CITY OF WILDOMAR PLANNING COMMISSION

SPECIAL MEETING OF DECEMBER 18, 2013

AT 6:30 P.M.

Council Chambers
23873 Clinton Keith Road, Suite #111

Stan Smith, Chairman
Veronica Langworthy, Vice-Chair
Robert Devine, Planning Commissioner
Bobby L. Swann III, Planning Commissioner

Matthew C. Bassi
Planning Director

Erica L. Vega
Assistant City Attorney

WILDOMAR PLANNING COMMISSION SPECIAL MEETING AGENDA FOR DECEMBER 18, 2013

ORDER OF BUSINESS: Public sessions of the December 18, 2013 special meeting of the Planning Commission begin at 6:30 p.m.

REPORTS: The Planning Commission agenda packet/reports are available for review at Wildomar City Hall, Planning Department located at 23873 Clinton Keith Road, Suite #201 and on the City's website, http://www.cityofwildomar.org/planning-commission-minutes.asp. Any writings or documents provided to a majority of the Planning Commission regarding any item on this agenda (other than writings legally exempt from public disclosure) will be made available for public inspection at City Hall during regular business hours.

PUBLIC COMMENTS: Prior to the business portion of the agenda, the Planning Commission will receive public comments regarding any items or matters within the jurisdiction of the governing body. The Chairman will separately call for testimony at the time of each public hearing. If you wish to speak, please complete a "Public Comment Card" available at the Chamber door. The completed form is to be submitted to the Planning Commission Clerk prior to an individual being heard. Lengthy testimony should be presented to the Commission in writing (15 copies) and only pertinent points presented orally. The time limit established for public comments is three minutes per speaker.

CONSENT CALENDAR: Consent Calendar items will be acted on by one roll call vote unless Council members, staff, or the public request the item be discussed and/or removed from the Consent Calendar for separate action.

PLEASE TURN ALL DEVICES TO VIBRATE/MUTE/OFF FOR THE DURATION OF THE MEETING. YOUR COOPERATION IS APPRECIATED.

CALL TO ORDER – SPECIAL MEETING - 6:30 P.M.

ROLL CALL

FLAG SALUTE

PUBLIC COMMENTS

This is the time when the Planning Commission receives general public comments regarding any items or matters within the jurisdiction of the Planning Commission that do not appear on the agenda. Each speaker is asked to fill out a "Public Comments Card" available at the Chamber door and submit the card to the Planning Commission Secretary. Lengthy testimony should be presented to the Commission in writing (15 copies) and only pertinent points presented orally. The time limit established for public comments is three minutes per speaker. Prior to taking action on any open session agenda item, the public will be permitted to comment at the time it is considered by the Planning Commission.

APPROVAL OF THE AGENDA AS PRESENTED

The Planning Commission to approve the agenda as it is herein presented, or, if it the desire of the Planning Commission, the agenda can be reordered at this time.

1.0 CONSENT CALENDAR

All matters listed under the Consent Calendar are considered routine and will be enacted by one roll call vote. There will be no separate discussion of these items unless members of the Commission, the Public, or Staff request that specific items are removed from the Consent Calendar for separate discussion and/or action.

1.1 Minutes – October 16, 2013 Special Meeting
Recommendation – Staff Recommends that the Planning Commission approve the Minutes as submitted.

1.2 Minutes – November 20, 2013 Special Meeting
Recommendation – Staff Recommends that the Planning Commission approve the Minutes as submitted.

2.0 PUBLIC HEARINGS

2.1 Tentative Tract Map No. 36519 (Planning Application No. 12-0392):

Planning Commission consideration for the adoption of a Mitigated Negative Declaration (MND) and Mitigation Monitoring & Reporting Program (MMRP) and approval of Tentative Tract Map No. 36519 for the subdivision of approximately 5.4 acres into 10 lots (1/2 acre each) for future single family residential development in the R-R (Rural Residential) zone, located at 34915 Orange Street (APN: 367-170-029).

RECOMMENDATION:

The Planning Department recommends the Planning Commission take the following actions:

1. Adopt a Resolution entitled:

PC RESOLUTION NO. 13-15

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF WILDOMAR, CALIFORNIA, ADOPTING A MITIGATED NEGATIVE DECLARATION AND MITIGATION MONITORING & REPORTING PROGRAM FOR TENTATIVE TRACT MAP NO. 36519 (PLANNING APPLICATION NO. 12-0392) FOR THE SUBDIVISION OF APPROXIMATELY 5.4 ACRES INTO 10 (1/2 ACRE) LOTS FOR FUTURE SINGLE FAMILY RESIDENTIAL DEVELOPMENT IN THE R-R (RURAL RESIDENTIAL) ZONE LOCATED AT 34915 ORANGE STREET (APN: 367-170-029).

2. Adopt a Resolution entitled:

PC RESOLUTION NO. 13-16

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF WILDOMAR, CALIFORNIA, APPROVING TENTATIVE TRACT MAP NO. 36519 (PLANNING APPLICATION NO. 12-0392) FOR THE SUBDIVISION OF APPROXIMATELY 5.4 ACRES INTO 10 (1/2 ACRE) LOTS FOR FUTURE SINGLE FAMILY RESIDENTIAL DEVELOPMENT IN THE R-R (RURAL RESIDENTIAL) ZONE LOCATED AT 34915 ORANGE STREET, SUBJECT TO CONDITIONS (APN: 367-170-029).

2.2 Public Use Permit No. 12-0105 (Planning Application No. 12-0105):
Planning Commission consideration of a Public Use Permit (PUP) to construct three (3) modular trailers totaling 1,800 square feet each to be used as Sunday School classrooms as an extension to an existing church (Gracepoint of the Nazarene) located at 21400 Canyon Drive (APN: 367-020-031).

RECOMMENDATION:
The Planning Department recommends the Planning Commission take the following action:

1. Adopt a Resolution entitled:

PC RESOLUTION NO. 13-22

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF WILDOMAR, CALIFORNIA, ADOPTING A CATEGORICAL EXEMPTION PER SECTION 15303 (NEW CONSTRUCTION OR CONVERSION OF SMALL STRUCTURES) OF THE CEQA GUIDELINES AND APPROVAL OF A PUBLIC USE PERMIT (PLANNING APPLICATION NO. 12-0105) TO CONSTRUCT THREE (3) MODULAR TRAILERS TOTALING 1,800 SQUARE FEET EACH TO BE USED AS SUNDAY SCHOOL CLASSROOMS AS AN EXTENSION TO AN EXISTING CHURCH (GRACEPOINT OF THE NAZARENE), SUBJECT TO CONDITIONS LOCATED AT 21400 CANYON DRIVE (APN: 367-020-031).

3.0 GENERAL BUSINESS

3.1 Strata/Prielipp GPA Initiation Request (Planning Application No. 13-0039):
The applicant (Strata Equity Group) is requesting a Planning Commission recommendation to the City Council in accordance with Section 17.08.040.B of the Zoning Ordinance to initiate a proposed general plan land use amendment on a 20.2-acre site from Business Park (BP) to High Density Residential (HDR) to accommodate a future 86-unit/104-bed Congregate Care Facility/Assisted Living Facility on 7.5 acres of the site, and a 143-unit townhome multi-family project on 12.7 acres of the site located at the northwest corner of Elizabeth Lane and Prielipp Road (APN: 380-250-023).

RECOMMENDATION:
The Planning Department recommends the Planning Commission recommend the City Council allow the initiation of a general plan amendment for Planning Application No. 13-0039 (Strata/Prielipp Project).

PLANNING DIRECTOR REPORT

This item is reserved for the Planning Director to report on items not on the agenda. No action by the Planning Commission is needed.

ASSISTANT CITY ATTORNEY REPORT

This item is reserved for the Assistant City Attorney to report on items not on the agenda. No action by the Planning Commission is needed.

PLANNING COMMISSION COMMUNICATIONS

This item is reserved for the Planning Commission to make comments on items not on the agenda, request information and/or provide direction to the Planning Department staff.

FUTURE AGENDA ITEMS

ADJOURNMENT

The City of Wildomar Planning Commission special meeting of December 18, 2013 is hereby adjourned.

RIGHT TO APPEAL:
Any decision of the Planning Commission may be appealed to the Planning Commission provided the required appeal application and the $964 filing fee is submitted to the City Clerk within ten (10) calendar days proceeding the Planning Commission's action on any given project.

REPORTS:
All agenda items and reports are available for review at Wildomar City Hall, 23873 Clinton Keith Road, Suite 201, Wildomar, California 92595. Any writings or documents provided to a majority of the Planning Commission regarding any item on this agenda (other than writings legally exempt from public disclosure) will be made available for public inspection at City Hall during regular business hours. If you wish to be added to the regular mailing list to receive a copy of the agenda, a request must be made through the Planning Department in writing or by e-mail.

ADDITIONS/DELETIONS:
Items of business may be added to the agenda upon a motion adopted by a minimum 2/3 vote finding that there is a need to take immediate action and that the need for action came to the attention of the City subsequent to the agenda being posted. Items may be deleted from the agenda upon request of staff or upon action of the Planning Commission.

ADA COMPLIANCE:
If requested, the agenda and backup materials will be made available in appropriate alternative formats to persons with a disability, as required by Section 202 of the Americans With Disabilities Act of 1990 (42 U.S.C. Sec. 12132), and the federal rules and regulations adopted in implementation thereof. Any person who requires a disability-related modification or accommodation, including auxiliary aids or services, in order to participate in the public meeting may request such modification, accommodation, aid or service by contacting the Planning Department either in person or by telephone at (951) 667-7751, no later than 10:00 A.M. on the day preceding the scheduled meeting.

POSTING STATEMENT:
On or before December 13, 2013, a true and correct copy of this agenda was posted at the three (3) designated places: 1) Wildomar City Hall, 23873 Clinton Keith Road; 2) United States Post Office, 21392 Palomar Street; and 3) Mission Trail Library, 34303 Mission Trail Road.

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Matthew C. Bassi
Planning Director

AGENDA SECTION 1.0

CONSENT CALENDAR ITEMS

AGENDA ITEM 1.1

CITY OF WILDOMAR
OFFICIAL SPECIAL PLANNING COMMISSION MEETING MINUTES
OF OCTOBER 16, 2013

CALL TO ORDER

The special meeting of the Wildomar Planning Commission was called to order by Planning Commission Chairman Smith at 6:30 P.M. at Wildomar City Hall, Council Chambers.

ROLL CALL

Present: Stan Smith, Chairman, Robert Devine, Commissioner, Bobby L. Swann III, Commissioner, Veronica Langworthy Commissioner.

Absent:

Staff Present
Matthew Bassi, Planning Director
Alfredo Garcia, Assistant Planner
Dan York, Public Works Director / City Engineer
Erica Vega, Assistant City Attorney

FLAG SALUTE

Chairman Smith led the flag salute.

PUBLIC COMMNENT:

None.

APPROVAL OF AGENDA AS SUBMITTED

Chairman Smith asked the Commission for a motion to approve the agenda as submitted. Vice Chairman Kazmier motioned to approve the agenda as submitted motion was seconded by Commissioner Swann. Motion carried 4-0-1, with the following vote resulted:

AYES:	SWANN, LANGWORTHY, SMITH
NOES:	None
ABSENT:	None
ABSTAIN:	DEVINE

1.0 CONSENT CALENDAR

No Consent Calendar Items.

2.0 PUBLIC HEARINGS

No Public Hearing Items.

3.0 GENERAL BUSINESS ITEMS:

3.1 Westpark Promenade Development Project (Planning Application No. 13-0082):

The Planning Department recommends the Planning Commission recommend the City Council allow the initiation of a general plan amendment for Planning Application No. 13-0082 (Westpark Promenade).

Director Bassi made a presentation to the Planning Commission.

Nicholas Brose applicant representative, commented on the project.

David Leonard applicant representative, commented on the project.

Sheryl Ade, resident with donation time from Gil Rasmussen, commented on the project.

A MOTION was made by Commissioner Devine, and was seconded by Vice-Chairman Kazmier, to recommend to the City Council not to allow the initiation of the GPA process for Planning Application No. 13-0082. Motion carried 5-0, with the following vote resulted:

AYES:	SWANN, SMITH, LANGWORTHY, DEVINE, KAZMIER
NOES:	None
ABSENT:	None
ABSTAIN:	None

3.2 Villa Sienna Apartment Project (Planning Application No. 13-0089):
The Planning Department recommends the Planning Commission recommend the City Council allow the initiation of a general plan amendment for Planning Application No. 13-0089 (Villa Sienna Apartment project).

Director Bassi made a presentation to the Planning Commission.

David Leonard applicant representative, commented on the project.

Sheryl Ade, resident commented on the project.

A MOTION was made by Commissioner Devine, and was seconded by Commissioner Swann, to recommend to the City Council not to allow the initiation of the GPA process for Planning Application No. 13-0089. Motion carried 3-1-1, with the following vote resulted:

AYES:	SMITH, DEVINE, KAZMIER
NOES:	SWANN
ABSENT:	None
ABSTAIN:	LANGWORTHY

Planning Directors Report

Director Bassi informed the Planning Commissioners of new projects that will be coming to hearing.

Assistant City Attorney's Report

Assistant City Attorney Vega made a brief presentation to the Commission regarding voting and making motions.

Planning Commission Communications

Commissioner Langworthy commented that large size land use maps of the City would be beneficial to the Commission to have for future discussions and thanked Sharon Heil for the crafts she made for City staff.

Commissioner Swann apologized for any misinformation he may have provided to the public prior to the evenings meeting.

Chairman Smith thanked staff for their work in the preparation of the agenda.

With no other communications, Chairman Smith adjourned the special Planning Commission meeting of October 16, 2013 at 8:03 P.M.

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Matthew C. Bassi
Planning Director/Minutes Secretary

AGENDA ITEM 1.2

CITY OF WILDOMAR
OFFICIAL SPECIAL PLANNING COMMISSION MEETING MINUTES
OF NOVEMBER 20, 2013

CALL TO ORDER

The special meeting of the Wildomar Planning Commission was called to order by Planning Commission Chairman Smith at 6:30 P.M. at Wildomar City Hall, Council Chambers.

ROLL CALL

Present: Stan Smith, Chairman, Robert Devine, Commissioner, Bobby L. Swann III, Commissioner, Veronica Langworthy Commissioner.

Absent:

Staff Present
Matthew Bassi, Planning Director
Mark Teague, Planning Manager
Alfredo Garcia, Assistant Planner
Erica Vega, Assistant City Attorney

FLAG SALUTE

Chairman Smith led the flag salute.

PUBLIC COMMENT:

Ms. Miller, resident, provided public comment.

APPROVAL OF AGENDA AS SUBMITTED

Chairman Smith asked the Commission for a motion to approve the agenda as submitted. Chairman Smith motioned to approve the agenda as submitted motion was seconded by Commissioner Langworthy. Motion carried 4-0-0, with the following vote resulted:

AYES:	DEVINE, SWANN, LANGWORTHY, SMITH
NOES:	None
ABSENT:	None
ABSTAIN:	None

1.0 CONSENT CALENDAR

1.1 Approval of the November 6, 2013 Planning Commission minutes.

Commissioner Devine motioned to approve the November 6, 2013 Planning Commission minutes as submitted. Motioned was seconded by Commissioner Langworthy. Motioned carried 4-0-0 with the following vote resulted:

AYES:	DEVINE, SMITH, LANGWORTHY, SWANN
NOES:	None
ABSENT:	None
ABSTAIN:	None

2.0 PUBLIC HEARINGS

2.1 City of Wildomar 2013 – 2021 Housing Element Update:
Planning Commission consideration of the 2013-2021 Housing Element Update which includes an Environmental Impact Report (SCH# 2013051001), General Plan Amendment No. 13-02, Change of Zone Nos. 13-02 & 13-03, and Zoning Ordinance Amendment Nos. 13-03, 13-04, 13-05 & 13-06.

Director Bassi made a presentation to the Planning Commission.

Mark Teague, Planning Manager made a presentation to the Planning Commission.

Chairman Smith opened the public hearing.

Martha Bridges resident, commented on the agenda item.

Ms. Miller resident, commented on the agenda item.

Monty Goddard resident, commented on the agenda item.

The Planning Commission voted on each Resolution separately as follows:

PC Resolution No. 13-23
A MOTION was made by Commissioner Swann, and was seconded by Chairman Smith, to adopt PC Resolution No. 13-23 recommending City Council certification of the Housing Element EIR. Commission discussion on the motion followed and no vote was taken.

An AMENDED MOTION was then made by Commissioner Langworthy to adopt PC Resolution No. 13-23 recommending City Council certification of the Housing Element EIR with the addition of new language that reads "a maximum site development size of 50% be applied to the 20 MUPA sites." The AMENDED MOTION was seconded by Chairman Smith. Motion carried 3-1-0, with the following vote resulted:

AYES: SWANN, SMITH, LANGWORTHY
NOES: DEVINE
ABSENT: None
ABSTAIN: None

PC Resolution No. 13-24
A MOTION was made by Commissioner Langworthy, and was seconded by Commissioner Swam, to adopt PC Resolution No. 13-24 recommending City Council adoption of GPA 13-02 with the addition of new language that reads "a maximum site development size of 50% be applied to the 20 MUPA sites." Motion carried 3-1-0, with the following vote resulted:

AYES: SWANN, SMITH, LANGWORTHY
NOES: DEVINE
ABSENT: None
ABSTAIN: None

PC Resolution No. 13-25
A MOTION was made by Commissioner Swann, and was seconded by Commissioner Langworthy, to adopt PC Resolution No. 13-25 recommending City Council approval of Change of Zone No. 3-02 as submitted. Motion carried 3-1-0, with the following vote resulted:

AYES: SWANN, SMITH, LANGWORTHY
NOES: DEVINE
ABSENT: None
ABSTAIN: None

PC Resolution No. 13-26

A MOTION was made by Commissioner Swann, and was seconded by Commissioner Devine, to adopt PC Resolution No. 13-26 recommending City Council approval of Change of Zone No. 13-03 as submitted. Motion carried 4-0-0, with the following vote resulted:

AYES: SWANN, SMITH, LANGWORTHY, DEVINE
NOES: None
ABSENT: None
ABSTAIN: None

PC Resolution No. 13-27

A MOTION was made by Commissioner Langworthy, and was seconded by Commissioner Swann, to adopt PC Resolution No. 13-27 recommending City Council approval of Zoning Ordinance Amendment No. 13-03 as submitted. Motion carried 4-0-0, with the following vote resulted:

AYES: SWANN, SMITH, LANGWORTHY, DEVINE
NOES: None
ABSENT: None
ABSTAIN: None

PC Resolution No. 13-28

A MOTION was made by Chairman Smith, and was seconded by Commissioner Swann, to adopt PC Resolution No. 13-28 recommending City Council approval of Zoning Ordinance Amendment No. 13-04 as submitted. Motion carried 4-0-0, with the following vote resulted:

AYES: SWANN, SMITH, LANGWORTHY, DEVINE
NOES: None
ABSENT: None
ABSTAIN: None

PC Resolution No. 13-29

A MOTION was made by Chairman Smith, and was seconded by Commissioner Swann, to adopt PC Resolution No. 13-29 recommending City Council approval of Zoning Ordinance Amendment No. 13-05 as submitted. Motion carried 4-0-0, with the following vote resulted:

AYES: SWANN, SMITH, LANGWORTHY, DEVINE
NOES: None
ABSENT: None
ABSTAIN: None

PC Resolution No. 13-30
A MOTION was made by Chairman Smith, and was seconded by Commissioner Swann, to adopt PC Resolution No. 13-30 recommending City Council approval of Zoning Ordinance Amendment No. 13-06. Commission discussion on the motion followed and no vote was taken.

An AMENDED MOTION was then made by Commissioner Langworthy to adopt PC Resolution No. 13-30 recommending City Council approval of Zoning Ordinance Amendment No. 13-06 with the addition of new language that reads "a maximum site development size of 50% be applied to the 20 MUPA sites." The AMENDED MOTION was seconded by Commissioner Swann. Motion carried 3-1-0, with the following vote resulted:

AYES:	SWANN, SMITH, LANGWORTHY
NOES:	DEVINE
ABSENT:	None
ABSTAIN:	None

3.0 GENERAL BUSINESS ITEMS:

No General Business Items.

Planning Directors Report

Director Bassi informed the Planning Commissioners that the City Council approved Michael Kazmier resignation from the Commission at their November 13 meeting, and that the City Clerk would begin a 30-day recruitment for a new Commissioner.

Assistant City Attorney's Report

None

Planning Commission Communications

With no other communications, Chairman Smith adjourned the Special Planning Commission meeting of November 20, 2013 at 8:13 P.M.

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Matthew C. Bassi
Planning Director/Minutes Secretary

APPROVAL OF AGENDA AS SUBMITTED

Chairman Smith asked the Commission for a motion to approve the agenda as submitted. Vice Chairman Kazmier motioned to approve the agenda as submitted motion was seconded by Commissioner Swann. Motion carried 4-0-1, with the following vote resulted:

AYES:	SWANN, LANGWORTHY, SMITH
NOES:	None
ABSENT:	None
ABSTAIN:	DEVINE

1.0 CONSENT CALENDAR

No Consent Calendar Items.

2.0 PUBLIC HEARINGS

No Public Hearing Items.

3.0 GENERAL BUSINESS ITEMS:

3.1 Westpark Promenade Development Project (Planning Application No. 13-0082):

The Planning Department recommends the Planning Commission recommend the City Council allow the initiation of a general plan amendment for Planning Application No. 13-0082 (Westpark Promenade).

Director Bassi made a presentation to the Planning Commission.

Nicholas Brose applicant representative, commented on the project.

David Leonard applicant representative, commented on the project.

Sheryl Ade, resident with donation time from Gil Rasmussen, commented on the project.

A MOTION was made by Commissioner Devine, and was seconded by Vice-Chairman Kazmier, to recommend to the City Council not to allow the initiation of the GPA process for Planning Application No. 13-0082. Motion carried 5-0, with the following vote resulted:

AYES:	SWANN, SMITH, LANGWORTHY, DEVINE, KAZMIER
NOES:	None
ABSENT:	None
ABSTAIN:	None

3.2 Villa Sienna Apartment Project (Planning Application No. 13-0089):
The Planning Department recommends the Planning Commission recommend the City Council allow the initiation of a general plan amendment for Planning Application No. 13-0089 (Villa Sienna Apartment project).

Director Bassi made a presentation to the Planning Commission.

David Leonard applicant representative, commented on the project.

Sheryl Ade, resident commented on the project.

A MOTION was made by Commissioner Devine, and was seconded by Commissioner Swann, to recommend to the City Council not to allow the initiation of the GPA process for Planning Application No. 13-0089. Motion carried 3-1-1, with the following vote resulted:

AYES:	SMITH, DEVINE, KAZMIER
NOES:	SWANN
ABSENT:	None
ABSTAIN:	LANGWORTHY

Planning Directors Report

Director Bassi informed the Planning Commissioners of new projects that will be coming to hearing.

Assistant City Attorney's Report

Assistant City Attorney Vega made a brief presentation to the Commission regarding voting and making motions.

Planning Commission Communications

Commissioner Langworthy commented that large size land use maps of the City would be beneficial to the Commission to have for future discussions and thanked Sharon Heil for the crafts she made for City staff.

Commissioner Swann apologized for any misinformation he may have provided to the public prior to the evenings meeting.

Chairman Smith thanked staff for their work in the preparation of the agenda.

With no other communications, Chairman Smith adjourned the special Planning Commission meeting of October 16, 2013 at 8:03 P.M.

_____
Matthew C. Bassi
Planning Director/Minutes Secretary

AGENDA SECTION 2.0

PUBLIC HEARING ITEMS

CITY OF WILDOMAR – PLANNING COMMISSION
Agenda Item No. 2.1
PUBLIC HEARING
Meeting Date: December 18, 2013

TO: Chairman and Members of the Planning Commission

FROM: Alfredo Garcia, Assistant Planner

SUBJECT: **Tentative Tract Map No. 36519 (Planning Application No. 12-0392):** Planning Commission consideration of a Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program and Tentative Tract Map No. 36519 for the subdivision of 5.54 acres into 10 lots for future single family residential development located at 34915 Orange Street.

STAFF RECOMMENDATION

The Planning Department recommends the Planning Commission take the following actions:

1. Adopt a Resolution entitled:

PC RESOLUTION NO. 13-15

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF WILDOMAR, CALIFORNIA, ADOPTING A MITIGATED NEGATIVE DECLARATION AND MITIGATION MONITORING & REPORTING PROGRAM FOR TENTATIVE TRACT MAP NO. 36519 (PLANNING APPLICATION NO. 12-0392) FOR THE SUBDIVISION OF APPROXIMATELY 5.4 ACRES INTO 10 (1/2 ACRE) LOTS FOR FUTURE SINGLE FAMILY RESIDENTIAL DEVELOPMENT IN THE R-R (RURAL RESIDENTIAL) ZONE LOCATED AT 34915 ORANGE STREET (APN: 367-170-029)

2. Adopt a Resolution entitled:

PC RESOLUTION NO. 13-16

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF WILDOMAR, CALIFORNIA, APPROVING TENTATIVE TRACT MAP NO. 36519 (PLANNING APPLICATION NO. 12-0392) FOR THE SUBDIVISION OF APPROXIMATELY 5.4 ACRES INTO 10 (1/2 ACRE) LOTS FOR FUTURE SINGLE FAMILY RESIDENTIAL DEVELOPMENT IN THE R-R (RURAL RESIDENTIAL) ZONE LOCATED AT 34915 ORANGE STREET, SUBJECT TO CONDITIONS (APN: 367-170-029).

PROJECT DESCRIPTION

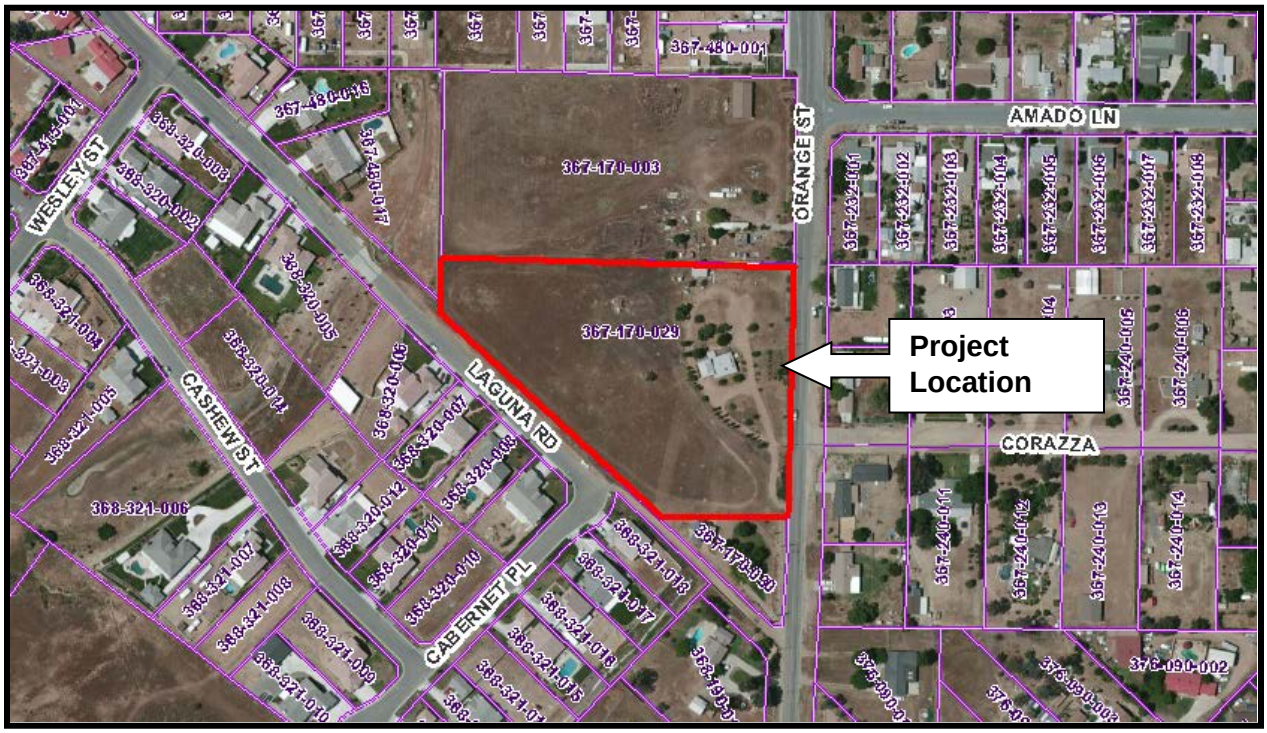
Background

This project was originally placed on the July 3, 2103 Planning Commission agenda for review. Staff's proposal was for the Commission to adopt a Categorical Exemption for the project per Section 15322 of the CEQA Guidelines. After further consideration of this approach, and clarification regarding the size of the project area, staff determined that a Mitigated Negative Declaration (MND) would be better suited. Therefore, at staff's recommendation, the project was pulled from the agenda and not presented at the July 3, 2013 meeting.

Project Location/Vicinity:

The project site encompasses 5.54 gross acres and is located between Orange Street and Laguna Road. Figure 1 below shows the project site and surrounding area.

Figure 1: Vicinity/Location Map



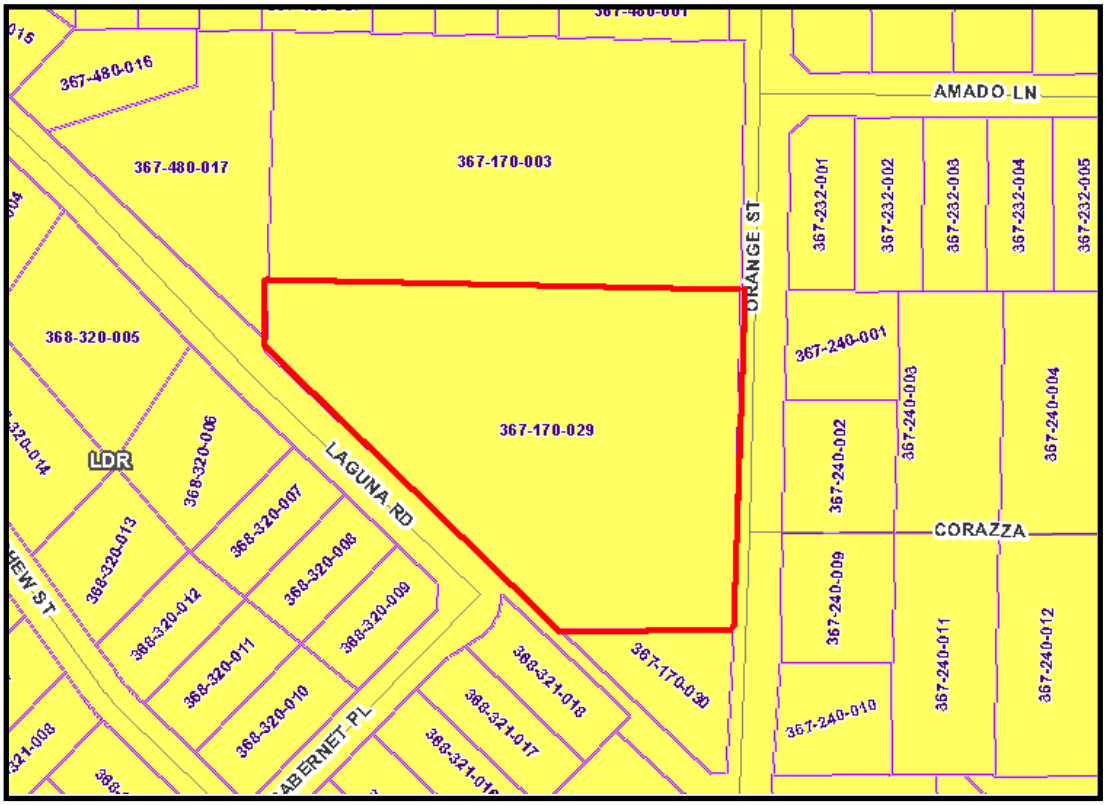
Surrounding Land Uses:

The project site is surrounded by existing residential uses to the north, south, east and west. The table on the next page summarizes the existing land uses on the site and adjacent area, including the existing land use and zoning designations. Figures 2 and 3 on page 3 and 4 illustrate the general plan and zoning information.

Table 1- Adjacent Land Use, General Plan Land Use Designation, and Zoning

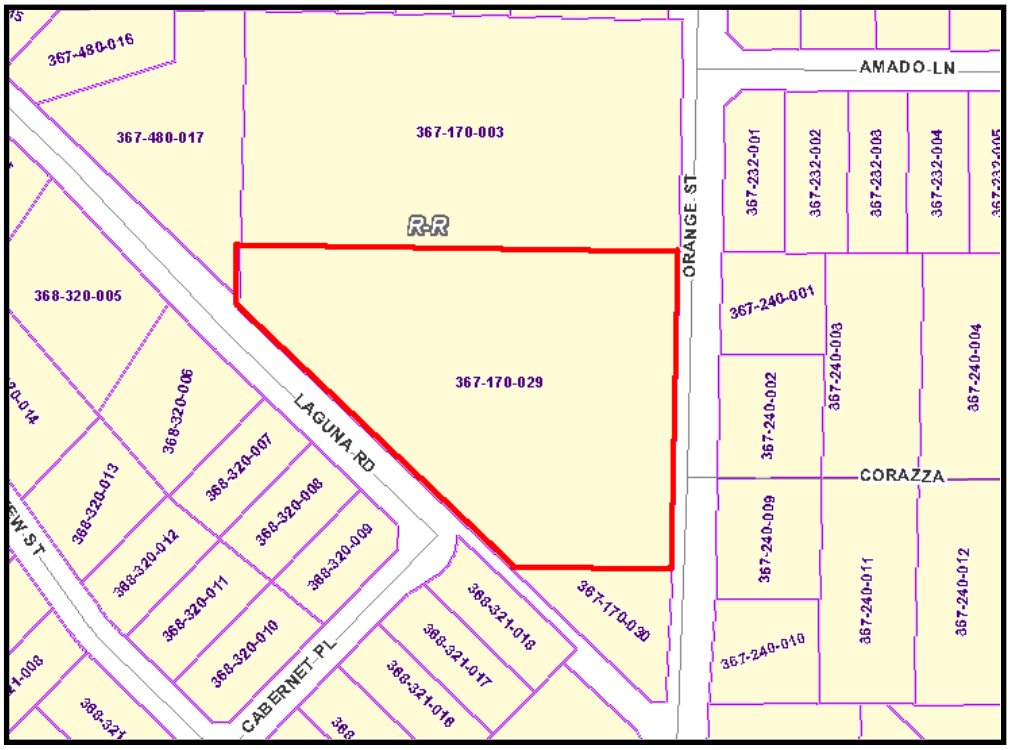
ADJACENT LAND USE, GENERAL PLAN AND ZONING			
Location	**Current Land Use**	**General Plan Land Use Designation**	**Zoning District**
Subject Property	Residential	Low Density Residential (LDR)	R-R (Rural Residential)
North	Residential	Low Density Residential (LDR)	R-R (Rural Residential)
South	Residential	Low Density Residential (LDR)	R-R (Rural Residential)
East	Residential	Low Density Residential (LDR)	R-R (Rural Residential)
West	Residential	Low Density Residential (LDR)	R-R (Rural Residential)

Figure 2: General Plan Land Use Designation (Low Density Residential, LDR)



Low Density Residential (LDR)

Figure 3: Zoning Designation
(Rural Residential, R-R)



Rural Residential (RR)

Tentative Tract Map No. 36519:
The applicant is proposing the subdivision of approximately 5.54 acres into 10 parcels (minimum ½ acre in size, or 21,780 square feet) for the future construction of single family residential dwelling units. Parcel 3 contains an existing single family home that will remain.

