, corporation yards, equipment service areas, toll-gates and refueling facilities are prime examples of such locations. They should be required for new construction and whenever a permit is issued to renovate or remodel an existing location.

Inspection and Maintenance Procedures:
Each inspection of the installed filtration systems should include broom sweeping the area around the inlet, removal of the inlet grate, removal of trash and debris and visual inspection of the filter and the installed sorbent.

The sorbent pouches should be removed, cleaned and inspected and, if the media is more than 50% coated, new pouches should be installed. The device should then be returned to its normal operating configuration, the inlet grate replaced and another broom cleanup completed. The exposed filter media and collected debris should be placed in a DOT-approved drum and disposed of in accordance with local agency requirements.

Follow-On Maintenance:
Because of past abuses of installed stormwater treatment devices, some governmental agencies within California, that accept Flo-Gard or Flo-Gard Plus as a BMP for stormwater runoff, are now requiring proof of a follow-on maintenance program. Other states are now following California's lead. It is recommended that the agencies require proof of either a contractor maintenance program or that the landowners certify that they will provide maintenance, in which case the installations would be made a component of periodic inspection tours.

KriStar Enterprises, the manufacturers of Flo-Gard and Flo-Gard Plus, provide a comprehensive maintenance program that not only provides for maintenance of all stormwater filtration systems (to include other than Flo-Gard) but notifies the owner and the appropriate oversight agency when maintenance has been performed.

Limitations:
Limitations for the products include a lack of recurring maintenance and installation in unsuitable sites or areas. Regarding the former, the efficiency of any filtration system is in director proportion to the caliber of its maintenance program. A lack of care can be a limitation for any stormwater filtration system. Next, installation of the units in unsuitable areas such as downstream from a sandpile or beneath large trees where needles or leaves can plug up the system is a serious limitation.

Recommendations:

1. That Catch Basin Insert Filtration systems such as Flo-Gard and Flo-Gard Plus be included as a BMP for preventing pollution of stormwater runoff by petroleum hydrocarbons, silt and debris.
2. That new and post-construction projects in areas subject to the generation of petroleum hydrocarbons, silt and debris be surveyed as potential sites for installation of Catch Basin Insert Filtration Systems.

CATCH BASIN MAINTENANCE RECORD

SITE INFORMATION		
Contact:	Phone: ( )	
Project Name:		
Address:		
Filter No. & Filter Model:		

SERVICE INFORMATION		
Date of Service:	By:	
☐ Inspection	☐ Clean Debris	☐ Clean Silt/Sediment
☐ Replace Pouch	☐ Replace Rock	☐ Repair/Replace Parts
Comments:		
Approval Signature:		

SITE INFORMATION		
Contact:	Phone: ( )	
Project Name:		
Address:		
Filter No. & Filter Model:		

SERVICE INFORMATION		
Date of Service:	By:	
☐ Inspection	☐ Clean Debris	☐ Clean Silt/Sediment
☐ Replace Pouch	☐ Replace Rock	☐ Repair/Replace Parts
Comments:		
Approval Signature:		

Spill Prevention, Control & Cleanup SC-11

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Description

Many activities that occur at an industrial or commercial site have the potential to cause accidental or illegal spills. Preparation for accidental or illegal spills, with proper training and reporting systems implemented, can minimize the discharge of pollutants to the environment.

Spills and leaks are one of the largest contributors of stormwater pollutants. Spill prevention and control plans are applicable to any site at which hazardous materials are stored or used. An effective plan should have spill prevention and response procedures that identify potential spill areas, specify material handling procedures, describe spill response procedures, and provide spill clean-up equipment. The plan should take steps to identify and characterize potential spills, eliminate and reduce spill potential, respond to spills when they occur in an effort to prevent pollutants from entering the stormwater drainage system, and train personnel to prevent and control future spills.

Targeted Constituents

Sediment	
Nutrients	
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Approach

Pollution Prevention

- Develop procedures to prevent/mitigate spills to storm drain systems. Develop and standardize reporting procedures, containment, storage, and disposal activities, documentation, and follow-up procedures.

- Develop a Spill Prevention Control and Countermeasure (SPCC) Plan. The plan should include:

CASQA California Stormwater Quality Association

SC-11 Spill Prevention, Control & Cleanup

- Description of the facility, owner and address, activities and chemicals present
- Facility map
- Notification and evacuation procedures
- Cleanup instructions
- Identification of responsible departments
- Identify key spill response personnel

■ Recycle, reclaim, or reuse materials whenever possible. This will reduce the amount of process materials that are brought into the facility.

Suggested Protocols (including equipment needs)

Spill Prevention

■ Develop procedures to prevent/mitigate spills to storm drain systems. Develop and standardize reporting procedures, containment, storage, and disposal activities, documentation, and follow-up procedures.

■ If consistent illegal dumping is observed at the facility:

- **Post "No Dumping" signs** with a phone number for reporting illegal dumping and disposal. Signs should also indicate fines and penalties applicable for illegal dumping.
- Landscaping and beautification efforts may also discourage illegal dumping.
- Bright lighting and/or entrance barriers may also be needed to discourage illegal dumping.

■ Store and contain liquid materials in such a manner that if the tank is ruptured, the contents will not discharge, flow, or be washed into the storm drainage system, surface waters, or groundwater.

■ If the liquid is oil, gas, or other material that separates from and floats on water, install a spill control device (such as a tee section) in the catch basins that collects runoff from the storage tank area.

■ Routine maintenance:

- Place drip pans or absorbent materials beneath all mounted taps, and at all potential drip and spill locations during filling and unloading of tanks. Any collected liquids or soiled absorbent materials must be reused/recycled or properly disposed.
- Store and maintain appropriate spill cleanup materials in a location known to all near the tank storage area; and ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
- Sweep and clean the storage area monthly if it is paved, *do not hose down the area to a storm drain.*

  - Check tanks (and any containment sumps) daily for leaks and spills. Replace tanks that are leaking, corroded, or otherwise deteriorating with tanks in good condition. Collect all spilled liquids and properly dispose of them.

- Label all containers according to their contents (e.g., solvent, gasoline).
- Label hazardous substances regarding the potential hazard (corrosive, radioactive, flammable, explosive, poisonous).
- Prominently display required labels on transported hazardous and toxic materials (per US DOT regulations).
- Identify key spill response personnel.

Spill Control and Cleanup Activities

- Follow the Spill Prevention Control and Countermeasure Plan.
- Clean up leaks and spills immediately.
- Place a stockpile of spill cleanup materials where it will be readily accessible (e.g., near storage and maintenance areas).
- On paved surfaces, clean up spills with as little water as possible. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous waste. Physical methods for the cleanup of dry chemicals include the use of brooms, shovels, sweepers, or plows.
- Never hose down or bury dry material spills. Sweep up the material and dispose of properly.
- Chemical cleanups of material can be achieved with the use of adsorbents, gels, and foams. Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.
- For larger spills, a private spill cleanup company or Hazmat team may be necessary.

Reporting

- Report spills that pose an immediate threat to human health or the environment to the Regional Water Quality Control Board.
- Federal regulations require that any oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hour).
- Report spills to local agencies, such as the fire department; they can assist in cleanup.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Types and quantities (in some cases) of wastes
  - Patterns in time of occurrence (time of day/night, month, or year)

SC-11 Spill Prevention, Control & Cleanup

- Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
- Responsible parties

Training

- Educate employees about spill prevention and cleanup.
- Well-trained employees can reduce human errors that lead to accidental releases or spills:
  - The employee should have the tools and knowledge to immediately begin cleaning up a spill should one occur.
  - Employees should be familiar with the Spill Prevention Control and Countermeasure Plan.
- Employees should be educated about aboveground storage tank requirements. Employees responsible for aboveground storage tanks and liquid transfers should be thoroughly familiar with the Spill Prevention Control and Countermeasure Plan and the plan should be readily available.
- Train employees to recognize and report illegal dumping incidents.

Other Considerations (Limitations and Regulations)

- State regulations exist for facilities with a storage capacity of 10,000 gallons or more of petroleum to prepare a Spill Prevention Control and Countermeasure (SPCC) Plan (Health & Safety Code Chapter 6.67).
- State regulations also exist for storage of hazardous materials (Health & Safety Code Chapter 6.95), including the preparation of area and business plans for emergency response to the releases or threatened releases.
- Consider requiring smaller secondary containment areas (less than 200 sq. ft.) to be connected to the sanitary sewer, prohibiting any hard connections to the storm drain.

Requirements

Costs (including capital and operation & maintenance)

- Will vary depending on the size of the facility and the necessary controls.
- Prevention of leaks and spills is inexpensive. Treatment and/or disposal of contaminated soil or water can be quite expensive.

Maintenance (including administrative and staffing)

- This BMP has no major administrative or staffing requirements. However, extra time is needed to properly handle and dispose of spills, which results in increased labor costs.

Spill Prevention, Control & Cleanup SC-11

Supplemental Information

Further Detail of the BMP

Reporting

Record keeping and internal reporting represent good operating practices because they can increase the efficiency of the facility and the effectiveness of BMPs. A good record keeping system helps the facility minimize incident recurrence, correctly respond with appropriate cleanup activities, and comply with legal requirements. A record keeping and reporting system should be set up for documenting spills, leaks, and other discharges, including discharges of hazardous substances in reportable quantities. Incident records describe the quality and quantity of non-stormwater discharges to the storm sewer. These records should contain the following information:

- Date and time of the incident
- Weather conditions
- Duration of the spill/leak/discharge
- Cause of the spill/leak/discharge
- Response procedures implemented
- Persons notified
- Environmental problems associated with the spill/leak/discharge

Separate record keeping systems should be established to document housekeeping and preventive maintenance inspections, and training activities. All housekeeping and preventive maintenance inspections should be documented. Inspection documentation should contain the following information:

- The date and time the inspection was performed
- Name of the inspector
- Items inspected
- Problems noted
- Corrective action required
- Date corrective action was taken

Other means to document and record inspection results are field notes, timed and dated photographs, videotapes, and drawings and maps.