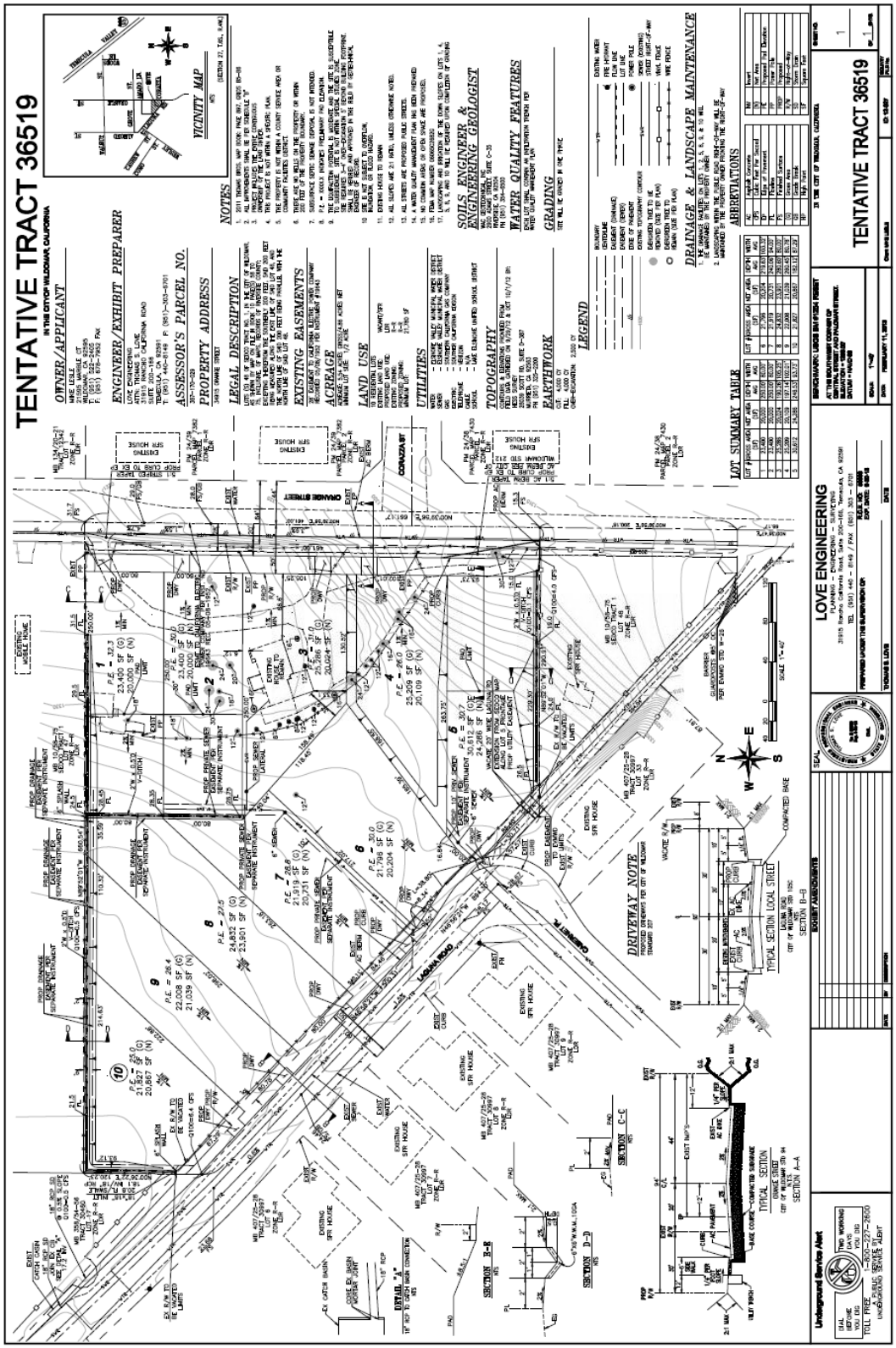
The proposed parcels range in size from 21,796 to 30,612 square feet (0.503 to 0.702 acres) with an average lot size of 24,029 (0.55 acres). Access to the proposed parcels will be provided from Laguna Road and Orange Street. The applicant intends to sell individual parcels rather than build homes on them. Table 2 below summarizes the proposed parcel sizes (in gross acres).

Table 2- Lot Summary Table

Parcel Number	Proposed Gross Lot Area Size
1	23,400 s.f.
2	23,400 s.f.
3	25,286 s.f.
4	25,209 s.f.
5	30,612 s.f.
6	21,796 s.f.
7	21,919 s.f.
8	24,832 s.f.
9	22,008 s.f.
10	21,827 s.f.

The design of the proposed subdivision is shown in Figure 4 (Page 6). A full size copy of Tract Map No. 36519 is also provided for Commission consideration (Refer to Attachment C - under separate cover).

Figure 4: Tentative Tract Map No. 36519 Exhibit



Street Dedication/Circulation/Utilities

The applicant has been conditioned to improve Orange Street and Laguna Road along all of the proposed parcels consistent with the street sections shown on Figure 4 and the City of Wildomar subdivision design standards. The street improvements include curb, gutter and sidewalk along Orange Street, and curbing and pavement, but no sidewalk along Laguna Road which matches the existing pavement on the west side of the roadway. The street section was also modified to help keep the 'rural feel' of the neighborhood.

A portion of the existing right of way of Laguna Road will be vacated as part of the map. The vacated portion begins at the northwest corner of Parcel 10 and Laguna Road and extends to the south west corner of Parcel 5, which is along an unimproved (dirt) connecting path that extends from the Laguna Road cul-de-sac to Orange Street. The dirt path appears to be a future extension of Laguna Road, however is in fact a water line easement owned by the Elsinore Valley Municipal Water District (EVMWD). The dirt path is used by drivers as a short cut to Orange Street which creates dust and erosion. The project is proposing to install "Barrier Guard Posts" at the southern extension of the dirt path at its intersection with Orange Street to prevent vehicular traffic. The guard posts will allow pedestrian travel along the easement. Street improvements that include curb and gutter as well as the proposed driveway for Parcel 5 will be designed to discourage vehicle traffic at the north end of the dirt path.

Driveways to each of the parcels are shown on Figure 4. Parcel 5 is the only parcel that extends from Orange Street to Laguna Road. Because of the potential for a through driveway on Parcel 5, Planning Condition 10 requires that driveway access to Orange Street from Parcel 5 be prohibited. Orange Street crests in the vicinity of Parcel 2 which could provide sight-distance issues for vehicles backing onto Orange Street. This hill also affects sight distance for parcels 1 and 3. Further, as a secondary roadway, Orange Street will ultimately have a higher number of cars and likely higher road speeds than a local street. As all of the proposed Parcels are ½ acre or larger in size, it is possible for the parcels on Orange Street to have vehicle ingress/egress in a forward direction. This means that there must be sufficient driveway area to allow a vehicle to turn around and exit the property in a forward manner. Condition 9 requires that Parcels 1 through 4 provide sufficient driveway and building setback to ensure that all vehicles can egress the property facing forward.

Grading & Drainage

While there will be minimal grading as much of the site is flat, the site will be graded to ensure positive drainage from each of the proposed parcels to the street or on-site storm drainage system. The storm water from this site ultimately flows into Lake Elsinore.

A new private drainage easement and ditch will be located along the western property line of Parcels 1 and 2. This same ditch is also located on the eastern property line of parcels 7 and 8. This ditch will convey stormwater from the western third of Parcel 1 and

2 as well as the eastern half of Parcels 8 and 9 to an east-west ditch along the northern property line of Parcels 1, 8 and 9. This east-west ditch is also located along the western boundary of Parcel 10 connecting to an existing culvert that will convey the stormwater to the existing storm drainage base located to the northwest of the project site. Figure 4 (Page 6) shows the location of the existing storm drainage basin in relation to the proposed project.

The portions of the proposed project that do not drain to the new ditch and easement drain toward Orange Street or Laguna Road and surface flow toward the inlet near Parcel 10. Another drainage ditch is located along the southern property line of Parcel 5 and flows toward Orange Street ultimately flowing southwest approximately 3,600 feet to an existing master drainage plan concrete trapezoidal channel owned by the Riverside County Flood Control District. The District refers to the channel as Wildomar Channel Stage 2.

The existing storm drainage basin is privately owned and maintained by the Wildomar Ranches home owner's association. While the basin has the capacity to accommodate the proposed project's storm drainage as designed, and the natural drainage of the site is toward this basin, it is unclear whether the project applicant has the legal ability to utilize the existing basin. Therefore, Planning Condition 8 requires that proof of a legal right of access to the existing storm drainage basin be provided to the City prior to recordation of the tract map. This effectively eliminates the ability for the project to proceed unless and until the ability to use the basin is verified by the City.

As indicated on Figure 4 (Page 6), the grading of the property will affect 4,000 cubic yards of material, but does not require the import or export of soil.

Public Utilities

The existing home on the project (see Parcel 3) is served by an on-site well and septic tank. Condition 11 requires that these facilities be abandoned and either capped or removed as required by the Riverside County Health Department. Water and sewer lines exist in Laguna Road and new development will be required to extend a lateral from the home to the lines in the roadway. Only water exists in Orange Street so a separate sewer easement is provided along the western property line of Parcel 2, and between Parcels 6 and 7, leading to Laguna Road. A small portion of the easement also provides for a sewer lateral for the existing home on Parcel 3. Similarly, a 10 foot sewer easement is provided across Parcel 5, allowing access to the Laguna Road sewer line by Parcels 4 and 5. All of the sewer lines flow via gravity and no lift station is needed to serve the proposed project. Water service for parcels 1 – 4 will be from Orange Street.

All other utilities (e.g. power, cable, phone) will be installed underground in accordance with city standards and located within the road right-of-way or public utility easements.

Project CEQA/MND

In accordance with the California Environmental Quality Act (CEQA - Public Resources Code Section 21000–21178.1), an Initial Study was prepared to analyze the proposed tract map project to determine any potential significant impacts upon the environment that would result from implementation of the project. A copy of the draft Initial Study/Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program is provided for Commission consideration (refer to Attachment A , Exhibit 1 & 2).

In accordance with CEQA, the draft IS/MND was released for a 30-day public review period which began on September 26, 2013 and concluded on October 28, 2013. Prior to the public review period, the document was sent to the State Clearinghouse and the City's local distribution list in accordance with CEQA. In addition, a Notice of Intent (NOI) was filed with the Riverside County Clerk on September 25, 2013, and a legal advertisement was published on September 26, 2013 in the "Press Enterprise" newspaper notifying the general public of the 30 day review period. A hard copy of the draft IS/MND document was placed at the Mission Trial Library, Planning Department public counter and on the City's website for public review.

Public Comments

During the review period, staff received four (4) comment letters. The comments received on the project resulted in additional conditions of approval. Specifically, Planning Condition 7 requiring a Phase 1 study be prepared, was added at the request of the Riverside County Department of Environmental Health. Planning Condition 8, regarding verification of the ability to use the existing storm drainage basin was added to address the comment letter from the Wildomar Ranches Homeowner's Association. A copy of the comment letters received during the review period, and staff's responses to each comment is provided in Attachment A, Exhibit 3 (Response to Comments).

PROJECT ANALYSIS:

Tentative Tract Map No. 36519:

The proposed project site has a General Plan land use designation of Low Density Residential (LDR). The LDR land use designation requires a minimum gross lot size of one-half (½) acre (i.e., 21,780 square feet). As shown in Table 3, all 10 parcels exceed the one-half (½) acre (i.e., 21,780 square feet) minimum lot size requirement. This results in a density of 2 units/acre.

Staff has evaluated the proposed tract map to ensure compliance with the provisions of Title 16 (Subdivisions) and Title 17 (Zoning) of the Wildomar Municipal Code. Table 3 on the next page summarizes the proposed parcel sizes and provides the lot standards set forth in Section 17.16.020 of the Wildomar Municipal Code for the Rural Residential (R-R) zone. As shown in Table 3, the proposed project meets and exceeds the minimum lot size required by the R-R zone.

Table 3: Lot Summary Table

Parcel Number	Minimum Required Lot Area (Gross)	Proposed Lot Area (Per TM 36519)[1]	Required Lot Width/Depth	Proposed Lot Width/Depth (Per TM 36519	Meets/Exceeds Standards
1	21,780 s.f.	23,400 s.f.	80' / 100'	80' / 250'	YES
2	21,780 s.f.	23,400 s.f.	80' / 100'	80' / 250'	YES
3	21,780 s.f.	25,286 s.f.	80' / 100'	105 / 190	YES
4	21,780 s.f.	25,209 s.f.	80' / 100'	102 / 197	YES
5	21,780 s.f.	30,612 s.f.	80' / 100'	93 / 246	YES
6	21,780 s.f.	21,796 s.f.	80' / 100'	103 / 219	YES
7	21,780 s.f.	21,919 s.f.	80' / 100'	94 / 240	YES
8	21,780 s.f.	24,832 s.f.	80' / 100'	80 / 280	YES
9	21,780 s.f.	22,008 s.f.	80' / 100'	80 / 260	YES
10	21,780 s.f.	21,827 s.f.	80' / 100'	87 / 182	YES

[1] As stated on page LU-38 of the General Plan, all density requirements are based on gross acres.

REQUIRED PROJECT FINDINGS

CEQA Findings:

Staff recommends that the Planning Commission, in light of the whole record before it including but not limited to the staff report, proposed Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program, documents incorporated herein by reference, written comments received and responses provided, and other substantial evidence (within the meaning of Public Resources Code § 21080(e) and § 21082.2) within the record and/or provided at the public hearing, find and determines as follows:

A. Review Period: That the City provided a public review period beginning on September 26, 2013 and concluding on October 28, 201 for the Mitigated Negative Declaration. This period meets the 30-day public review period required by CEQA Guidelines Sections 15073 and 15105.

B. Compliance with Law: That the Mitigated Negative Declaration and Mitigation Monitoring & Reporting Program were prepared, processed, and noticed on the City website, a paper copy at Wildomar City Hall and the Wildomar city library in accordance with the California Environmental Quality Act (Public Resources Code Section 21000 et seq.), and the CEQA Guidelines (14 California Code of Regulations Section 15000 et seq.).

C. Independent Judgment: The Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program were prepared by the City of Wildomar and therefore reflect the independent judgment and analysis of the City.

D. Mitigation Monitoring & Reporting Program: That the Mitigation Monitoring & Reporting Program is designed to ensure compliance during project implementation in that changes to the project and/or mitigation measures have been incorporated into the project and are fully enforceable through permit conditions, agreements or other measures as required by Public Resources Code Section 21081.6.

E. No Significant Effect: That revisions made to the project as agreed to by the applicant and mitigation measures imposed as conditions of approval on the project, avoid or mitigate any potential significant effects on the environment identified in the MND to a point below the threshold of significance. Furthermore, after taking into consideration the revisions to the project and the mitigation measures imposed, the Planning Commission finds that there is no substantial evidence, in light of the whole record, from which it could be fairly argued that the project may have a significant effect on the environment. Therefore, the Planning Commission concludes that the project will not have a significant effect on the environment with the proposed Mitigation Measures and Mitigation Monitoring & Reporting Program.

Tentative Tract Map No. 36519 Findings:

In accordance with Wildomar Municipal Code Title 16 and Title 17, and Government Code § 66473.1, § 66473.5 and § 66474, the Planning department, in light of the whole record before it, including but not limited to the Planning Department's staff report and all documents incorporated by reference therein, the City's General Plan, Subdivision Ordinance, Zoning Ordinance, standards for public streets and facilities, and any other evidence within the record or provided at the public hearing of this matter, recommends that the Planning Commission hereby find and determine as follows:

A. The proposed tract map is consistent with the City's General Plan and any applicable specific plan as specified in Government Code Section 65451.

Evidence: The current General Plan Land Use Designation for the site is Low Density Residential (LDR). The LDR land use designation is intended for single family residential subdivisions with a density of 2 units / acre with a 21,780 square-foot minimum gross lot size. In reviewing the applicant's request to subdivide 5.54 acres into 10 single family residential lots, the overall density proposed is consistent with the General Plan and minimum lot sizes. In terms of specific land use policies related to this project, the proposed tract map promotes (and is consistent with) the following residential related land use policies:

LU 3.1 (Community Design) – "Accommodate land use development in accordance with the patterns and distribution of uses and density depicted on the General Plan Land Use map."

LU 6.1 (Land Use Compatibility) – "Require land uses to develop in accordance with the General Plan and area plans to ensure compatibility and minimize impacts."

LU12.6 (Circulation) - "Require that adequate and accessible circulation facilities exist to meet the demands of a proposed land use."

LU22.1 (Community Development) - "Accommodate the development of single and multi family residential units in areas appropriately designated by the General Plan and area plan land use maps. "

LU22.3 (Community Development) - "Require that adequate and available circulation facilities, water resources and sewer facilities exist to meet the demands of the proposed residential land use."

B. The design or improvement of the proposed subdivision is consistent with the City's General Plan and any applicable specific plan.

Evidence: The proposed subdivision has been designed to meet all City standards applicable to residential subdivisions which are designed to provide satisfactory pedestrian and vehicular circulation, including emergency vehicle access and on-site and off-site public improvements. Further, all streets, utilities, and drainage facilities have been designed and are required to be constructed in conformance with City standards.

C. The site is physically suitable for the type and proposed density of development.

Evidence: The project site encompasses 5.54 acres that are relatively flat. The tentative tract map proposes to subdivide the project area into 10 lots for single family residential development. The density allowed by the LDR allows for lots sizes of 21,780 square feet per dwelling. Therefore, the proposed project site is physically suitable for the type and proposed density of development.

D. The design of the subdivision or proposed improvements are not likely to cause substantial environmental damage or substantially and avoidably injure fish or wildlife or their habitat.

Evidence: The City prepared an Initial Study for the proposed tract map project that resulted in the preparation, processing and review of a Mitigated Negative Declaration (MND). The MND analyzed the environmental issues required by CEQA, including potential impacts to fish and wildlife and their respective habitats. Based on this review, it was determined that the project improvements will not

cause substantial environmental damage or substantially and avoidably injure fish or wildlife or their habitat. Therefore, the proposed tract map meets this finding.

E. The design of the subdivision or type of improvements is not likely to cause serious public health problems.

Evidence: The design of the subdivision is in conformance with the City's General Plan, Zoning Code and Subdivision Ordinance. The design and construction of all improvements to accommodate the project have been conditioned in accordance with all applicable City of Wildomar ordinances, codes, and standards including, but not limited to, the California Uniform Building Code, the City's Ordinances relating to stormwater runoff management and adopted public works standards. As the City's ordinances, codes, and standards have been created based on currently accepted standards and practices for the preservation of the public health, safety and welfare, the proposed tract map project meets this finding.

F. The design of the subdivision or the type of improvements will not conflict with easements, acquired by the public at large, for access through or use of, property within the proposed subdivision.

Evidence: No easements of record or easements established by judgment of a court of competent jurisdiction for public access across the site have been disclosed in a search of the title records for the site and the City does not otherwise have any constructive or actual knowledge of any such easements.

PUBLIC COMMUNICATION / NOTICING

In accordance with Wildomar Municipal Code Section 16.12.140(A), the Planning Department, on December 4, 2013 mailed a public hearing notice to the property owner and all property owners within a 600-foot radius of the project boundaries notifying them of the December 18, 2013 Planning Commission public hearing for the proposed tentative tract map project. A hearing notice was also provided to the EVMWD and LEUSD in accordance with Wildomar Municipal Code Section 16.12.140(A). In addition, on December 6, 2013, a legal notice was published in The Press Enterprise, a local newspaper of general circulation, notifying the general public of the December 18, 2013 Planning Commission hearing for the proposed tentative tract map project.

Respectfully Submitted,
Matthew C. Bassi
Planning Director

Prepared By,
Alfredo Garcia
Assistant Planner

Reviewed By,
Erica L. Vega
Assistant City Attorney

ATTACHMENTS

A. PC Resolution No. 13-15 for IS / MND
   Exhibit 1 – Initial Study / Mitigated Negative Declaration
   Exhibit 1-A – Appendices/Technical Studies
   Exhibit 2 – Mitigation Monitoring and Reporting Program.
   Exhibit 3 – Comment letters on IS/MND and responses to comments.
B. PC Resolution No. 13-16 for Tentative Tract Map No. 36519
   Exhibit 1 - Conditions of Approval Matrix
C. Tentative Tract Map No. 36519 Exhibits (reductions)

ATTACHMENT A

PC Resolution No. 13-15
Initial Study / Mitigated Negative Declaration for
Tentative Tract Map No. 36519

PC RESOLUTION NO. 13-15

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF WILDOMAR, CALIFORNIA, ADOPTING A MITIGATED NEGATIVE DECLARATION AND MITIGATION MONITORING & REPORTING PROGRAM FOR TENTATIVE TRACT MAP NO. 36519 (PLANNING APPLICATION NO. 12-0392) FOR THE SUBDIVISION OF APPROXIMATELY 5.4 ACRES INTO 10 (1/2 ACRE) LOTS FOR FUTURE SINGLE FAMILY RESIDENTIAL DEVELOPMENT IN THE R-R (RURAL RESIDENTIAL) ZONE LOCATED AT 34915 ORANGE STREET (APN: 367-170-029)

WHEREAS, the Planning Department has received an application for Tentative Tract Map No. 36519 for the subdivision of 5.54 acres into 10 lots for future single family residential development located at 34915 Orange Street by:

Applicant/Owner:	Mr. Mike Lesle
Project Location:	34915 Orange Street
APN(s):	367-170-029
Project Area:	5.54. acres

WHEREAS, the proposed Tentative Parcel Map No. 34915 (Planning Application No. 12-0392) is considered a "project" as defined by the California Environmental Quality Act, Public Resources Code § 21000 et seq. ("CEQA"); and

WHEREAS, after completion of an Initial Study, the Planning Director determined that there were potentially significant effects on the environment. Therefore, staff prepared, and has recommended that the Planning Commission adopt, a Mitigated Negative Declaration for this project; and

WHEREAS, the proposed Mitigated Negative Declaration consists of the following documents: Initial Study/Mitigated Negative Declaration, Technical Appendices, Mitigation Monitoring and Reporting Program, , and comments received on the draft IS/MND and responses to those comments. References to the "Mitigated Negative Declaration" contained herein refer to all of the documents listed above; and

WHEREAS, on September 26, 2013, using a method required under CEQA Guidelines Section 15072(b), the City provided a Notice of Intent to adopt the proposed Initial Study/Mitigated Negative Declaration to the State Clearinghouse, general public, local distribution list, responsible/trustee agencies, and the Riverside County Clerk; and

WHEREAS, on September 26, 2013, the draft Initial Study/Mitigated Negative Declaration was posted in three public places for review at: 1) Wildomar City Hall, 2) Wildomar Mission Trail Library, 3) the City of Wildomar website; and

WHEREAS, the City made the proposed Initial Study/Mitigated Negative Declaration document available for public review commencing on September 26, 2013 and concluding on October 28, 2013, a period of not less than 30 days. During the public review period, the City received four (4) written comments concerning the proposed Initial Study/Mitigated Negative Declaration and staff responded to each comment as shown in Exhibit 2 hereto; and

WHEREAS, the City of Wildomar Planning Commission conducted a public hearing on December 18, 2013, at which time interested persons had an opportunity to testify in support of, or opposition to the proposed the Mitigated Negative Declaration and at which time the Planning Commission received public testimony concerning the Mitigated Negative Declaration.

NOW THEREFORE, the Planning Commission of the City of Wildomar does hereby resolve, determine, order as follows:

SECTION 1: CEQA FINDINGS.

The Planning Commission, in light of the whole record before it including but not limited to the staff report, Initial Study/Mitigated Negative Declaration, Mitigation Monitoring and Reporting Program, documents incorporated herein by reference, written comments received on the IS/MND and responses to those comments, and other substantial evidence (within the meaning of Public Resources Code § 21080(e) and § 21082.2) within the record and/or provided at the public hearing, find and determines as follows:

A. Review Period: That the City has provided the required 30-day public review period for the Initial Study/Mitigated Negative Declaration which began on September 26, 2013 and concluded on October 28, 2013 as required by CEQA Guidelines Sections 15073 and 15105.

B. Compliance with Law: That the Mitigated Negative Declaration was prepared, processed, and noticed on the City website, a paper copy at Wildomar City Hall and the Wildomar city library in accordance in accordance with the California Environmental Quality Act (Public Resources Code Section 21000 et seq.), the CEQA Guidelines (14 California Code of Regulations Section 15000 et seq.).

C. Independent Judgment: That the Mitigated Negative Declaration reflect the independent judgment and analysis of the City.

D. Mitigation Monitoring & Reporting Program: That the Mitigation Monitoring & Reporting Program is designed to ensure compliance during project implementation in that changes to the project and/or mitigation measures have been incorporated into the project and are fully enforceable through permit conditions, agreements or other measures as required by Public Resources Code Section 21081.6.

E. No Significant Effect: That revisions made to the project as agreed to by the applicant and mitigation measures imposed as conditions of approval on the project, avoid or mitigate any potential significant effects on the environment identified in the Mitigated Negative Declaration to a point below the threshold of significance. Furthermore, after taking into consideration the revisions to the project and the mitigation measures imposed, the Planning Commission finds that there is no substantial evidence, in light of the whole record, from which it could be fairly argued that the project may have a significant effect on the environment. Therefore, the Planning Commission concludes that the project will not have a significant effect on the environment with the proposed mitigation measures and Mitigation Monitoring & Reporting Program.

SECTION 2: MULTIPLE SPECIES HABITAT CONSERVATION PLAN (MSHCP).

The project is found to be consistent with the MSHCP. The project is located outside of any MSHCP criteria area and mitigation is provided through payment of the MSHCP Mitigation Fee.

SECTION 3: PLANNING COMMISSION ACTIONS.

The Planning Commission hereby takes the following actions:

1. Adopt a Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program: The Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program for Tract Map No. 36519 (Planning Application No. 12-0392) is hereby approved and adopted as provided in Exhibits 1 through 3 to this Resolution.

2. Notice of Determination: In compliance with Public Resources Code § 21152 and CEQA Guidelines § 15075, the Planning Director shall prepare a Notice of Determination concerning the approval and adoption of the Mitigated Negative Declaration, and within five (5) working days of project approval, file the Notice with the Riverside County Clerk for posting.

3. Location: The Mitigated Negative Declaration for Tract Map No. 36519, and all documents incorporated therein or forming the record of decision therefore, shall be filed with the Wildomar Planning Department at the Wildomar City Hall, 23873 Clinton Keith Road, Suite 201, Wildomar, California 92595, and shall be made available for public review upon request.

PASSED, APPROVED AND ADOPTED this 18th day of December 2013, by the following vote:

AYES.

NOES:

ABSENT:

ABSTAINED:

_____
Stan Smith
Planning Commission Chairman

ATTEST:

_____
Matthew C. Bassi
Planning Director/Minutes Secretary

APPROVED AS TO FORM:

_____
Eric Vega
Assistant City Attorney

EXHIBIT 1

Initial Study/Mitigated Negative Declaration

INITIAL STUDY FOR THE

LESLE TRACT MAP MND

TENTATIVE TRACT MAP No. 36519

(Planning Application No. 12-0392)

Lead Agency:

CITY OF WILDOMAR

23873 Clinton Keith Road, Suite 201

Wildomar, CA 92595

Prepared by:

PMC, Inc.

6020 Cornerstone Court West, Suite 260

San Diego, CA 92121

September 2013

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Note to Reader: To save natural resources, the appendices are contained on a CD-ROM included with the printed copy of this Initial Study. The appendices are also available in the Environmental Documents Center of the City's Planning Department website (http://www.cityofwildomar.org/planning.asp). Printed copies of the appendices are also available as part of the project file and can be reviewed at the following location:

City of Wildomar City Hall
23873 Clinton Keith Rd., Suite 201
Wildomar, CA 92595
Hours: Monday – Thursday, 8 a.m. – 5 p.m. (closed Fridays)

APPENDICES

1 Tentative Tract Map No. 36519

2 Site Photos

3 Air Quality Modeling

3a Greenhouse Gas Emissions Modeling

4 Habitat Assessment

5 Phase 1 Cultural Resources Survey

5a Paleontological Resource Assessment

6 Preliminary Soils Report

7 Preliminary Hydrology/Drainage Study

8 Preliminary Water Quality Management Plan

I. INTRODUCTION AND PROJECT DESCRIPTION

Purpose and Project Overview

This document is an Initial Study evaluating the environmental impacts resulting from the development of a proposed Tentative Tract Map (TTM No. 36519) that would subdivide 5.54 acres into ten parcels zoned for Rural Residential development (consistent with the General Plan) between Orange Street and Laguna Road in Wildomar, California. The proposed project will be consistent with the existing zoning and land use designation of the project site.

Project Location

The proposed project site is located between Orange Street and Laguna Road in Wildomar, California. The regional and local vicinity of the project site are shown in **Figures 1** and **2**. The Assessor's Parcel Number (APN) for the project site is 367-170-029.

Project Description

Tentative Tract Map

The applicant is applying for a Tentative Tract Map (TTM No. 36519) to subdivide an existing 5.54 acre parcel into ten (10) parcels, each meeting or exceeding the ½ acre (21,780 square feet) minimum lot size required in the R-R (Rural Residential) zone. One of the proposed parcels will maintain an existing single family dwelling unit on the site, while the remaining nine (9) parcels are intended for future single family residential dwelling units. The proposed parcels would be numbered Parcels 1 through 10 and are divided as shown in **Table 1-1** below and **Figure 3**.

Table 1-1
Proposed Lot Acreage

Parcel Number	Gross Lot Sizes (Consistent with the R-R zone)	
	Square Footage	Gross Acreage
1	23,400	.54
2	23,400	.54
3	25,286	.58
4	25,209	.58
5	30,612	.70
6	21,796	.50
7	21,919	.50
8	24,832	.57
9	22,008	.50
10	21,827	.50
Totals	**240,289**	**5.54**

Source: TTM No. 36519

Roadway Access

Direct access to each of the lots created by the proposed project will be via existing roadways. Lots 1 through 4 will be directly accessed via Orange Street and lots 5 through 10 will be directly accessed via Laguna Road. Lots 1 through 4 will be included in a Line of Sight survey to determine if they will include driveways that allow for vehicle turn around within each proposed lot. An improvement to Laguna Road and the turn into Cabernet Place will include the vacation of a portion of the existing Laguna Road right-of-way along parcels 5 through 10. In addition, the proposed project will also include the placement of bollards to block vehicle traffic from traveling from Laguna Road onto Orange Street along an existing unpaved path.

Water

The proposed project will receive potable water service from the Elsinore Valley Municipal Water District (EVMWD). Connections to the EVMWD water supply will occur at existing water lines in Orange Street and Laguna Road.

Wastewater

The proposed project will receive wastewater service from the Elsinore Valley Municipal Water District. Connection to the EVMWD wastewater system will occur at an existing 6-inch sewer line in Laguna Road. Wastewater service to lots 1, 2, 3, 6, and 7 will be provided by a proposed, private six-inch sewer line within a 10-foot easement that will travel from Laguna Road along the southeastern boundary of lot 7 to the western boundary of lot 2. Wastewater service to lots 4 and 5 will be provided by a proposed, private six-inch sewer line within a ten-foot easement that will run from Laguna Road along northwestern boundary of lot 5 to the southwestern boundary of lot 4. Finally, wastewater service to lots 8, 9, and 10 will be provided through connection to the existing six-inch sewer line within Laguna Road.

Stormwater

Stormwater currently flows from the project site through two tributary drainage areas. Drainage area A, approximately composed of the northwestern two-thirds (3.5 acres) of the project site, drains north along Laguna Road to an existing catch basin located on Cashew Street approximately 400 feet southwest of the project site. Drainage area B, approximately composed of the remaining southeastern portion (1.7 acres) of the site, drains to the south along Orange Street. The proposed project will include a two-foot wide, six-inch deep proposed drainage feature along the northern boundary of the site that will be capable of directing flows from drainage area A. Flows from drainage area B will be received by a proposed two-foot wide, six-inch deep drainage feature running along the southern boundary of the project site.

Other Utilities and Services

Electric, gas, cable, and telecommunications services would be extended onto the site from existing lines along Orange Street (**Figure 3**). Electricity would be provided by Southern California Edison, natural gas service gas service by the Southern California Gas Company, telecommunications by Verizon, and solid waste removal by Waste Management. The site is located within the boundaries of the Lake Elsinore Unified School District. Local government services are provided by the City of Wildomar. Fire and law enforcement services are provided by the City of Wildomar through contracts with the Riverside County Fire Department and the Riverside County Sheriff's Department.

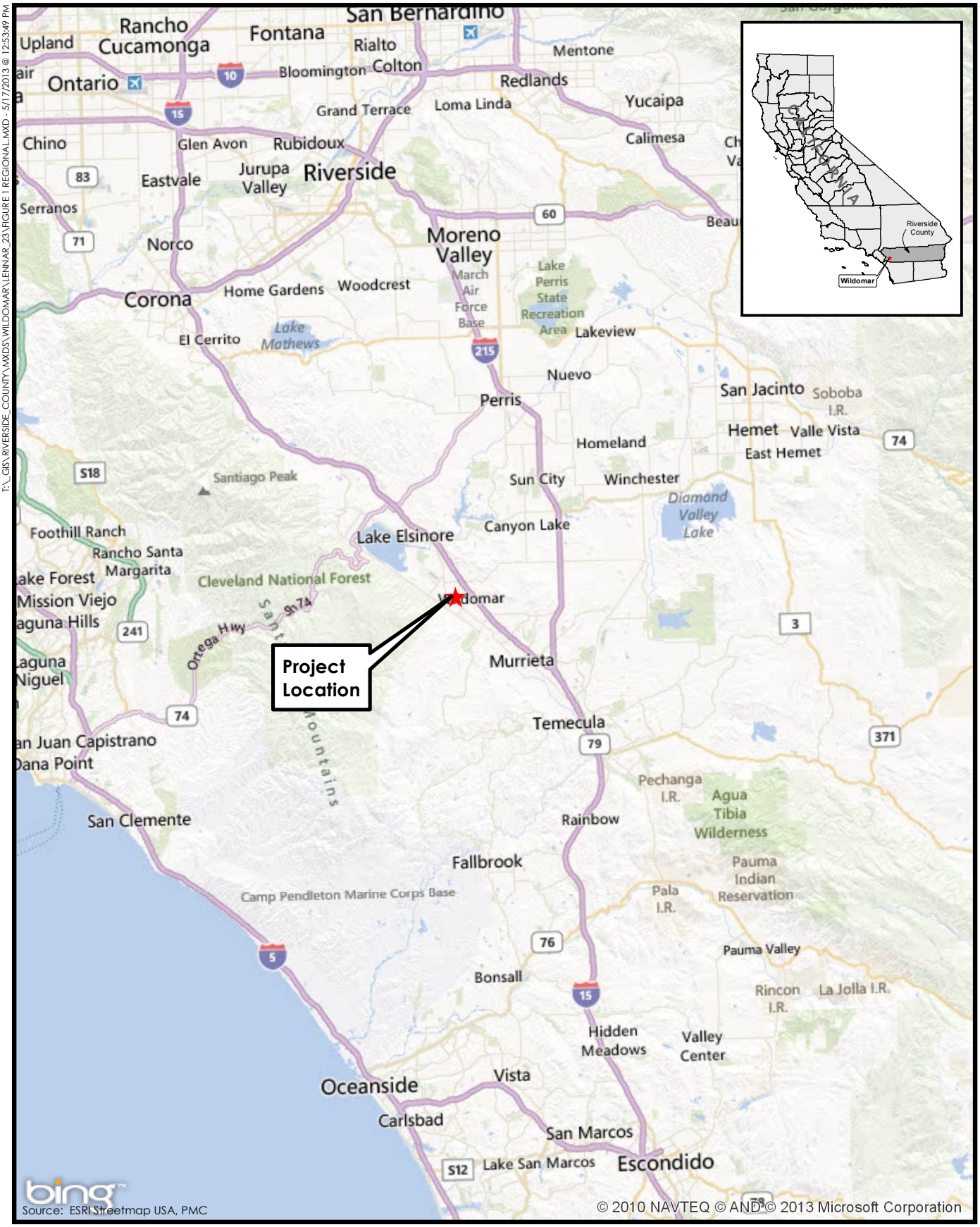

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Figure 1
Regional Vicinity Map

T:_GIS\RIVERSIDE_COUNTY\MXDS\WILDOMAR\LENNAR_23\FIGURE 1 REGIONAL.MXD - 5/17/2013 @ 12:53:49 PM

T:_GIS\RIVERSIDE_COUNTY\MXDS\WILDOMAR\LENNAR_23\FIGURE 2 PROJECT LOCATION.MXD - 12/28/2012 @ 3:54:08 PM

Source: Bing Maps, 2012; City of Wildomar, 2012

300 0 300
FEET
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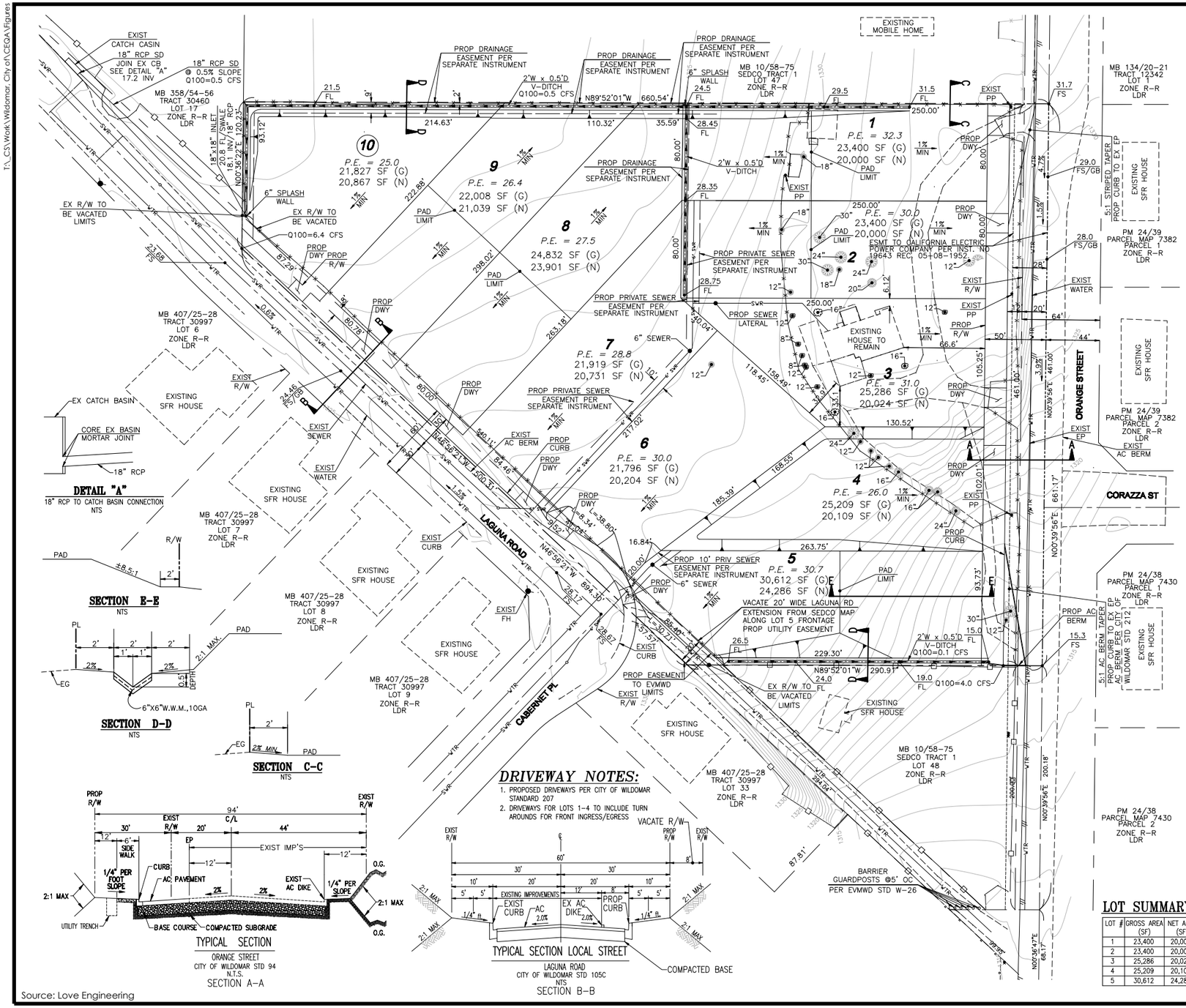
Figure 2
Project Location



DETAIL "A"

18" RCP TO CATCH BASIN CONNECTION
NTS

SECTION E-E

NTS

SECTION D-D

NTS

SECTION C-C

NTS

TYPICAL SECTION

ORANGE STREET
CITY OF WILDOMAR STD 94
N.T.S.
SECTION A-A

TYPICAL SECTION LOCAL STREET

LAGUNA ROAD
CITY OF WILDOMAR STD 105C
NTS
SECTION B-B

DRIVEWAY NOTES:

1. PROPOSED DRIVEWAYS PER CITY OF WILDOMAR STANDARD 207
2. DRIVEWAYS FOR LOTS 1-4 TO INCLUDE TURN AROUNDS FOR FRONT INGRESS/EGRESS

Source: Love Engineering

IN THE CITYOF WILDOMAR, CALIFORNIA

OWNER/APPLICANT

MIKE LESLE
21595 MARBLE CT
WILDOMAR, CA 92595
T: (951) 522-2405
F: (951) 678-7952 FAX

ENGINEER/EXHIBIT PREPARER

LOVE ENGINEERING
ATTN: THOMAS S. LOVE
31915 RANCHO CALIFORNIA ROAD
SUITE 200-166
TEMECULA, CA 92591
T: (951) 440-8149 F: (951)-303-6701

ASSESSOR'S PARCEL NO.

367-170-029

PROPERTY ADDRESS

34915 ORANGE STREET

LEGAL DESCRIPTION

LOTS (S) 48 OF SEDCO TRACT NO. 1, IN THE CITY OF WILDOMAR, AS SHOWN BY MAP ON FILE IN BOOK 10 PAGE(S) 58 TO 75, INCLUSIVE, OF MAPS, RECORDS OF RIVERSIDE COUNTY;
EXCEPTING THEREFROM THE SOUTHERLY 200 FEET, SAID 200 FEET BEING MEASURED ALONG THE EAST LINE OF SAID LOT 48, AND THE NORTH LINE OF SAID 200 FEET BEING PARALLEL WITH THE NORTH LINE OF SAID LOT 48.

EXISTING EASEMENTS

28' EASEMENT TO CALIFORNIA ELECTRIC POWER COMPANY RECORDED 05/08/1952 PER INSTRUMENT #19643

ACREAGE

ACREAGE: 5.54 ACRES GROSS/4.86 ACRES NET
MINIMUM LOT SIZE: 1/2 ACRE

LAND USE

10 RESIDENTIAL LOTS

EXISTING LAND USE:	VACANT/SFR
PROPOSED LAND USE:	LDR
EXISTING ZONING:	R-R
PROPOSED ZONING:	R-R
MINIMUM LOT:	21,780 SF

UTILITIES

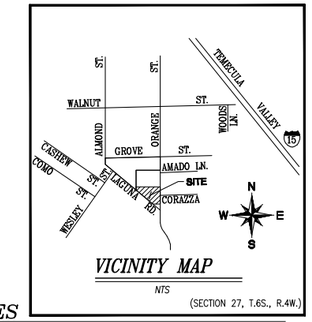
WATER	– ELSINORE VALLEY MUNICIPAL WATER DISTRICT
SEWER	– ELSINORE VALLEY MUNICIPAL WATER DISTRICT
GAS	– SOUTHERN CALIFORNIA GAS COMPANY
ELECTRIC	– SOUTHER CALIFORNIA EDISON
TELEPHONE	– VERIZON
CABLE	– N/A
SCHOOL	– LAKE ELSINORE UNIFIED SCHOOL DISTRICT

TOPOGRAPHY

CONTOURS & ELEVATIONS PROVIDED FROM FIELD DATA GATHERED ON 9/29/12 & OCT 10/1/12 BY:
HESS SURVEY
28039 SCOTT RD, SUITE D-387
MURRIETA, CA 92563
PH (951) 325-2200

EARTHWORK

CUT: 4,000 CY
FILL: 4,000 CY
OVER-EXCAVATION: 2,500 CY



VICINITY MAP

NTS
(SECTION 27, T.6S., R.4W.)

NOTES

1. 2011 THOMAS BROS. MAP BOOK: PAGE 897, GRIDS B5-B6
2. ALL IMPROVEMENTS SHALL BE PER SCHEDULE "B"
3. PROJECT INCLUDES THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
4. THIS PROJECT IS NOT WITHIN A SPECIFIC PLAN.
5. THE PROPERTY IS NOT WITHIN A COUNTY SERVICE AREA OR COMMUNITY FACILITIES DISTRICT.
6. THERE ARE NO WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THE PROPERTY BOUNDARY.
7. SUBSURFACE SEPTIC SEWAGE DISPOSAL IS NOT INTENDED.
8. P.E. = XXXX.X INDICATES PRELIMINARY PAD ELEVATION.
9. THE LIQUIFACTION POTENTIAL IS MODERATE AND THE SITE IS SUSCEPTIBLE TO SUBSIDENCE. SITE IS NOT WITHIN SPECIAL STUDIES ZONE. SITE REQUIRES 3-4' OVER-EXCAVATION 5' BEYOND BUILDING FOOTPRINT. SHALL BE VERIFIED AND APPROVED IN THE FIELD BY GEOTECHNICAL ENGINEER OF RECORD.
10. SITE IS NOT SUBJECT TO OVERFLOW, INUNDATION, OR FLOOD HAZARD.
11. EXISTING HOUSE TO REMAIN
12. ALL SLOPES ARE 2:1 RATIO, UNLESS OTHERWISE NOTED.
13. ALL STREETS ARE PROPOSED PUBLIC STREETS.
14. A WATER QUALITY MANAGEMENT PLAN HAS BEEN PREPARED
15. NO COMMION AREAS OR OPEN SPACE ARE PROPOSED.
16. FEMA MAP NUMBER 06065C2682G
17. LANDSCAPING AND IRRIGATION OF THE DOWN SLOPES ON LOTS 1, 4, 5, 8, 9, AND 10 WILL BE REQUIRED UPON COMPLETION OF GRADING

SOILS ENGINEER & ENGINEERING GEOLOGIST

WAC GEOTECHNICAL, INC
2900 ADAMS STREET, SUITE C-35
RIVERSIDE, CA 92504
PH (951) 354-6500

WATER QUALITY FEATURES

EACH LOT SHALL CONTAIN AN INFILTRATION TRENCH PER WATER QUALITY MANGEMENT PLAN

GRADING

SITE WILL BE GRADED IN ONE PHASE

LEGEND

BOUNDARY	EXISTING WATER
CENTERLINE	FIRE HYDRANT
EASEMENT (DRAINAGE)	FLOW LINE
EASEMENT (SEWER)	LOT LINE
EDGE OF PAVEMENT	POWER POLE
EXISTING TOPOGRAPHY CONTOUR	SEWER (EXISTING)
EVERGREEN TREE TO BE REMOVED (SIZE PER PLAN)	STREET RIGHT-OF-WAY
EVERGREEN TREE TO REMAIN (SIZE PER PLAN)	VINYL FENCE
	WIRE FENCE

DRAINAGE & LANDSCAPE MAINTENANCE

1. THE DRAINAGE FACILITIES ON LOTS 1, 2, 5, 8, 9, & 10 WILL BE MAINTAINED BY THE PROPERTY OWNER
2. LANDSCAPING WITHIN THE PUBLIC ROAD RIGHT-OF-WAY WILL BE MAINTAINED BY THE PROPERTY OWNER FRONTING THE RIGHT-OF-WAY

LOT SUMMARY TABLE

LOT #	GROSS AREA (SF)	NET AREA (SF)	DEPTH AVG	WIDTH AVG
1	23,400	20,000	250.00'	80.00'
2	23,400	20,000	250.00'	80.00'
3	25,286	20,024	190.26'	105.25'
4	25,209	20,109	197.14'	102.01'
5	30,612	24,286	246.53'	93.73'
6	21,796	20,204	219.63'	103.32'
7	21,919	20,731	240.06'	94.00'
8	24,832	23,901	280.60'	80.00'
9	22,008	21,039	260.45'	80.78'
10	21,827	20,867	182.12'	87.29'

ABBREVIATIONS

AC	Asphalt Concrete
CFS	Cubic Feet Per Second
EP	Edge of Pavement
FL	Flowline
FS	Finished Surface
(G)	Gross Area
GB	Grade Break
HP	High Point
INV	Invert
(N)	Net Area
PE	Proposed Pad Elevation
PP	Power Pole
PROP	Proposed
R/W	Right-of-Way
SD	Storm Drain
SF	Square Feet

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Figure 3
Tentative Tract Map
PMC®

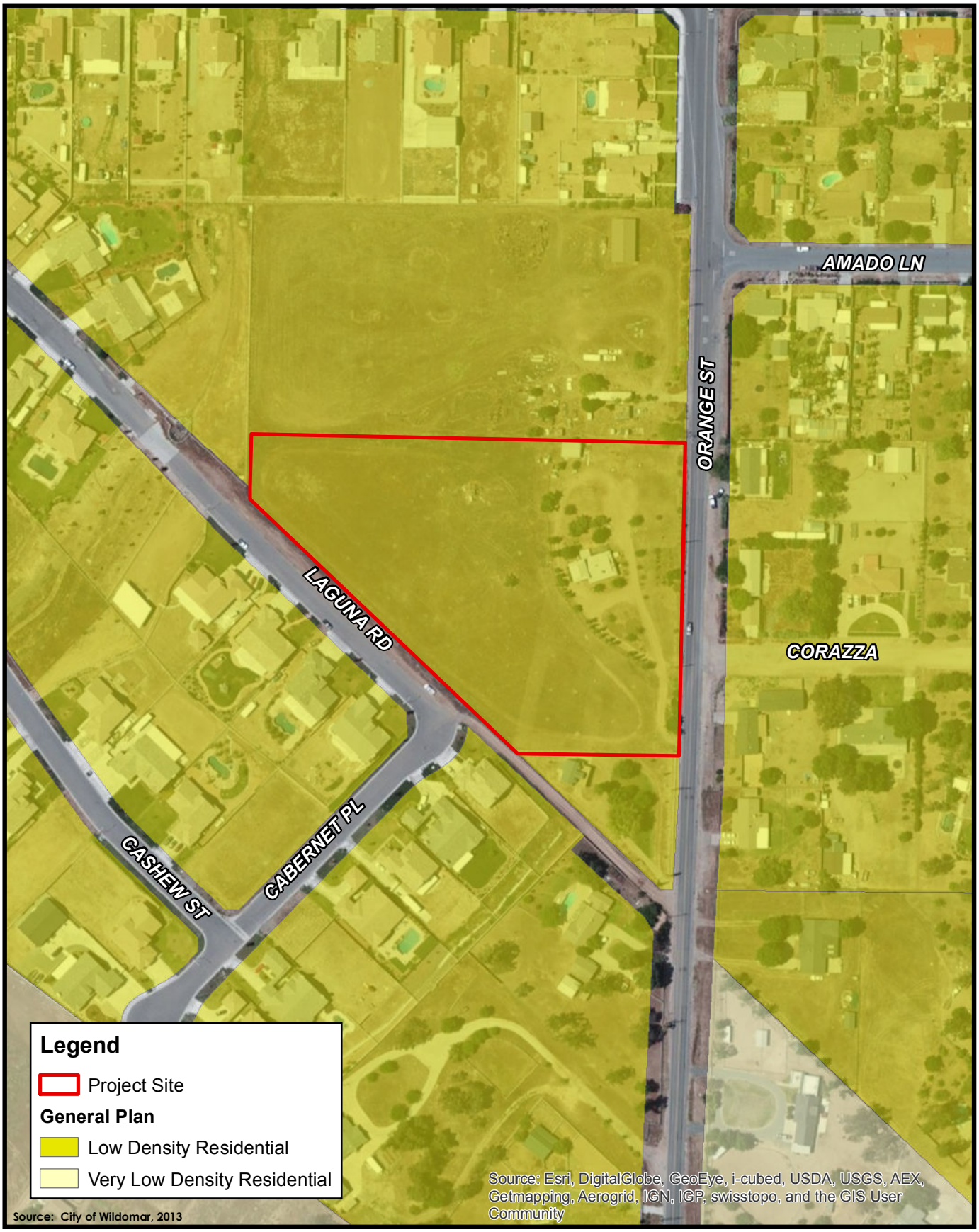

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Figure 3a
Existing General Plan Map

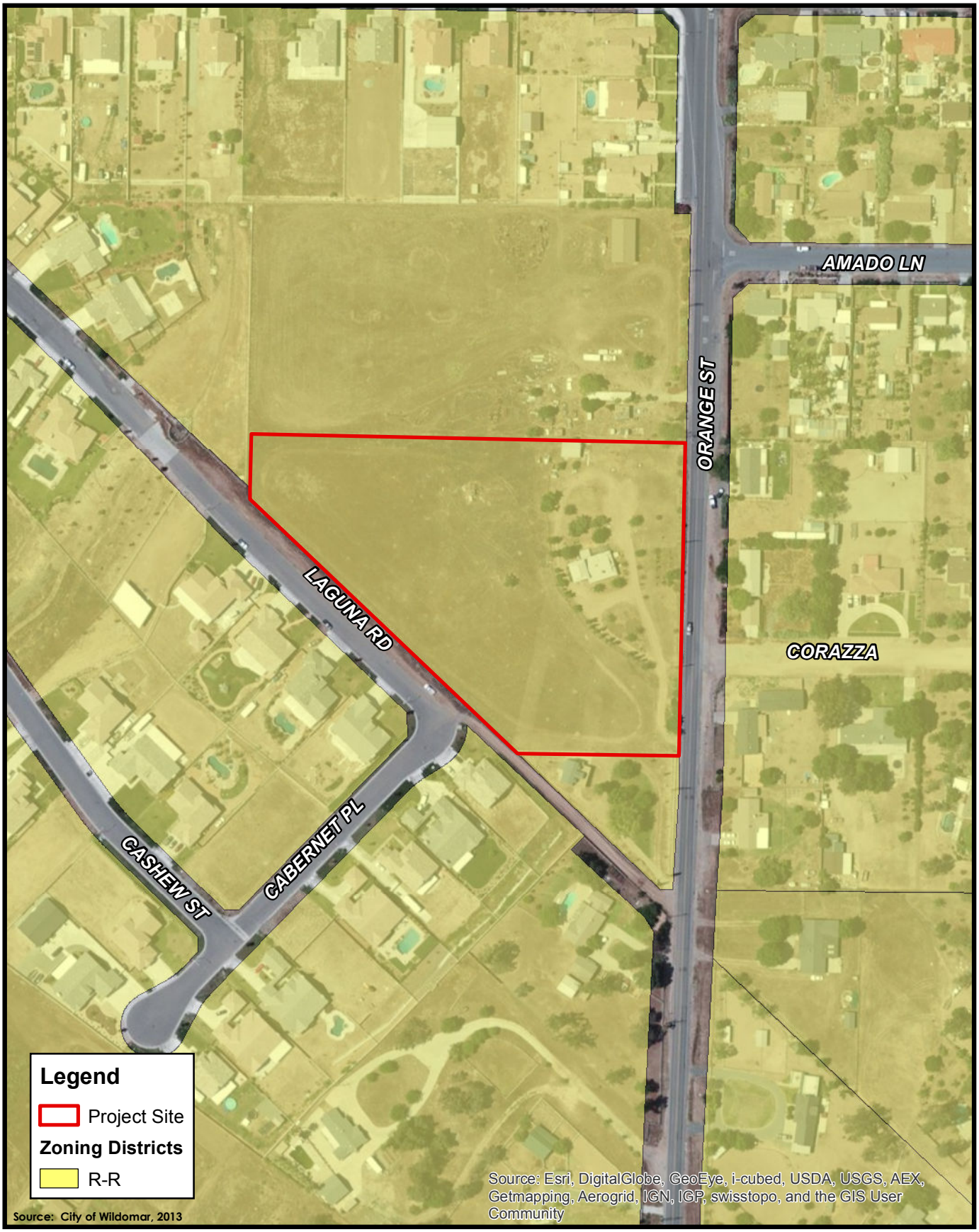

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Figure 3b
Existing Zoning Map

II. EXISTING CONDITIONS

Regulatory Setting

The current City of Wildomar General Plan land use designation for the project site is Low Density Residential (LDR), which allows for single-family detached residences on large parcels of 0.5 to 1 acre. The General Plan land use designation for all properties immediately adjacent to the project site is also Low Density Residential (**Figure 3a**).

The project site is currently zoned Rural Residential (R-R). The R-R zone district allows for one-family dwellings, mobile homes, planned residential developments, public parks, limited commercial, water works facilities, agricultural and farming uses, and mining. Other uses permitted with a conditional use permit include, but are not limited to, airport or landing fields, auto wrecking yards, cemeteries, fairgrounds, auto service stations, bakeries, expanded commercial uses, gas stations, parking lots, offices, and lumber yards (Wildomar Zoning Ordinance Section 17.16). The zoning for all adjacent properties is also Rural Residential (**Figure 3b**).

Physical Setting

The project site is relatively flat, with the site's lowest point located at the southeast corner and the highest point at the northwest corner. Elevations within the project site range from approximately 1,324 to 1,330 feet above mean sea level. The entire project site has been disturbed by the current rural residential development of the northeast corner of the site and periodic clearing and grubbing of vegetation. Currently, vegetation at the project site can be categorized as including native grasses, weeds, and inland sage scrub vegetation. In addition, there is an existing single family home and accessory structures to the home on the site. This home will remain in place and will occupy lot 3 of the proposed map.

III. ENVIRONMENTAL CHECKLIST

BACKGROUND

1. **Project Title:**

   Lesle Tract Map (TTM No. 36519) (PA 12-0392)

2. **Lead Agency Name and Address:**

   City of Wildomar, 23873 Clinton Keith Road, Suite 201, Wildomar, CA 92595

3. **Contact Person and Phone Number:**

   Matthew C. Bassi, Planning Director; (951) 677-7751, ext. 213

4. **Project Location:**

   34915 Orange Street in the City of Wildomar; Assessor's Parcel Number: 367-170-029; Township 6 south, Range 4 west, Section 36

5. **Project Sponsor's Name and Address:**

   Mike Lesle, 21595 Marble Court, Wildomar, CA 92595

6. **General Plan Designation:**

   Low Density Residential (LDR)

7. **Zoning:**

   Rural Residential (R-R)

8. **Description of Project:**

   A Tentative Tract Map (TTM No. 36519) subdividing one existing parcel, totaling 5.54 acres, into ten parcels, nine of which would be developed for single family residences in the future.

9. **Surrounding Land Uses and Setting:**

   North – Zoning: Rural Residential; Land Use: Low Density Residential

   South – Zoning: Rural Residential; Land Use: Low Density Residential

   East – Zoning: Rural Residential; Land Use: Low Density Residential

   West – Zoning: Rural Residential; Land Use: Low Density Residential

10. **Other Public Agency Required Approvals:**

    None

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project involving at least one impact that is "Less Than Significant Impact With Mitigation Incorporated" as indicated by the checklist on the following pages.

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

DETERMINATION

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because of the incorporated mitigation measures and revisions in the project have been made by or agreed to by the project proponent. A **MITIGATED NEGATIVE DECLARATION** will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

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

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

City Representative

Signature | Date

Matthew C. Bassi, Planning Director

Applicant

Pursuant to Section 15070(b)(1) of the California Environmental Quality Act , as the project applicant, I agree to revisions of the project plans or proposals as described in this Initial Study/Mitigated Negative Declaration to avoid or reduce environmental impacts of my project to a less than significant level.

Signature | Date

Mike Lesle

Printed Name

IV. ENVIRONMENTAL ANALYSIS

1. Aesthetics

Issues: Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?				✓
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				✓
c) Substantially degrade the existing visual character or quality of the site and its surroundings?				✓
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			✓	
e) Interfere with the nighttime use of the Mount Palomar Observatory, as protected through the Mount Palomar Observatory Lighting Ordinance?			✓	

DISCUSSION

a, c) **No Impact**. The proposed project will result in residential development similar to that which already exists on surrounding properties. There will be no new impacts to any scenic vista or any degradation of the visual character of the site and its surroundings. No impact is expected.

b) **No Impact**. As demonstrated by the site photographs contained in **Appendix 2**, the proposed project site does not contain any rock outcroppings, trees, or structures that could be categorized as a scenic resource. While the proposed project site is located adjacent to a section of Interstate 15 (I-15) that is eligible but currently not designated to be a state scenic highway (City of Wildomar 2008, Figure C-9; Caltrans 2012), the scenic vistas from the freeway are of the surrounding mountains and their ridgelines, which would not be impacted by the proposed project. No impact is expected.

d, e) **Less Than Significant Impact**. The proposed project would create new sources of light and glare. The City's building permit process will ensure compliance with City zoning and design standards regulating lighting, siding materials, etc. This process will require submittal of lighting photometric plans for review and approval prior to issuance of building permits. Therefore, the proposed project would not create new sources of light or glare that would adversely affect day or nighttime views in the area, and this would be considered a less than significant impact. However, all development is subject to Ordinance No. 75 of Wildomar Municipal Code. Future compliance with Ordinance No. 75 of the Wildomar Municipal Code would allow any impact to be less than significant.

STANDARD CONDITIONS AND REQUIREMENTS

Per Ordinance No. 75 of the Wildomar Municipal Code, exterior lighting above 55,000 lumens per acre is prohibited. In addition, all outdoor lighting shall be located, adequately shielded, and directed such that no direct light falls outside the parcel of origin or onto the public right-of-way.

MITIGATION MEASURES

None required.

2. Agricultural Resources

Issues: Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?				✓
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?				✓
c) Conflict with existing zoning for, or cause rezoning of, forestland (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?				✓
d) Result in the loss of forestland or conversion of forestland to non-forest use?				✓
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to nonagricultural use or conversion of forestland to non-forest use?				✓

DISCUSSION

a–e) **No Impact.** According to the Riverside County Land Information System (2013), the site is not located within an agricultural preserve (Williamson Act) or classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance by the Farmland Mapping and Monitoring Program of the California Department of Conservation; therefore, there is no potential to convert farmland to nonagricultural uses. The site is located within an urbanized area of Wildomar that is currently designated for residential use. As seen in the photos included in **Appendix 2,** the site is not forested and there is no current agricultural use on the site. There will be no impact to agricultural uses.

STANDARD CONDITIONS AND REQUIREMENTS

None required.

MITIGATION MEASURES

None required.

3. Air Quality

Issues: Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?				✓
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?			✓	
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			✓	
d) Expose sensitive receptors to substantial pollutant concentrations?			✓	
e) Create objectionable odors affecting a substantial number of people?				✓

DISCUSSION

a) **No Impact.** The project site is located within the South Coast Air Basin (SoCAB), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAQMD is required, pursuant to the federal Clean Air Act, to reduce emissions of criteria pollutants for which the basin is in nonattainment (i.e., ozone [O_3], particulate matter equal to or less than 10 microns and less than 2.5 microns in diameter [PM_{10} and $PM_{2.5}$, respectively]), nitrogen oxide (NOx), and lead. These are considered criteria pollutants because they are four of several prevalent air pollutants known to be hazardous to human health. (It should be noted that the proposed project is not anticipated to generate a quantifiable amount of lead emissions, as these are typically not associated with residential development projects.)

In order to reduce emissions for which the SoCAB is in nonattainment, the SCAQMD has adopted the 2012 Air Quality Management Plan (AQMP). The 2012 AQMP establishes a program of rules and regulations directed at reducing air pollutant emissions and achieving state (California) and national air quality standards. The 2012 AQMP is a regional and multi-agency effort including the SCAQMD, the California Air Resources Board (CARB), the Southern California Association of Governments (SCAG), and the US Environmental Protection Agency (EPA). The 2012 AQMP pollutant control strategies are based on the latest scientific and technical information and planning assumptions, including the 2012 Regional Transportation Plan/Sustainable Communities Strategy, updated emission inventory methodologies for various source categories, and SCAG's latest growth forecasts. (SCAG's latest growth forecasts were defined in consultation with local governments and with reference to local general plans.) The project is subject to the SCAQMD's Air Quality Management Plan. (The SCAQMD considers projects that are consistent with the AQMP, which is intended to bring the basin into attainment for all criteria pollutants, to also have less than significant cumulative impacts.)

Criteria for determining consistency with the AQMP are defined by the following indicators:

- Consistency Criterion No. 1: The proposed project will not result in an increase in the frequency or severity of existing air quality violations, or cause or contribute to new violations, or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.
- Consistency Criterion No. 2: The proposed project will not exceed the assumptions in the AQMP.

The violations to which Consistency Criterion No. 1 refers are the California ambient air quality standards (CAAQS) and the national ambient air quality standards (NAAQS), which are enforced in the SoCAB by the SCAQMD. As evaluated under Issue b) below, the project will not exceed the SCAQMD short-term construction standards or SCAQMD long-term operational standards and in so doing will not violate the CAAQS or NAAQS. Additionally, the analysis for long-term local air quality impacts showed that future carbon monoxide (CO) concentration levels along roadways and at intersections affected by project traffic will not exceed the 1-hour and 8-hour state CO pollutant concentration standards. Thus, a less than significant impact is expected, and the project would be consistent with the first criterion.

Concerning Consistency Criterion No. 2, the AQMP contains air pollutant reduction strategies based on SCAG's latest growth forecasts. The proposed project is consistent with the land use designation and development density presented in the City of Wildomar's General Plan (2003) and therefore would not exceed the population or job growth projections used by the SCAQMD to develop the Air Quality Management Plan. No impact would occur.

b) **Less Than Significant Impact**. As discussed previously, the project site is located within the SoCAB. State and federal air quality standards are often exceeded in many parts of the basin. A discussion of the project's potential short-term construction-period and long-term operational-period air quality impacts is provided below.

Construction Emissions

The SCAQMD has established methods to quantify air emissions associated with construction activities such as air pollutant emissions generated by operation of on-site construction equipment, fugitive dust emissions related to grading and site work activities, and mobile (tailpipe) emissions from construction worker vehicles and haul/delivery truck trips. Emissions would vary from day to day, depending on the level of activity, the specific type of construction activity occurring, and, for fugitive dust, prevailing weather conditions.

The proposed project would generate short-term construction-related air quality impacts. These impacts are temporary in nature. The resultant emissions of these activities were calculated using the CalEEMod air quality model (**Appendix 3** and **Appendix 3a**). CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for the use of government agencies, land use planners, and environmental professionals. Construction equipment requirements and usage rates used in the model were based on model default assumptions as shown in **Table 3-1**.

Table 3-1
Construction Details

Construction Phase	Duration	Worker Trips/Day	Equipment	Hours Used/Day
Site Preparation	10 days	18	3 rubber-tired dozers 4 tractors/loaders/backhoes	8 8
Grading	20 days	15	2 excavators 1 grader 1 rubber-tired dozer 2 scrapers 2 tractors/loaders/backhoes	8 8 8 8 8
Building Construction	230 days	3	1 crane 3 forklifts 1 generator set 3 tractors/loaders/backhoes 1 welder	7 8 8 7 8
Paving	20 days	15	2 pavers 2 paving equipments 2 rollers	8 8 8
Painting	20 days	1	1 air compressor	6

Source: CalEEMod Model. Notes: CalEEMod estimates 10.8 miles per worker trip. The site preparation phase accounts for 313 truck trips in order to export 2,500 cubic yards of soil.

This assessment includes quantification of net increases of ozone precursor pollutants (i.e., reactive organic gases (ROG) and oxides of nitrogen (NOx)) and airborne particulate matter (i.e., $PM_{2.5}$ and PM_{10}) attributable to the proposed project. These quantified emission projections are then compared with SCAQMD significance thresholds (SCAQMD 2011b).

The unmitigated construction air quality emissions are summarized in **Table 3-2**.

Table 3-2
Maximum Short-Term Unmitigated Construction Emissions (Pounds per Day)

Construction Phase	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Site Preparation	**9.45**	**74.97**	**44.15**	0.05	11.98	**8.09**
Grading	6.66	52.95	34.36	**0.06**	**13.14**	4.30
Building Construction	4.76	32.23	23.45	0.04	2.07	2.03
Paving	4.95	30.17	21.38	0.03	2.74	2.55
Painting	**5.47**	2.57	1.96	0.00	0.23	0.22
SCAQMD Threshold	*75.00*	*100.00*	*550.00*	*150.00*	*150.00*	*55.00*
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

*Source: CalEEMod (SCAQMD 2011a); see **Appendix 3.** The site preparation phase accounts for 313 truck trips in order to export 2,500 cubic yards of soil. **Bolded** areas equal maximum daily construction emissions. Modeling inputs account for SCAQMD Rule 1113, Architectural Coatings, which places limits on the organic compound content in various coating categories, as well as SCAQMD Rule 403, Fugitive Dust, which requires all construction site roads to be either paved, watered periodically, or chemically stabilized (modeling inputs assume periodic watering) and limits construction vehicle speeds to a maximum 15 miles per hour.*
ROG = reactive organic gas
NO_X = oxides of nitrogen
CO = carbon monoxide
SO_X = sulfur oxides
PM_{10} = particulate matter equal to or less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter

The quantity, duration, and intensity of construction activity have an effect on the amount of construction emissions, and related pollutant concentrations, occurring at any one time. As such, the emissions forecasts provided herein reflect a specific set of conservative assumptions based on the assumed construction scenario wherein a relatively large amount of construction is occurring in a relatively intensive manner. Because of this conservative assumption, actual emissions could be less than those forecast. If construction is delayed or occurs over a longer time period, emissions could be reduced because of (1) a more modern and cleaner-burning construction equipment fleet mix and/or (2) a less intensive buildout schedule (i.e., fewer daily emissions occurring over a longer time interval).

As shown above, all criteria pollutant emissions would remain below their respective thresholds. While impacts would be considered less than significant, the proposed project would be subject to SCAQMD rules and regulations to reduce specific emissions and to mitigate potential air quality impacts. The following is a list of noteworthy rules that are potentially applicable to the project:

- **Rule 402 (Nuisance)** – This rule prohibits the discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury, or damage to business or property. This rule does not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.
- **Rule 403 (Fugitive Dust)** – This rule requires fugitive dust sources to implement Best Available Control Measures for all sources and all forms of visible particulate matter are prohibited from crossing any property line. SCAQMD Rule 403 is intended to reduce PM_{10} emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust. PM_{10} suppression techniques are summarized below.

    a. Portions of the construction site to remain inactive longer than a period of three months will be seeded and watered until grass cover is grown or otherwise stabilized in a manner acceptable to the City.

    b. All on-site roads will be paved as soon as feasible or watered periodically or chemically stabilized.

    c. All material transported off-site will be either sufficiently watered or securely covered to prevent excessive amounts of dust.

    d. The area disturbed by clearing, grading, earth moving, or excavation operations will be minimized at all times.

    e. Where vehicles leave the construction site and enter adjacent public streets, the streets will be swept daily or washed down at the end of the work day to remove soil tracked onto the paved surface.

- **Rule 1113 (Architectural Coatings)** – This rule requires manufacturers, distributors, and end-users of architectural and industrial maintenance coatings to reduce ROG/volatile organic compound emissions from the use of these coatings, primarily by placing limits on the ROG/volatile organic compound content of various coating categories.

Construction Localized Significance Analysis

As part of the SCAQMD's environmental justice program, attention has been focused on localized effects of air quality. SCAQMD staff has developed localized significance threshold (LST) methodology that can be used by public agencies to determine whether or not a project may generate significant adverse localized air quality impacts (SCAQMD 2008). LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard and are developed based on the ambient concentrations of that pollutant for each source receptor area (SRA). Wildomar is located within SRA 25.