Aboveground Tank Leak and Spill Control

Accidental releases of materials from aboveground liquid storage tanks present the potential for contaminating stormwater with many different pollutants. Materials spilled, leaked, or lost from

SC-11 Spill Prevention, Control & Cleanup

tanks may accumulate in soils or on impervious surfaces and be carried away by stormwater runoff.

The most common causes of unintentional releases are:

- Installation problems
- Failure of piping systems (pipes, pumps, flanges, couplings, hoses, and valves)
- External corrosion and structural failure
- Spills and overfills due to operator error
- Leaks during pumping of liquids or gases from truck or rail car to a storage tank or vice versa

Storage of reactive, ignitable, or flammable liquids should comply with the Uniform Fire Code and the National Electric Code. Practices listed below should be employed to enhance the code requirements:

- Tanks should be placed in a designated area.
- Tanks located in areas where firearms are discharged should be encapsulated in concrete or the equivalent.
- Designated areas should be impervious and paved with Portland cement concrete, free of cracks and gaps, in order to contain leaks and spills.
- Liquid materials should be stored in UL approved double walled tanks or surrounded by a curb or dike to provide the volume to contain 10 percent of the volume of all of the containers or 110 percent of the volume of the largest container, whichever is greater. The area inside the curb should slope to a drain.
- For used oil or dangerous waste, a dead-end sump should be installed in the drain.
- All other liquids should be drained to the sanitary sewer if available. The drain must have a positive control such as a lock, valve, or plug to prevent release of contaminated liquids.
- Accumulated stormwater in petroleum storage areas should be passed through an oil/water separator.

Maintenance is critical to preventing leaks and spills. Conduct routine inspections and:

- Check for external corrosion and structural failure.
- Check for spills and overfills due to operator error.
- Check for failure of piping system (pipes, pumps, flanger, coupling, hoses, and valves).
- Check for leaks or spills during pumping of liquids or gases from truck or rail car to a storage facility or vice versa.

Spill Prevention, Control & Cleanup SC-11

- Visually inspect new tank or container installation for loose fittings, poor welding, and improper or poorly fitted gaskets.
- Inspect tank foundations, connections, coatings, and tank walls and piping system. Look for corrosion, leaks, cracks, scratches, and other physical damage that may weaken the tank or container system.
- Frequently relocate accumulated stormwater during the wet season.
- Periodically conduct integrity testing by a qualified professional.

Vehicle Leak and Spill Control
Major spills on roadways and other public areas are generally handled by highly trained Hazmat teams from local fire departments or environmental health departments. The measures listed below pertain to leaks and smaller spills at vehicle maintenance shops.

In addition to implementing the spill prevention, control, and clean up practices above, use the following measures related to specific activities:

Vehicle and Equipment Maintenance
- Perform all vehicle fluid removal or changing inside or under cover to prevent the run-on of stormwater and the runoff of spills.
- Regularly inspect vehicles and equipment for leaks, and repair immediately.
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
- Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- Immediately drain all fluids from wrecked vehicles.
- Store wrecked vehicles or damaged equipment under cover.
- Place drip pans or absorbent materials under heavy equipment when not in use.
- Use adsorbent materials on small spills rather than hosing down the spill.
- Remove the adsorbent materials promptly and dispose of properly.
- Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.
- Oil filters disposed of in trashcans or dumpsters can leak oil and contaminate stormwater. Place the oil filter in a funnel over a waste oil recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask your oil supplier or recycler about recycling oil filters.

SC-11 Spill Prevention, Control & Cleanup

- Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries, even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

- Design the fueling area to prevent the run-on of stormwater and the runoff of spills:
  - Cover fueling area if possible.
  - Use a perimeter drain or slope pavement inward with drainage to a sump.
  - Pave fueling area with concrete rather than asphalt.
- If dead-end sump is not used to collect spills, install an oil/water separator.
- Install vapor recovery nozzles to help control drips as well as air pollution.
- Discourage **"topping-off" of fuel tanks**.
- Use secondary containment when transferring fuel from the tank truck to the fuel tank.
- Use adsorbent materials on small spills and general cleaning rather than hosing down the area. Remove the adsorbent materials promptly.
- Carry out all Federal and State requirements regarding underground storage tanks, or install above ground tanks.
- Do not use mobile fueling of mobile industrial equipment around the facility; rather, transport the equipment to designated fueling areas.
- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Train employees in proper fueling and cleanup procedures.

Industrial Spill Prevention Response

For the purposes of developing a spill prevention and response program to meet the stormwater regulations, facility managers should use information provided in this fact sheet and the spill prevention/response portions of the fact sheets in this handbook, for specific activities. The program should:

- Integrate with existing emergency response/hazardous materials programs (e.g., Fire Department)
- Develop procedures to prevent/mitigate spills to storm drain systems
- Identify responsible departments
- Develop and standardize reporting procedures, containment, storage, and disposal activities, documentation, and follow-up procedures
- Address spills at municipal facilities, as well as public areas

- Provide training concerning spill prevention, response and cleanup to all appropriate personnel

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

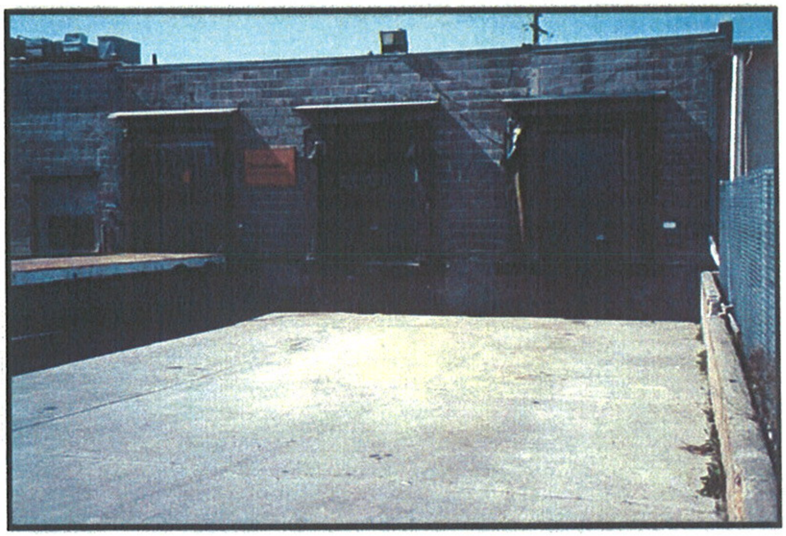
Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Stormwater Managers Resource Center http://www.stormwatercenter.net/

Outdoor Loading/Unloading SC-30



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Description

The loading/unloading of materials usually takes place outside on docks or terminals; therefore, materials spilled, leaked, or lost during loading/unloading may collect in the soil or on other surfaces and have the potential to be carried away by stormwater runoff or when the area is cleaned. Additionally, rainfall may wash pollutants from machinery used to unload or move materials. Implementation of the following protocols will prevent or reduce the discharge of pollutants to stormwater from outdoor loading/unloading of materials.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

Pollution Prevention

- Keep accurate maintenance logs to evaluate materials removed and improvements made.
- Park tank trucks or delivery vehicles in designated areas so that spills or leaks can be contained.
- Limit exposure of material to rainfall whenever possible.
- Prevent stormwater run-on.
- Check equipment regularly for leaks.

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Suggested Protocols

Loading and Unloading – General Guidelines

- Develop an operations plan that describes procedures for loading and/or unloading.
- Conduct loading and unloading in dry weather if possible.
- Cover designated loading/unloading areas to reduce exposure of materials to rain.
- Consider placing a seal or door skirt between delivery vehicles and building to prevent exposure to rain.
- Design loading/unloading area to prevent stormwater run-on, which would include grading or berming the area, and position roof downspouts so they direct stormwater away from the loading/unloading areas.
- Have employees load and unload all materials and equipment in covered areas such as building overhangs at loading docks if feasible.
- Load/unload only at designated loading areas.
- Use drip pans underneath hose and pipe connections and other leak-prone spots during liquid transfer operations, and when making and breaking connections. Several drip pans should be stored in a covered location near the liquid transfer area so that they are always available, yet protected from precipitation when not in use. Drip pans can be made specifically for railroad tracks. Drip pans must be cleaned periodically, and drip collected materials must be disposed of properly.
- Pave loading areas with concrete instead of asphalt.
- Avoid placing storm drains in the area.
- Grade and/or berm the loading/unloading area to a drain that is connected to a deadend.

Inspection

- Check loading and unloading equipment regularly for leaks, including valves, pumps, flanges and connections.
- Look for dust or fumes during loading or unloading operations.

Training

- Train employees (e.g., fork lift operators) and contractors on proper spill containment and cleanup.
- Have employees trained in spill containment and cleanup present during loading/unloading.
- Train employees in proper handling techniques during liquid transfers to avoid spills.
- Make sure forklift operators are properly trained on loading and unloading procedures.

Outdoor Loading/Unloading SC-30

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Contain leaks during transfer.
- Store and maintain appropriate spill cleanup materials in a location that is readily accessible and known to all and ensure that employees are familiar with the site's spill control plan and proper spill cleanup procedures.
- Have an emergency spill cleanup plan readily available.
- Use drip pans or comparable devices when transferring oils, solvents, and paints.

Other Considerations (Limitations and Regulations)

- Space and time limitations may preclude all transfers from being performed indoors or under cover.
- It may not be possible to conduct transfers only during dry weather.

Requirements

Costs

Costs should be low except when covering a large loading/unloading area.

Maintenance

- Conduct regular inspections and make repairs as necessary. The frequency of repairs will depend on the age of the facility.
- Check loading and unloading equipment regularly for leaks.
- Conduct regular broom dry-sweeping of area.

Supplemental Information

Further Detail of the BMP

Special Circumstances for Indoor Loading/Unloading of Materials

Loading or unloading of liquids should occur in the manufacturing building so that any spills that are not completely retained can be discharged to the sanitary sewer, treatment plant, or treated in a manner consistent with local sewer authorities and permit requirements.

- For loading and unloading tank trucks to above and below ground storage tanks, the following procedures should be used:
  - The area where the transfer takes place should be paved. If the liquid is reactive with the asphalt, Portland cement should be used to pave the area.
  - The transfer area should be designed to prevent run-on of stormwater from adjacent areas. Sloping the pad and using a curb, like a speed bump, around the uphill side of the transfer area should reduce run-on.

- The transfer area should be designed to prevent runoff of spilled liquids from the area. Sloping the area to a drain should prevent runoff. The drain should be connected to a dead-end sump or to the sanitary sewer. A positive control valve should be installed on the drain.

- For transfer from rail cars to storage tanks that must occur outside, use the following procedures:

  - Drip pans should be placed at locations where spillage may occur, such as hose connections, hose reels, and filler nozzles. Use drip pans when making and breaking connections.

  - Drip pan systems should be installed between the rails to collect spillage from tank cars.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net/

Building & Grounds Maintenance SC-41

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	
Organics	

Description

Stormwater runoff from building and grounds maintenance activities can be contaminated with toxic hydrocarbons in solvents, fertilizers and pesticides, suspended solids, heavy metals, abnormal pH, and oils and greases. Utilizing the protocols in this fact sheet will prevent or reduce the discharge of pollutants to stormwater from building and grounds maintenance activities by washing and cleaning up with as little water as possible, following good landscape management practices, preventing and cleaning up spills immediately, keeping debris from entering the storm drains, and maintaining the stormwater collection system.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

Pollution Prevention

- Switch to non-toxic chemicals for maintenance when possible.
- Choose cleaning agents that can be recycled.
- Encourage proper lawn management and landscaping, including use of native vegetation.

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SC-41 Building & Grounds Maintenance

- Encourage use of Integrated Pest Management techniques for pest control.
- Encourage proper onsite recycling of yard trimmings.
- Recycle residual paints, solvents, lumber, and other material as much as possible.

Suggested Protocols

Pressure Washing of Buildings, Rooftops, and Other Large Objects

- In situations where soaps or detergents are used and the surrounding area is paved, pressure washers must use a water collection device that enables collection of wash water and associated solids. A sump pump, wet vacuum or similarly effective device must be used to collect the runoff and loose materials. The collected runoff and solids must be disposed of properly.
- If soaps or detergents are not used, and the surrounding area is paved, wash runoff does not have to be collected but must be screened. Pressure washers must use filter fabric or some other type of screen on the ground and/or in the catch basin to trap the particles in wash water runoff.
- If you are pressure washing on a grassed area (with or without soap), runoff must be dispersed as sheet flow as much as possible, rather than as a concentrated stream. The wash runoff must remain on the grass and not drain to pavement.

Landscaping Activities

- Dispose of grass clippings, leaves, sticks, or other collected vegetation as garbage, or by composting. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Use mulch or other erosion control measures on exposed soils.

Building Repair, Remodeling, and Construction

- Do not dump any toxic substance or liquid waste on the pavement, the ground, or toward a storm drain.
- Use ground or drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of collected material daily.
- Use a ground cloth or oversized tub for activities such as paint mixing and tool cleaning.
- Clean paintbrushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain. Brushes and tools covered with non-water-based paints, finishes, or other materials must be cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal.
- Use a storm drain cover, filter fabric, or similarly effective runoff control mechanism if dust, grit, wash water, or other pollutants may escape the work area and enter a catch basin. This is particularly necessary on rainy days. The containment device(s) must be in place at the beginning of the work day, and accumulated dirty runoff and solids must be collected and disposed of before removing the containment device(s) at the end of the work day.

- If you need to de-water an excavation site, you may need to filter the water before discharging to a catch basin or off-site. If directed off-site, you should direct the water through hay bales and filter fabric or use other sediment filters or traps.

- Store toxic material under cover during precipitation events and when not in use. A cover would include tarps or other temporary cover material.

Mowing, Trimming, and Planting

- Dispose of leaves, sticks, or other collected vegetation as garbage, by composting or at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.

- Use mulch or other erosion control measures when soils are exposed.

- Place temporarily stockpiled material away from watercourses and drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.

- Consider an alternative approach when bailing out muddy water: do not put it in the storm drain; pour over landscaped areas.

- Use hand weeding where practical.

Fertilizer and Pesticide Management

- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.

- Use less toxic pesticides that will do the job when applicable. Avoid use of copper-based pesticides if possible.

- Do not use pesticides if rain is expected.

- Do not mix or prepare pesticides for application near storm drains.

- Use the minimum amount needed for the job.

- Calibrate fertilizer distributors to avoid excessive application.

- Employ techniques to minimize off-target application (e.g., spray drift) of pesticides, including consideration of alternative application techniques.

- Apply pesticides only when wind speeds are low.

- Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.

- Irrigate slowly to prevent runoff and then only as much as is needed.

- Clean pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.

- Dispose of empty pesticide containers according to the instructions on the container label.

SC-41 Building & Grounds Maintenance

- Use up the pesticides. Rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Implement storage requirements for pesticide products with guidance from the local fire department and County Agricultural Commissioner. Provide secondary containment for pesticides.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering and repair leaks in the irrigation system as soon as they are observed.

Training

- Educate and train employees on pesticide use and in pesticide application techniques to prevent pollution.
- Train employees and contractors in proper techniques for spill containment and cleanup.
- Be sure the frequency of training takes into account the complexity of the operations and the nature of the staff.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Place a stockpile of spill cleanup materials, such as brooms, dustpans, and vacuum sweepers (if desired) near the storage area where it will be readily accessible.
- Have employees trained in spill containment and cleanup present during the loading/unloading of dangerous wastes, liquid chemicals, or other materials.
- Familiarize employees with the Spill Prevention Control and Countermeasure Plan.
- Clean up spills immediately.

Other Considerations

Alternative pest/weed controls may not be available, suitable, or effective in many cases.

Requirements

Costs

- Cost will vary depending on the type and size of facility.
- Overall costs should be low in comparison to other BMPs.

Maintenance

Sweep paved areas regularly to collect loose particles. Wipe up spills with rags and other absorbent material immediately, do not hose down the area to a storm drain.

Supplemental Information

Further Detail of the BMP

Fire Sprinkler Line Flushing

Building fire sprinkler line flushing may be a source of non-stormwater runoff pollution. The water entering the system is usually potable water, though in some areas it may be non-potable reclaimed wastewater. There are subsequent factors that may drastically reduce the quality of the water in such systems. Black iron pipe is usually used since it is cheaper than potable piping, but it is subject to rusting and results in lower quality water. Initially, the black iron pipe has an oil coating to protect it from rusting between manufacture and installation; this will contaminate the water from the first flush but not from subsequent flushes. Nitrates, poly-phosphates and other corrosion inhibitors, as well as fire suppressants and antifreeze may be added to the sprinkler water system. Water generally remains in the sprinkler system a long time (typically a year) and between flushes may accumulate iron, manganese, lead, copper, nickel, and zinc. The water generally becomes anoxic and contains living and dead bacteria and breakdown products from chlorination. This may result in a significant BOD problem and the water often smells. Consequently dispose fire sprinkler line flush water into the sanitary sewer. Do not allow discharge to storm drain or infiltration due to potential high levels of pollutants in fire sprinkler line water.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Mobile Cleaners Pilot Program: Final Report. 1997. Bay Area Stormwater Management Agencies Association (BASMAA). http://www.basmaa.org/

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA). http://www.basmaa.org/

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net/

Parking/Storage Area Maintenance SC-43

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	
Trash	✓
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Description

Parking lots and storage areas can contribute a number of substances, such as trash, suspended solids, hydrocarbons, oil and grease, and heavy metals that can enter receiving waters through stormwater runoff or non-stormwater discharges. The protocols in this fact sheet are intended to prevent or reduce the discharge of pollutants from parking/storage areas and include using good housekeeping practices, following appropriate cleaning BMPs, and training employees.

Approach

The goal of this program is to ensure stormwater pollution prevention practices are considered when conducting activities on or around parking areas and storage areas to reduce potential for pollutant discharge to receiving waters. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

Pollution Prevention

- Encourage alternative designs and maintenance strategies for impervious parking lots. (See New Development and Redevelopment BMP Handbook)

- Keep accurate maintenance logs to evaluate BMP implementation.

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SC-43 Parking/Storage Area Maintenance

Suggested Protocols

General

- Keep the parking and storage areas clean and orderly. Remove debris in a timely fashion.
- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and/or infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low quantities.
- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.
- Discharge soapy water remaining in mop or wash buckets to the sanitary sewer through a sink, toilet, clean-out, or wash area with drain.

Controlling Litter

- **Post "No Littering" sign**s and enforce anti-litter laws.
- Provide an adequate number of litter receptacles.
- Clean out and cover litter receptacles frequently to prevent spillage.
- Provide trash receptacles in parking lots to discourage litter.
- Routinely sweep, shovel, and dispose of litter in the trash.

Surface Cleaning

- Use dry cleaning methods (e.g., sweeping, vacuuming) to prevent the discharge of pollutants into the stormwater conveyance system if possible.
- Establish frequency of public parking lot sweeping based on usage and field observations of waste accumulation.
- Sweep all parking lots at least once before the onset of the wet season.
- Follow the procedures below if water is used to clean surfaces:
  - Block the storm drain or contain runoff.
  - Collect and pump wash water to the sanitary sewer or discharge to a pervious surface. Do not allow wash water to enter storm drains.
  - Dispose of parking lot sweeping debris and dirt at a landfill.
- Follow the procedures below when cleaning heavy oily deposits:
  - Clean oily spots with absorbent materials.
  - Use a screen or filter fabric over inlet, then wash surfaces.