The emissions analyzed under the LST methodology are nitrogen dioxide (NO_2), CO, PM_{10}, and $PM_{2.5}$. For pollutants NO_2 and CO, the LSTs are derived using an air quality dispersion model to back-calculate the emissions per day that would cause or contribute to a violation of any ambient air quality standard for a particular source receptor area. LSTs for NO_2 and CO are derived by adding the incremental emission impacts from the project activity to the peak background NO_2 and CO concentrations and comparing the total concentration to the most stringent ambient air quality standards. The most stringent standard for NO_2 is the 1-hour state standard of 18 parts per hundred million and for CO is the 1-hour and 8-hour state standards of 9 parts per million (ppm) and 20 ppm, respectively. For PM_{10} and $PM_{2.5}$, for which the SoCAB is nonattainment, the localized significance thresholds are derived using an air quality dispersion model to back-calculate the emissions that would be necessary to worsen an existing violation in the specific source receptor area, using the allowable change in concentration thresholds approved by the SCAQMD. For PM_{10} and $PM_{2.5}$, the approved 24-hour concentration thresholds for construction and operation are 10.4 $\mu g/m^3$ and 2.5 $\mu g/m^3$, respectively.[1]

According to the LST methodology, only on-site emissions need to be analyzed. Emissions associated with hauling, vendor trips, and worker trips are mobile source emissions that occur off-site and need not be considered according to LST methodology. The SCAQMD has provided LST look-up tables and sample construction scenarios to allow users to readily determine if the daily emissions for proposed construction or operational activities could result in significant localized air quality impacts for projects 5 acres or smaller.[2] The LST thresholds are estimated for each SRA using the maximum daily disturbed area (in acres) and the distance of the project to the nearest sensitive receptors (in meters). Sensitive receptors in the project vicinity include existing residences. The closest receptor distance on the LST look-up tables is 25 meters. According to the LST methodology, projects with boundaries closer than 25 meters to the nearest receptor should use localized significance thresholds for receptors located at 25 meters. A receptor distance of 25 meters was used herein for a conservative analysis. The results are summarized below.

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[1] $\mu g/m^3$ = microgram per cubic meter

[2] Available on the Internet at http://www.aqmd.gov/ceqa/handbook/LST/LST.html.

The SCAQMD has issued guidance on applying CalEEMod modeling results to LST analyses. For the purposes of this analysis, air pollutant emissions associated with grading and site preparation activities were quantified for the entire project site. Since CalEEMod calculates construction emissions based on the number of equipment hours and the maximum daily soil disturbance activity possible for each piece of equipment, **Table 3-3** has been provided by the SCAQMD to determine the maximum daily disturbed acreage for comparison to local significance thresholds.

Table 3-3
Equipment-Specific Grading Rates

Equipment Type	Acres/8-Hour Day
Crawler Tractor	0.5
Graders	0.5
Rubber-Tired Dozers	0.5
Scrapers	1.0

Source: CalEEMod User Guide Appendix A (SCAQMD 2011b)

The unmitigated construction-related air pollutant emissions associated with the grading and site preparation activities of the entire 5.54-acre site are summarized in **Table 3-2**. CalEEMod identifies that three rubber-tired dozers and four tractors (crawler tractor) could be used simultaneously on a peak day during the site preparation phase. CalEEMod identifies that two excavators (crawler tractor), one grader, one rubber-tired dozer, two tractors (crawler tractor), and two scrapers could be used simultaneously on a peak day during the grading phase. Based on equipment-specific grading rates as defined by the SCAQMD and shown in **Table 3-3**, the proposed project will result in a maximum of 3.5 acres disturbed on any one day during the site preparation phase and 5 acres disturbed on any one day during the grading phase (the site preparation phase and grading phase do not occur concurrently). Thus, local significance thresholds for a 5-acre site are applicable to the proposed project.

Sensitive receptors include residences, schools, hospitals, and similar uses. Existing residential uses surround the project site on most sides. **Table 3-4** shows that the emissions of these pollutants on the peak day of construction would not result in concentrations of pollutants at nearby residences or other sensitive receptors, and less than significant impacts would occur.

Table 3-4
Construction Local Significance Threshold (LST) Impacts (Pounds per Day)

Emissions Source	Nitrogen Oxide	Carbon Monoxide	PM_{10}	$PM_{2.5}$
On-Site Site Preparation Emissions	74.88	43.05	11.74	8.08
On-Site Grading Emissions	45.66	30.18	5.32	3.96
LST Threshold [1]	371	1,965	13	8
Significant Emissions?	**No**	**No**	**No**	**No**

[1] *Source: SCAQMD 2008*

Operational Impacts

The SCAQMD has also established significance thresholds to evaluate the potential impacts associated with long-term project operations (SCAQMD 1993). Regional air pollutant emissions associated with project operations include area source emissions, energy-use emissions, and mobile source emissions. Area source emissions comprise emissions from fuel combustion from space and water heating, landscape maintenance equipment, evaporative emissions from architectural coatings and consumer products, and unpermitted emissions from stationary sources. Energy-use emissions comprise emissions from on-site natural gas usage, and mobile source emissions comprise emissions from automobiles.

Operational area source emissions, energy-use emissions, and mobile source emissions (e.g., trucks, cars, parking lot sweepers) for the proposed project were calculated using the CalEEMod air quality model (**Appendix 3** and **Appendix 3a**). As shown in **Table 3-5**, the project's net emissions would not exceed SCAQMD thresholds for CO, NO_X, sulfur oxides (SO_X), ROG, PM_{10}, or $PM_{2.5}$. Note that emissions rates differ from summer to winter. This is because weather factors are dependent on the season, and these factors affect pollutant mixing/dispersion, ozone formation, etc. Therefore, regional operations emissions would not result in a significant long-term regional air quality impact.

Table 3-5
Long-Term Unmitigated Operational Emissions (Pounds per Day)

Emissions Source	ROG	NOx	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer						
Area Source Emissions	1.34	0.05	3.74	0.01	0.48	0.48
Energy Use Emissions	0.01	0.09	0.04	0.00	0.01	0.01
Vehicle Emissions	0.43	1.05	4.63	0.01	0.90	0.08
Total	**1.78**	**1.19**	**8.41**	**0.02**	**1.39**	**0.57**
Winter						
Area Source Emissions	1.34	0.05	3.74	0.01	0.48	0.48
Energy Use Emissions	0.01	0.09	0.04	0.00	0.01	0.01
Vehicle Emissions	0.42	1.11	4.29	0.01	0.90	0.08
Total	**1.77**	**1.25**	**8.07**	**0.02**	**1.39**	**0.57**
SCAQMD Threshold	55.00	55.00	550.00	150.00	150.00	55.0
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod (SCAQMD 2011b)
ROG = reactive organic gas
NO_X = nitrogen oxides
CO = carbon monoxide
SO_X = sulfur oxides
PM_{10} = particulate matter equal to or less than 10 microns in diameter
$PM_{2.5}$ = particulate matter less than 2.5 microns in diameter

Operations Localized Significance Analysis

Table 3-6 shows the calculated emissions for the proposed operational activities compared with the appropriate localized significance thresholds. The LST analysis only includes on-site sources; however, the CalEEMod model outputs do not separate on- and off-site emissions for mobile sources. For a worst-case scenario assessment, the emissions shown in **Table 3-6** include all on-site project-related stationary sources and 5 percent of the project-related new mobile sources, which is an estimate of the amount of project-related new vehicle traffic that will occur on-site (SCAQMD 2008). Considering the total trips included in the CalEEMod model (86 average daily trips), the assumption that 5 percent of them (4 daily trips) would occur only within the project site is conservative.

Table 3-6 shows that the operational emission rates would not exceed the LST thresholds for receptors at 25 meters. Therefore, the proposed operational activity would not result in a localized significant air quality impact.

Table 3-6
Operational Local Significance Threshold (LST) Impacts (Pounds per Day)

Emissions Source	Nitrogen Oxide	Carbon Monoxide	PM_{10}	$PM_{2.5}$
On-Site Emissions	0.1	3.97	0.52	0.48
LST Thresholds	371	1,965	4	2
Significant Emissions?	**No**	**No**	**No**	**No**

Impacts associated with construction and operational air quality would be considered less than significant, as SCAQMD significance thresholds for criteria emissions would not be surpassed (see **Tables 3-2**, **3-4**, **3-5**, and **3-6**).

c) **Less Than Significant Impact**. The proposed project may contribute to the net increase of ozone precursors and other criteria pollutants. The SCAQMD's approach for assessing cumulative impacts is based on the AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and California Clean Air Acts. In other words, the SCAQMD considers projects that are consistent with the AQMP, which is intended to bring the basin into attainment for all criteria pollutants, to also have less than significant cumulative impacts.[3] The discussion under Issue a) describes the SCAQMD criteria for determining consistency with the AQMP and further demonstrates that the proposed project would be consistent with it.

For example, as stated under Issue a), the criteria for determining consistency with the AQMP are defined by the following indicators:

[3] CEQA Guidelines Section 15064(h)(3) states, "A lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program which provides specific requirements that will avoid or substantially lessen the cumulative problem (e.g., water quality control plan, air quality plan, integrated waste management plan) within the geographic area in which the project is located. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency."

- Consistency Criterion No. 1: The proposed project will not result in an increase in the frequency or severity of existing air quality violations, or cause or contribute to new violations, or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.
- Consistency Criterion No. 2: The proposed project will not exceed the assumptions in the AQMP in 2013 or increments based on the years of project buildout phase.

The violations to which Consistency Criterion No. 1 refers are the CAAQS and the NAAQS. As evaluated under Issue b) above, the project will not exceed the short-term construction standards or long-term operational standards and in so doing will not violate any air quality standards. Thus, a less than significant impact is expected, and the project would be consistent with the first criterion. Concerning Consistency Criterion No. 2, the AQMP contains air pollutant reduction strategies based on SCAG's latest growth forecasts, and SCAG's growth forecasts were defined in consultation with local governments and with reference to local general plans. The proposed project is consistent with the land use designation and development density presented in the City's General Plan and therefore would not exceed the population or job growth projections used by the SCAQMD to develop the Air Quality Management Plan.

As such, cumulative impacts would be less than significant per the SCAQMD significance threshold since the project would be consistent with the AQMP.

d) **Less Than Significant Impact.** Sensitive land uses are generally defined as locations where people reside or where the presence of air emissions could adversely affect the use of the land. Typical sensitive receptors include residents, schoolchildren, hospital patients, and the elderly.

Air Toxics

The project would not be a source of air toxics as it only proposes residential development and residential development does not generate air toxics.

In terms of residential land uses being developed near an existing stationary source of air toxics, the issuance of SCAQMD air quality permits and compliance with all SCAQMD, state, and federal regulations regarding stationary toxic air contaminants would reduce potential stationary sources of air toxics emissions such that sensitive receptors would not be exposed to substantial air pollutant concentrations. The SCAQMD limits public exposure to air toxics through a number of programs and reviews the potential for air toxic emissions from new and modified stationary sources through the SCAQMD permitting process for stationary sources. Air toxic emissions from existing stationary sources are limited by:

1) SCAQMD Rule 1401, which requires that construction or reconstruction of a major stationary source emitting hazardous air pollutants listed in Section 112(b) of the Clean Air Act be constructed with Best Available Control Technology and comply with all other applicable requirements.
2) Implementation of the Air Toxics "Hot Spots" (AB 2588) Program.
3) Implementation of the federal Title III Toxics Program.

Facilities and equipment that require permits from the SCAQMD are screened from risks from toxic emissions and can be required to install Toxic Best Available Control Technology (T-BACT) to reduce the risks to below significant if deemed necessary by the SCAQMD. T-BACTs are the most up-to-date methods, systems, techniques, and production processes available to achieve the greatest feasible emission reductions for air toxics. In addition, the proposed project is not

located near any existing stationary sources of air toxics. Therefore, future residential development allowed under the proposed project would not be adversely affected by stationary sources of air toxics.

Mobile sources of air toxics include freeways and major roadways, which are sources of diesel particulate matter (DPM). DPM has been listed as an air toxic by CARB. In April 2005, CARB released the *Land Use and Air Quality Handbook: A Community Health Perspective*, which offers guidance on siting sensitive land uses in proximity to sources of air toxics. The handbook recommends that sensitive land uses be sited no closer than 500 feet from a freeway or major roadway, a buffer area that was developed to protect sensitive receptors from exposure to DPM, which was based on traffic-related studies that showed a 70 percent drop in PM concentrations at a distance of 500 feet from the roadway. Presumably, acute and chronic risks as well as lifetime cancer risk due to DPM exposure are lowered proportionately. Per Google Earth, the project site is approximately 4,360 feet (0.8 mile) west of Interstate 15. Therefore, the site lies beyond the CARB-recommended buffer area, and future receptors would not be negatively affected by air toxics generated on Interstate 15.

Carbon Monoxide

Typically, substantial pollutant concentrations of CO are associated with mobile sources (e.g., vehicle idling time). Localized concentrations of CO are associated with congested roadways or signalized intersections operating at poor levels of service (level of service E or lower). High concentrations of CO may negatively affect local sensitive receptors (e.g., residents, schoolchildren, or hospital patients). There are sensitive receptors (existing residential uses) adjacent to the project site in most directions.

As stated in subsection 16, Transportation/Traffic, the proposed project will not result in any level of service at E or lower at the traffic facilities analyzed [see Issue a) in subsection 16, Transportation/Traffic]. Therefore, this impact is considered less than significant since the proposed project would not result in traffic facilities operating at poor levels of service.

e) No Impact. The SCAQMD *CEQA Air Quality Handbook* (1993) identifies certain land uses as sources of odors. These land uses include agriculture (farming and livestock), wastewater treatment plants, food processing plants, chemical plants, composting facilities, refineries, landfills, dairies, and fiberglass molding. The proposed project is residential in nature and will not include any of the land uses that have been identified by the SCAQMD as odor sources. Therefore, there would be no odor impacts from the proposed project.

STANDARD CONDITIONS AND REQUIREMENTS

None required.

MITIGATION MEASURES

None required.

4. Biological Resources

Issues: Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?		✓		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?				✓
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?				✓
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?				✓
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				✓
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?		✓		

Note to the reader: As of January 1, 2013, the agency formerly known as the California Department of Fish and Game (CDFG) changed its name to the California Department of Fish and Wildlife (CDFW). For purposes of this discussion, the agency names and abbreviations are interchangeable.

ENVIRONMENTAL SETTING

A habitat assessment of the project site was performed by Brian F. Smith and Associates on January 28, 2013 and it is included with this IS/MND as **Appendix 4**. This habitat assessment was used to conduct an evaluation of the project and to characterize the environmental setting on and adjacent to the proposed project. In addition to the information provided by the habitat assessment, a thorough query of available data and literature from local, state, federal, and nongovernmental agencies was used to evaluate the potential biological impacts of the proposed project.

Database searches were performed on the following websites:

- US Fish and Wildlife Service's (USFWS) Information Planning and Conservation (IPaC) System (2013a)
- USFWS's Critical Habitat Portal (2013b)
- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) (2013)
- California Native Plant Society's (CNPS) Inventory of Rare, Threatened, and Endangered Plants of California (2013)

A search of the USFWS's IPaC System and Critical Habitat Portal database was performed for the project area to identify federally protected species and their habitats that may be affected by the proposed project. In addition, a query of the CNDDB database was conducted to identify known occurrences for special-status species within a 1- and 5-mile radius of the proposed project. Lastly, the CNPS database was queried to identify special-status plant species with the potential to occur within the Wildomar, California, US Geological Survey (USGS) 7.5-minute quadrangle.

According to the habitat assessment performed by Brian F. Smith and Associates Inc. (Brian F. Smith and Associates 2013), the site is a mix of urban/developed land and disturbed land. The urban /developed land consists of a house, adjacent structures, and areas landscaped with non-native plants. The disturbed area is vegetated with non-native annuals.

The proposed project site is located within the Western Riverside County Multiple Species Conservation Plan (MSHCP) (County of Riverside 2003). The MSHCP formally determines conservation planning for all of western Riverside County. The MSHCP identifies plants, wildlife, and habitat that need to be preserved or protected. It also outlines procedures for mitigation of future land development and determines under what circumstances an "incidental take" can be permitted.

<u>Special-Status Species</u>

Candidate, sensitive, or special-status species are commonly characterized as species that are at potential risk or actual risk to their persistence in a given area or across their native habitat. These species have been identified and assigned a status ranking by governmental agencies such as the CDFW, the USFWS, and private organizations such as the CNPS. The degree to which a species is at risk of extinction is the determining factor in the assignment of a status ranking. Some common threats to a species' or population's persistence include habitat loss, degradation, and fragmentation, as well as human conflict and intrusion. For the purposes of this biological review, special-status species are defined by the following codes:

1. Listed, proposed, or candidates for listing under the federal Endangered Species Act (50 Code of Federal Regulations [CFR] 17.11 – listed; 61 Federal Register [FR] 7591, February 28, 1996 candidates)
2. Listed or proposed for listing under the California Endangered Species Act (Fish and Game Code [FGC] 1992 Section 2050 et seq.; 14 California Code of Regulations [CCR] Section 670.1 et seq.)
3. Designated as Species of Special Concern by the CDFW
4. Designated as Fully Protected by the CDFW (FGC Sections 3511, 4700, 5050, 5515)
5. Species that meet the definition of rare or endangered under the California Environmental Quality Act (CEQA) (14 CCR Section 15380) including CNPS List Rank 1B and 2

The query of the USFWS, CNPS, and CNDDB databases revealed 26 sensitive plant species and 19 special-status wildlife species, a total of 45 species, with the potential to occur in the project vicinity. Appendix B, provided in **Appendix 4**, summarizes each species identified in the database results, includes a description of the habitat requirements for each species, and cites conclusions regarding the potential for each species to be impacted by the proposed project.

DISCUSSION OF IMPACTS

a) **Less Than Significant Impact With Mitigation Incorporated.** Forty-five special-status species were identified by the database queries; however, due to the nature of the site, suitable habitat for all but one of the species identified does not occur on or adjacent to the project. Please refer to Appendix B in **Appendix 4** for a summary of the general habitat characteristics required by each species, as well as the potential for each species to be impacted by the project. All special-status species with the potential to occur on the project site are covered under the MSHCP.

Based on the results of database searches and historic records, as well as known regional occurrences, burrowing owl (*Athene cunicularia*) is the only special-status species with the potential to occur on the project site. Given the site's heavily disturbed nature and because it is surrounded by urban land uses, no special-status plants or other special-status animals have the potential to occur on the project site.

A site survey was conducted on January 14, 2013, by personnel of Brian F. Smith and Associates, Inc. The site was surveyed on foot, and all plant and wildlife species observed were recorded. No sign of burrowing owls, rare plants, or other special-status species were encountered. Although there is the potential for burrowing owl to utilize the project site, it is unlikely that this species would occupy the area due to the level of disturbance and the presence of dogs, feral cats, and other predators.

Though no sign of burrowing owls was found during previous surveys, project implementation may result in the loss of western burrowing owls through destruction of active nesting sites and/or incidental burial of adults, young, and eggs, should they become established on-site. Implementation of mitigation measures **BIO-1**, **BIO-2**, and **BIO-3** would reduce these impacts to a less than significant level.

Habitats on and adjacent to the project site may provide suitable nesting habitat for birds protected under the Migratory Bird Treaty Act and Section 3503.5 of the California Fish and Game Code. The removal of trees/vegetation during construction activities could result in noise, dust, human disturbance, and other direct/indirect impacts to nesting birds on or in the vicinity of the project site. Incorporation of mitigation measure **BIO-1** would ensure that potential impacts to these species are less than significant with mitigation incorporated.

b) **No Impact.** Sensitive habitats include (a) areas of special concern to resource agencies; (b) areas protected under CEQA; (c) areas designated as sensitive natural communities by the CDFW; (d) areas outlined in Section 1600 of the FGC; (e) areas regulated under Section 404 of the federal Clean Water Act; and (f) areas protected under local regulations and policies (MSHCP). No riparian habitat or other sensitive natural communities occur within the project boundaries; therefore, no impact will occur as a result of the project.

c) **No Impact.** No waters of the state or United States occur within the project boundaries; therefore, no impact to federally protected wetlands will occur as a result of the project.

d) **No Impact.** Wildlife corridors refer to established migration routes commonly used by resident and migratory species for passage from one geographic location to another. Movement corridors

may provide favorable locations for wildlife to travel between different habitat areas, such as foraging sites, breeding sites, cover areas, and preferred summer and winter range locations. They may also function as dispersal corridors allowing animals to move between various locations within their range. No wildlife corridors for resident migratory wildlife species occur on or adjacent to the site. In addition, the project is not located within a "Special Linkage Area" as defined by the MSHCP. As a result, no impact to the movements of any native resident or migratory fish or wildlife species, or established native resident or migratory wildlife corridors, or the use of native wildlife nursery sites would occur as a result of the proposed project.

e) **No Impact.** There are no native trees growing on-site. There is no tree preservation policy or ordinance applicable to the proposed project. Furthermore, as discussed throughout this subsection, the proposed project would protect biological resources, including sensitive, rare, threatened, or endangered species, wildlife, and habitats, consistent with policies in the MSHCP. As such, the project would not conflict with any local policies or ordinances protecting biological resources. No impact will occur.

f) **Less Than Significant With Mitigation Incorporated.** The MSHCP is a habitat conservation plan and natural community conservation plan to which the City of Wildomar is a permittee (i.e., signatory). Although the project site is located within the MSHCP Plan Area, it is not located within a Criteria Cell. Since the site is not located within a Criteria Cell, there are no conservation requirements on the property. The project site is subject to review for consistency with Section 6.1.2–Protection of Species Associated with Riparian/Riverine Areas and Vernal Pool, Section 6.1.3–Protection of Narrow Endemic Plant Species, Section 6.3.2–Additional Survey Needs and Procedures, and Section 6.1.4–Guidelines Pertaining to the Urban/Wildlands Interface of the MSHCP. A discussion of the proposed project's consistency with these MSHCP sections follows.

Consistency with MSHCP Section 6.1.2: Section 6.1.2 of the MSHCP addresses preservation of riparian, riverine, vernal pool, and fairy shrimp habitats. According to the habitat assessment prepared by Brian F. Smith and Associates (2013) (**Appendix 4**), the project site does not support riverine/riparian habitat and vernal pools. Therefore, no impacts to riparian or fairy shrimp habitat will occur.

Consistency with MSHCP Section 6.1.3: Section 6.1.3 sets forth survey requirements for certain narrow endemic plants. The project site is not located within the Narrow Endemic Plant Species Survey Area and therefore would not conflict with Section 6.1.3.

Consistency with MSHCP Section 6.3.2: Section 6.3.2 sets forth the survey requirements for various plant and animal surveys. The project is not located within a Criteria Area Species Survey Area. However, the project is located in an additional survey area for burrowing owl. A habitat assessment for burrowing owls was conducted (Brian F. Smith and Associates 2013). During the habitat assessment process, the project site was walked to determine the presence of burrowing owl habitat. It was determined that it was unlikely that burrowing owls would occupy the site due to the presence of predators; however, there is the potential that this species could become established on-site in the future. As such, project-related activities could result in impacts to this species. However, implementation of mitigation measures **BIO-2** and **BIO-3** would ensure that potential impacts to burrowing owls are avoided or mitigated to a less than significant level.

Consistency with MSHCP Section 6.1.4: Section 6.1.4 of the MSHCP addresses the need for certain projects to incorporate measures to address urban/wildland interfaces in or near the MSHCP conservation area. The project site is not located within or next to any MSHCP conservation areas that would require the need for implementation of the Urban/Wildland

Interface Guidelines. The project would not conflict with Section 6.1.4 of the MSHCP or with any goals and policies of the MSHCP; therefore, impacts are considered less than significant.

A final component of the MSHCP is mitigation fee areas, which are land areas that occur within the MSHCP and require a fee for development activities to occur. These fees are utilized to fund the minimization of impacts to certain endemic species. The proposed project is located within the MSHCP mitigation fee area (Riverside County Ordinance 810.2). A standard condition for the proposed project includes the payment of these fees to comply with the overlying habitat conservation plan (the MSHCP).

With implementation of mitigation measures and adherence to the standard conditions and requirements, any impacts will be less than significant with mitigation incorporated. In addition, implementation of the mitigation measures discussed above will mean the project will have no conflict with the MSHCP.

STANDARD CONDITIONS AND REQUIREMENTS

The project applicant shall submit fees to the City in accordance with the requirements of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Mitigation Fee Area.

MITIGATION MEASURES

BIO-1 The project applicant shall conduct construction and clearing activities outside of the avian nesting season (January 15–August 31), where feasible. If clearing and/or construction activities occur during the nesting season, preconstruction surveys for nesting raptors, migratory birds, and special-status resident birds (e.g., coastal California gnatcatcher) shall be conducted by a qualified biologist, up to 14 days before initiation of construction activities. The qualified biologist shall survey the construction zone and a 250-foot radius surrounding the construction zone to determine whether the activities taking place have the potential to disturb or otherwise harm nesting birds.

If an active nest is located within 100 feet (250 feet for raptors) of construction activities, the project applicant shall establish an exclusion zone (no ingress of personnel or equipment at a minimum radius of 100 feet or 250 feet, as appropriate, around the nest). Alternative exclusion zones may be established through consultation with the CDFW and the USFWS, as necessary. The exclusion zones shall remain in force until all young have fledged.

Reference to this requirement and to the Migratory Bird Treaty Act shall be included in the construction specifications.

If construction activities or tree removal are proposed to occur during the non-breeding season (September 1–January 14), a survey is not required, no further studies are necessary, and no mitigation is required.

Timing/Implementation: *The project applicant shall incorporate requirements into all rough and/or precise grading plan documents. The project applicant's construction inspector shall monitor to ensure that measures are implemented during construction.*

Enforcement/Monitoring: *City of Wildomar Planning and Public Works Departments*

BIO-2 Per MSHCP Species-Specific Objective 6, preconstruction presence/absence surveys for burrowing owl within the survey area, where suitable habitat is present, will be conducted for all covered activities through the life of the building permit. Surveys will be conducted 30 days prior

to disturbance. Take of active nests will be avoided. Passive relocation (use of one-way doors and collapse of burrows) will occur when owls are present outside the nesting season. If construction is delayed or suspended for more than 30 days after the survey, the area shall be resurveyed.

Surveys shall be completed for occupied burrowing owl burrows within all construction areas and within 150 meters (500 feet) of the project work areas (where possible and appropriate based on habitat). All occupied burrows will be mapped on an aerial photo.

Timing/Implementation: *Thirty days prior to any vegetation removal or ground-disturbing activities*

Enforcement/Monitoring: *City of Wildomar Planning and Public Works Departments*

BIO-3 If burrowing owls are identified during the survey period, the City shall require the project applicant to take the following actions to offset impacts prior to ground disturbance:

Active nests within the areas scheduled for disturbance or degradation shall be avoided from February 1 through August 31, and a minimum 75-meter (250-foot) buffer shall be provided until fledging has occurred. Following fledging, owls may be passively relocated by a qualified biologist.

If impacts on occupied burrows in the non-nesting period are unavoidable, on-site passive relocation techniques may be used if approved by the CDFW to encourage owls to move to alternative burrows outside of the impact area. However, no occupied burrows shall be disturbed during the nesting season. A qualified biologist must verify through noninvasive methods that the burrow is no longer occupied.

If relocation of the owls is approved for the site by the CDFW, the City shall require the developer to hire a qualified biologist to prepare a plan for relocating the owls to a suitable site. The relocation plan must include all of the following:

- The location of the nest and owls proposed for relocation.
- The location of the proposed relocation site.
- The number of owls involved and the time of year when the relocation is proposed to take place.
- The name and credentials of the biologist who will be retained to supervise the relocation.
- The proposed method of capture and transport for the owls to the new site.
- A description of site preparation at the relocation site (e.g., enhancement of existing burrows, creation of artificial burrows, one-time or long-term vegetation control).
- A description of efforts and funding support proposed to monitor the relocation.

If paired owls are present within 50 meters (160 feet) of a temporary project disturbance (e.g., parking areas), active burrows shall be protected with fencing/cones/flagging and monitored by a qualified biologist throughout construction to identify losses from nest abandonment and/or loss of reproductive effort. Any identified loss shall be reported to the CDFW.

Timing/Implementation: *Prior to any vegetation removal or ground-disturbing activities*

Enforcement/Monitoring: *City of Wildomar Planning and Public Works Departments*

5. Cultural Resources

Issues: Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?				✓
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?		✓		
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		✓		
d) Disturb any human remains, including those interred outside of formal cemeteries?		✓		

DISCUSSION

a) **No Impact**. The project would not cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 of the California Environmental Quality Act. A historical records check and field survey conducted of the site by a qualified archeologist (**Appendix 5**) determined that none of the existing structures on the site are of historical significance. In addition, the Wildomar General Plan does not identify any historical resources on the project site. No impact is expected.

b) **Less Than Significant Impact With Mitigation Incorporated**. The project is not anticipated to cause a substantial adverse impact to an archaeological resource. However, because archaeological resource sites have been identified within Wildomar, there is the potential for the unanticipated discovery of these resources. Because these resources are known to exist in the general area, the mitigation measures listed in this section (**CUL-1** through **CUL-8**) will ensure that any unanticipated discovery would not have a significant impact on archeological resources.

According to the Riverside County Land Information System (2013), the project site is not located within Native American tribal lands. However, historically there have been tribal activities in and around the Wildomar area, and there is a potential for the inadvertent discovery of previously unknown resources. Implementation of mitigation measures **CUL-1** through **CUL-8** will reduce any potential impact to a less than significant level.

c) **Less Than Significant Impact With Mitigation Incorporated**. The site has been identified as having a high potential/sensitivity (High A) for paleontological resources according to the Wildomar General Plan Paleontological Sensitivity Resources Map. Mitigation measures (**CUL-7** and **CUL-8**) will be implemented to reduce impacts in the event that paleontological resources are found during ground-disturbing activity. Following the implementation of mitigation measures **CUL-7** and **CUL-8**, any impact would be less than significant.

d) **Less Than Significant Impact With Mitigation Incorporated**. There are no records of the project site containing any previously identified formal or informal cemetery. Although there are no known human remains on the project site, in the event human remains are encountered during

ground-disturbing activities, mitigation measures (**CUL-1** through **CUL-6**) would reduce any impact to a less than significant level.

STANDARD CONDITIONS AND REQUIREMENTS

None required.

MITIGATION MEASURES

CUL-1 Prior to future development approval on the project site and issuance of any grading, building, or other permit authorizing ground-disturbing activity, the following wording shall be included in all construction contract documentation:

> If during grading or construction activities cultural resources are discovered on the project site, work shall be halted immediately within 50 feet of the discovery and the resources shall be evaluated by a qualified archeologist and the Pechanga Tribe. Any unanticipated cultural resources that are discovered shall be evaluated and a final report prepared, by the qualified archeologist. The report shall include a list of the resources discovered, documentation of each site/locality, and interpretation of resources identified, and the method of preservation and/or recovery for identified resources. In the event the significant resources are recovered and if the qualified archaeologist and the Tribe determines the resources to be historic or unique, avoidance and/or mitigation would be required pursuant to and consistent with CEQA Guidelines Sections 15064.5 and 15126.4 and Public Resources Code Section 21083.2 and the Cultural Resources Treatment and Monitoring Agreement required by mitigation measure **CUL-2**.

Timing/Implementation: *As a condition of future development approval, and implemented during ground-disturbing construction activities*

Enforcement/Monitoring: *City of Wildomar Building and Planning Departments*

CUL-2 At least 30 days prior to seeking a grading permit, the project applicant(s) for future development shall contact the appropriate Tribe to notify the Tribe of grading, excavation, and the monitoring program, and to coordinate with the City of Wildomar and the Tribe to develop a Cultural Resources Treatment and Monitoring Agreement.[4] The agreement shall address the treatment of known cultural resources; the designation, responsibilities, and participation of Native American Tribal monitors during grading, excavation, and ground-disturbing activities; project grading and development scheduling; terms of compensation; and treatment and final disposition of any cultural resources, sacred sites, and human remains discovered on the site.

Timing/Implementation: *Prior to the issuance of a grading permit*

Enforcement/Monitoring: *City of Wildomar Engineering and Planning Departments*

CUL-3 Prior to future development approval on the project site and issuance of any grading, building, or other permit authorizing ground-disturbing activity, the project applicant(s) shall include the following wording on all construction contract documentation:

> If human remains are encountered, California Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the Riverside County Coroner has

[4] It is anticipated that the Pechanga Band of Luiseño Indians will be the "appropriate" Tribe due to their prior and extensive coordination with the surrounding cities in determining potentially significant impacts and appropriate mitigation measures.

made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b), remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission shall be contacted within a reasonable time frame. Subsequently, the Native American Heritage Commission shall identify the "most likely descendant." The most likely descendant shall then make recommendations and engage in consultations concerning the treatment of the remains as provided in Public Resources Code Section 5097.98.

Timing/Implementation: *As a condition of future development approval, and implemented during ground-disturbing construction activities*

Enforcement/Monitoring: *City of Wildomar Engineering and Planning Departments*

CUL-4 All cultural materials, with the exception of sacred items, burial goods, and human remains (which will be addressed in the Cultural Resources Treatment and Monitoring Agreement required by mitigation measure **CUL-2**), that are collected during the grading monitoring program and from any previous archeological studies or excavations on the project site shall be curated according to the current professional repository standards. The collections and associated records shall be transferred, including title, to the Pechanga Tribe's curation facility, which meets the standards set forth in 36 CRF Part 79 for federal repositories.

Timing/Implementation: *As a condition of project approval, and implemented during ground-disturbing construction activities*

Enforcement/Monitoring: *City of Wildomar Engineering and Planning Departments*

CUL-5 All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible as determined by a qualified professional in consultation with the Pechanga Tribe. To the extent that a sacred site cannot be feasibly preserved in place or left in an undisturbed state, mitigation measures shall be required pursuant to and consistent with Public Resources Code Section 21083.2.

Timing/Implementation: *As a condition of project approval, and implemented during ground-disturbing construction activities*

Enforcement/Monitoring: *City of Wildomar Engineering and Planning Departments*

CUL-6 Prior to future development approval on the project site and issuance of any grading, building, or other permit authorizing ground-disturbing activity, the project applicant(s) shall include the following wording on all construction contract documentation:

> If inadvertent discoveries of subsurface archaeological resources are discovered during grading, work shall be halted immediately within 50 feet of the discovery and the developer and Tribe shall meet and confer regarding the significance of and mitigation for such resources. If the developer and the Tribe cannot agree on the significance of or the mitigation for such resources, these issues will be presented to the City of Wildomar Planning Director for decision. The Planning Director shall make the determination based on the provisions of CEQA with respect to archaeological resources and shall take into account the religious beliefs, customs, and practices of the Pechanga Tribe. Notwithstanding any other rights available under the law, the decision of the Planning Director shall be appealable to the City of Wildomar. In the event the significant

resources are recovered and if the qualified archaeologist determines the resources to be historic or unique as defined by relevant state and local law, avoidance and mitigation would be required pursuant to and consistent with CEQA Guidelines Sections 15064.5 and 15126.4 and Public Resources Code Section 21083.2.

Timing/Implementation: *As a condition of future development approval, and implemented during ground-disturbing construction activities*

Enforcement/Monitoring: *City of Wildomar Engineering and Planning Departments*

CUL-7 Prior to the issuance of a grading permit, the project applicant(s) for future development shall identify to the City of Wildomar the qualified paleontologist who has been retained to evaluate the significance of any inadvertently discovery paleontological resources. If paleontological resources are encountered during grading or project construction, all work in the area of the find shall cease. The project applicant shall notify the City of Wildomar and retain a qualified paleontologist to investigate the find. The qualified paleontologist shall make recommendations as to the disposition of the paleontological resources to the City of Wildomar Planning Director. The developer shall comply with the recommendations of the qualified paleontologist that are approved by the City of Wildomar Planning Director for the recovery, treatment and storage of any discovered resources. The developer shall pay for all required treatment and storage of discovered resources.