- Do not allow discharges to the storm drain.
- Vacuum/pump discharges to a tank or discharge to sanitary sewer.
- Appropriately dispose of spilled materials and absorbents.

Surface Repair

- Preheat, transfer or load hot bituminous material away from storm drain inlets.
- Apply concrete, asphalt, and seal coat during dry weather to prevent contamination from contacting stormwater runoff.
- Cover and seal nearby storm drain inlets where applicable (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal.
- Use only as much water as necessary for dust control, to avoid runoff.
- Catch drips from paving equipment that is not in use with pans or absorbent material placed under the machines. Dispose of collected material and absorbents properly.

Inspection

- Have designated personnel conduct inspections of parking facilities and stormwater conveyance systems associated with parking facilities on a regular basis.
- Inspect cleaning equipment/sweepers for leaks on a regular basis.

Training

- Provide regular training to field employees and/or contractors regarding cleaning of paved areas and proper operation of equipment.
- Train employees and contractors in proper techniques for spill containment and cleanup.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Place a stockpile of spill cleanup materials where it will be readily accessible or at a central location.
- Clean up fluid spills immediately with absorbent rags or material.
- Dispose of spilled material and absorbents properly.

Other Considerations

Limitations related to sweeping activities at large parking facilities may include high equipment costs, the need for sweeper operator training, and the inability of current sweeper technology to remove oil and grease.

SC-43 Parking/Storage Area Maintenance

Requirements

Costs

Cleaning/sweeping costs can be quite large. Construction and maintenance of stormwater structural controls can be quite expensive as well.

Maintenance

- Sweep parking lot regularly to minimize cleaning with water.
- Clean out oil/water/sand separators regularly, especially after heavy storms.
- Clean parking facilities regularly to prevent accumulated wastes and pollutants from being discharged into conveyance systems during rainy conditions.

Supplemental Information

Further Detail of the BMP

Surface Repair

Apply concrete, asphalt, and seal coat during dry weather to prevent contamination from contacting stormwater runoff. Where applicable, cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal. Only use only as much water as is necessary for dust control to avoid runoff.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA). http://www.basmaa.org/

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net/

Drainage System Maintenance SC-44

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Targeted Constituents

Sediment	✓
Nutrients	
Trash	✓
Metals	
Bacteria	✓
Oil and Grease	
Organics	

Description

As a consequence of its function, the stormwater conveyance system collects and transports urban runoff and stormwater that may contain certain pollutants. The protocols in this fact sheet are intended to reduce pollutants reaching receiving waters through proper conveyance system operation and maintenance.

Approach

Pollution Prevention

Maintain catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis to remove pollutants, reduce high pollutant concentrations during the first flush of storms, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.

Suggested Protocols

Catch Basins/Inlet Structures

- Staff should regularly inspect facilities to ensure compliance with the following:
  - Immediate repair of any deterioration threatening structural integrity.
  - Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.
  - Stenciling of catch basins and inlets (see SC34 Waste Handling and Disposal).

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SC-44 Drainage System Maintenance

- Clean catch basins, storm drain inlets, and other conveyance structures before the wet season to remove sediments and debris accumulated during the summer.
- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Clean and repair as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes if necessary with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed. Do not dewater near a storm drain or stream.

Storm Drain Conveyance System
- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Collect and pump flushed effluent to the sanitary sewer for treatment whenever possible.

Pump Stations
- Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- Do not allow discharge to reach the storm drain system when cleaning a storm drain pump station or other facility.
- Conduct routine maintenance at each pump station.
- Inspect, clean, and repair as necessary all outlet structures prior to the wet season.

Open Channel
- Modify storm channel characteristics to improve channel hydraulics, increase pollutant removals, and enhance channel/creek aesthetic and habitat value.
- Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural (emphasis added) state of any river, stream, or lake in California, must enter into a Steam or Lake Alteration Agreement with the Department of Fish and Game. The developer-applicant should also contact local governments (city, county, special districts), other state agencies (SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Federal Corps of Engineers and USFWS.

Illicit Connections and Discharges
- Look for evidence of illegal discharges or illicit connections during routine maintenance of conveyance system and drainage structures:
  - Is there evidence of spills such as paints, discoloring, etc?

- Are there any odors associated with the drainage system?
- Record locations of apparent illegal discharges/illicit connections?
- Track flows back to potential dischargers and conduct aboveground inspections. This can be done through visual inspection of upgradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
- Eliminate the discharge once the origin of flow is established.

- Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Illegal Dumping

- Inspect and clean up hot spots and other storm drainage areas regularly where illegal dumping and disposal occurs.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Illegal dumping hot spots
  - Types and quantities (in some cases) of wastes
  - Patterns in time of occurrence (time of day/night, month, or year)
  - Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
  - Responsible parties
- **Post "No Dumping" signs** in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Training

- Train crews in proper maintenance activities, including record keeping and disposal.
- Allow only properly trained individuals to handle hazardous materials/wastes.
- Have staff involved in detection and removal of illicit connections trained in the following:
  - OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).

- OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and Federal OSHA 29 CFR 1910.146).

- Procedural training (field screening, sampling, smoke/dye testing, TV inspection).

Spill Response and Prevention

- Investigate all reports of spills, leaks, and/or illegal dumping promptly.

- Clean up all spills and leaks using "dry" methods (with absorbent materials and/or rags) or dig up, remove, and properly dispose of contaminated soil.

- Refer to fact sheet SC-11 Spill Prevention, Control, and Cleanup.

Other Considerations (Limitations and Regulations)

- Clean-up activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.

- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, liquid/sediment disposal, and prohibition against disposal of flushed effluent to sanitary sewer in some areas.

- Regulations may include adoption of substantial penalties for illegal dumping and disposal.

- Local municipal codes may include sections prohibiting discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the storm drain system.

Requirements

Costs

- An aggressive catch basin cleaning program could require a significant capital and O&M budget.

- The elimination of illegal dumping is dependent on the availability, convenience, and cost of alternative means of disposal. The primary cost is for staff time. Cost depends on how aggressively a program is implemented. Other cost considerations for an illegal dumping program include:

  - Purchase and installation of signs.

  - Rental of vehicle(s) to haul illegally-disposed items and material to landfills.

  - Rental of heavy equipment to remove larger items (e.g., car bodies) from channels.

  - Purchase of landfill space to dispose of illegally-dumped items and material.

- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary.

Maintenance

- Two-person teams may be required to clean catch basins with vactor trucks.
- Teams of at least two people plus administrative personnel are required to identify illicit discharges, depending on the complexity of the storm sewer system.
- Arrangements must be made for proper disposal of collected wastes.
- Technical staff are required to detect and investigate illegal dumping violations.

Supplemental Information

Further Detail of the BMP

Storm Drain Flushing

Flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in storm drainage systems. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as an open channel, another point where flushing will be initiated, or the sanitary sewer and the treatment facilities, thus preventing resuspension and overflow of a portion of the solids during storm events. Flushing prevents "plug flow" discharges of concentrated pollutant loadings and sediments. Deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, thereby releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce impacts of stormwater pollution, a second inflatable device placed well downstream may be used to recollect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to recollect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75% for organics and 55-65% for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used or that fire hydrant line flushing coincide with storm sewer flushing.

SC-44 Drainage System Maintenance

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

Ferguson, B.K. 1991. Urban Stream Reclamation, p. 324-322, Journal of Soil and Water Conservation.

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net

United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Storm Drain System Cleaning. On line:
http://www.epa.gov/npdes/menuofbmps/poll_16.htm

Housekeeping Practices SC-60

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Description

Promote efficient and safe housekeeping practices (storage, use, and cleanup) when handling potentially harmful materials such as fertilizers, pesticides, cleaning solutions, paint products, automotive products, and swimming pool chemicals. Related information is provided in BMP fact sheets SC-11 Spill Prevention, Control & Cleanup and SC-34 Waste Handling & Disposal.

Approach

Pollution Prevention

- Purchase only the amount of material that will be needed for foreseeable use. In most cases this will result in cost savings in both purchasing and disposal. See SC-61 Safer Alternative Products for additional information.

- Be aware of new products that may do the same job with less environmental risk and for less or the equivalent cost. Total cost must be used here; this includes purchase price, transportation costs, storage costs, use related costs, clean up costs and disposal costs.

Suggested Protocols

General

- Keep work sites clean and orderly. Remove debris in a timely fashion. Sweep the area.

- Dispose of wash water, sweepings, and sediments, properly.

- Recycle or dispose of fluids properly.

- Establish a daily checklist of office, yard and plant areas to confirm cleanliness and adherence to proper storage and security. Specific employees should be assigned specific inspection responsibilities and given the authority to remedy any problems found.

- Post waste disposal charts in appropriate locations detailing for each waste its hazardous nature (poison, corrosive, flammable), prohibitions on its disposal (dumpster, drain, sewer) and the recommended disposal method (recycle, sewer, burn, storage, landfill).

- Summarize the chosen BMPs applicable to your operation and post them in appropriate conspicuous places.

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- Require a signed checklist from every user of any hazardous material detailing amount taken, amount used, amount returned and disposal of spent material.
- Do a before audit of your site to establish baseline conditions and regular subsequent audits to note any changes and whether conditions are improving or deteriorating.
- Keep records of water, air and solid waste quantities and quality tests and their disposition.
- Maintain a mass balance of incoming, outgoing and on hand materials so you know when there are unknown losses that need to be tracked down and accounted for.
- Use and reward employee suggestions related to BMPs, hazards, pollution reduction, work place safety, cost reduction, alternative materials and procedures, recycling and disposal.
- Have, and review regularly, a contingency plan for spills, leaks, weather extremes etc. Make sure all employees know about it and what their role is so that it comes into force automatically.

Training
- Train all employees, management, office, yard, manufacturing, field and clerical in BMPs and pollution prevention and make them accountable.
- Train municipal employees who handle potentially harmful materials in good housekeeping practices.
- Train personnel who use pesticides in the proper use of the pesticides. The California Department of Pesticide Regulation license pesticide dealers, certify pesticide applicators and conduct onsite inspections.
- Train employees and contractors in proper techniques for spill containment and cleanup. The employee should have the tools and knowledge to immediately begin cleaning up a spill if one should occur.

Spill Response and Prevention
- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and Countermeasure (SPCC) plant up-to-date, and implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations
- There are no major limitations to this best management practice.
- There are no regulatory requirements to this BMP. Existing regulations already require municipalities to properly store, use, and dispose of hazardous materials

Housekeeping Practices SC-60

Requirements

Costs

- Minimal cost associated with this BMP. Implementation of good housekeeping practices may result in cost savings as these procedures may reduce the need for more costly BMPs.

Maintenance

- Ongoing maintenance required to keep a clean site. Level of effort is a function of site size and type of activities.

Supplemental Information

Further Detail of the BMP

- The California Integrated Waste Management Board's Recycling Hotline, 1-800-553-2962, provides information on household hazardous waste collection programs and facilities.

Examples

There are a number of communities with effective programs. The most pro-active include Santa Clara County and the City of Palo Alto, the City and County of San Francisco, and the Municipality of Metropolitan Seattle (Metro).

References and Resources

British Columbia Lake Stewardship Society. Best Management Practices to Protect Water Quality from Non-Point Source Pollution. March 2000. http://www.nalms.org/bclss/bmphome.html#bmp

King County Stormwater Pollution Control Manual - http://dnr.metrokc.gov/wlr/dss/spcm.htm

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities, Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July, 1998, Revised by California Coastal Commission, February 2002.

Orange County Stormwater Program http://www.ocwatersheds.com/stormwater/swp_introduction.asp

San Mateo STOPPP - (http://stoppp.tripod.com/bmp.html)

Landscape Maintenance SC-73

Objectives

- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	
Bacteria	
Oil and Grease	
Organics	
Oxygen Demanding	☑

Description

Landscape maintenance activities include vegetation removal; herbicide and insecticide application; fertilizer application; watering; and other gardening and lawn care practices. Vegetation control typically involves a combination of chemical (herbicide) application and mechanical methods. All of these maintenance practices have the potential to contribute pollutants to the storm drain system. The major objectives of this BMP are to minimize the discharge of pesticides, herbicides and fertilizers to the storm drain system and receiving waters; prevent the disposal of landscape waste into the storm drain system by collecting and properly disposing of clippings and cuttings, and educating employees and the public.

Approach

Pollution Prevention

- Implement an integrated pest management (IPM) program. IPM is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools.

- Choose low water using flowers, trees, shrubs, and groundcover.

- Consider alternative landscaping techniques such as naturescaping and xeriscaping.

- Conduct appropriate maintenance (i.e. properly timed fertilizing, weeding, pest control, and pruning) to help preserve the landscapes water efficiency.

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- Consider grass cycling (grass cycling is the natural recycling of grass by leaving the clippings on the lawn when mowing. Grass clippings decompose quickly and release valuable nutrients back into the lawn).

Suggested Protocols
Mowing, Trimming, and Weeding

- Whenever possible use mechanical methods of vegetation removal (e.g mowing with tractor-type or push mowers, hand cutting with gas or electric powered weed trimmers) rather than applying herbicides. Use hand weeding where practical.
- Avoid loosening the soil when conducting mechanical or manual weed control, this could lead to erosion. Use mulch or other erosion control measures when soils are exposed.
- Performing mowing at optimal times. Mowing should not be performed if significant rain events are predicted.
- Mulching mowers may be recommended for certain flat areas. Other techniques may be employed to minimize mowing such as selective vegetative planting using low maintenance grasses and shrubs.
- Collect lawn and garden clippings, pruning waste, tree trimmings, and weeds. Chip if necessary, and compost or dispose of at a landfill (see waste management section of this fact sheet).
- Place temporarily stockpiled material away from watercourses, and berm or cover stockpiles to prevent material releases to storm drains.

Planting

- Determine existing native vegetation features (location, species, size, function, importance) and consider the feasibility of protecting them. Consider elements such as their effect on drainage and erosion, hardiness, maintenance requirements, and possible conflicts between preserving vegetation and the resulting maintenance needs.
- Retain and/or plant selected native vegetation whose features are determined to be beneficial, where feasible. Native vegetation usually requires less maintenance (e.g., irrigation, fertilizer) than planting new vegetation.
- Consider using low water use groundcovers when planting or replanting.

Waste Management

- Compost leaves, sticks, or other collected vegetation or dispose of at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Place temporarily stockpiled material away from watercourses and storm drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- Reduce the use of high nitrogen fertilizers that produce excess growth requiring more frequent mowing or trimming.

- Avoid landscape wastes in and around storm drain inlets by either using bagging equipment or by manually picking up the material.

Irrigation

- Where practical, use automatic timers to minimize runoff.
- Use popup sprinkler heads in areas with a lot of activity or where there is a chance the pipes may be broken. Consider the use of mechanisms that reduce water flow to sprinkler heads if broken.
- Ensure that there is no runoff from the landscaped area(s) if re-claimed water is used for irrigation.
- If bailing of muddy water is required (e.g. when repairing a water line leak), do not put it in the storm drain; pour over landscaped areas.
- Irrigate slowly or pulse irrigate to prevent runoff and then only irrigate as much as is needed.
- Apply water at rates that do not exceed the infiltration rate of the soil.

Fertilizer and Pesticide Management

- Utilize a comprehensive management system that incorporates integrated pest management (IPM) techniques. There are many methods and types of IPM, including the following:
  - Mulching can be used to prevent weeds where turf is absent, fencing installed to keep rodents out, and netting used to keep birds and insects away from leaves and fruit.
  - Visible insects can be removed by hand (with gloves or tweezers) and placed in soapy water or vegetable oil. Alternatively, insects can be sprayed off the plant with water or in some cases vacuumed off of larger plants.
  - Store-bought traps, such as species-specific, pheromone-based traps or colored sticky cards, can be used.
  - Slugs can be trapped in small cups filled with beer that are set in the ground so the slugs can get in easily.
  - In cases where microscopic parasites, such as bacteria and fungi, are causing damage to plants, the affected plant material can be removed and disposed of (pruning equipment should be disinfected with bleach to prevent spreading the disease organism).
  - Small mammals and birds can be excluded using fences, netting, tree trunk guards.
  - Beneficial organisms, such as bats, birds, green lacewings, ladybugs, praying mantis, ground beetles, parasitic nematodes, trichogramma wasps, seed head weevils, and spiders that prey on detrimental pest species can be promoted.
- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.

- Use pesticides only if there is an actual pest problem (not on a regular preventative schedule).
- Do not use pesticides if rain is expected. Apply pesticides only when wind speeds are low (less than 5 mph).
- Do not mix or prepare pesticides for application near storm drains.
- Prepare the minimum amount of pesticide needed for the job and use the lowest rate that will effectively control the pest.
- Employ techniques to minimize off-target application (e.g. spray drift) of pesticides, including consideration of alternative application techniques.
- Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.
- Calibrate fertilizer and pesticide application equipment to avoid excessive application.
- Periodically test soils for determining proper fertilizer use.
- Sweep pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Purchase only the amount of pesticide that you can reasonably use in a given time period (month or year depending on the product).
- Triple rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Dispose of empty pesticide containers according to the instructions on the container label.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.
- Inspect pesticide/fertilizer equipment and transportation vehicles daily.

Training

- Educate and train employees on use of pesticides and in pesticide application techniques to prevent pollution. Pesticide application must be under the supervision of a California qualified pesticide applicator.
- Train/encourage municipal maintenance crews to use IPM techniques for managing public green areas.
- Annually train employees within departments responsible for pesticide application on the appropriate portions of the agency's IPM Policy, SOPs, and BMPs, and the latest IPM techniques.

- Employees who are not authorized and trained to apply pesticides should be periodically (at least annually) informed that they cannot use over-the-counter pesticides in or around the workplace.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a know in location
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- The Federal Pesticide, Fungicide, and Rodenticide Act and California Title 3, Division 6, Pesticides and Pest Control Operations place strict controls over pesticide application and handling and specify training, annual refresher, and testing requirements. The regulations generally cover: a list of approved pesticides and selected uses, updated regularly; general application information; equipment use and maintenance procedures; and record keeping. The California Department of Pesticide Regulations and the County Agricultural Commission coordinate and maintain the licensing and certification programs. All public agency employees who apply pesticides and herbicides in "agricultural use" areas such as parks, golf courses, rights-of-way and recreation areas should be properly certified in accordance with state regulations. Contracts for landscape maintenance should include similar requirements.
- All employees who handle pesticides should be familiar with the most recent material safety data sheet (MSDS) files.
- Municipalities do not have the authority to regulate the use of pesticides by school districts, however the California Healthy Schools Act of 2000 (AB 2260) has imposed requirements on California school districts regarding pesticide use in schools. Posting of notification prior to the application of pesticides is now required, and IPM is stated as the preferred approach to pest management in schools.

Requirements

Costs

Additional training of municipal employees will be required to address IPM techniques and BMPs. IPM methods will likely increase labor cost for pest control which may be offset by lower chemical costs.