Timing/Implementation: *Prior to the issuance of a grading permit*

Enforcement/Monitoring: *City of Wildomar Engineering and Planning Departments*

CUL-8 To address the possibility that cultural resources may be encountered during future grading or construction, a qualified professional archeologist shall monitor all construction activities that could potentially impact archaeological deposits and a qualified paleontologist shall monitor all construction activities that could potentially impact paleontological deposits (e.g., grading, excavation, and/or trenching). However, monitoring should be discontinued as soon the qualified professional is satisfied that construction will not disturb cultural resources.

Timing/Implementation: *As a condition of future development approval, and implemented during ground-disturbing construction activities*

Enforcement/Monitoring: *City of Wildomar Engineering and Planning Departments*

6. Geology and Soils

Issues: Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	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, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning map, issued by the State Geologist for the area or based on other substantial evidence of a known fault?			✓	
ii) Strong seismic ground shaking?		✓		
iii) Seismic-related ground failure, including liquefaction?		✓		
iv) Landslides?				✓
b) Result in substantial soil erosion or the loss of topsoil?		✓		
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?		✓		
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?		✓		
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				✓

DISCUSSION

a)

i) **Less Than Significant Impact**. The project is located within Seismic Region 1 less than 1.5 miles from the Glen Ivy Segment of the Elsinore fault (WAC 2013) (**Appendix 6**). While Riverside County geographic information system (GIS) mapping does not identify the site as being within a California Earthquake Fault Hazard Zone (formerly known as an Alquist-Priolo Special Studies Zone) or the Riverside Fault Hazard Zone, the western border of the project site is less than 900 feet from the identified Wildomar fault. Considering this, the project site may be expected to experience occasional strong ground motions from earthquakes caused by both local and regional faults. A review by WAC Geotechnical (2013) of published maps and the Riverside

County Land Information System indicates that no known active faults are located on-site (**Appendix 6**).

As there is no evidence of a known fault on the project site, the project would not expose people or structures to potential substantial adverse effects associated with ground rupture. This would be considered a less than significant impact.

ii) **Less Than Significant Impact With Mitigation Incorporated.** The proposed project could expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. The project site is located in an area of high regional seismicity and may experience horizontal ground acceleration during an earthquake along the Wildomar fault of the Elsinore Fault Zone, which is located approximately 860 feet from the project site, or other fault zones throughout the region. The project site does not lie within a California Earthquake Fault Hazard Zone (formerly called an Alquist-Priolo Special Studies Zone) and does not lie within a Riverside County Fault Zone. The project site has been, and will continue to be, exposed to strong seismic ground shaking, which is considered a potentially significant impact. Compliance with mitigation measure **GEO-1** will minimize the potential for damage associated with strong seismic ground shaking and reduce this impact to a less than significant level.

iii) **Less Than Significant Impact With Mitigation Incorporated**. A preliminary soils report completed for the proposed project by WAC Geotechnical (2013; **Appendix 6**) determined that the project site is within a moderate risk liquefaction zone as established by the State of California. The report screened the soils of the project site (pursuant to Special Publication 117) and further revealed that the potential for liquefaction and adverse associated adverse effects within the site is considered low. To address any potential impacts from other seismic-related ground failure, compliance with mitigation measure **GEO-1** will minimize the potential for damage associated with strong seismic ground shaking and reduce this impact to a less than significant level.

iv) **No Impact.** The proposed project is not expected to expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death, from landslides. Due to the relatively level terrain in the proposed project area, this site is not subject to landslide, collapse, or rockfall hazards. The project site is located in an area of general seismic activity, but does not contain areas subject to unstable geologic units or soil. According to the Wildomar General Plan (2008), the project site has no potential for landslides. Additionally, due to the proposed project site's distance from boulders or other rock formations, there is no potential for mudslide or rock fall hazards. No impact is anticipated.

b) **Less Than Significant Impact With Mitigation Incorporated**. During site preparation and grading and as future development is proposed, soil erosion may result during construction, as grading and construction can loosen surface soils and make soils susceptible to the effects of wind and water movement across the surface. Mitigation measure **GEO-2** will require compliance with the National Pollutant Discharge Elimination System (NPDES) and the State Water Quality Control Board's construction permit as well as the submittal of detailed erosion control plans with any grading plans. A draft water quality management plan for the project site is included as **Appendix 8** to this Initial Study. The implementation of mitigation measures **GEO-2** and **GEO-3** will address any erosion issues associated with the future grading of the site. As a result, any impact would be considered to be less than significant with mitigation incorporated.

c) **Less Than Significant Impact With Mitigation Incorporated**. According to the Riverside County Land Information System (2013), the project site is located in an area that is designated as having a moderate potential for liquefaction and is susceptible to subsidence. To address any potential impacts related to ground failure, compliance with mitigation measure **GEO-1** would reduce any impact associated with ground failure hazards to a less than significant level.

d) **Less Than Significant Impact With Mitigation Incorporated**. Supporting soils on the site were noted in a preliminary soils report by WAC Geotechnical (2013) (**Appendix 6**) to be brown to tannish-brown silts and fine to medium-grained, alluvial, decomposed granite sands. All subsoils on the project site are considered to be suitable for use as structural fills intended to support proposed structures or to fill slopes (WAC 2013). Future development proposed on the site is required to comply with the California Building Code and commonly accepted engineering practices, which require special design and construction methods for dealing with expansive and unstable soil behavior. Compliance with recommendations included in the soils report required by mitigation measure **GEO-1** will ensure that soils at future development sites would be capable of supporting the structures resulting from the proposed project. Compliance would reduce any impact resulting from expansive and unstable soils to a less than significant level.

e) **No Impact**. The proposed project will not include the installation of septic tanks or alternative wastewater disposal systems. No impact is expected.

STANDARD CONDITIONS AND REQUIREMENTS

None required.

MITIGATION MEASURES

GEO-1 All grading shall conform to the California Building Code, Chapter 16.12 of the Wildomar Municipal Code, and all other relevant laws, rules, and regulations governing grading in Wildomar. Prior to commencing any grading which includes 50 or more cubic yards, the developer shall obtain a grading permit from the Building Department.

Timing/Implementation: *Prior to the issuance of a building permit*

Enforcement/Monitoring: *City of Wildomar Engineering and Planning Departments*

GEO-2 Prior to issuance of a grading permit, the developer shall provide the Engineering Department evidence of compliance with the National Pollutant Discharge Elimination System (NPDES) and obtain a construction permit from the State Water Resources Control Board (SWRCB).

Timing/Implementation: *Prior to the issuance of a grading permit*

Enforcement/Monitoring: *City of Wildomar Engineering and Planning Departments*

GEO-3 Erosion control-landscape plans, required for manufactured slopes greater than 3 feet in vertical height, are to be signed by a registered landscape architect and bonded per the requirements of California Building Code as adopted by the City of Wildomar in section 15.12.010 of the city municipal code. Planting shall occur within 30 days of meeting final grades to minimize erosion and to ensure slope coverage prior to the rainy season. The developer shall plant and irrigate all manufactured slopes steeper than a 4:1 (horizontal to vertical) ratio and 3 feet or greater in vertical height with grass or ground cover; slopes 15 feet or greater in vertical height shall be planted with additional shrubs or trees or as approved by the City Engineer.

Timing/Implementation: *Prior to the issuance of a grading permit*

Enforcement/Monitoring: *City of Wildomar Engineering and Planning Departments*

7. Greenhouse Gas Emissions

Issues: Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			✓	
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			✓	

DISCUSSION

a) **Less Than Significant Impact.** Construction and operation of the proposed project would generate greenhouse gas (GHG) emissions. Overall, the following activities associated with the future residential development could directly or indirectly contribute to the generation of GHG emissions:

- **Construction Activities:** During construction of the project, GHGs would be emitted through the operation of construction equipment and from worker and vendor vehicles, each of which typically uses fossil-based fuels to operate. The combustion of fossil-based fuels creates GHGs such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). Furthermore, CH_4 is emitted during the fueling of heavy equipment.
- **Gas, Electric, and Water Use:** Natural gas use results in the emissions of two GHGs: CH_4 (the major component of natural gas) and CO_2 from the combustion of natural gas. Electricity use can result in GHG production if the electricity is generated by combusting fossil fuel. California's water conveyance system is energy-intensive. Preliminary estimates indicate that the total energy used to pump and treat this water exceeds 6.5 percent of the total electricity used in the state per year.
- **Solid Waste Disposal:** Solid waste generated by the project could contribute to GHG emissions in a variety of ways. Landfilling and other methods of disposal use energy for transporting and managing the waste, and they produce additional GHGs to varying degrees. Landfilling, the most common waste management practice, results in the release of CH_4 from the anaerobic decomposition of organic materials. Methane is 21 times more potent a GHG than CO_2. However, landfill CH_4 can also be a source of energy. In addition, many materials in landfills do not decompose fully, and the carbon that remains is sequestered in the landfill and not released into the atmosphere.
- **Motor Vehicle Use:** Transportation associated with the proposed project would result in GHG emissions from the combustion of fossil fuels in daily automobile and truck trips.

GHG emissions associated with residential land uses would occur over the short term from construction activities, consisting primarily of emissions from equipment exhaust. There would also be long-term regional emissions associated with project-related new vehicular trips and stationary source emissions, such as natural gas used for heating and electricity usage for lighting. Preliminary guidance from the Office of Planning and Research (OPR) and recent letters from the Attorney General critical of CEQA documents which have taken different approaches

indicate that lead agencies should calculate, or estimate, emissions from vehicular traffic, energy consumption, water conveyance and treatment, waste generation, and construction activities. The calculation presented below includes construction as well as long-term operational emissions in terms of annual carbon dioxide equivalents (CO_2e) associated with the anticipated operations of the proposed project. The resultant emissions of these activities were calculated using the CalEEMod air quality model (**Appendix 3**). CalEEMod (SCAQMD 2011b) is a statewide land use emissions computer model designed to provide a uniform platform for the use of government agencies, land use planners, and environmental professionals.

Thresholds of significance illustrate the extent of an impact and are a basis from which to apply mitigation measures. On September 28, 2010, the SCAQMD conducted Stakeholder Working Group Meeting #15, which resulted in a recommended threshold of 3,000 metric tons of CO_2e as a threshold for all land uses. Therefore, for the purposes of this evaluation and in the absence of any other adopted significance thresholds, a threshold of 3,000 metric tons of CO_2e per year is used to assess the significance of greenhouse gases. Emissions resulting from implementation of the proposed project have been quantified and the quantified emissions are compared with the SCAQMD greenhouse gas threshold. The anticipated GHG emissions during project construction and operation are shown in **Table 7-1**. In accordance with the SCAQMD guidance, projected GHGs from construction have been quantified and amortized over 30 years, which is the number of years considered to represent the life of the project. The amortized construction emissions are added to the annual average operational emissions. Per **Table 7-1**, GHG emissions projected to result from both construction (amortized over 30 years) and operation of the proposed project would not exceed the SCAQMD greenhouse gas threshold of 3,000 metric tons of CO_2e per year. The impact is therefore considered less than significant.

Table 7-1
Construction-Related and Operational Greenhouse Gas Emissions (Metric Tons per Year)

Emission Type	CO_2e
Construction (amortized over 30 years)	28
Indirect Emissions from Energy Consumption	39
Water Demand	4
Waste Generation	5
Area Source (landscaping)	7
Mobile Source (vehicles)	114
Operations Total	**197**
SCAQMD Greenhouse Gas Threshold	*3,000*
Threshold Exceeded?	No

*Source: CalEEMod (SCAQMD 2011b). Emission projections based on modeling software defaults for nine single family dwelling units in Riverside County during the year 2015. Projections account for 86 average daily trips and the emission intensity factors of Southern California Edison. Construction equipment requirements and usage rates used in the model were based on model default assumptions as shown in **Table 3-1**. Per SCAQMD guidance, construction emissions are amortized over 30 years, which is considered to represent the life span of residential development.*

b) **Less Than Significant Impact.** The City of Wildomar does not have local policies or ordinances with the purpose of reducing GHG emissions. However, the City is subject to compliance with the Global Warming Solutions Act (AB 32), codified at Health and Safety Code Sections 38500, 38501, 28510 (repealed), 38530, 38550, 38560, 38561–38565, 38570, 38571, 38574, 38580, 38590, and 38592–38599. As identified under Issue a) above, the proposed project would not surpass the SCAQMD's recommended GHG significance thresholds, which were prepared with the purpose of complying with the requirements of AB 32. Therefore, the proposed project would not conflict with AB 32. This impact is less than significant.

STANDARD CONDITIONS AND REQUIREMENTS

None required.

MITIGATION MEASURES

None required.

8. Hazards and Hazardous Materials

Issues: Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			✓	
b) Create a significant hazard to the public or the environment through reasonable foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			✓	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				✓
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				✓
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles or a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				✓
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?				✓
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				✓
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?		✓		

DISCUSSION

a) **Less Than Significant Impact**. The Riverside County Environmental Health Department issues permits to and conducts inspections of businesses that use, store, or handle quantities of hazardous materials and/or waste greater than or equal to 55 gallons or 500 pounds, or 200 cubic feet of compressed gas, at any time. The Riverside County Environmental Health Department also implements the Hazardous Material Management Plans (Business Emergency Plans) that include an inventory of hazardous materials used, handled, or stored at any business in Wildomar.

When completed, the proposed project will be a residential development, which will not store or use any significant quantities of hazardous material. During the construction phase of the proposed project, the stormwater pollution prevention program will manage the presence and use of hazardous materials on the site. Any impacts would be less than significant.

b) **Less Than Significant Impact**. Residential development associated with the proposed project would not include uses that utilize large quantities of hazardous materials. Due to the limited nature of materials associated with residential land uses and the existing regulatory requirements, the potential for release of hazardous materials into the environment associated with development would be considered less than significant.

c) **No Impact**. The closest school to the proposed project, Elsinore High School, is located slightly more than one-half mile (0.67 miles) from the project site. Other schools within 1 mile of the project site include Wildomar Elementary (0.80 miles) and Santa Rosa Academy (0.94 miles). As a residential development, the project will not emit hazardous emissions or handle hazardous or acutely hazardous material within one-quarter mile of a school. No impacts are expected.

d) **No Impact**. The proposed project is not located on any hazardous materials site as designated by Government Code Section 65962.5. A review of the information on the Department of Toxic Substances Control website (2013) did not identify any other hazardous materials sites on or adjacent to the project site. Consequently, there is no impact.

e) **No Impact**. The project site is not located within any airport land use plan. The closest public airport is French Valley Airport, which is located approximately 9 miles southeast of the project site. Given the distance and that the project is not in the airport land use plan for French Valley Airport, there is no impact.

f) **No Impact**. The project site is located in proximity to Skylark Field, which is a private airstrip located at the south end of Lake Elsinore, approximately 1.5 miles northwest of the project site. Skylark Field is used primarily by skydiving aircraft, which commonly drop parachutists into the nearby back-bay area south of the lake. The airstrip is also used for gliding and other recreational uses. As shown in Figure 5, Skylark Airfield Area of Influence, of the Elsinore Area Plan (2003), the proposed project site is outside of the area of influence. No impact is anticipated.

g) **No Impact**. Access to the project site will be via Orange Street and Laguna Road. Development of the proposed project will not require the closure or relocation of any roadways, and operation of the proposed project is not expected to interfere with access to either Orange Street or Laguna Road. In addition, no current program within the City of Wildomar identifies either Laguna Road or Orange Street as an emergency access route. The proposed project will have no impact on any plans for emergency evacuation.

h) **Less Than Significant Impact With Mitigation Incorporated**. According to the Riverside County Land Information System (2013), the project site is in a Cal Fire Local Responsibility Area (LRA) and the southeastern portion of the project site (affecting proposed lots 4 and 5) is within a Very High Fire Hazard Severity Zone (VHFHSZ). Although the proposed project is in an urbanized setting, the VHFHSZ designation calls for specific measures to help prevent the threat of wildfire. Mitigation measure **HAZ-1** will mitigate for a potential wildfire threat, resulting in a less than significant impact.

STANDARD CONDITIONS AND REQUIREMENTS

1. Septic tanks currently exist on the property. Any buried septic systems shall be properly removed following Riverside County Environmental Health Department guidelines.

2. Any trash, debris, and waste materials remaining from uses prior to development shall be disposed of off-site, in accordance with current local, state, and federal disposal regulations. Any materials containing petroleum residues encountered during property improvements shall be evaluated prior to removal and disposal, following proper procedures. Any buried trash/debris encountered shall be evaluated by an experienced environmental consultant prior to removal.

3. Prior to the sale of any portion of the proposed project that is within an area designated by Cal Fire as a Very High Fire Hazard Severity Zone, the current property owner will be required to make a natural hazard disclosure as part of a real estate transfer. Any potential property buyer shall be required to sign a disclosure indicating they have knowledge of the property's location within a Very High Fire Hazard Severity Zone.

MITIGATION MEASURES

HAZ-1 Homeowners of the proposed project shall comply with California Government Code Section 51182 which includes the following requirements for residences within a Very High Fire Hazard Severity Zone:

- a defensible space of 100 feet between a structure the front, rear and each side of a structure shall be maintained;
- all trees, shrubs, and any other plant material adjacent to or overhanging a building must be kept free of dead or dying wood;
- the roof of any structure must be kept free of leaves, needles, or other vegetative materials;
- any portion of a tree that extends within 10 feet of the outlet of a chimney or stovepipe must be removed.

Timing/Implementation: *Upon occupancy*

Enforcement/Monitoring: *City of Wildomar Code Enforcement Division*

9. Hydrology and Water Quality

Issues: Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?			✓	
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			✓	
c) 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?			✓	
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?			✓	
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?			✓	
f) Otherwise substantially degrade water quality?			✓	
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?				✓
h) Place within 100-year flood hazard area structures which would impede or redirect flood flows?				✓
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?				✓
j) Inundation by seiche, tsunami, or mudflow?				✓

DISCUSSION

a) **Less Than Significant Impact.** The project site falls under the jurisdiction of the San Diego Regional Water Quality Control Board (RWQCB) and is located in the Lake Elsinore watershed. Any future development associated with the proposed project will be subject to the requirements of National Pollutant Discharge Elimination System (NPDES) Stormwater Permit No. R8-2010-0033, which requires that the City impose water quality and watershed protection measures for all development projects and prohibits discharges from causing violations of applicable water quality standards or from resulting in conditions that create a nuisance or water quality impairment in receiving waters. A key component of the NPDES permit is the implementation of the Area-Wide Urban Runoff Management Program for the City, which includes the requirement of stormwater quality treatment and/or best management practices (BMPs) in project design for both construction and operation for new development. The BMPs will include site design components as well as source and treatment control measures, which are be included in the project's water quality management plan (WQMP) (**Appendix 8**).

Following the implementation of the best management practices included in the project's WQMP, the proposed project and associated future development on the project site is not expected to violate any water quality standards or waste discharge requirements, or have a significant impact on the environment.

b) **Less Than Significant Impact**. The proposed project is located within the area subject to the Elsinore Basin Groundwater Management Plan (EVMWD 2005). Adopted on March 24, 2005, under the authority of the Groundwater Management Planning Act (California Water Code Part 2.75, Section 10753), as amended, the plan addresses the hydrogeologic understanding of the Elsinore Basin, the evaluation of baseline conditions, the identification of management issues and strategies, and the definition and evaluation of alternatives.

Currently, the proposed project site is largely permeable, and the overall and proposed development will slightly increase the imperviousness of the site. Considering that the proposed project includes the development of low-density residential housing, there will not be a significant decrease in the permeability of the project site. Therefore the proposed project would not result in significant impacts to the recharge of local groundwater supplies because surface water from the proposed project site will not be removed from the Elsinore Basin.

The proposed project would not substantially interfere with groundwater recharge or deplete groundwater supplies. Furthermore, the EVMWD imports water to ensure that significant overdraft of local groundwater supplies does not occur. Based on the EVMWD's Urban Water Management Plan (2011), no adverse impacts to groundwater resources are forecast to occur from implementing the proposed project, which is anticipated as part of buildout of the Wildomar General Plan. This impact will be less than significant.

c) **Less Than Significant Impact**. A hydrology/drainage study prepared for the proposed project by Love Engineering in February 2013 (**Appendix 7**) determined that the proposed residential development on the project site would result in reduced stormwater flows from the project site. This reduced flow rate from the project site would be due to a substantial increase in the path of travel for one of the two tributary drainage areas of the site. **Table 9-1** includes the flow rates for both drainage areas.

Table 9-1
Stormwater Flow Rates (Cubic Feet per Second)

	2-Year – 24-Hour Runoff (CFS)		10-Year – 24-Hour Runoff (CFS)		100-Year – 3-Hour Runoff (CFS)
	Existing Condition	Developed Condition	Existing Condition	Developed Conditions	Peak Q
Area A	0.6	0.4	1.6	1.1	6.4
Area B	0.3	0.2	0.8	0.7	4.0
Total	0.9	0.6	2.4	1.8	10.4

*Source: Love Engineering 2013 (**Appendix 7**)*

Within both drainage area A and drainage area B flows will primarily drain directly to either Orange Street or Laguna Road. Excess flow from drainage area A will be collected by a proposed two-foot wide, six-inch deep culvert that will convey flows via an existing street inlet in Laguna Road to an existing detention basin on Cashew Street approximately 400 feet northwest of the project site. Excess flows from drainage area B will be collected by a proposed two-foot wide, six-inch deep culvert that will convey flows to Orange Street and existing facilities.

Future development on the project site will be required to implement the water quality management plan (WQMP) prepared for the proposed project (**Appendix 8**). Considering the reduced stormwater flows from the site and the implementation of the WQMP, any impact would be less than significant.

d) **Less Than Significant Impact**. While the proposed project would result in slight changes to the existing hydrologic features of the project site, these changes would not result in significant changes to the volume of stormwater flows from the project site or the hydrologic features receiving flows from the site (Love Engineering 2013) (**Appendix 7**). Any impact would be less than significant.

e) **Less Than Significant Impact**. The proposed project would not result in any operational increases in runoff water which will continue to flow from the site. In addition, any future development will be required to prepare a stormwater pollution prevention plan (SWPPP) that will include best management practices designed to reduce and manage increases in runoff water at the site. The BMPs may include design components such as channeling site runoff into landscape areas, the incorporation of landscape buffer areas between sidewalks and streets, the construction of containment and infiltration of roof runoff to landscaping. The proposed best management practices included in the water quality management plan (**Appendix 8**) and required SWPPP will ensure that post-development discharge of stormwater flow is equal to predevelopment conditions. Any impact would be less than significant.

f) **Less Than Significant Impact**. The proposed project and/or future development associated with the proposed project would not otherwise substantially degrade water quality. Future development on the project site would be subject to the requirements of NPDES Stormwater Permit No. R8-2010-0033, which requires that the City impose water quality and watershed protection measures for all development projects and prohibits discharges from causing violations of applicable water quality standards or from resulting in conditions that create a nuisance or water quality impairment in receiving waters. A key component of the NPDES permit is the implementation of the Area-Wide Urban Runoff Management Program for the City, which

includes the requirement of stormwater quality treatment and/or BMPs in project design for both construction and operation for new development.

As a standard condition, any future development will be required to prepare and comply with the requirements of the SWPPP and finalized water quality management plan, which would ensure that significant water quality impacts and violations of standards and requirements do not occur. Any impact to water quality would be less than significant.

g) **No Impact**. The proposed project site is not located within a 100-year flood hazard area (according to FEMA Flood Map Number 06065C2682G). Therefore, the proposed project would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map. No impact is anticipated.

h) **No Impact**. The project does not propose to impede or redirect any flood flows. The project site is located within Zone X according to Federal Emergency Management Agency (FEMA) Flood Map Number 06065C2682G. The FEMA describes Zone X as an area determined to be outside the 0.2 percent annual chance floodplain. The project site is located outside of the 100-year flood hazard area. No impact is anticipated.

i) **No Impact**. According to Figure 10 of the Wildomar General Plan (2008), the project site is located outside of the inundation area of Lake Elsinore. No impact is anticipated.

j) **No Impact**. The project site is not located in an area that is subject to seiches, mudflows, or tsunamis. No impact is anticipated.

STANDARD CONDITIONS AND REQUIREMENTS

1. Prior to the approval of the grading permit for future development on the project site, the project applicant(s) shall be required to prepare a stormwater pollution prevention plan (SWPPP) consistent with the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2010-0014-DWQ), which is to be administered through all phases of grading and project construction. The SWPPP shall incorporate best management practices (BMPs) to ensure that potential off-site water quality impacts during construction phases are minimized. The SWPPP shall be submitted to the Regional Water Quality Control Board and to the City of Wildomar for review. A copy of the SWPPP must be kept accessible on the project site at all times. In addition, the project applicant(s) will be required to submit, and obtain City approval of, the attached (**Appendix 8**) preliminary water quality management plan prior to the issuance of any building or grading permit for future development on the project site in order to comply with the Area-Wide Urban Runoff Management Program. The project shall implement site design BMPs, source control BMPs, and treatment control BMPs as identified in the water quality management plan. Site design BMPs shall include, but are not limited to, landscape buffer areas, roof and paved area runoff directed to vegetated areas, and vegetated swales. Source control BMPs shall include, but are not limited to, education, landscape maintenance, litter control, irrigation design to prevent overspray, and covered trash storage. Treatment control BMPs shall include vegetated swales and a detention basin, or an infiltration device.

MITIGATION MEASURES

None required.

10. Land Use and Planning

Issues: Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?				✓
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				✓
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?			✓	

DISCUSSION

a) **No Impact**. The proposed project will not eliminate any streets in the area or to create any new arterial roadways or structures that would divide the community. No impact is anticipated.

b) **No Impact.** The proposed project site and all surrounding land is zoned as Rural Residential and designated for Low Density Residential use. The proposed project is consistent with the existing zone and land use designation. No impact is anticipated.

c) **Less Than Significant Impact.** The City of Wildomar participates in the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). The plan establishes areas of sensitivity considered Criteria Areas or Cells. Projects outside of these areas can proceed consistent with the provisions of CEQA and are subject to payment of an MSHCP Mitigation Fee. The MSHCP establishes procedures for the determination of sensitivity. The proposed project is subject to the MSHCP but is outside of any Criteria Area or Cell; therefore, the proposed project will be required to pay the standard impact mitigation fee. The proposed project will not conflict with any habitat conservation plan or natural community conservation plan, and any impacts would be less than significant.

STANDARD CONDITIONS AND REQUIREMENTS

1. Prior to the issuance of a grading permit, any developer shall pay the regional impact mitigation fee established by the Western Riverside County Multiple Species Habitat Conservation Plan.

MITIGATION MEASURES

None required.

11. Mineral Resources

Issues: Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?				✓
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?				✓

DISCUSSION

a) **No Impact.** The proposed project is located within an area designated as MRZ-3 by the Wildomar General Plan (2008). The MRZ-3 zone includes areas where the available geologic information indicates that while mineral deposits are likely to exist, the significance of the deposit is undetermined. A review of project soil types (**Appendix 6**) did not reveal any significant potential for mineral resources at the site. No impact is anticipated.

b) **No Impact.** There are no known locally important mineral resource recovery sites identified on the project site in the Wildomar General Plan (2008) or in a specific plan or other land use plan of value to the region or to the residents of the state. No impact is expected.

STANDARD CONDITIONS AND REQUIREMENTS

None required.

MITIGATION MEASURES

None required.

12. Noise

Issues: Would the project result in:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) The exposure of persons to, or the generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			✓	
b) The exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?		✓		
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?		✓		
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?		✓		
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 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?				✓
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?			✓	

DISCUSSION

a) **Less Than Significant Impact.** The City of Wildomar sets standards for allowable noise levels according to General Plan land use designations. These standards, contained within the Wildomar General Plan, are measured by equivalent continuous sound level (L_{eq}). L_{eq} is a method of describing sound levels that vary over time, resulting in a single decibel value which takes into account the total sound energy over a period of time of interest. The proposed project is currently designated for residential use, allowing for a maximum exterior noise level of 65 L_{eq} (10 minutes) from 7 a.m. to 10 p.m. and 45 L_{eq} (10 minutes) from 10 p.m. to 7 a.m., and a maximum interior noise level of 55 L_{eq} (10 minutes) from 7 a.m. to 10 p.m. and 40 LEQ (10 minutes) from 10 p.m. to 7 a.m. Since the proposed project does not require a change in the existing land use of the project site, and the surrounding land uses are the same as that of the proposed project, the proposed project does not represent any significant change to the long-term noise levels of the area.

As the proposed project is developed, it is possible that construction noise will result in a short-term, unsustained elevation in the amount of noise at the project site. Noise levels associated with typical construction equipment are summarized in **Table 12-1.** Based on these typical noise levels, construction activities associated with future development may result in noise levels that

range from 71 to 99 dBA at 50 feet. However, noise levels would attenuate as noise source distance increases away from sensitive receptors. A common attenuation rate for noise levels is a 3 dBA reduction in noise level for every doubling of distance.

Table 12-1
Typical Construction Equipment Noise Levels

Type of Equipment	Range of Maximum Sound Levels Measured (dBA at 50 feet)
Rock Drills	83–99
Jackhammers	75–85
Pumps	74–84
Dozers	77–90
Scrapers	83–91
Haul Trucks	83–94
Cranes	79–86
Portable Generators	71–87
Rollers	75–82
Tractors	77–82
Front-End Loaders	77–90
Hydraulic Backhoes	81–90
Hydraulic Excavators	81–90
Graders	79–89
Air Compressors	76–89
Trucks	81–87

Source: FTA 2006

However, the City of Wildomar General Plan does not set standards for temporary noise impacts so any noise generation during the construction of the proposed project will not result in a generation of noise in excess of currently established standards. Any impact would be less than significant.

b) **Less Than Significant Impact With Mitigation Incorporated**. Construction of future development on the project site would have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved. Vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. **Table 12-2** displays vibration levels for typical construction equipment.

Table 12-2
Typical Construction-Equipment Vibration Levels

Equipment	PPV at 25 Feet (in/sec)[1]	Approximate Lv at 25 Feet[2]
Large Bulldozer	0.089	87
Caisson Drilling	0.089	87
Trucks	0.076	86
Jackhammer	0.035	79
Small Bulldozer	0.003	58

Source: FTA 2006
[1] Where PPV is the peak particle velocity
[2] Where 1_, is the velocity level in decibels (VdB) referenced to 1 micro-inch/second and based on the root mean square (RMS) velocity amplitude.

Future development on the project site may require the use of bulldozers and trucks. According to the Federal Transit Administration (FTA), vibration levels associated with the use of a large bulldozer are 0.089 inches per second (in/sec) peak particle velocity (PPV) and 87 vibration decibels [VdB referenced to 1 micro inch per second (gin/sec) and based on the RMS velocity amplitude] at 25 feet, as shown in **Table 12-2**. Using the FTA-recommended procedure for applying a propagation adjustment to these reference levels, predicted worst-case vibration levels of approximately 0.03 in/sec PPV and 81 dBA at approximately 50 feet from the project site's boundary could occur from use of a large bulldozer. These vibration levels would not exceed the California Department of Transportation's recommended standard of 0.2 in/sec PPV (Caltrans 2002) with respect to the prevention of structural damage for normal buildings. Vibration levels at greater distances would be substantially diminished.

Implementation of mitigation measure **NOI-1** would ensure that construction activities associated with future development on the project site are limited to the hours of 6:00 a.m. to 6:00 p.m. from June through September, and 7:00 a.m. to 6:00 p.m. October through May. In addition, mitigation measure **NOI-2** would ensure that sources of construction noise are identified and individually mitigated for by planned actions such as equipment location and the placement of noise barriers. Upon completion of development, no excessive ground vibrations or noises are expected to occur. Following the implementation of mitigation measures **NOI-1** and **NOI-2**, any impacts would be less than significant.

c) **Less Than Significant Impact With Mitigation Incorporated**. The proposed project would not result in increases in ambient noise levels above existing levels without the project. The site is currently vacant and has a minimal contribution to local ambient noise levels, and the proposed land use of the project site will be consistent with the surrounding area, resulting in no permanent substantial increases in ambient noise levels.

d) **Less Than Significant Impact With Mitigation Incorporated**. The proposed project may result in a substantial temporary increase in ambient noise levels above existing levels and construction of future development on the project site would temporarily increase ambient noise levels. This is expected to occur as the site is graded and as homes are constructed. These noise impacts have the potential to be significant considering the distance to adjacent residences. However, implementation of mitigation measure **NOI-1** would require that all construction activities (except in emergencies) be limited to the hours of 6:00 a.m. to 6:00 p.m. from June through September, and 7:00 a.m. to 6:00 p.m. from October through May. In addition, people working

near the heavy equipment would be exposed to high noise levels for short periods of time; however, the City and private contractors are required to comply with Occupational Safety and Health Administration (OSHA) requirements for employee protection during construction. With the implementation of mitigation measures **NOI-1 and NOI-2**, no significant noise impact is expected to occur.

e) **No Impact**. The project site is not located within the influence area for any airport. The closest public general aviation airfield is French Valley Airport, approximately 9 miles southeast of the project site. The project site is outside of the airport noise and safety influence or flight surface control areas. No impact is expected.

f) **Less Than Significant Impact**. Skylark Field is located approximately 1.5 miles northwest of the project site in the City of Lake Elsinore. As shown on Figure 5 of the Elsinore Area Plan, the proposed project is outside the Airport Influence Policy area for Skylark Field. The proposed project is not within an airport master plan area and does not require review by the Airport Land Use Commission. As the proposed project is distant from the airfield and not part of the influence policy area for the airport, aircraft will be higher in overflight of the property and would not subject the project site to excessive noise. This impact is considered less than significant.

STANDARD CONDITIONS AND REQUIREMENTS

None required.

MITIGATION MEASURES

NOI-1 Future development on the project site shall implement the following construction noise mitigation measures to reduce potential construction noise impacts to a less than significant level:

- All construction and general maintenance activities (except in an emergency) shall be limited to the hours of 6:00 a.m. to 6:00 p.m. from June through September and 7:00 a.m. to 6:00 p.m. from October through May.
- Construction equipment staging and storage areas shall be located as far from the existing residential land uses as possible.
- All construction equipment shall be properly maintained with operating mufflers and air intake silencers as effective as those installed by the original manufacturer.
- Residents living up to 1,000 feet from the property line shall be provided with a construction schedule and contact information to file a complaint. Timely notification shall accompany any major changes to this schedule.
- A temporary noise barrier shall be erected along the project boundaries during all construction activities. The barrier shall be capable of reducing any construction-related noise impacts to levels below the thresholds within the city of Wildomar General Plan.

Timing/Implementation: *During construction*

Enforcement/Monitoring: *City of Wildomar Building and Planning Departments*

NOI-2 Prior to the issuance of a grading permit, a construction noise mitigation plan shall be drafted by the developer and submitted to the City for review and approval. The plan shall depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of the proposed project. Methods for mitigating for any noise impact may include:

- the construction of a noise attenuation fence;
- preferential location of equipment; and
- the use of current noise suppression technology and equipment.

Timing/Implementation: *Prior to Grading*

Enforcement/Monitoring: *City of Wildomar Building and Planning Departments*

13. Population and Housing

Issues: Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			✓	
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				✓
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				✓

DISCUSSION

a) **Less Than Significant Impact.** The proposed project will result in nine additional single-family homes. Using 2012 California Department of Finance estimates, an average of 3.255 persons per household is assumed for residences within the city. Considering this estimate, the proposed project will result in 30 new residents. As of 2012, according to the California Department of Finance, Wildomar's estimated population was 32,719. The addition of 30 residents to the city's population represents and increase of less than 0.001 percent. Any impact would be less than significant.

b, c) **No Impact.** There is currently a single home on the project site that will remain as part of the proposed project. No housing units or people would be affected, and the construction of replacement housing is not required. No impact is expected.

STANDARD CONDITIONS AND REQUIREMENTS

None required.

MITIGATION MEASURES

None required.