Maintenance

Not applicable

Supplemental Information

Further Detail of the BMP

Waste Management

Composting is one of the better disposal alternatives if locally available. Most municipalities either have or are planning yard waste composting facilities as a means of reducing the amount of waste going to the landfill. Lawn clippings from municipal maintenance programs as well as private sources would probably be compatible with most composting facilities

Contractors and Other Pesticide Users

Municipal agencies should develop and implement a process to ensure that any contractor employed to conduct pest control and pesticide application on municipal property engages in pest control methods consistent with the IPM Policy adopted by the agency. Specifically, municipalities should require contractors to follow the agency's IPM policy, SOPs, and BMPs; provide evidence to the agency of having received training on current IPM techniques when feasible; provide documentation of pesticide use on agency property to the agency in a timely manner.

References and Resources

King County Stormwater Pollution Control Manual. Best Management Practices for Businesses. 1995. King County Surface Water Management. July. On-line: http://dnr.metrokc.gov/wlr/dss/spcm.htm

Los Angeles County Stormwater Quality Model Programs. Public Agency Activities http://ladpw.org/wmd/npdes/model_links.cfm

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July. 1998.

Orange County Stormwater Program http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Santa Clara Valley Urban Runoff Pollution Prevention Program. 1997 Urban Runoff Management Plan. September 1997, updated October 2000.

United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Landscaping and Lawn Care. Office of Water. Office of Wastewater Management. On-line: http://www.epa.gov/npdes/menuofbmps/poll_8.htm

Site Design & Landscape Planning SD-10

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- ☑ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

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SD-10 Site Design & Landscape Planning

Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.
- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Promote natural vegetation by using parking lot islands and other landscaped areas.
- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.
- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

SD-10 Site Design & Landscape Planning

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Efficient Irrigation

SD-12

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

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- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.

- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:

  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff

  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect

  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible

  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth

- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

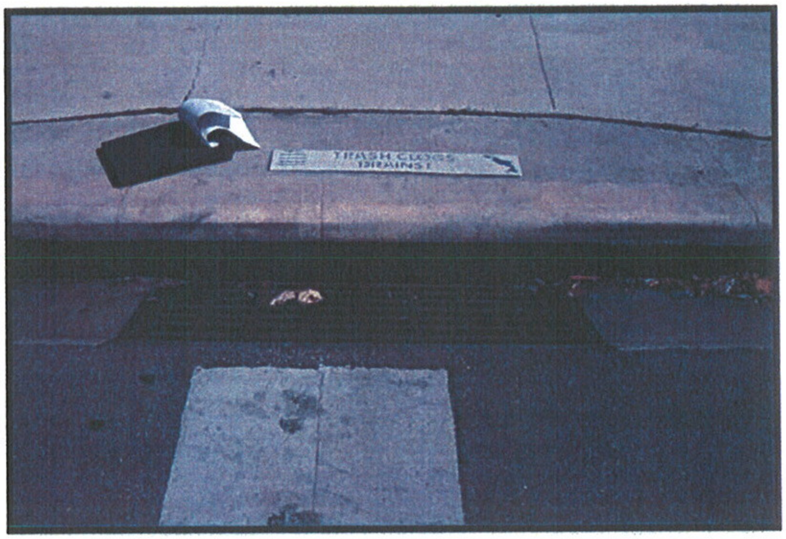
A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13



Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING

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– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.

- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Trash Storage Areas SD-32

Design Objectives

Maximize Infiltration

Provide Retention

Slow Runoff

Minimize Impervious Land Coverage

Prohibit Dumping of Improper Materials

☑ Contain Pollutants

Collect and Convey

Description

Trash storage areas are areas where a trash receptacle (s) are located for use as a repository for solid wastes. Stormwater runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or creeks. Waste handling operations that may be sources of stormwater pollution include dumpsters, litter control, and waste piles.

Approach

This fact sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff associated with trash storage and handling. Preventative measures including enclosures, containment structures, and impervious pavements to mitigate spills, should be used to reduce the likelihood of contamination.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Design requirements for waste handling areas are governed by Building and Fire Codes, and by current local agency ordinances and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code and ordinance requirements. Hazardous waste should be handled in accordance with legal requirements established in Title 22, California Code of Regulation.

Wastes from commercial and industrial sites are typically hauled by either public or commercial carriers that may have design or access requirements for waste storage areas. The design criteria in this fact sheet are recommendations and are not intended to be in conflict with requirements established by the waste hauler. The waste hauler should be contacted prior to the design of your site trash collection areas. Conflicts or issues should be discussed with the local agency.

Designing New Installations

Trash storage areas should be designed to consider the following structural or treatment control BMPs:

- Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater.
- Make sure trash container areas are screened or walled to prevent off-site transport of trash.

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

- Use lined bins or dumpsters to reduce leaking of liquid waste.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Pave trash storage areas with an impervious surface to mitigate spills.
- Do not locate storm drains in immediate vicinity of the trash storage area.
- Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Maintenance Considerations

The integrity of structural elements that are subject to damage (i.e., screens, covers, and signs) must be maintained by the owner/operator. Maintenance agreements between the local agency and the owner/operator may be required. Some agencies will require maintenance deed restrictions to be recorded of the property title. If required by the local agency, maintenance agreements or deed restrictions must be executed by the owner/operator before improvement plans are approved.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Appendix E

Soils Report

Appendix F

Treatment Control BMP Sizing Calculations and Design Details

Worksheet 1

Design Procedure for BMP Design Volume

85th percentile runoff event

Designer: S. McMasters
Company: Thienes Engineering
Date: 11-4-2011
Project: 200 Distribution Facility - Beaumont
Location: Site = 156.40

1. Create Unit Storage Volume Graph a. Site location (Township, Range, and Section). b. Slope value from the Design Volume Curve in **Appendix A**. c. Plot this value on the Unit Storage Volume Graph shown on **Figure 2**. d. Draw a straight line form this point to the origin, to create the graph	T &R Section Slope = 1.14 Is this graph attached? Yes ☑ No ☐	*(1)* *(2)*
2. Determine Runoff Coefficient a. Determine total impervious area b. Determine total tributary area c. Determine Impervious fraction $i = (5) / (6)$ d. Use *(7)* in **Figure 1** to find Runoff OR $C = .858i^3 - .78i^2 + .774i + .04$	$A_{impervious}$ = 125.12 acres A_{total} = 156.40 acres i = .80 C = .60	*(5)* *(6)* *(7)* *(8)*
3. Determine 85% Unit Storage Volume a. Use *(8)* in **Figure 2** Draw a Vertical line from *(8)* to the graph, then a Horizontal line to the desired V_u value.	V_u = .68 in-acre/acre	*(9)*
4. Determine Design Storage Volume a. $V_{BMP} = (9) \times (6)$ [in- acres] b. $V_{BMP} = (10) / 12$ [ft- acres] c. $V_{BMP} = (11) \times 43560$ [ft³]	V_{BMP} = 106.35 in-acre V_{BMP} = 8.9 ft-acre V_{BMP} = 387,684 ft³	*(10)* *(11)* *(12)*

Notes: Drains to Infiltration Basin

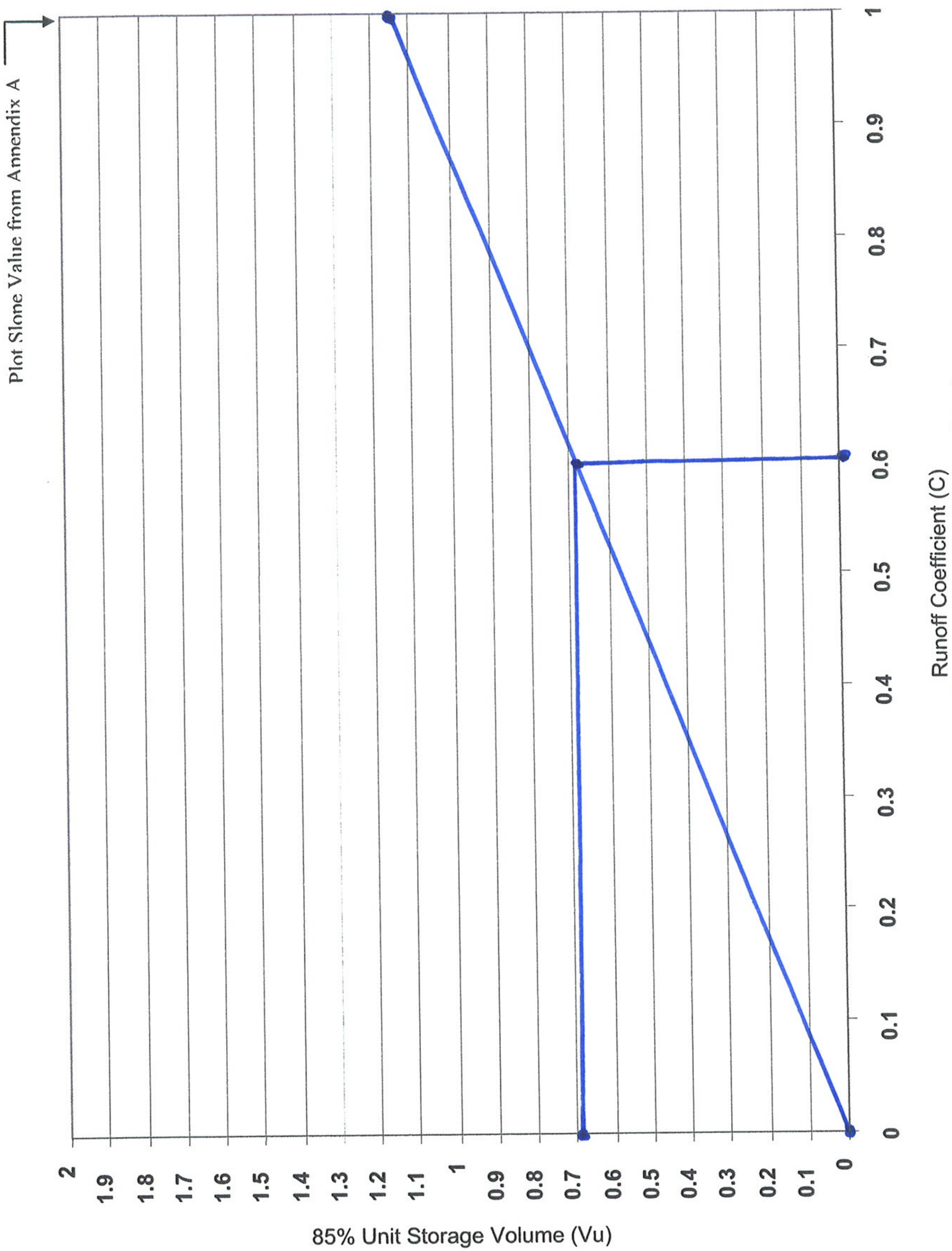


Figure 2 Unit Storage Volume Graph

3. Using the runoff coefficient found in step 2, determine 85th percentile unit storage volume (V_u) using Figure 2 (created in step 1).