14. Public Services

Issues: Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the following public services:				
a) Fire protection?			✓	
b) Police protection?			✓	
c) Schools?			✓	
d) Parks?			✓	
e) Other public facilities?			✓	

DISCUSSION

a) **Less Than Significant Impact.** The Riverside County Fire Department (RCFD) provides fire protection and safety services to the City of Wildomar. The proposed project will be primarily served by Wildomar Fire Station #61, located at 32637 Gruwell Street, approximately one-half mile from the project site. In addition to Fire Station #61, several other Riverside County fire stations in the surrounding area would be able to provide fire protection safety services to the project site if needed. The 2011 RCFD annual report concluded that within Wildomar there were a total of 2,674 incidents in 2010 and 2,555 incidents in 2011. Considering the number of housing units in the city, 10,806 in 2010 and 10,840 in 2011, there were .25 incidents per household in 2010 and 0.24 incidents per household in 2011. The proposed project will add nine homes. Considering the 2011 incident rate of .24 incidents per housing unit, the proposed project may be projected to generate 2.16 annual incidents. An additional 2.16 incidents would represent an insignificant increase in the number of incidents in Wildomar.

A standard condition of approval for the proposed project includes compliance with the requirements of the Riverside County Fire Department and the payment of standard development impact fees by any future home builder pursuant to Section 3.44.080 of the Wildomar Municipal Code. The proposed project is not expected to result in activities that create unusual fire protection needs or significant impacts. Any impact would be considered incremental and less than significant.

b) **Less Than Significant Impact.** Police protection services are provided by the Riverside County Sheriff's Department (RCSD). The nearest sheriff's station is located at 333 Limited Street in Lake Elsinore, approximately 6.3 miles from the project site. Traffic enforcement is provided for Riverside County in this area by the California Highway Patrol, with additional support from the local Riverside County Sheriff's Department.

For the purpose of establishing acceptable levels of service, the Riverside County Sheriff's Department maintains a recommended service ratio of 1.2 sworn law enforcement personnel for every 1,000 of population (City of Wildomar 2008). As stated in Issue a) in subsection 13,

Population and Housing, of this Initial Study, the proposed project will result in approximately 30 new residents. Considering the RCSD's recommended service ratio, the population increase resulting from the proposed project would require 0.036 additional sworn law enforcement personnel.

In addition, as a standard condition of approval, any future building permit applicant will be required to pay the standard development impact fees pursuant to Section 3.44.080 of the Wildomar Municipal Code. The proposed project is not expected to result in activities that create unusual police protection needs or significant impacts. Any impacts would be considered incremental and less than significant.

c) **Less Than Significant Impact.** The project site is located in the Lake Elsinore Unified School District (LEUSD). The district has established school impact mitigation fees to address the facility impacts created by residential, commercial, and industrial development.

According to the LEUSD's School Facilities Needs Analysis, the generation rates for single-family homes include 0.2877 per unit for elementary school (K–5), 0.1376 per unit for middle school (grades 6–8), and 0.1702 per unit for high school (grades 9–12). Based on these rates, the project will generate three elementary school students, two middle school students, and two high school students, for a total of seven students (LEUSD 2012). As of the 2011/12 academic year, the LEUSD enrolled 22,171 students. The proposed project will represent an increase in LEUSD enrollment of less than 1 percent.

Current state law requires that impacts to current school facilities be mitigated though mandatory development impact fees. The fees enacted within the LEUSD of $3.10 per square foot of residential development will be collected for future development as stated in standard conditions of approval. This standard condition of approval will act to fully mitigate any impact the proposed project will have on the LEUSD's facilities. Any impact would be less than significant.

d) **Less Than Significant Impact.** The City of Wildomar owns and manages three public parks: Marna O'Brien Park, Regency Heritage Park, and Windsong Park. In addition, the city contains 306.93 acres of land dedicated to open space recreation and 220.92 acres of land dedicated to open space conservation. Upon city incorporation in 2008, the City of Wildomar adopted the Riverside County Municipal Code. The code includes an open space requirement of 3 acres of neighborhood and community parkland per 1,000 residents. As of 2012, according to the California Department of Finance, Wildomar's estimated population was 32,719. The city's current open space inventory includes 542.11 acres, which surpasses the 98.16 acres required by the City's Municipal Code. The completion of the proposed project will result in a population increase of approximately 30 residents in Wildomar, generating a demand for 0.09 acres of parkland. Finally, the proposed project will not directly connect to the City's multi-use trail network with the closest component of the trail system running along Grove Street, approximately 600 feet north of the project site. Considering the incremental increase in demand for parkland and Wildomar's current surplus as well as the standard condition of payment of any Park Impact fees , any impact would be less than significant.

e) **Less Than Significant Impact.** Development associated with the proposed project may result in a slight increase in the demand for other governmental services, economic development, and the other community support services commonly provided by the City of Wildomar, including but not limited to City Hall, the Mission Trail Library, and the Animal Friends of the Valleys animal shelter. As stated in Issue a) in subsection 13, Population and Housing, of this Initial Study, the proposed

project will result in approximately 30 new residents. Considering the 2012 population of Wildomar of 32,719, the proposed project would result in an incremental population increase. Impacts to community support services as a result of this incremental population increase would be less than significant.

A standard condition of approval for the proposed project includes the payment of standard development impact fees pursuant to Section 3.44.080 of the Wildomar Municipal Code. The proposed project is not expected to result in activities that create unusual demands on local government services. Any impact would be less than significant.

STANDARD CONDITIONS AND REQUIREMENTS

1. Prior to issuance of any building permit, the project applicant shall pay the required development impact fees for the Riverside County Sherriff's Department, Riverside County Fire Department, and other governmental services pursuant to Section 3.44 of the Wildomar Municipal Code and in effect at the time of building permit issuance.
2. Prior to issuance of any building permit, the project applicant shall pay the required school impact mitigation fees established by the Lake Elsinore Unified School District and in effect at the time of building permit issuance.
3. Prior to issuances of any building permit, the project applicant shall by the required Park Impact fees established by the City of Wildomar and in effect at the time of building permit issuance.

MITIGATION MEASURES

None required.

15. Recreation

Issues: Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	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?			✓	
b) Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?				✓

DISCUSSION

a) **Less Than Significant Impact.** The proposed project and future residential development associated with the proposed project may result in an incremental increased use of existing neighborhood and regional parks or other recreational facilities. However, considering the very small population increase the proposed project may result in, and the required minimum 0.5 acre lot sizes which would allow for home-based recreational opportunities, any impact would be less than significant.

b) **No Impact.** The proposed project and future residential development associated with the proposed project would not be expected to require the construction or expansion of new recreational facilities. There are no parks or recreational facilities included in the project. As a result, no impacts are anticipated.

STANDARD CONDITIONS AND REQUIREMENTS

None required.

MITIGATION MEASURES

None required.

16. Transportation/Traffic

Issues: Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	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?			✓	
b) Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?			✓	
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?				✓
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?		✓		
e) Result in inadequate emergency access?				✓
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?			✓	

DISCUSSION

a) **Less Than Significant Impact.** Intersection and roadway functioning is often described by its level of service (LOS). LOS A constitutes light traffic conditions with no interruptions in service or delays at intersections, while LOS F represents congested and unstable conditions with slow moving traffic accompanied by significant delays at many intersections. The City of Wildomar General Plan (2008) establishes a citywide goal for intersection performance during peak traffic periods at LOS D or lower.

Development associated with the proposed project would result in additional vehicle trips on the citywide road network. Assumptions regarding the number of trips a proposed project will generate may be based on trip generation rates in the Institute of Transportation Engineers, *Trip Generation Manual, 8th Edition* (2008). The manual, which determines daily traffic trips based on

land use, states that detached single-family residential units generate 0.75 a.m. peak-hour trips, 1.01 p.m. peak-hour trips, and 9.57 daily trips. Considering these generation rates, the proposed development is projected to generate a total of 86 additional daily vehicle trips on a weekday, 7 of which will occur during the morning peak hour and 9 of which will occur during the evening peak hour.

The Wildomar General Plan (2008) also classifies local roadways by the number of lanes of the road and certain design standards for vertical and horizontal roadway alignment. According to these criteria, both Orange Street and Laguna Road would be categorized as collector roadways. For collector roadways, to be classified as a LOS D the maximum allowed average daily trips (ADT) are 11,700. (Wildomar, 2008) The 2013 Riverside County Transportation Department (RCTD) traffic count book included a 3,408 ADT count for Orange Street south of Walnut Street but did not include any ADT information for Laguna Road. (RCTD, 2013) A 3,408 ADT for Orange Street allows for a LOS lower than D and an additional 86 vehicle trips would not result in a LOS higher than D. Despite having no available information on the current ADT for Laguna Road, the additional 86 vehicle trips resulting from the proposed project would represent a less than 0.01 percent increase to a collector roadway already operating at LOS D.

In addition, the proposed project represents a population increase of approximately 30 people. Such an increase is not significant enough to affect public transit systems or non-motorized transit opportunities. Any impact would be less than significant.

b) **Less Than Significant Impact**. Every county in California is required to develop a Congestion Management Program (CMP) that looks at the links between land use, transportation, and air quality. In its role as Riverside County's Congestion Management Agency, the Riverside County Transportation Commission (RCTC) prepares and periodically updates the county's CMP to meet federal Congestion Management System guidelines as well as state CMP legislation. The Southern California Association of Governments (SCAG) is required under federal planning regulations to determine that CMPs within its region are consistent with the Regional Transportation Plan. The RCTC's current Congestion Management Program was adopted in March 2011; of the roadways in Wildomar, Interstate 15 (I-15) is included in the CMP.

The RCTC's Congestion Management Program does not require traffic impact assessments for development proposals. However, local agencies are required to maintain the minimum level of service thresholds included in their respective general plans. If a street or highway segment included as part of the CMP falls below the adopted minimum level of service of E, a deficiency plan is required.

Some of the vehicle trips generated by residential development on the project site will connect to the CMP network at Interstate 15, and development associated with the proposed project may add an additional increment of traffic to the designated CMP network.

Using vehicular traffic estimates included in the Institute of Transportation Engineers *Trip Generation Manual, 8th Edition* (2008), the proposed project can be estimated to result in 86 new weekday daily vehicle trips. Conservatively predicting that all of those new 86 daily vehicle trips will include travel on I-15, this increase would represent an incremental increase to the 2012 vehicle counts of 118,500 along I-15 at the Baxter Road exchange (Caltrans 2013).[5] Any impacts

[5] 2012 average annual daily trip (AADT) of 118,500 was achieved by obtaining the delta of 116,000 AADT south of the I-15 Clinton Keith exit and 121,000 AADT north of the I-15 Baxter Road exit.

would be less than significant.

c) **No Impact.** The proposed project would not 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. The maximum building height of the project is significantly less than the height of the terrain in the vicinity of the project. Since the location and height of the project would not affect air traffic patterns or aircraft operations from any private or public airport, no impacts are expected.

d) **Less Than Significant Impact With Mitigation Incorporated.** Orange Street as it runs along the eastern boundary of the project site has a slope of 3.9 percent resulting in a slight vertical curve. Mitigation measure **TRA-1** will ensure that access to Orange Street from parcels 1 through 4 will not be result in any hazardous or unsafe design feature. Furthermore, the City has site design criteria governing the placement of driveways to allow for adequate site distance and turning movements. These provisions would become effective at the time of plot plan consideration and approval. Following the implementation of mitigation measure **TRA-1** and an adherence to existing City ordinances include the requirement for review of the placement of driveways for sight distance and turning movements, this impact is considered less than significant.

e) **No Impact.** The proposed project would include direct access to Laguna Road and Orange Street, which are both currently designed to provide adequate emergency access. The proposed project would not interfere with area-wide emergency access or the implementation of local emergency response plans. No impact is anticipated.

f) **Less Than Significant Impact**. The proposed project will construct curb improvements along Orange Street and Laguna Road for the frontage of the property consistent with City requirements. All roadway and driveway improvements within the City's right-of-way will be designed to comply with design criteria contained in Chapter 16.24 of the Wildomar Municipal Code, including the construction of sidewalks, curbs, and gutters along the property frontage. The proposed project site is not located on a current Riverside Transit Authority transit line, bike lane, or pedestrian path and does not impact any trail plan. Any impact would be less than significant.

STANDARD CONDITIONS AND REQUIREMENTS

1. Prior to issuance of any building permit on the project site, any project applicant(s) shall pay the appropriate Transportation Uniform Mitigation Fee to the Western Riverside County Council of Governments.

MITIGATION MEASURES

TRA-1 Lots 1, 2, 3, and 4 shall include a driveway design which allows for on-site vehicle turn-around for front ingress from Orange Street to the proposed lot and front egress from the proposed lot to Orange Street.

Timing/Implementation: *Prior to the issuance of a building permit*

Enforcement/Monitoring: *City of Wildomar Engineering and Planning Departments*

17. Utilities and Service Systems

Issues: Would the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?			✓	
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?			✓	
c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			✓	
d) Have sufficient water supplies available to serve the project from existing entitlements and resources or are new or expanded entitlements needed?			✓	
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?			✓	
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			✓	
g) Comply with federal, state, and local statutes and regulations related to solid waste?			✓	

DISCUSSION

a) **Less Than Significant Impact.** The San Diego Regional Water Quality Control Board regulates wastewater discharges within the portion of Wildomar encompassing the project site.[6] Development on the project site would receive wastewater services from the Elsinore Valley

[6] The city lies within two different watersheds and therefore is subject to the jurisdiction of two different regional boards: Santa Ana (Lake Elsinore) and San Diego (Santa Margarita River). This would require the City to administer two separate MS4 permits, which would add considerably to the cost and burden of development. The City requested to be governed by one MS4 permit to reduce costs. The City and the Regional Boards agreed that the City would be governed by the MS4 permit issued by the San Diego Regional Water Quality Control Board for the Santa Margarita River watershed. So, no matter where a project is located within the city, it must comply with the MS4 permit issued by the San Diego Regional Board for the Santa Margarita River watershed. However, the Santa Ana Regional Water Quality Control Board will continue to regulate grading activities as well as any hydrology changes within its permit area.

Municipal Water District. Sewer service will be provided through connection to an existing 8-inch gravity feed sewer line in Laguna Road. The existing sewer line connects to a lift station named B-2 LS located at 32741 Mission Trail in Wildomar (EVMWD 2008a). Wastewater transferred through lift station B-2 LS will be delivered to the Lake Elsinore Wastewater Treatment Facility located at 14980 Strickland Avenue in the City of Lake Elsinore. Per California Regional Water Quality Control Board Order No. R8-2005-0003, the treatment plant has a capacity of 8 million gallons per day (mgd) with an average flow of approximately 4.66 mgd, resulting in a treatment capacity of approximately 3.34 mgd (EVMWD 2008a). The proposed project will not result in a flow of wastewater that exceeds the permitted flow of this facility. Any impact would be less than significant.

b) **Less Than Significant Impact**. The Elsinore Valley Municipal Water District (EVMWD) will provide water and wastewater services for the proposed project. The EVMWD has an adopted Urban Water Management Plan (UWMP) (2011) and a Wastewater Master Plan (2008) that were written to anticipate and meet the service needs of future growth.

The EVMWD Urban Water Management Plan established a baseline per capita water demand for residents within the district's service area by compiling overall water demands for a ten-year period from 1999 to 2008. This per capita demand rate is measured in gallons per capita per day (gpcd). The 2010 baseline water demand baseline is 248 gpcd. Based on this estimate, the proposed project would result in an increased water demand of 7,440 gpd (8.33 acre-feet per year). The UWMP states that the current average daily production of potable water is 43,800 acre-feet per year and that the EVMWD has the capacity to produce 66,500 acre-feet per year of potable water. Considering the incremental increase in potable water production required by the proposed project and the remaining production capacity of the EVMWD, the proposed project will have a less than significant impact on water treatment and conveyance facilities.

For this study, assumptions on wastewater production from the proposed project are based on the EVMWD's 2008 Wastewater Master Plan, which estimated that land designated for low-density residential use produced 360 gallons of wastewater per a day per acre (gpd/ac). Using this estimation, the proposed project (including the existing home) would produce 1,994.4 gallons of wastewater per day. Current capacity at lift station B-2 LS is 3,600 gallons per minute, which would allow for flows from the proposed project (EVMWD 2008a). Per Regional Water Quality Control Board Order No. R8-2005-0003, the Lake Elsinore Wastewater Treatment Facility has a capacity of 8 mgd with an average flow of approximately 4.66 mgd, resulting in a treatment capacity of approximately 3.34 mgd. Estimated wastewater flows from the proposed project would result in an incremental increase to treatment demands at the treatment plant. Any impact would be less than significant.

c) **Less Than Significant Impact.** Development of the proposed project would serve to reduce stormwater runoff from the site. Any impact would be less than significant.

d) **Less Than Significant Impact**. The project site is within the service boundary for the EVMWD, and future development on the project site would be connecting to the EVMWD's water service infrastructure. Using EVMWD baseline per capita water demand rates and population projection information provided by the California Department of Finance (DOF), the proposed project is estimated to result in an increased annual demand of 8.14 acre-feet of water (EVMWD 2011; DOF 2012).[7] The projected demand of 8.14 acre-feet per year would represent am incremental

[7] Calculation includes the EVMWD's base daily per capita water use of 248 gallons per day (gpd), the DOF's average 2012

increase to the water demand of the district through 2034. (EVMWD, 2011) Furthermore, since the proposed project would not result in any change to the current land use designation, any increase in water demand resulting from the proposed project has been anticipated by the EVMWD and was considered by the 2010 UWMP. Any impact would be less than significant.

e) **Less Than Significant Impact**. The proposed project would connect to existing wastewater service infrastructure provided by the EVMWD. For determine future demand for wastewater facilities the EVMWD relies on recommended generation factors included in Appendix B of the Wastewater Master Plan (WMP). The recommended generation factors are determined according to land use designation with the designation of the proposed project being low density residential (LDR). The generation factor for LDR is 400 gallons per day per acre (gpd/ac). (EVMWD, 2008) Using this factor, the proposed project may be expected to result in an additional wastewater demand of 2,160 gpd/ac. An increase of 2,160 gpd/ac represents and incremental increase to the wastewater demand of the EVMWD and its facilities. Any impact would be less than significant.

f, g) **Less Than Significant Impact**. The main disposal site in the vicinity of the project site is the El Sobrante Landfill in Corona. The El Sobrante Landfill (Cal Recycle Solid Waste Information System Number 33-AA-0217) is projected to reach full capacity of 184,930,000 tons in 2045 (Cal Recycle 2013). The landfill covers approximately 1,322 acres and receives approximately 16,054 tons of solid waste per day.

The California Department of Resources Recycling and Recovery (CalRecycle) collects and maintains data that records the rate of solid waste disposal at local, regional, and statewide levels. CalRecycle inputs this data into the Disposal Reporting System (DRS), which is used to determine per capita disposal rates as well as other solid waste disposal statistics. There is currently no regional reporting system in place for inland Southern California, so for this analysis the statewide per capita disposal rate will be used. The most current data available (2011) from the CalRecycle DRS assigns a disposal rate of 4.4 pounds per day to the residents of California (CalRecycle 2011). Using the CalRecycle DRS disposal rates for California residents, the 30 new residents of the proposed project may be expected to generate 142 pounds per day of solid waste. This incremental generation is well within the capacity of the El Sobrante Landfill, and impacts would be less than significant.

STANDARD CONDITIONS AND REQUIREMENTS

None required.

MITIGATION MEASURES

None required.

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population per household estimate of 3.255 people (9 DUs x 3.255 = 29.295 people; 29.295 people x 248 gpd = 7,265.16 gpd; 7,265.16 gpd x 365 = 2,651,783 gallons per year (gpy); 2,651,783 gpy ÷ 325,851 = 8.14 acre-feet per year).

V. MANDATORY FINDINGS OF SIGNIFICANCE

Issues: Does the project:	Potentially Significant Impact	Less Than Significant Impact With Mitigation Incorporated	Less Than Significant Impact	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?		✓		
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 past projects, the effects of other current projects, and the effects of probable future projects.)		✓		
c) Have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?		✓		

DISCUSSION

The following are Mandatory Findings of Significance in accordance with Section 15065 of the CEQA Guidelines.

a) **Less Than Significant Impact With Mitigation Incorporated.** Based on evaluations and discussions contained in this IS/MND, the proposed project and associated future residential development on the project site have a very limited potential to incrementally degrade the quality of the environment because the site was previously disturbed, is not in an environmentally sensitive location, and is consistent with the City of Wildomar General Plan. As a result, the proposed project would not significantly affect the environment following implementation of the mitigation measures contained in this IS/MND.

b) **Less Than Significant Impact With Mitigation Incorporated**

Aesthetics

Implementation of the proposed project and associated future residential development on the project site would not contribute to cumulative visual resource or aesthetic impacts. The proposed project will include residential development that is consistent with existing land uses, and the City's plot plan application process will ensure that future residential development is in compliance with all zoning development standards. Any impact would be less than significant.

Agricultural Resources

Implementation of the proposed project and associated future residential development on the project site would not contribute to cumulative impacts to agricultural resources or forestland

impacts. Thus, less than cumulatively considerable impacts to agricultural resources and forestland resources are anticipated under cumulative conditions.

Air Quality

The SCAQMD's approach for assessing cumulative impacts is based on the AQMP forecasts of attainment of ambient air quality standards in accordance with the requirements of the federal and California Clean Air Acts. As discussed earlier, the proposed project would be consistent with the AQMP, which is intended to bring the South Coast Air Basin into attainment for all criteria pollutants. In addition, the construction and operations emissions calculated for the proposed project (see Tables 3-2, 3-4, 3-5, and 3-6) are less than the applicable SCAQMD daily significance thresholds that are designed to assist the region in attaining the applicable state and national ambient air quality standards. As such, cumulative impacts would be less than cumulatively considerable.

Biological Resources

The potential for impacts to raptors and migratory birds is addressed through mitigation. The cumulative biological impacts associated with the project have been mitigated through payment of mitigation fees required by the MSHCP. Therefore any impact would be less than cumulatively considerable.

Cultural Resources

Future residential development on the project site could contribute to an increase in cultural resource impacts. However, mitigation measures identified in subsection 5, Cultural Resources, of this IS/MND would reduce the potential impacts associated with future development on the project site. Thus, the project would have a less than cumulatively considerable impact.

Geology and Soils

Project-related impacts on geology and soils associated with future residential development on the project site would be site-specific and the mitigation measures in subsection 6, Geology and Soils, would ensure that the development on the site would not contribute to seismic hazards or water quality impacts associated with soil erosion. Following the implementation of mitigation measures **GEO-1** through **GEO-4** any cumulative impact would be less than cumulatively considerable.

Greenhouse Gas Emissions

The greenhouse gas analysis provided in subsection 7, Greenhouse Gas Emissions, evaluated the proposed project's cumulative contribution to global climate change and determined that the project would not create a cumulatively considerable environmental impact resulting from greenhouse gas emissions.

Hazards and Hazardous Materials

The proposed project is not expected to utilize or contribute to hazards associated with the accidental release of hazardous materials. However, even if hazardous materials are used on the site, implementation of mitigation measure **HAZ-1** and compliance with federal, state, and City regulations will ensure that cumulative hazard conditions are less than cumulatively considerable.

Hydrology and Water Quality

Future residential development on the project site has the potential to result in cumulative hydrology and water quality impacts; however, implementation of the Best Management Procedures (BMPs) included in the preliminary water quality management plan and a stormwater pollution prevention plan (SWPPP) will ensure that any cumulative impact is less than significant.

Land Use and Planning

The proposed project and associated future residential development on the project site are consistent with the existing land use designation of the General Plan and the zoning district. The proposed division of the site is consistent with other development in the project area. Future development of each parcel excluding parcel 3 will require completion of a plot planning process. As the proposed project area is surrounded by residential development, and the project is consistent with both the zoning and General Plan designations for the site, the project would result in no cumulative impacts to land uses.

Mineral Resources

The proposed project and associated future residential development on the project site would not result in any site-specific significant impacts to mineral resources. Less than cumulatively considerable impacts under cumulative conditions are anticipated.

Noise

Future residential development on the project site would result in incremental temporary and permanent changes in the ambient noise levels in the vicinity; however, mitigation measure **NOI-1**, identified in subsection 12, Noise, of this IS/MND would mitigate cumulative noise impacts to less than cumulatively considerable.

Population and Housing

The proposed project and associated future residential development on the project site would not result in any significant impact to population and housing. In determining the potential of the proposed project to contribute to the cumulative impacts of recently approved projects, the Bundy Canyon Road and Orange Street Subdivision (Tentative Tract Map 30522) was considered. Tentative Tract Map (TTM) 30522 will result in new commercial development within in the City which will lead to new employment opportunities. However, the new employment opportunities that will result from TTM 30522 will not substantial enough to result in any impact to population and housing. Any impact to the housing and population of the City would be less than cumulatively considerable.

Public Services

The proposed project is not expected to contribute to cumulative public service impacts. Future regional development may result in impacts to fire and police protection. However, these activities would be offset through the implementation of development impact fees. Future development would not result in a cumulative increase in the severity of public service impacts. Less than cumulatively considerable public services impacts are anticipated.

Recreation

The project and associated future residential development would not contribute to park and recreation impacts. Therefore, the proposed project would not contribute to cumulative parks and recreation impacts, and less than cumulatively considerable impacts are anticipated.

Transportation/Traffic

In determining if the proposed project will result in any cumulative impacts, the average daily vehicle trips associated with the approved commercial subdivision at Orange Street and Bundy Canyon Road (Tentative Tract Map 30522) was considered. As reported in the environmental analysis for Tentative Tract Map (TTM) 30522, the existing level of service at the intersection of Orange Street and Bundy Canyon Road is C. The trips associated with the proposed project will not affect the level of service at this intersection since there is currently sufficient capacity. In the cumulative condition, improvements associated with TTM 30522 were required to meet the traffic demands of TTM 30522 as well as need of forecasted growth including the proposed project. Any impact would be less than cumulatively considerable.

Utilities and Service Systems

The proposed project and any future development of the project site would not result in any impacts to utilities and Service Systems. However, future development of the surrounding areas could result in potential impacts to utilities and service systems. These potential impacts would be offset by the payment of service fees and would therefore be less than significant.

c) **Less Than Significant Impact With Mitigation Incorporated**. The proposed project and associated future development do not have the potential to significantly adversely affect humans, either directly or indirectly. While a number of the future development impacts were identified as having a potential to significantly impact humans, with the identified mitigation measures and standard requirements, these impacts are expected to be less than significant. With implementation of the identified measures, the proposed project and associated future development are not expected to cause significant adverse impacts to humans. All significant impacts are avoidable, and the City of Wildomar will ensure that measures imposed to protect human beings are implemented.

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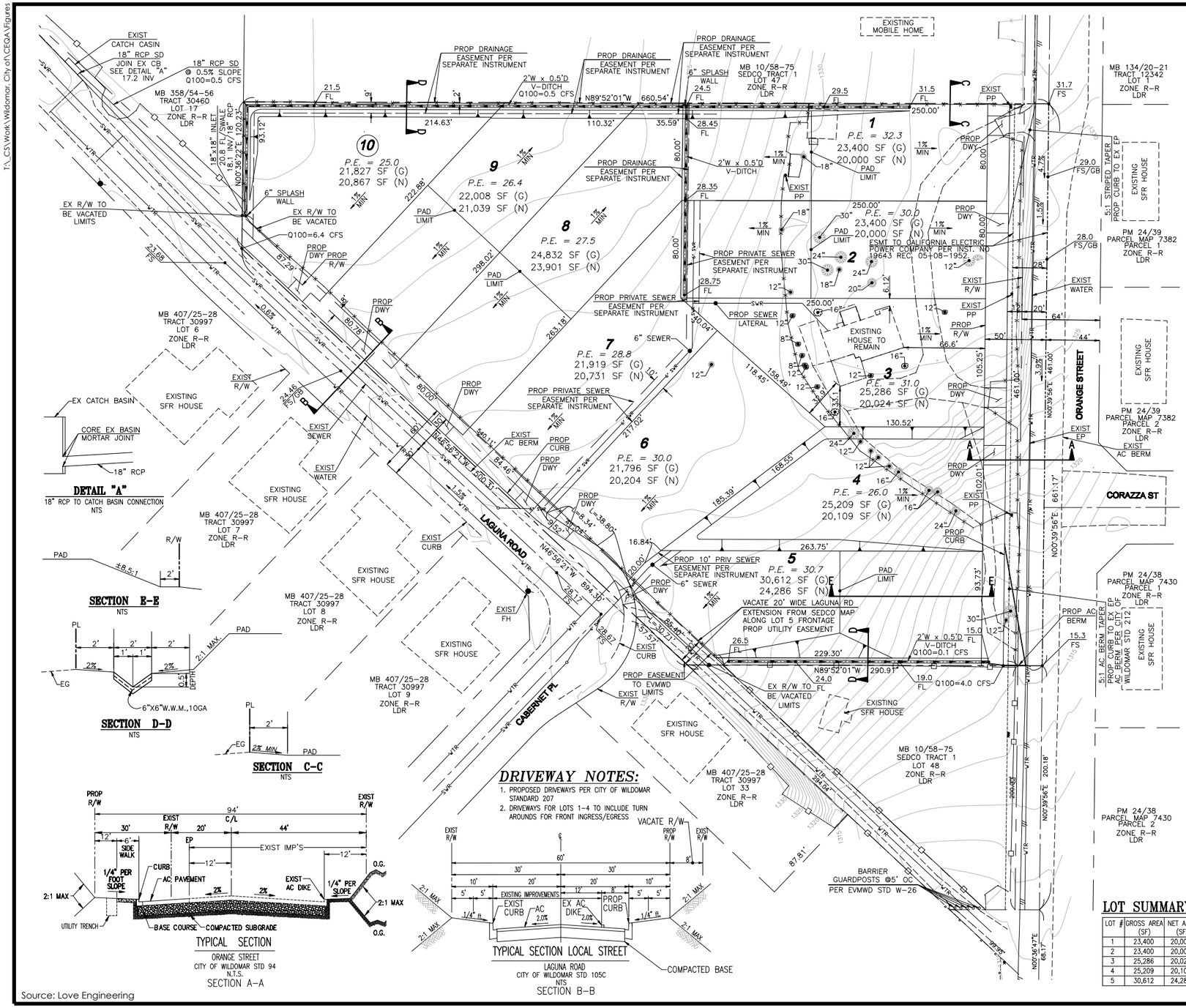
Exhibit 1-A

Appendices/Technical Studies

Appendices

APPENDIX 1 - TENTATIVE TRACT MAP



DETAIL "A"

18" RCP TO CATCH BASIN CONNECTION
NTS

SECTION E-E

NTS

SECTION D-D

NTS

SECTION C-C

NTS

TYPICAL SECTION

ORANGE STREET
CITY OF WILDOMAR STD 94
N.T.S.
SECTION A-A

TYPICAL SECTION LOCAL STREET

LAGUNA ROAD
CITY OF WILDOMAR STD 105C
NTS
SECTION B-B

DRIVEWAY NOTES:

1. PROPOSED DRIVEWAYS PER CITY OF WILDOMAR STANDARD 207
2. DRIVEWAYS FOR LOTS 1-4 TO INCLUDE TURN AROUNDS FOR FRONT INGRESS/EGRESS

Source: Love Engineering

IN THE CITYOF WILDOMAR, CALIFORNIA

OWNER/APPLICANT

MIKE LESLE
21595 MARBLE CT
WILDOMAR, CA 92595
T: (951) 522-2405
F: (951) 678-7952 FAX

ENGINEER/EXHIBIT PREPARER

LOVE ENGINEERING
ATTN: THOMAS S. LOVE
31915 RANCHO CALIFORNIA ROAD
SUITE 200-166
TEMECULA, CA 92591
T: (951) 440-8149 F: (951)-303-6701

ASSESSOR'S PARCEL NO.

367-170-029

PROPERTY ADDRESS

34915 ORANGE STREET

LEGAL DESCRIPTION

LOTS (S) 48 OF SEDCO TRACT NO. 1, IN THE CITY OF WILDOMAR, AS SHOWN BY MAP ON FILE IN BOOK 10 PAGE(S) 58 TO 75, INCLUSIVE, OF MAPS, RECORDS OF RIVERSIDE COUNTY;
EXCEPTING THEREFROM THE SOUTHERLY 200 FEET, SAID 200 FEET BEING MEASURED ALONG THE EAST LINE OF SAID LOT 48, AND THE NORTH LINE OF SAID 200 FEET BEING PARALLEL WITH THE NORTH LINE OF SAID LOT 48.

EXISTING EASEMENTS

28' EASEMENT TO CALIFORNIA ELECTRIC POWER COMPANY RECORDED 05/08/1952 PER INSTRUMENT #19643

ACREAGE

ACREAGE: 5.54 ACRES GROSS/4.86 ACRES NET
MINIMUM LOT SIZE: 1/2 ACRE

LAND USE

10 RESIDENTIAL LOTS

EXISTING LAND USE:	VACANT/SFR
PROPOSED LAND USE:	LDR
EXISTING ZONING:	R-R
PROPOSED ZONING:	R-R
MINIMUM LOT:	21,780 SF

UTILITIES

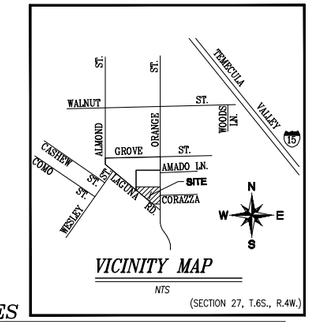
WATER	– ELSINORE VALLEY MUNICIPAL WATER DISTRICT
SEWER	– ELSINORE VALLEY MUNICIPAL WATER DISTRICT
GAS	– SOUTHERN CALIFORNIA GAS COMPANY
ELECTRIC	– SOUTHER CALIFORNIA EDISON
TELEPHONE	– VERIZON
CABLE	– N/A
SCHOOL	– LAKE ELSINORE UNIFIED SCHOOL DISTRICT

TOPOGRAPHY

CONTOURS & ELEVATIONS PROVIDED FROM FIELD DATA GATHERED ON 9/29/12 & OCT 10/1/12 BY:
HESS SURVEY
28039 SCOTT RD, SUITE D-387
MURRIETA, CA 92563
PH (951) 325-2200

EARTHWORK

CUT: 4,000 CY
FILL: 4,000 CY
OVER-EXCAVATION: 2,500 CY



VICINITY MAP

NTS
(SECTION 27, T.6S., R.4W.)