4. Determine the design storage volume (V_{BMP}). This is the volume to be used in the design of selected BMPs presented in this handbook.

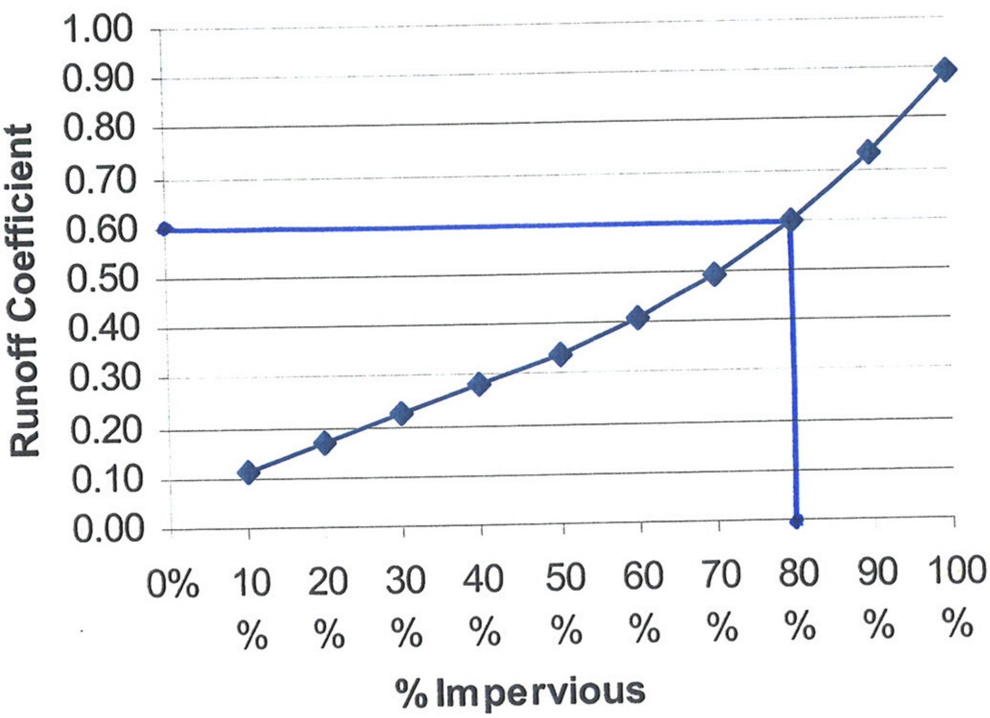
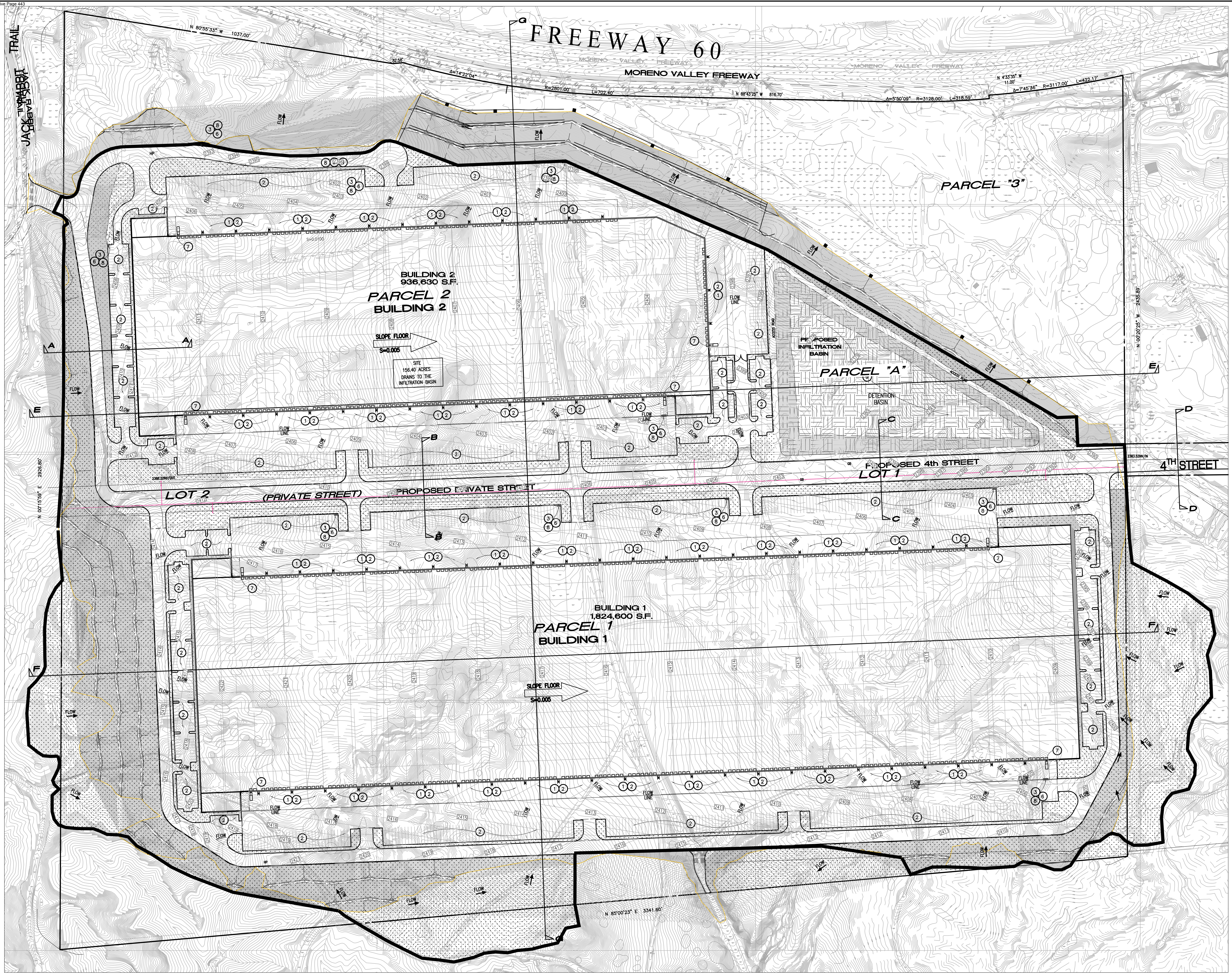


Figure 1. Impervious – Coefficient Curve (WEF/ASCE Method[25])

[25] Imperviousness is the decimal fraction of the total catchment covered by the sum of roads, parking lots, sidewalks, rooftops, and other impermeable surfaces of an urban landscape.


R7W R6W R5W R4W R3W R2W R1W R1E R2E R3E R4E R5E R6E R7E R8E
T1S T2S T3S T4S T5S T6S T7S T8S
SAN BERNARDINO MOUNTAINS
Mira Loma 1.21
0.78 Riverside North
Pigeon Pass 0.81
Project site
Banning Bench 1.15
Desert Hot Springs East 0.92
Riverside South 0.83
Beaumont 1.25
1.06 Cabazon
1.20 Prado Dam
Lake Mathews 0.81
Tachevah Dam 1.10
San Jacinto 0.92
Cathedral City 0.94
Idyllwild 1.36
Winchester 0.92
El Cariso Station 1.31
Elsinore 1.13
Hurkey Creek Park 1.13
Red Mountain 1.19
La Cresta 1.25
Anza 0.95
Temecula 1.24
Aguanga Valley 0.95
SANTA ANA MOUNTAINS
SAN JACINTO MOUNTAINS
1.20 1.10 1.00 0.90
N.T.S.
Rain Gage Location
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
Slope of the Design Volume Curve
May 2004

Administrative Page 443



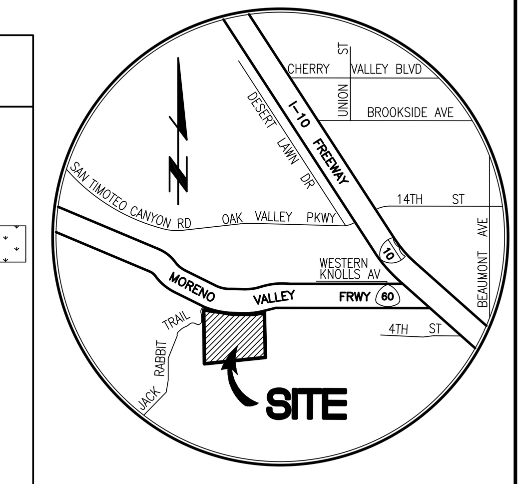
LEGEND

1. SC-30: OUTDOOR LOADING/UNLOADING
2. SC-43: PARKING AREA MAINTENANCE
3. SC-44: DRAINAGE SYSTEM MAINTENANCE
4. SC-73: LANDSCAPE MAINTENANCE
5. SD-12: EFFICIENT IRRIGATION
6. SD-13: STORM DRAIN SYSTEM SIGNS
7. SD-32: TRASH ENCLOSURES (COMPACTORS)
8. MP-52: DRAIN INSERT
9. TC-11: INFILTRATION BASIN

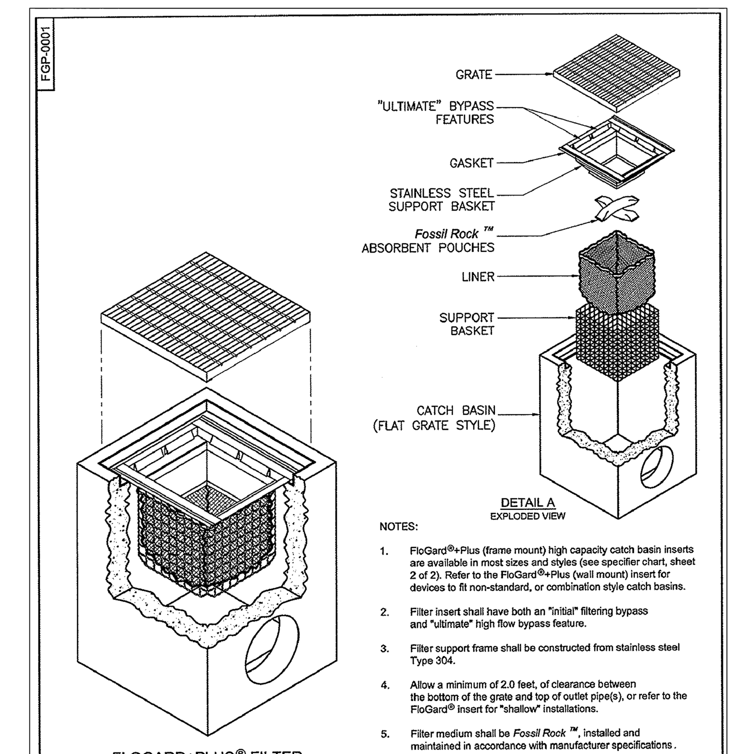
NOTE:
SC-11: SPILL PREVENTION, CONTROL AND CLEANUP
SC-41: BUILDING AND GROUNDS MAINTENANCE
SC-60: HOUSEKEEPING PRACTICES
SD-10: SITE DESIGN AND LANDSCAPE PLANNING

ONGOING OVER THE ENTIRE SITE

PROJECT BOUNDARY
DRAINAGE AREAS
FLOW LINE



VICINITY MAP
N.T.S.



NOTES:

1. FloGard®+Plus (frame mount) high capacity catch basin inserts are available in most sizes and styles (see specifier chart, sheet 2 of 2). Refer to the FloGard®+Plus (wall mount) insert for devices to fit non-standard, or combination style catch basins.
2. Filter insert shall have both an "initial" filtering bypass and "ultimate" high flow bypass feature.
3. Filter support frame shall be constructed from stainless steel Type 304.
4. Allow a minimum of 2.0 feet, of clearance between the bottom of the grate and top of outlet pipe(s), or refer to the FloGard® insert for "shallow" installations.
5. Filter medium shall be *Fossil Rock* ™, installed and maintained in accordance with manufacturer specifications.
6. Storage capacity reflects 80% of maximum solids collection prior to impeding filtering bypass.
7. Filtered flow rrate includes a safety factor of two.

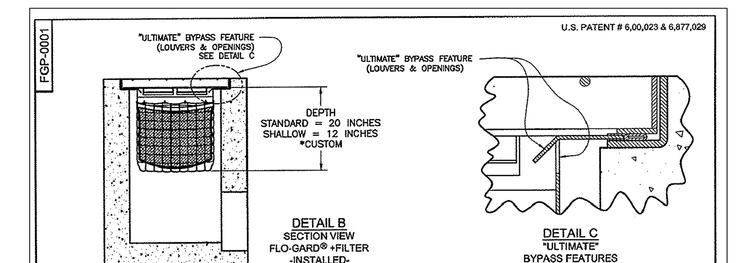
U.S. PATENT # 6,00,023 & 6,877,029

TITLE
FloGard® +PLUS
CATCH BASIN FILTER INSERT
(Frame Mount)
FLAT GRATED INLET

KriStar Enterprises, Inc.
P.O. Box 6419, Santa Rosa, CA 95406
Ph: 800.579.8819, Fax: 707.524.8186, www.kristar.com

DRAWING NO. FGP-0001 | REV A | ECO 0001 | DATE JPR 09/01/06 | SHEET 1 OF 2

U.S. PATENT # 6,00,023 & 6,877,029



* MANY OTHER STANDARD & CUSTOM SIZES & DEPTHS AVAILABLE UPON REQUEST.

SPECIFIER CHART

MODEL NO. STANDARD DEPTH	STANDARD & SHALLOW DEPTH (Data in these columes is the same for both STANDARD & SHALLOW versions)			STANDARD DEPTH -20 Inches-		MODEL NO. SHALLOW DEPTH	SHALLOW DEPTH -12 Inches-	
	INLET ID Inside Dimension (inch x inch)	GRATE OD Outside Dimension (inch x inch)	TOTAL BYPASS CAPACITY (cu. ft.)	SOLIDS STORAGE CAPACITY (cu. ft.)	FILTERED FLOW (cu. ft. / sec.)		SOLIDS STORAGE CAPACITY (cu. ft.)	FILTERED FLOW (cu. ft. / sec.)
FGP-12F	12 X 12	12 X 14	2.8	0.3	0.4	FGP-12F8	.15	.25
FGP-1530F	15 X 30	15 X 35	6.9	2.3	1.6	FGP-1530F8	1.3	.9
FGP-16F	16 X 16	16 X 19	4.7	0.8	0.7	FGP-16F8	.45	.4
FGP-1624F	16 X 24	16 X 26	5.0	1.5	1.2	FGP-1624F8	.85	.7
FGP-18F	18 X 18	18 X 20	4.7	0.8	0.7	FGP-18F8	.45	.4
FGP-1820F	16 X 19	18 X 21	5.9	2.1	1.4	FGP-1820F8	1.2	.8
FGP-1824F	16 X 22	18 X 24	5.0	1.5	1.2	FGP-1824F8	.85	.7
FGP-1836F	18 X 36	18 X 40	6.9	2.3	1.6	FGP-1836F8	1.3	.9
FGP-2024F	18 X 22	20 X 24	5.9	1.2	1.0	FGP-2024F8	.7	.55
FGP-21F	22 X 22	22 X 24	6.1	2.2	1.5	FGP-21F8	1.25	.85
FGP-2142F	21 X 40	24 X 40	9.1	4.3	2.4	FGP-2142F8	2.45	1.35
FGP-2148F	19 X 46	22 X 48	9.8	4.7	2.6	FGP-2148F8	2.7	1.5
FGP-24F	24 X 24	24 X 27	6.1	2.2	1.5	FGP-24F8	1.25	.85
FGP-2430F	24 X 30	26 X 30	7.0	2.8	1.8	FGP-2430F8	1.6	1.05
FGP-2436F	24 X 36	24 X 40	8.0	3.4	2.0	FGP-2436F8	1.95	1.15
FGP-2448F	24 X 48	26 X 48	9.3	4.4	2.4	FGP-2448F8	2.5	1.35
FGP-28F	28 X 28	32 X 32	6.3	2.2	1.5	FGP-28F8	1.25	.85
FGP-2440F	24 X 36	28 X 40	8.3	4.2	2.3	FGP-2440F8	2.4	1.3
FGP-30F	30 X 30	30 X 34	8.1	3.6	2.0	FGP-30F8	2.05	1.15
FGP-36F	36 X 36	36 X 40	9.1	4.6	2.4	FGP-36F8	2.65	1.35
FGP-3648F	36 X 48	40 X 48	11.5	6.8	3.2	FGP-3648F8	3.9	1.85
FGP-48F	48 X 48	48 X 54	13.2	9.5	3.9	FGP-48F8	5.45	2.25
FGP-SD24F	24 X 24	28 X 28	6.1	2.2	1.5	FGP-SD24F8	1.25	.85
FGP-1836FGO	18 X 36	20 X 40	6.9	2.3	1.6	FGP-1836F8GO	1.3	.9
FGP-2436FGO	20 X 36	24 X 40	8.0	3.4	2.0	FGP-2436F8GO	1.95	1.15
FGP-48FGO	18 X 48	20 X 54	6.3	2.2	1.5	FGP-48F8GO	1.25	.85

TITLE
FloGard® +PLUS
CATCH BASIN FILTER INSERT
(Frame Mount)
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0 60 120 240 360
SCALE:1"= 120'

Last Update: 11/4/11
O:\3000-3099\3080\3080 BMP SITE PLAN_recover.dwg

CITY OF BEAUMONT
PUBLIC WORKS DEPARTMENT

BMP SITE PLAN
FOR
BEAUMONT DISTRIBUTION PARK
4TH STREET
BEAUMONT, CA. 92223

PREPARED FOR:

TIMOTEO LAND DEVELOPMENT LLC
1300 QUAIL STREET, SUITE #100
NEWPORT BEACH, CA. 92660
PHONE: (949) 833-0222
FAX: (949) 833-1960

Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH.(714)521-4811 FAX(714)521-4173

Designed by ______
Date ______
Checked by ______
Date ______
Designed by ______
Date ______
Checked by ______
Date ______

Aproved by ______ Date ______

Public Works Director R.C.E. 28129

Sheet 1 of 1 Sheets

3080/1 OF 1 SHEET

Appendix G

AGREEMENTS – CC&RS, COVENANT AND AGREEMENTS AND/OR OTHER MECHANISMS FOR ENSURING ONGOING OPERATION, MAINTENANCE, FUNDING AND TRANSFER OF REQUIREMENTS FOR THIS PROJECT-SPECIFIC WQMP

Appendix H

Phase 1 Environmental Site Assessment – Summary of Site Remediation Conducted and Use Restrictions