NOTES

1. 2011 THOMAS BROS. MAP BOOK: PAGE 897, GRIDS B5-B6
2. ALL IMPROVEMENTS SHALL BE PER SCHEDULE "B"
3. PROJECT INCLUDES THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
4. THIS PROJECT IS NOT WITHIN A SPECIFIC PLAN.
5. THE PROPERTY IS NOT WITHIN A COUNTY SERVICE AREA OR COMMUNITY FACILITIES DISTRICT.
6. THERE ARE NO WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THE PROPERTY BOUNDARY.
7. SUBSURFACE SEPTIC SEWAGE DISPOSAL IS NOT INTENDED.
8. P.E. = XXXX.X INDICATES PRELIMINARY PAD ELEVATION.
9. THE LIQUIFACTION POTENTIAL IS MODERATE AND THE SITE IS SUSCEPTIBLE TO SUBSIDENCE. SITE IS NOT WITHIN SPECIAL STUDIES ZONE. SITE REQUIRES 3-4' OVER-EXCAVATION 5' BEYOND BUILDING FOOTPRINT. SHALL BE VERIFIED AND APPROVED IN THE FIELD BY GEOTECHNICAL ENGINEER OF RECORD.
10. SITE IS NOT SUBJECT TO OVERFLOW, INUNDATION, OR FLOOD HAZARD.
11. EXISTING HOUSE TO REMAIN
12. ALL SLOPES ARE 2:1 RATIO, UNLESS OTHERWISE NOTED.
13. ALL STREETS ARE PROPOSED PUBLIC STREETS.
14. A WATER QUALITY MANAGEMENT PLAN HAS BEEN PREPARED
15. NO COMMION AREAS OR OPEN SPACE ARE PROPOSED.
16. FEMA MAP NUMBER 06065C2682G
17. LANDSCAPING AND IRRIGATION OF THE DOWN SLOPES ON LOTS 1, 4, 5, 8, 9, AND 10 WILL BE REQUIRED UPON COMPLETION OF GRADING

SOILS ENGINEER & ENGINEERING GEOLOGIST

WAC GEOTECHNICAL, INC
2900 ADAMS STREET, SUITE C-35
RIVERSIDE, CA 92504
PH (951) 354-6500

WATER QUALITY FEATURES

EACH LOT SHALL CONTAIN AN INFILTRATION TRENCH PER WATER QUALITY MANGEMENT PLAN

GRADING

SITE WILL BE GRADED IN ONE PHASE

LEGEND

BOUNDARY	EXISTING WATER
CENTERLINE	FIRE HYDRANT
EASEMENT (DRAINAGE)	FLOW LINE
EASEMENT (SEWER)	LOT LINE
EDGE OF PAVEMENT	POWER POLE
EXISTING TOPOGRAPHY CONTOUR	SEWER (EXISTING)
EVERGREEN TREE TO BE REMOVED (SIZE PER PLAN)	STREET RIGHT-OF-WAY
EVERGREEN TREE TO REMAIN (SIZE PER PLAN)	VINYL FENCE
	WIRE FENCE

DRAINAGE & LANDSCAPE MAINTENANCE

1. THE DRAINAGE FACILITIES ON LOTS 1, 2, 5, 8, 9, & 10 WILL BE MAINTAINED BY THE PROPERTY OWNER
2. LANDSCAPING WITHIN THE PUBLIC ROAD RIGHT-OF-WAY WILL BE MAINTAINED BY THE PROPERTY OWNER FRONTING THE RIGHT-OF-WAY

LOT SUMMARY TABLE

LOT #	GROSS AREA (SF)	NET AREA (SF)	DEPTH AVG	WIDTH AVG
1	23,400	20,000	250.00'	80.00'
2	23,400	20,000	250.00'	80.00'
3	25,286	20,024	190.26'	105.25'
4	25,209	20,109	197.14'	102.01'
5	30,612	24,286	246.53'	93.73'
6	21,796	20,204	219.63'	103.32'
7	21,919	20,731	240.06'	94.00'
8	24,832	23,901	280.60'	80.00'
9	22,008	21,039	260.45'	80.78'
10	21,827	20,867	182.12'	87.29'

ABBREVIATIONS

AC	Asphalt Concrete
CFS	Cubic Feet Per Second
EP	Edge of Pavement
FL	Flowline
FS	Finished Surface
(G)	Gross Area
GB	Grade Break
HP	High Point
INV	Invert
(N)	Net Area
PE	Proposed Pad Elevation
PP	Power Pole
PROP	Proposed
R/W	Right-of-Way
SD	Storm Drain
SF	Square Feet

0 40 80
FEET
N

Figure 3
Tentative Tract Map
PMC®

APPENDIX 2 – SITE PHOTOS

APPENDIX 2: Site Photos

West side of Orange Street looking south from NE border of project site

Existing home to remain seen from Orange Street.

Looking east along Corazza Street from Orange Street

West side of Orange Street looking north from SE corner of project site

East side of Laguna Road looking NW from NW boundary of project site

Project site seen from southern end of Laguna Road

APPENDIX 2: Site Photos

East side of Laguna Road looking NW from SW boundary of project site

End of Laguna Road looking SE, area to be closed to vehicular traffic

Looking SW along Cabernet Place from the southern end of Laguna Road

APPENDIX 3 – AIR QUALITY MODELING

Orange Street Tract Map (12-0392)

Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Single Family Housing	9	Dwelling Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Southern California Edison
Climate Zone	10		2.4		
		Precipitation Freq (Days)			
			28		

1.3 User Entered Comments

Project Characteristics -

Land Use - Lot acreage per Tentative Tract Map

Grading - Total Acres Distrubed = 5.51 acres

Architectural Coating - SCAQMD Rule 1113

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	9.45	74.98	44.01	0.07	18.30	3.62	21.92	9.94	3.62	13.56	0.00	8,162.77	0.00	0.85	0.00	8,180.58
2015	5.47	30.18	23.21	0.04	0.20	2.55	2.74	0.01	2.55	2.56	0.00	4,094.48	0.00	0.45	0.00	4,103.85
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	9.45	74.98	44.01	0.07	10.37	3.62	13.14	4.48	3.62	8.09	0.00	8,162.77	0.00	0.85	0.00	8,180.58
2015	5.47	30.18	23.21	0.04	0.20	2.55	2.74	0.01	2.55	2.56	0.00	4,094.48	0.00	0.45	0.00	4,103.85
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

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	1.34	0.05	3.74	0.01		0.00	0.48		0.00	0.48	63.51	163.35		0.25	0.00	233.38
Energy	0.01	0.09	0.04	0.00		0.00	0.01		0.00	0.01		117.56		0.00	0.00	118.27
Mobile	0.42	1.11	4.29	0.01	0.85	0.05	0.90	0.03	0.05	0.08		709.96		0.03		710.58
Total	**1.77**	**1.25**	**8.07**	**0.02**	**0.85**	**0.05**	**1.39**	**0.03**	**0.05**	**0.57**	**63.51**	**990.87**		**0.28**	**0.00**	**1,062.23**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.07	0.00	18.07	9.93	0.00	9.93						0.00
Off-Road	9.37	74.88	43.05	0.07		3.61	3.61		3.61	3.61		7,997.69		0.84		8,015.31
Total	**9.37**	**74.88**	**43.05**	**0.07**	**18.07**	**3.61**	**21.68**	**9.93**	**3.61**	**13.54**		**7,997.69**		**0.84**		**8,015.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	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
Worker	0.08	0.10	0.96	0.00	0.23	0.01	0.24	0.01	0.01	0.02		165.08		0.01		165.27
Total	**0.08**	**0.10**	**0.96**	**0.00**	**0.23**	**0.01**	**0.24**	**0.01**	**0.01**	**0.02**		**165.08**		**0.01**		**165.27**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.13	0.00	8.13	4.47	0.00	4.47						0.00
Off-Road	9.37	74.88	43.05	0.07		3.61	3.61		3.61	3.61	0.00	7,997.69		0.84		8,015.31
Total	**9.37**	**74.88**	**43.05**	**0.07**	**8.13**	**3.61**	**11.74**	**4.47**	**3.61**	**8.08**	**0.00**	**7,997.69**		**0.84**		**8,015.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	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
Worker	0.08	0.10	0.96	0.00	0.23	0.01	0.24	0.01	0.01	0.02		165.08		0.01		165.27
Total	**0.08**	**0.10**	**0.96**	**0.00**	**0.23**	**0.01**	**0.24**	**0.01**	**0.01**	**0.02**		**165.08**		**0.01**		**165.27**

3.3 Grading - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.33	0.00	6.33	3.31	0.00	3.31						0.00
Off-Road	5.98	45.66	30.18	0.05		2.47	2.47		2.47	2.47		5,240.06		0.53		5,251.29
Total	**5.98**	**45.66**	**30.18**	**0.05**	**6.33**	**2.47**	**8.80**	**3.31**	**2.47**	**5.78**		**5,240.06**		**0.53**		**5,251.29**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.63	7.54	3.57	0.01	7.33	0.29	7.62	0.04	0.29	0.33		1,283.74		0.03		1,284.37
Vendor	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
Worker	0.07	0.08	0.80	0.00	0.20	0.01	0.20	0.01	0.01	0.01		137.57		0.01		137.73
Total	**0.70**	**7.62**	**4.37**	**0.01**	**7.53**	**0.30**	**7.82**	**0.05**	**0.30**	**0.34**		**1,421.31**		**0.04**		**1,422.10**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.85	0.00	2.85	1.49	0.00	1.49						0.00
Off-Road	5.98	45.66	30.18	0.05		2.47	2.47		2.47	2.47	0.00	5,240.06		0.53		5,251.29
Total	**5.98**	**45.66**	**30.18**	**0.05**	**2.85**	**2.47**	**5.32**	**1.49**	**2.47**	**3.96**	**0.00**	**5,240.06**		**0.53**		**5,251.29**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.63	7.54	3.57	0.01	7.33	0.29	7.62	0.04	0.29	0.33		1,283.74		0.03		1,284.37
Vendor	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
Worker	0.07	0.08	0.80	0.00	0.20	0.01	0.20	0.01	0.01	0.01		137.57		0.01		137.73
Total	**0.70**	**7.62**	**4.37**	**0.01**	**7.53**	**0.30**	**7.82**	**0.05**	**0.30**	**0.34**		**1,421.31**		**0.04**		**1,422.10**

3.4 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.74	32.06	23.20	0.04		2.02	2.02		2.02	2.02		4,040.61		0.42		4,049.51
Total	**4.74**	**32.06**	**23.20**	**0.04**		**2.02**	**2.02**		**2.02**	**2.02**		**4,040.61**		**0.42**		**4,049.51**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.01	0.15	0.08	0.00	0.01	0.00	0.01	0.00	0.00	0.01		26.99		0.00		27.00
Worker	0.01	0.02	0.16	0.00	0.04	0.00	0.04	0.00	0.00	0.00		27.51		0.00		27.55
Total	**0.02**	**0.17**	**0.24**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.01**		**54.50**		**0.00**		**54.55**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.74	32.06	23.20	0.04		2.02	2.02		2.02	2.02	0.00	4,040.61		0.42		4,049.51
Total	**4.74**	**32.06**	**23.20**	**0.04**		**2.02**	**2.02**		**2.02**	**2.02**	**0.00**	**4,040.61**		**0.42**		**4,049.51**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.01	0.15	0.08	0.00	0.01	0.00	0.01	0.00	0.00	0.01		26.99		0.00		27.00
Worker	0.01	0.02	0.16	0.00	0.04	0.00	0.04	0.00	0.00	0.00		27.51		0.00		27.55
Total	**0.02**	**0.17**	**0.24**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.01**		**54.50**		**0.00**		**54.55**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.34	29.16	22.98	0.04		1.80	1.80		1.80	1.80		4,040.61		0.39		4,048.81
Total	**4.34**	**29.16**	**22.98**	**0.04**		**1.80**	**1.80**		**1.80**	**1.80**		**4,040.61**		**0.39**		**4,048.81**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.01	0.14	0.08	0.00	0.01	0.00	0.01	0.00	0.00	0.00		27.01		0.00		27.02
Worker	0.01	0.02	0.15	0.00	0.04	0.00	0.04	0.00	0.00	0.00		26.86		0.00		26.89
Total	**0.02**	**0.16**	**0.23**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**		**53.87**		**0.00**		**53.91**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.34	29.16	22.98	0.04		1.80	1.80		1.80	1.80	0.00	4,040.61		0.39		4,048.81
Total	**4.34**	**29.16**	**22.98**	**0.04**		**1.80**	**1.80**		**1.80**	**1.80**	**0.00**	**4,040.61**		**0.39**		**4,048.81**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.01	0.14	0.08	0.00	0.01	0.00	0.01	0.00	0.00	0.00		27.01		0.00		27.02
Worker	0.01	0.02	0.15	0.00	0.04	0.00	0.04	0.00	0.00	0.00		26.86		0.00		26.89
Total	**0.02**	**0.16**	**0.23**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**		**53.87**		**0.00**		**53.91**

3.5 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.89	30.10	20.54	0.03		2.54	2.54		2.54	2.54		2,917.65		0.44		2,926.87
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**4.89**	**30.10**	**20.54**	**0.03**		**2.54**	**2.54**		**2.54**	**2.54**		**2,917.65**		**0.44**		**2,926.87**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	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
Worker	0.06	0.08	0.73	0.00	0.20	0.01	0.20	0.01	0.01	0.01		134.28		0.01		134.43
Total	**0.06**	**0.08**	**0.73**	**0.00**	**0.20**	**0.01**	**0.20**	**0.01**	**0.01**	**0.01**		**134.28**		**0.01**		**134.43**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.89	30.10	20.54	0.03		2.54	2.54		2.54	2.54	0.00	2,917.65		0.44		2,926.87
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**4.89**	**30.10**	**20.54**	**0.03**		**2.54**	**2.54**		**2.54**	**2.54**	**0.00**	**2,917.65**		**0.44**		**2,926.87**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	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
Worker	0.06	0.08	0.73	0.00	0.20	0.01	0.20	0.01	0.01	0.01		134.28		0.01		134.43
Total	**0.06**	**0.08**	**0.73**	**0.00**	**0.20**	**0.01**	**0.20**	**0.01**	**0.01**	**0.01**		**134.28**		**0.01**		**134.43**

3.6 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.06					0.00	0.00		0.00	0.00						0.00
Off-Road	0.41	2.57	1.90	0.00		0.22	0.22		0.22	0.22		281.19		0.04		281.96
Total	**5.47**	**2.57**	**1.90**	**0.00**		**0.22**	**0.22**		**0.22**	**0.22**		**281.19**		**0.04**		**281.96**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	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
Worker	0.00	0.01	0.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00		8.95		0.00		8.96
Total	**0.00**	**0.01**	**0.05**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**		**8.95**		**0.00**		**8.96**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.06					0.00	0.00		0.00	0.00						0.00
Off-Road	0.41	2.57	1.90	0.00		0.22	0.22		0.22	0.22	0.00	281.19		0.04		281.96
Total	**5.47**	**2.57**	**1.90**	**0.00**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**281.19**		**0.04**		**281.96**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	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
Worker	0.00	0.01	0.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00		8.95		0.00		8.96
Total	**0.00**	**0.01**	**0.05**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**		**8.95**		**0.00**		**8.96**

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					
Unmitigated	0.42	1.11	4.29	0.01	0.85	0.05	0.90	0.03	0.05	0.08		709.96		0.03		710.58
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
Single Family Housing	86.13	90.72	78.93	243,561	243,561
Total	86.13	90.72	78.93	243,561	243,561

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
Single Family Housing	10.80	7.30	7.50	40.20	19.20	40.60

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 Unmitigated	0.01	0.09	0.04	0.00		0.00	0.01		0.00	0.01		117.56		0.00	0.00	118.27
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					
Single Family Housing	999.242	0.01	0.09	0.04	0.00		0.00	0.01		0.00	0.01		117.56		0.00	0.00	118.27
Total		**0.01**	**0.09**	**0.04**	**0.00**		**0.00**	**0.01**		**0.00**	**0.01**		**117.56**		**0.00**	**0.00**	**118.27**

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					
Unmitigated	1.34	0.05	3.74	0.01		0.00	0.48		0.00	0.48	63.51	163.35		0.25	0.00	233.38
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	0.03					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.32					0.00	0.00		0.00	0.00						0.00
Hearth	0.96	0.04	2.98	0.01		0.00	0.48		0.00	0.48	63.51	162.00		0.25	0.00	232.00
Landscaping	0.02	0.01	0.77	0.00		0.00	0.00		0.00	0.00		1.35		0.00		1.38
Total	**1.33**	**0.05**	**3.75**	**0.01**		**0.00**	**0.48**		**0.00**	**0.48**	**63.51**	**163.35**		**0.25**	**0.00**	**233.38**

Orange Street Tract Map (12-0392)

Riverside-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Single Family Housing	9	Dwelling Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Southern California Edison
Climate Zone	10		2.4		
		Precipitation Freq (Days)			
			28		

1.3 User Entered Comments

Project Characteristics -

Land Use - Lot acreage per Tentative Tract Map

Grading - Total Acres Distrubed = 5.51 acres

Architectural Coating - SCAQMD Rule 1113

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	9.45	74.97	44.15	0.08	18.30	3.62	21.92	9.94	3.62	13.56	0.00	8,183.22	0.00	0.85	0.00	8,201.05
2015	5.47	30.17	23.22	0.04	0.20	2.55	2.74	0.01	2.55	2.56	0.00	4,098.06	0.00	0.45	0.00	4,107.44
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2014	9.45	74.97	44.15	0.08	10.37	3.62	13.14	4.48	3.62	8.09	0.00	8,183.22	0.00	0.85	0.00	8,201.05
2015	5.47	30.17	23.22	0.04	0.20	2.55	2.74	0.01	2.55	2.56	0.00	4,098.06	0.00	0.45	0.00	4,107.44
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

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	1.34	0.05	3.74	0.01		0.00	0.48		0.00	0.48	63.51	163.35		0.25	0.00	233.38
Energy	0.01	0.09	0.04	0.00		0.00	0.01		0.00	0.01		117.56		0.00	0.00	118.27
Mobile	0.43	1.05	4.63	0.01	0.85	0.05	0.90	0.03	0.05	0.08		780.57		0.03		781.26
Total	**1.78**	**1.19**	**8.41**	**0.02**	**0.85**	**0.05**	**1.39**	**0.03**	**0.05**	**0.57**	**63.51**	**1,061.48**		**0.28**	**0.00**	**1,132.91**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.07	0.00	18.07	9.93	0.00	9.93						0.00
Off-Road	9.37	74.88	43.05	0.07		3.61	3.61		3.61	3.61		7,997.69		0.84		8,015.31
Total	**9.37**	**74.88**	**43.05**	**0.07**	**18.07**	**3.61**	**21.68**	**9.93**	**3.61**	**13.54**		**7,997.69**		**0.84**		**8,015.31**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	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
Worker	0.08	0.09	1.10	0.00	0.23	0.01	0.24	0.01	0.01	0.02		185.53		0.01		185.74
Total	**0.08**	**0.09**	**1.10**	**0.00**	**0.23**	**0.01**	**0.24**	**0.01**	**0.01**	**0.02**		**185.53**		**0.01**		**185.74**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.13	0.00	8.13	4.47	0.00	4.47						0.00
Off-Road	9.37	74.88	43.05	0.07		3.61	3.61		3.61	3.61	0.00	7,997.69		0.84		8,015.31
Total	**9.37**	**74.88**	**43.05**	**0.07**	**8.13**	**3.61**	**11.74**	**4.47**	**3.61**	**8.08**	**0.00**	**7,997.69**		**0.84**		**8,015.31**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	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
Worker	0.08	0.09	1.10	0.00	0.23	0.01	0.24	0.01	0.01	0.02		185.53		0.01		185.74
Total	**0.08**	**0.09**	**1.10**	**0.00**	**0.23**	**0.01**	**0.24**	**0.01**	**0.01**	**0.02**		**185.53**		**0.01**		**185.74**

3.3 Grading - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.33	0.00	6.33	3.31	0.00	3.31						0.00
Off-Road	5.98	45.66	30.18	0.05		2.47	2.47		2.47	2.47		5,240.06		0.53		5,251.29
Total	**5.98**	**45.66**	**30.18**	**0.05**	**6.33**	**2.47**	**8.80**	**3.31**	**2.47**	**5.78**		**5,240.06**		**0.53**		**5,251.29**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.61	7.21	3.26	0.01	7.33	0.29	7.61	0.04	0.29	0.33		1,291.29		0.03		1,291.91
Vendor	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
Worker	0.07	0.08	0.92	0.00	0.20	0.01	0.20	0.01	0.01	0.01		154.61		0.01		154.79
Total	**0.68**	**7.29**	**4.18**	**0.01**	**7.53**	**0.30**	**7.81**	**0.05**	**0.30**	**0.34**		**1,445.90**		**0.04**		**1,446.70**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.85	0.00	2.85	1.49	0.00	1.49						0.00
Off-Road	5.98	45.66	30.18	0.05		2.47	2.47		2.47	2.47	0.00	5,240.06		0.53		5,251.29
Total	**5.98**	**45.66**	**30.18**	**0.05**	**2.85**	**2.47**	**5.32**	**1.49**	**2.47**	**3.96**	**0.00**	**5,240.06**		**0.53**		**5,251.29**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.61	7.21	3.26	0.01	7.33	0.29	7.61	0.04	0.29	0.33		1,291.29		0.03		1,291.91
Vendor	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
Worker	0.07	0.08	0.92	0.00	0.20	0.01	0.20	0.01	0.01	0.01		154.61		0.01		154.79
Total	**0.68**	**7.29**	**4.18**	**0.01**	**7.53**	**0.30**	**7.81**	**0.05**	**0.30**	**0.34**		**1,445.90**		**0.04**		**1,446.70**

3.4 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.74	32.06	23.20	0.04		2.02	2.02		2.02	2.02		4,040.61		0.42		4,049.51
Total	**4.74**	**32.06**	**23.20**	**0.04**		**2.02**	**2.02**		**2.02**	**2.02**		**4,040.61**		**0.42**		**4,049.51**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.01	0.15	0.07	0.00	0.01	0.00	0.01	0.00	0.00	0.01		27.23		0.00		27.24
Worker	0.01	0.02	0.18	0.00	0.04	0.00	0.04	0.00	0.00	0.00		30.92		0.00		30.96
Total	**0.02**	**0.17**	**0.25**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.01**		**58.15**		**0.00**		**58.20**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.74	32.06	23.20	0.04		2.02	2.02		2.02	2.02	0.00	4,040.61		0.42		4,049.51
Total	**4.74**	**32.06**	**23.20**	**0.04**		**2.02**	**2.02**		**2.02**	**2.02**	**0.00**	**4,040.61**		**0.42**		**4,049.51**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.01	0.15	0.07	0.00	0.01	0.00	0.01	0.00	0.00	0.01		27.23		0.00		27.24
Worker	0.01	0.02	0.18	0.00	0.04	0.00	0.04	0.00	0.00	0.00		30.92		0.00		30.96
Total	**0.02**	**0.17**	**0.25**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.01**		**58.15**		**0.00**		**58.20**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.34	29.16	22.98	0.04		1.80	1.80		1.80	1.80		4,040.61		0.39		4,048.81
Total	**4.34**	**29.16**	**22.98**	**0.04**		**1.80**	**1.80**		**1.80**	**1.80**		**4,040.61**		**0.39**		**4,048.81**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.01	0.13	0.07	0.00	0.01	0.00	0.01	0.00	0.00	0.00		27.25		0.00		27.26
Worker	0.01	0.01	0.17	0.00	0.04	0.00	0.04	0.00	0.00	0.00		30.19		0.00		30.22
Total	**0.02**	**0.14**	**0.24**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**		**57.44**		**0.00**		**57.48**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.34	29.16	22.98	0.04		1.80	1.80		1.80	1.80	0.00	4,040.61		0.39		4,048.81
Total	**4.34**	**29.16**	**22.98**	**0.04**		**1.80**	**1.80**		**1.80**	**1.80**	**0.00**	**4,040.61**		**0.39**		**4,048.81**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.01	0.13	0.07	0.00	0.01	0.00	0.01	0.00	0.00	0.00		27.25		0.00		27.26
Worker	0.01	0.01	0.17	0.00	0.04	0.00	0.04	0.00	0.00	0.00		30.19		0.00		30.22
Total	**0.02**	**0.14**	**0.24**	**0.00**	**0.05**	**0.00**	**0.05**	**0.00**	**0.00**	**0.00**		**57.44**		**0.00**		**57.48**

3.5 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.89	30.10	20.54	0.03		2.54	2.54		2.54	2.54		2,917.65		0.44		2,926.87
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**4.89**	**30.10**	**20.54**	**0.03**		**2.54**	**2.54**		**2.54**	**2.54**		**2,917.65**		**0.44**		**2,926.87**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	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
Worker	0.06	0.07	0.84	0.00	0.20	0.01	0.20	0.01	0.01	0.01		150.95		0.01		151.11
Total	**0.06**	**0.07**	**0.84**	**0.00**	**0.20**	**0.01**	**0.20**	**0.01**	**0.01**	**0.01**		**150.95**		**0.01**		**151.11**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.89	30.10	20.54	0.03		2.54	2.54		2.54	2.54	0.00	2,917.65		0.44		2,926.87
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**4.89**	**30.10**	**20.54**	**0.03**		**2.54**	**2.54**		**2.54**	**2.54**	**0.00**	**2,917.65**		**0.44**		**2,926.87**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	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
Worker	0.06	0.07	0.84	0.00	0.20	0.01	0.20	0.01	0.01	0.01		150.95		0.01		151.11
Total	**0.06**	**0.07**	**0.84**	**0.00**	**0.20**	**0.01**	**0.20**	**0.01**	**0.01**	**0.01**		**150.95**		**0.01**		**151.11**

3.6 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.06					0.00	0.00		0.00	0.00						0.00
Off-Road	0.41	2.57	1.90	0.00		0.22	0.22		0.22	0.22		281.19		0.04		281.96
Total	**5.47**	**2.57**	**1.90**	**0.00**		**0.22**	**0.22**		**0.22**	**0.22**		**281.19**		**0.04**		**281.96**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	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
Worker	0.00	0.00	0.06	0.00	0.01	0.00	0.01	0.00	0.00	0.00		10.06		0.00		10.07
Total	**0.00**	**0.00**	**0.06**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**		**10.06**		**0.00**		**10.07**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.06					0.00	0.00		0.00	0.00						0.00
Off-Road	0.41	2.57	1.90	0.00		0.22	0.22		0.22	0.22	0.00	281.19		0.04		281.96
Total	**5.47**	**2.57**	**1.90**	**0.00**		**0.22**	**0.22**		**0.22**	**0.22**	**0.00**	**281.19**		**0.04**		**281.96**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	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
Worker	0.00	0.00	0.06	0.00	0.01	0.00	0.01	0.00	0.00	0.00		10.06		0.00		10.07
Total	**0.00**	**0.00**	**0.06**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**		**10.06**		**0.00**		**10.07**

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					
Unmitigated	0.43	1.05	4.63	0.01	0.85	0.05	0.90	0.03	0.05	0.08		780.57		0.03		781.26
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
Single Family Housing	86.13	90.72	78.93	243,561	243,561
Total	86.13	90.72	78.93	243,561	243,561

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
Single Family Housing	10.80	7.30	7.50	40.20	19.20	40.60

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 Unmitigated	0.01	0.09	0.04	0.00		0.00	0.01		0.00	0.01		117.56		0.00	0.00	118.27
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					
Single Family Housing	999.242	0.01	0.09	0.04	0.00		0.00	0.01		0.00	0.01		117.56		0.00	0.00	118.27
Total		**0.01**	**0.09**	**0.04**	**0.00**		**0.00**	**0.01**		**0.00**	**0.01**		**117.56**		**0.00**	**0.00**	**118.27**

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					
Unmitigated	1.34	0.05	3.74	0.01		0.00	0.48		0.00	0.48	63.51	163.35		0.25	0.00	233.38
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	0.03					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.32					0.00	0.00		0.00	0.00						0.00
Hearth	0.96	0.04	2.98	0.01		0.00	0.48		0.00	0.48	63.51	162.00		0.25	0.00	232.00
Landscaping	0.02	0.01	0.77	0.00		0.00	0.00		0.00	0.00		1.35		0.00		1.38
Total	**1.33**	**0.05**	**3.75**	**0.01**		**0.00**	**0.48**		**0.00**	**0.48**	**63.51**	**163.35**		**0.25**	**0.00**	**233.38**

APPENDIX 3A – GREENHOUSE GAS EMISSIONS

Orange Street Tract Map (12-0392)

Riverside-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Single Family Housing	9	Dwelling Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**		**Utility Company**	Southern California Edison
Climate Zone	10		2.4		
		Precipitation Freq (Days)			
			28		

1.3 User Entered Comments

Project Characteristics -

Land Use - Lot acreage per Tentative Tract Map

Construction Phase -

Grading - Total Acres Distrubed = 5.51 acres

Architectural Coating - SCAQMD Rule 1113

Construction Off-road Equipment Mitigation -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.62	4.30	3.04	0.01	0.23	0.26	0.49	0.08	0.26	0.34	0.00	489.49	489.49	0.05	0.00	490.54
2015	0.15	0.61	0.45	0.00	0.00	0.04	0.05	0.00	0.04	0.04	0.00	65.65	65.65	0.01	0.00	65.81
Total	**0.77**	**4.91**	**3.49**	**0.01**	**0.23**	**0.30**	**0.54**	**0.08**	**0.30**	**0.38**	**0.00**	**555.14**	**555.14**	**0.06**	**0.00**	**556.35**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2014	0.62	4.30	3.04	0.01	0.14	0.26	0.40	0.04	0.26	0.30	0.00	489.49	489.49	0.05	0.00	490.54
2015	0.15	0.61	0.45	0.00	0.00	0.04	0.05	0.00	0.04	0.04	0.00	65.65	65.65	0.01	0.00	65.81
Total	**0.77**	**4.91**	**3.49**	**0.01**	**0.14**	**0.30**	**0.45**	**0.04**	**0.30**	**0.34**	**0.00**	**555.14**	**555.14**	**0.06**	**0.00**	**556.35**

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	0.10	0.00	0.20	0.00		0.00	0.01		0.00	0.01	0.96	5.74	6.69	0.00	0.00	6.80
Energy	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00	0.00	38.31	38.31	0.00	0.00	38.55
Mobile	0.07	0.18	0.76	0.00	0.13	0.01	0.14	0.01	0.01	0.01	0.00	114.25	114.25	0.00	0.00	114.35
Waste						0.00	0.00		0.00	0.00	2.16	0.00	2.16	0.13	0.00	4.85
Water						0.00	0.00		0.00	0.00	0.00	3.42	3.42	0.02	0.00	3.96
Total	**0.17**	**0.20**	**0.97**	**0.00**	**0.13**	**0.01**	**0.15**	**0.01**	**0.01**	**0.02**	**3.12**	**161.72**	**164.83**	**0.15**	**0.00**	**168.51**

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.09	0.00	0.09	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.37	0.22	0.00		0.02	0.02		0.02	0.02	0.00	36.27	36.27	0.00	0.00	36.35
Total	**0.05**	**0.37**	**0.22**	**0.00**	**0.09**	**0.02**	**0.11**	**0.05**	**0.02**	**0.07**	**0.00**	**36.27**	**36.27**	**0.00**	**0.00**	**36.35**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.78	0.78	0.00	0.00	0.78
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.78**	**0.78**	**0.00**	**0.00**	**0.78**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.04	0.00	0.04	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.37	0.22	0.00		0.02	0.02		0.02	0.02	0.00	36.27	36.27	0.00	0.00	36.35
Total	**0.05**	**0.37**	**0.22**	**0.00**	**0.04**	**0.02**	**0.06**	**0.02**	**0.02**	**0.04**	**0.00**	**36.27**	**36.27**	**0.00**	**0.00**	**36.35**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.78	0.78	0.00	0.00	0.78
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.78**	**0.78**	**0.00**	**0.00**	**0.78**

3.3 Grading - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.06	0.00	0.06	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.06	0.46	0.30	0.00		0.02	0.02		0.02	0.02	0.00	47.52	47.52	0.00	0.00	47.63
Total	**0.06**	**0.46**	**0.30**	**0.00**	**0.06**	**0.02**	**0.08**	**0.03**	**0.02**	**0.05**	**0.00**	**47.52**	**47.52**	**0.00**	**0.00**	**47.63**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.01	0.07	0.03	0.00	0.07	0.00	0.07	0.00	0.00	0.00	0.00	11.69	11.69	0.00	0.00	11.69
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.30	1.30	0.00	0.00	1.30
Total	**0.01**	**0.07**	**0.04**	**0.00**	**0.07**	**0.00**	**0.07**	**0.00**	**0.00**	**0.00**	**0.00**	**12.99**	**12.99**	**0.00**	**0.00**	**12.99**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.03	0.00	0.03	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.06	0.46	0.30	0.00		0.02	0.02		0.02	0.02	0.00	47.52	47.52	0.00	0.00	47.63
Total	**0.06**	**0.46**	**0.30**	**0.00**	**0.03**	**0.02**	**0.05**	**0.02**	**0.02**	**0.04**	**0.00**	**47.52**	**47.52**	**0.00**	**0.00**	**47.63**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.01	0.07	0.03	0.00	0.07	0.00	0.07	0.00	0.00	0.00	0.00	11.69	11.69	0.00	0.00	11.69
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.30	1.30	0.00	0.00	1.30
Total	**0.01**	**0.07**	**0.04**	**0.00**	**0.07**	**0.00**	**0.07**	**0.00**	**0.00**	**0.00**	**0.00**	**12.99**	**12.99**	**0.00**	**0.00**	**12.99**

3.4 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.50	3.38	2.45	0.00		0.21	0.21		0.21	0.21	0.00	386.61	386.61	0.04	0.00	387.46
Total	**0.50**	**3.38**	**2.45**	**0.00**		**0.21**	**0.21**		**0.21**	**0.21**	**0.00**	**386.61**	**386.61**	**0.04**	**0.00**	**387.46**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60	0.00	0.00	2.60
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.73	2.73	0.00	0.00	2.74
Total	**0.00**	**0.02**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**5.33**	**5.33**	**0.00**	**0.00**	**5.34**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.50	3.38	2.45	0.00		0.21	0.21		0.21	0.21	0.00	386.61	386.61	0.04	0.00	387.46
Total	**0.50**	**3.38**	**2.45**	**0.00**		**0.21**	**0.21**		**0.21**	**0.21**	**0.00**	**386.61**	**386.61**	**0.04**	**0.00**	**387.46**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60	0.00	0.00	2.60
Worker	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.73	2.73	0.00	0.00	2.74
Total	**0.00**	**0.02**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**5.33**	**5.33**	**0.00**	**0.00**	**5.34**

3.4 Building Construction - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.04	0.28	0.22	0.00		0.02	0.02		0.02	0.02	0.00	34.81	34.81	0.00	0.00	34.88
Total	**0.04**	**0.28**	**0.22**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**34.81**	**34.81**	**0.00**	**0.00**	**34.88**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.23	0.00	0.00	0.23
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.24	0.00	0.00	0.24
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.47**	**0.47**	**0.00**	**0.00**	**0.47**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.04	0.28	0.22	0.00		0.02	0.02		0.02	0.02	0.00	34.81	34.81	0.00	0.00	34.88
Total	**0.04**	**0.28**	**0.22**	**0.00**		**0.02**	**0.02**		**0.02**	**0.02**	**0.00**	**34.81**	**34.81**	**0.00**	**0.00**	**34.88**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.23	0.00	0.00	0.23
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.24	0.00	0.00	0.24
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.47**	**0.47**	**0.00**	**0.00**	**0.47**

3.5 Paving - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.05	0.30	0.21	0.00		0.03	0.03		0.03	0.03	0.00	26.46	26.46	0.00	0.00	26.54
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.05**	**0.30**	**0.21**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**26.46**	**26.46**	**0.00**	**0.00**	**26.54**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27	1.27	0.00	0.00	1.27
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.27**	**1.27**	**0.00**	**0.00**	**1.27**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.05	0.30	0.21	0.00		0.03	0.03		0.03	0.03	0.00	26.46	26.46	0.00	0.00	26.54
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.05**	**0.30**	**0.21**	**0.00**		**0.03**	**0.03**		**0.03**	**0.03**	**0.00**	**26.46**	**26.46**	**0.00**	**0.00**	**26.54**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27	1.27	0.00	0.00	1.27
Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**1.27**	**1.27**	**0.00**	**0.00**	**1.27**

3.6 Architectural Coating - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56
Total	**0.05**	**0.03**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**2.55**	**2.55**	**0.00**	**0.00**	**2.56**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.00	0.00	0.08
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.08**	**0.08**	**0.00**	**0.00**	**0.08**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.05					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.00	0.03	0.02	0.00		0.00	0.00		0.00	0.00	0.00	2.55	2.55	0.00	0.00	2.56
Total	**0.05**	**0.03**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**2.55**	**2.55**	**0.00**	**0.00**	**2.56**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.00	0.00	0.08
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.08**	**0.08**	**0.00**	**0.00**	**0.08**

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					
Unmitigated	0.07	0.18	0.76	0.00	0.13	0.01	0.14	0.01	0.01	0.01	0.00	114.25	114.25	0.00	0.00	114.35
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
Single Family Housing	86.13	90.72	78.93	243,561	243,561
Total	86.13	90.72	78.93	243,561	243,561

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
Single Family Housing	10.80	7.30	7.50	40.20	19.20	40.60

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 Unmitigated						0.00	0.00		0.00	0.00	0.00	18.85	18.85	0.00	0.00	18.97
NaturalGas Unmitigated	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00	0.00	19.46	19.46	0.00	0.00	19.58
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					
Single Family Housing	364723	0.00	0.02	0.01	0.00		0.00	0.00		0.00	0.00	0.00	19.46	19.46	0.00	0.00	19.58
Total		**0.00**	**0.02**	**0.01**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**19.46**	**19.46**	**0.00**	**0.00**	**19.58**

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			
Single Family Housing	64798.4					18.85	0.00	0.00	18.97
Total						**18.85**	**0.00**	**0.00**	**18.97**

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					
Unmitigated	0.10	0.00	0.20	0.00		0.00	0.01		0.00	0.01	0.96	5.74	6.69	0.00	0.00	6.80
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	0.01					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.06					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.03	0.00	0.06	0.00		0.00	0.01		0.00	0.01	0.96	5.51	6.47	0.00	0.00	6.57
Landscaping	0.00	0.00	0.14	0.00		0.00	0.00		0.00	0.00	0.00	0.22	0.22	0.00	0.00	0.23
Total	**0.10**	**0.00**	**0.20**	**0.00**		**0.00**	**0.01**		**0.00**	**0.01**	**0.96**	**5.73**	**6.69**	**0.00**	**0.00**	**6.80**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Unmitigated					3.42	0.02	0.00	3.96
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Single Family Housing	0.586386 / 0.369678					3.42	0.02	0.00	3.96
Total						**3.42**	**0.02**	**0.00**	**3.96**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Unmitigated					2.16	0.13	0.00	4.85
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			
Single Family Housing	10.66					2.16	0.13	0.00	4.85
Total						**2.16**	**0.13**	**0.00**	**4.85**

APPENDIX 4 – HABITAT ASSESSMENT

Habitat Assessment for Western Burrowing Owl *Athene cunicularia hypugaea*

34915 Orange Street
Wildomar, California

APN 367-170-029

Prepared for:

Mike Lesle
21595 Marble Court
Wildomar, California 92595

Prepared by:

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January 28, 2013

REPORT SUMMARY

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Report Date: January 28, 2013

Report Title: Habitat Assessment for Western Burrowing Owl, *Athene cunicularia hypugaea,* 34915 Orange Street, APN 367-170-029, Wildomar, California

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Lead Agency: City of Wildomar

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USGS Quadrangle: *Wildomar, California* (7.5 minute)

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Summary

The proposed project is a Tentative Tract Map for 34915 Orange Street (APN 367-170-029), Wildomar, California. The project site is 5.54 acres with approximately 1.55 acres of urban/developed land and an existing house and appurtenant structures. Approximately 3.99 acres contains abandoned farmland, which is described as disturbed land in this report. The property will be divided into 10 residential lots and the existing house will remain.

The proposed project will ultimately result in the complete disturbance of the entire parcel. The existing urban/developed land (1.55 acres) will be unchanged. Disturbed land (3.99 acres) will be converted to urban/developed land for home construction. The proposed action will not adversely affect sensitve species, wetlands (including vernal pools and riparian/riverine areas), or jurisdictional waters. The proposed project is not within a cell or cell group. The Multiple Species Habitat Concervation Plan (MSHCP) Reserve Assembly will not be affected.

If implemented as described in this document, the proposed action will not adversely affect sensitive biological resources. Mitigation and monitoring are not recommended.

1.0 INTRODUCTION

1.1 Purpose of Report

The purpose of this report is to document the biological resources present, or potentially present, at 34915 Orange Street, APN 367-170-029, Wildomar, California. This report is intended to identify potential effects of the proposed project on biological resources, as well as to recommend measures to avoid, minimize, or mitigate significant impacts consistent with the California Environmental Quality Act (CEQA) and the Western Riverside MSHCP.

1.2 Project Location

The proposed project is in the City of Wildomar, Riverside County, California (Figure 1). The project site is located at 34915 Orange Street, APN 367-170-029, and is depicted on the USGS *Wildomar* 7.5 minute topographic map, NE ¼, SE ¼, Section 27, Range 4 West, Township 6 South (Figure 2).

1.3 Project Description

The proposed project is a Tentative Tract Map (Figure 3). The property will be divided into 10 residential lots and the existing house will remain. The lots will be built-out 100 percent.

2.0 METHODS AND SURVEY LIMITATIONS

Prior to the site visit, the Western Riverside MSHCP, the California Natural Diversity Database (CNDDB) ArcGIS 9.x (CDFG 2012a), and Rarefind 4 (CDFG 2011b) were reviewed to determine if any sensitive species may be present on or near the proposed site. National Wetland Inventory (USFWS 2008) maps for the site were consulted to determine if mapped wetlands might be present. Appropriate United States Geological Survey maps (7.5 minute) were reviewed to determine if drainage features, including "blue-line streams," might be present. The Web Soil Survey (WSS 2012) was consulted to identify soils associated with the proposed site, and the National List of Hydric Soils (NRCS 2007) was reviewed to determine if any of these soils might be hydric in nature.

A site visit was made on January 14, 2013 by Mr. Larry Dean. The site was surveyed on foot by walking over the site in a series of random transects to provide visual coverage of the entire site. Vegetation and wildlife species observed were recorded. Wildlife signs (scat, bones, feathers, tracks, dens, and burrows) were also recorded as encountered. Frequent pauses were made during the survey to watch and listen for wildlife.

3.0 SURVEY RESULTS

At the time of the site visit, the temperature was approximately 62 degrees Fahrenheit, winds were 5.0 to 10.0 miles per hour out of the north and northeast, visibility was unlimited, and cloud cover was high and less than 30 percent.

3.1 Land Use

The proposed project site and adjacent properties are rural residential within the Elsinore Area Plan of the MSHCP. It is not within or adjacent to a criteria cell or cell croup. The proposed action will not adversely affect the proposed MHCP preserve assembly.

3.2 Topography

The proposed project site is level with no terrain relief. The property slopes gently, about two percent, from the northwest to the southeast with the slope increasing slightly in the southeast corner.

3.3 Soils

Soils associated with the proposed project site (Figure 4) include:

- Ramona sandy loam, 0 to 5.0 percent slopes, severely eroded
- Ramona sandy loam, 2.0 to 5.0 percent slopes, eroded
- Ramona sandy loams, 5.0 to 8.0 percent slopes, eroded
- Ramona sandy loam, 8.0 to 15.0 percent slopes, severely eroded
- Hanford coarse sandy loam, 2.0 to 8.0 percent slopes

3.4 Wetlands and Jurisdictional Waters

There are no jurisdictional wetlands or non-jurisdictional wetlands present on the proposed project site. There are no waters under the jurisdiction of the United States or the State of California present on the property.

3.5 Vernal Pools

Vernal pools are seasonal wetlands that occur in depressions. These depressions are underlain by an impervious layer that allows water to pond in the depression. In Riverside County, vernal pools fill during winter rains and then dry out following the rainy season. Vernal pools are often short-lived and the plant and animal species associated with them are uniquely adapted to vernal pool conditions, often completing their entire life cycle in a matter of days. Many of the species associated with vernal pools are listed under state and federal endangered species acts.

The proposed project site was searched for vernal pools and vernal pool topography. Vernal pools are not present on the proposed project site or in the immediate vicinity.

3.6 Riparian/Riverine Areas

Riparian/riverine areas are defined by the MSHCP as "...lands which contain habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or which depend upon soil moisture from a nearby fresh water source; or areas with fresh water flow during all or a portion of the year."

There are no riparian/riverine areas present on or adjacent to the property.

3.7 Plant Communities

The vegetation map for Riverside County depicts the proposed project site as developed habitat and agricultural land. The site visit confirmed the presence of urban/developed land (Figure 5). The agricultural land is no longer being used for agriculture, and for the puposes of this report it is being described as disturbed land.

3.7.1 Urban/Developed Land (Element Code 12000)

Urban/developed land has been constructed upon or otherwise altered to the extent that native vegetation can no longer be supported. Urban/developed land is characterised by permanent and semi-permanent structures, paved areas, and landscaped areas requiring irrigation (Oberbauer et al 2008).

The urban/developed land on the proposed project site (1.55 acres) includes the house site, adjacent structures, and areas landscaped with non-native plant species (Figure 5) including olive trees, grape vines, eucalyptus trees, jacaranda, and several species of non-native ornamental plants.

3.7.2 Disturbed Land

Disturbed land include areas that have been disturbed by authorized human activity to the extent that they are no longer recognizable as a native or naturalized vegetation association (Oberbauer et al 2008). Approximately 3.99 acres of disturbed lands are present on the project site. The disturbed area is vegetated with non-native annual grasses such as wild oat, rat-tail fescue, red brome, and invasive broad-leaf forbs such as filree and short-pod mustard.

Table 1
Plant Communities
34915 Orange Street
APN 367-170-029
Wildomar, California

Plant Community	Acreage
Urban/Developed Land	1.55 acres
Disturbed Land	3.99 acres
Total	5.54 acres

3.7.3 Zoological Resources

Wildlife observed on the proposed project site was representative of rural residential areas.

Table 2 **Wildlife Species Observed** **34915 Orange Street** **APN 367-170-029** **Wildomar, California**	
Common Name	**Scientific Name**
Canyon towhee	*Melozone fusca*
American crow	*Corvus brachyrhynchos*
Black phoebe	*Sayornis nigricans*
Pocket gopher	*Thomomys bottae*

3.7.4 Wildlife Movement Corridors

Wildlife movement corridors provide avenues for wildlife to move between patches of habitat. When wildlife movement corridors are destroyed or interrupted, the interconnected habitat patches become isolated islands of habitat. These islands become less productive in terms of species diversity. The isolation of the species trapped in the island of habitat may lead to serious population declines and could result in the local extinction of a species. Wildlife coridors are considered to be biologically sensitive. There are no local or regional corridors present on or in the vicinity of the proposed project site.

4.0 RARE, THREATENED, ENDANDGERED, NARROW ENDEMIC AND/OR SENSITIVE SPECIES, OR MSHCP COVERED SPECIES

The CNDDB and the Riverside County Conservation Summary Report Generator were consulted to determine which sensitive species, if any, may be present on or near the proposed project site. For the purposes of this report sensitive species are considered to be species that are listed under state and/or federal endangered species acts, and those species covered by the MSHCP.

The summary report identified the burrowing owl (*Athene cunicularia hypugaea*) as potentially being present. The CNDDB identified nine state and/or federally listed species as occurring in the vicinity of the proposed project site. The burrowing owl and the nine species identified by the CNDDB were assessed to determine their potential to occur on or near the project site (Appendix B). The project site was assessed to determine if suitable habitat for these species might be present.

Determinations regarding the probability of a species occurring on the site are based on:

- Recorded occurrences of the species in the immediate vicinity (two mile radius) of the property,
- The presence of suitable habitat for the species, and
- The quality of suitable habitat, if present.

A species was determined to have a high potential for occurrence if there are recorded occurrences within 2.0 miles of the project site and suitable habitat of good quality is present. A species is determined to have a moderate potential for occurrence if there are no recorded occurrences within 2.0 miles but suitable habitat of reasonable quality is present. A species is determined to have a low potential for occurrence if there are no recorded occurrences within 2.0 miles and habitat is fragmented or of low quality. A species is considered to have no potential to occur on the site if there are no recorded occurrences within 2.0 miles and suitable habitat is not present (Appendix B).

Three species were determined to have low to moderate potential to occur on the proposed project site: burrowing owl, coastal California gnatcatcher, and Stephens' kangaroo rat.

4.1 Burrowing Owl (*Athene cunicularia hypugaea*)

The western burrowing owl has not been listed under state or federal endangered species acts. It is however protected under the Migratory Bird Treaty Act of 1918. The western burrowing owl is also protected under Sections 3503 and 3503.5 of the California Fish and Game Code.

The western burrowing owl is on the Additional Survey Needs and Procedures (Section 6.3.2) list of the Western Riverside MSHCP. Surveys for this species are required to be conducted as part of the review process for projects within the burrowing owl survey area when suitable habitat is present. Burrowing owls located as a result of these surveys shall be conserved in accordance with procedures described within Section 6.3.2, MSHCP, Volume 1 (MSHCP 2003).

Burrowing owls tend to prefer areas with good horizontal visibility, low ground cover density, and elevated perches, allowing for easy detection of prey and predators. Burrowing owls are generally found in dry, open, treeless areas such as agricultural lands, grasslands, low-density shrub, and scrublands. Burrowing owls typically use burrows made by burrowing mammals such as ground squirrels. Burrows are used for nesting, shelter, and escape cover.

There is one recorded occurrence of this species in the vicinity of the proposed project site. The project site has a large area of open treeless ground, however, burrows suitable for use by burrowing owls were not observed. Several domestic dogs freely roam around this area and evidence was found of feral cats. Dogs had destroyed the majority of the burrows that were observed. The remaining burrows were those used by pocket gophers. The presence of the dogs and feral cats, potential burrowing owl predators, has probably eliminated any possibility of

burrowing owls occurring here. Burrowing owls and/or evidence of burrowing owls was not observed during the site visit. Burrowing owls are not present.

4.2 Coastal California Gnatcatcher (*Polioptila californica californica*)

The coastal California gnatcatcher is listed as endangered by the U.S. Fish and Wildlife Service and is a State of California Species of Special Concern. The coastal California gnatcatcher is covered by provisions of the MSHCP.

The coastal California gnatcatcher is a small, non-migratory songbird that is found in or near coastal sage scrub habitat in southwestern California and northwestern Baja California, Mexico. The coastal California gnatcatcher is found almost exclusively in coastal sage scrub, but has also been seen in chaparral and riparian habitats.

There have been numerous recorded occurrences of this species in the vicinity of the project. The coastal California gnatcatcher is considered an obligate of coastal sage scrub. Sage scrub is not present on the project site and the coastal California gnatcatcher is not likely to occur there.

4.3 Stephens' Kangaroo Rat (*Dipodomys stephensi*)

Stephens' kangaroo rat has been listed as endangered by the U.S. Fish and Wildlife Service and as threatened by the State of California. Stephens' kangaroo rat is covered by the provisions of the MSHCP.

Suitable habitat for Stephens' kangaroo rat is present on the proposed project site; however, there are no recorded occurrences of this species within 2.0 miles of the project site. Evidence of kangaroo rats (such as droppings and dust baths) was not observed. Potential for this species to be present is low.

Several domestic dogs freely roam in this area and evidence was found of feral cats. Dogs and cats are predators of Stephens' kangaroo rats. Stephens' kangaroo rats will avoid areas where predators are present. The presence of the dogs and feral cats has probably eliminated any possibility of Stephens' kangaroo rat occurring here. Evidence of Stephens' kangaroo rat was not observed. This species is not likely to be present.

5.0 PROJECT IMPACT ANALYSIS

It is anticipated that the proposed project will ultimately result in an 100 percent build-out of the parcel. The existing urban/developed land (1.55 acres) will be unchanged. Disturbed land (3.99 acres) will be converted to urban/developed as homes are constructed (Figure 6). The proposed action will not adversely affect sensitve species, wetlands (including vernal pools and riparian/riverine areas), or jurisdictional waters. The proposed project is not within a cell or cell group. The MSHCP Reserve Assembly will not be affected.

Table 3 Potential Project Impacts Plant Communities 34915 Orange Street APN 367-170-029 Wildomar, California			
Plant Community	**Acreage**	**Affected**	**Unaffected**
Urban/Developed Land	1.55 acres	1.55 acres	0
Disturbed Land	3.99 acres	3.99 acres	0
Total	5.54 acres	5.54 acres	0

6.0 MITIGATION AND MONITORING REQUIREMENTS

If implemented as described in this document, the proposed action will not adversely affect sensitive biological resources. Mitigation and monitoring are not recommended.

7.0 CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief. Fieldwork conducted for this assessment was performed by me or under my direct supervision. I certify that I have not signed a non-disclosure or consultant confidentiality agreement with the project applicant or applicant's representative and that I have no financial interest in the project.

SIGNED: Laurence N. Dean DATE 31 January 2013

Laurence N. Dean,
Senior Wildlife Ecologist

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APPENDIX A

Figures

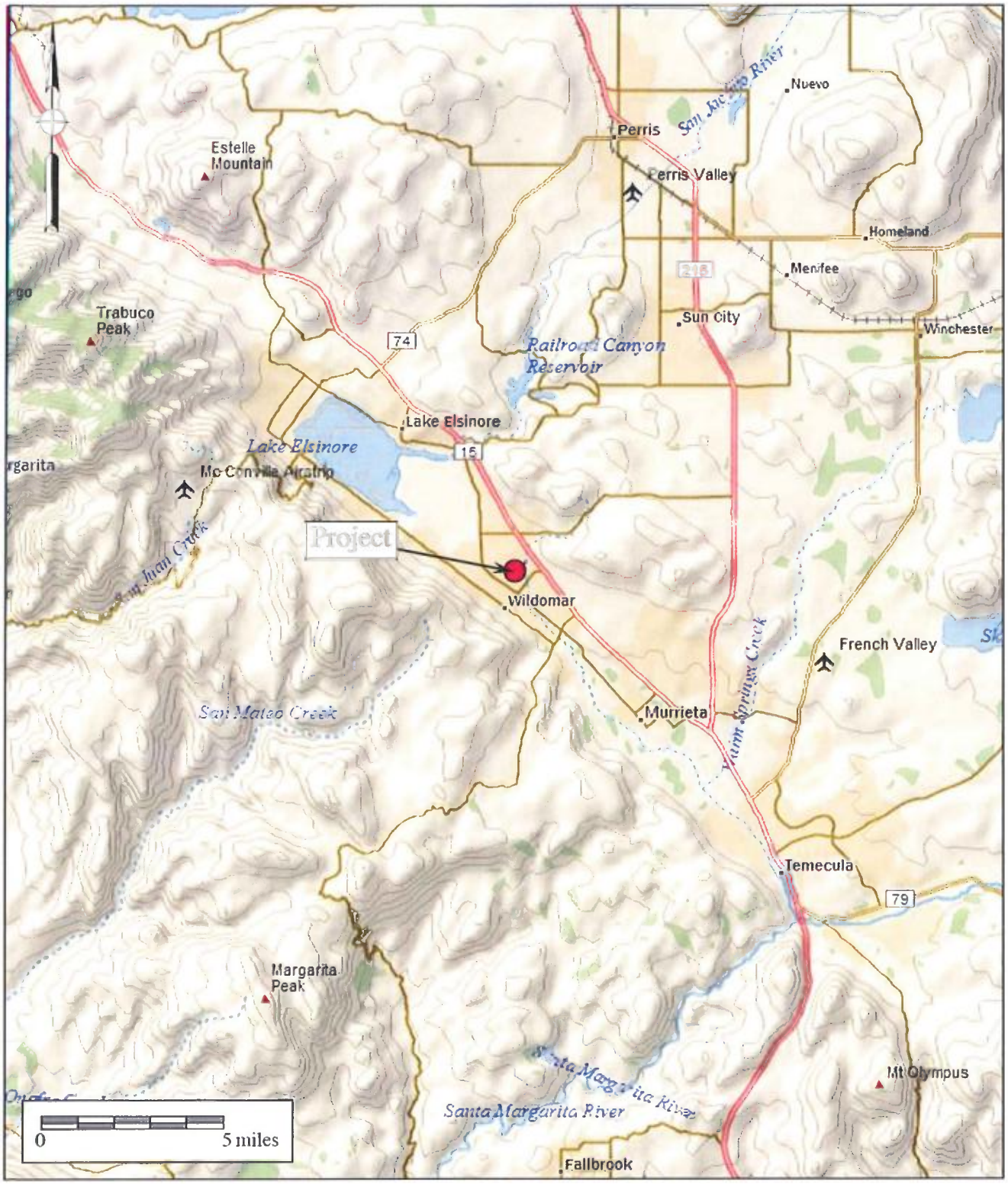

Figure 1
General Location Map
34915 Orange Street
APN 367-170-029
Wildomar, California

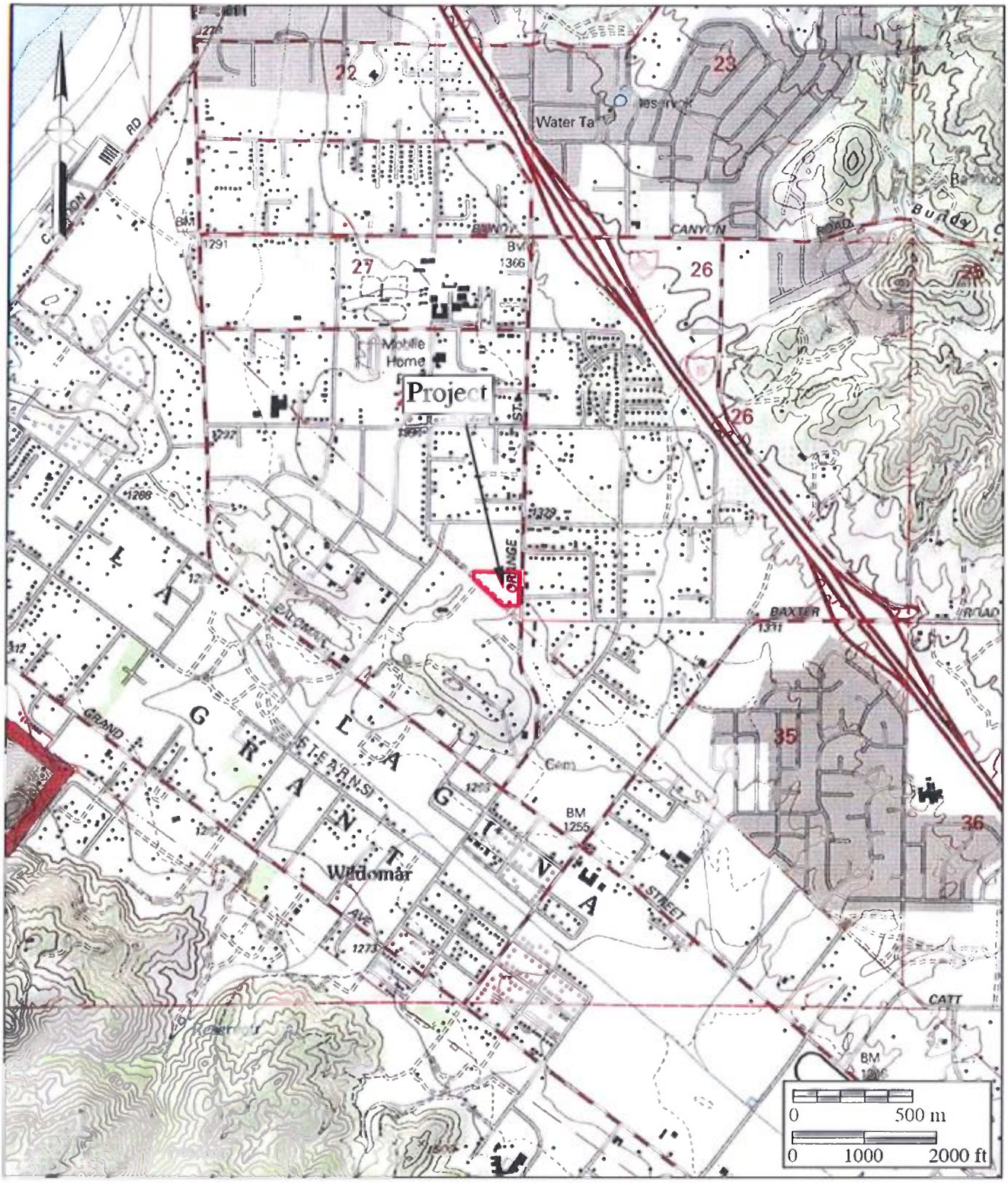

Figure 2
Project Location Map
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APN 367-170-029
Wildomar, California

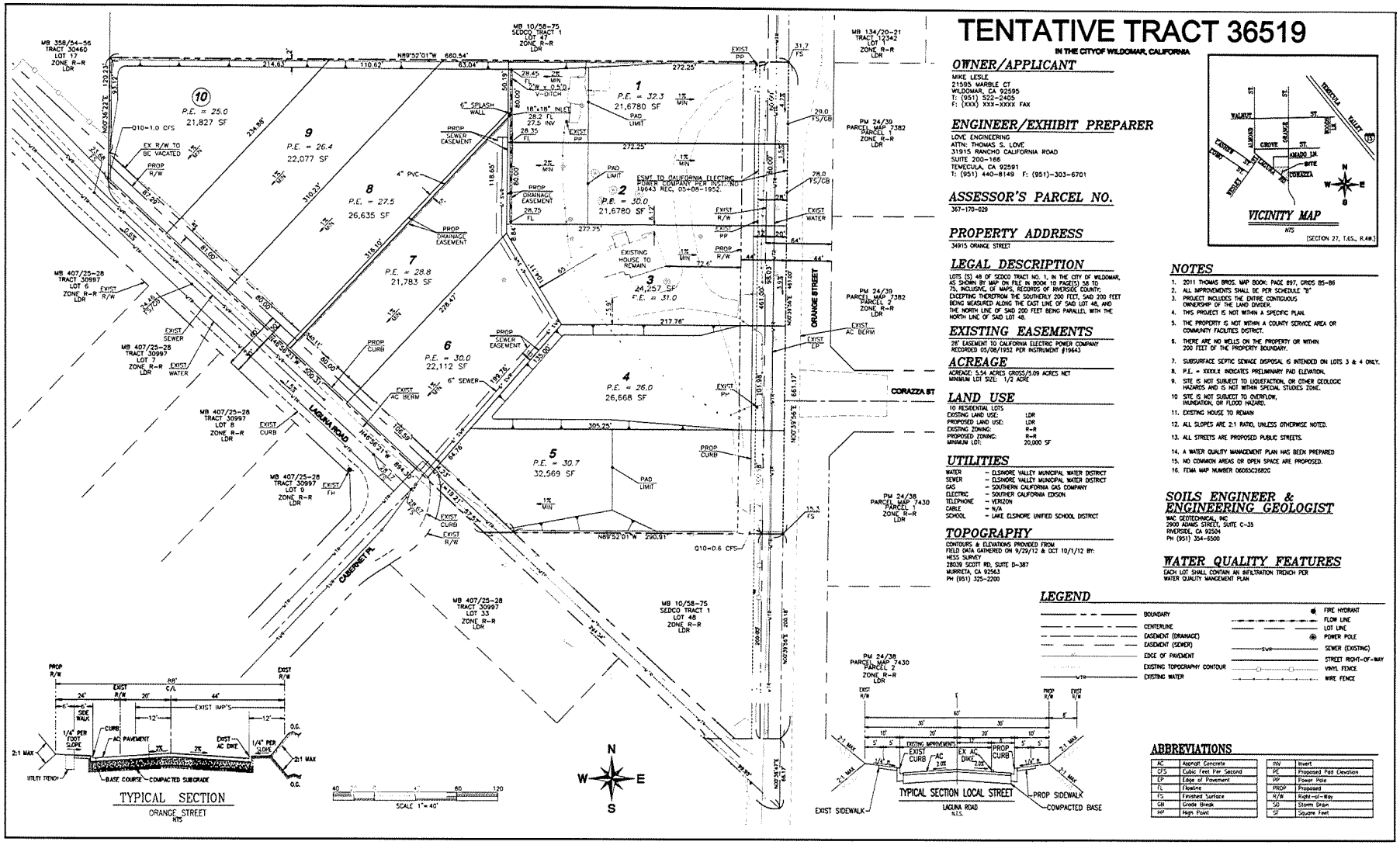

Figure 3
Site Plan
34915 Orange Street
APN 367-170-029
Wildomar, California

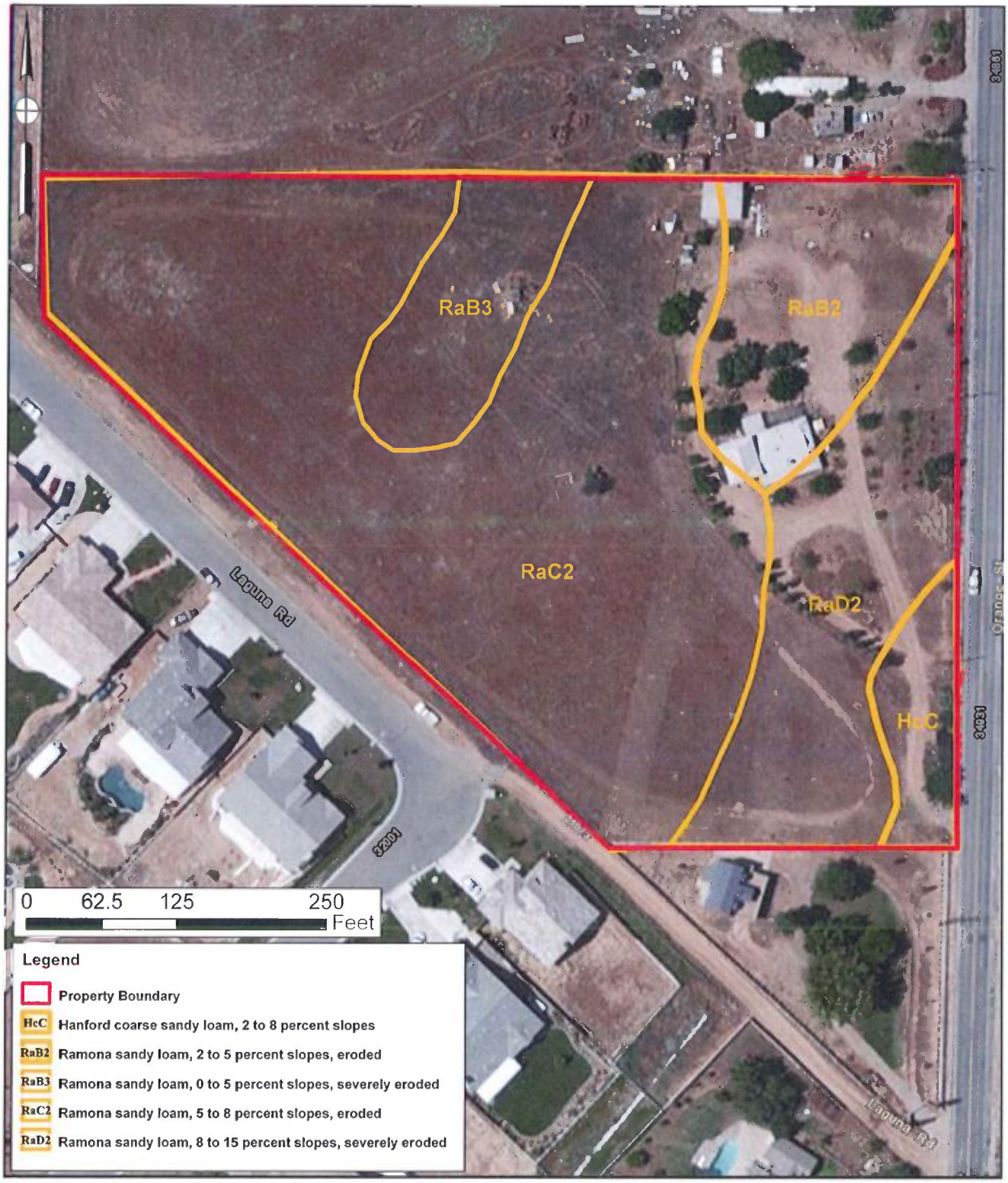

Figure 4
Soils
34915 Orange Street
APN 367-170-029
Wildomar, California

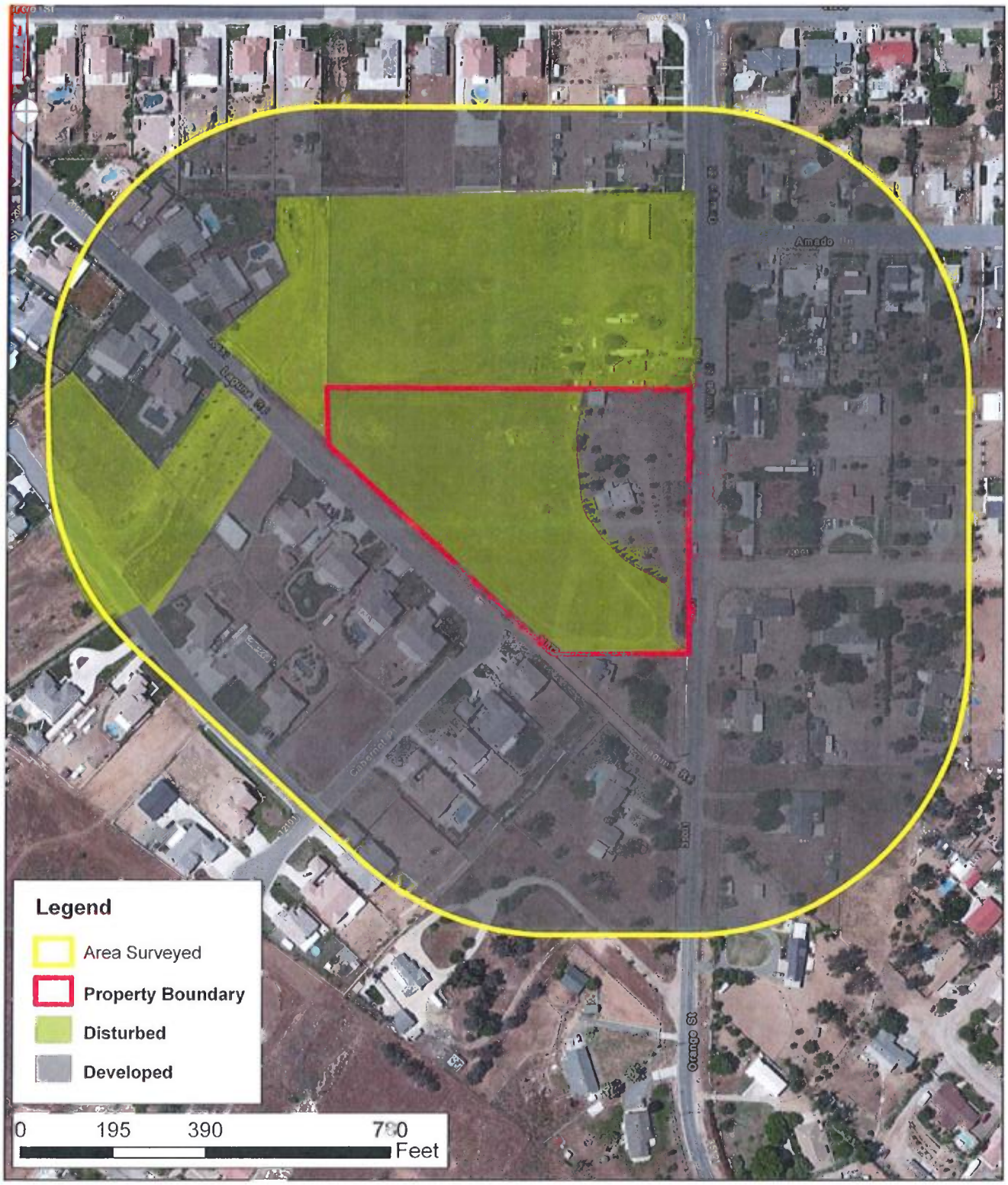

Figure 5
Plant Communities
34915 Orange Street
APN 367-170-029
Wildomar, California

Figure 6

Potential Impacts of the Proposed Project

34915 Orange Street
APN 367-170-029
Wildomar, California

APPENDIX B

Project Specific List of Sensitive Species Potentially Associated with the Proposed Project

Appendix B

Project Specific List of Sensitive Species Potentially Associated with the Proposed Project
34915 Orange Street
APN 367-170-029
Wildomar, California

Common Name	*Scientific Name*	Federal Status	State Status	CNPS Status	MSHCP Status	Habitat Requirements	Habitat Present	Recorded Occurrences[1]	Potential[2]
Munz's onion	*Allium munzii*	E	T	1B.1	Covered	Chaparral, cismontane woodland, coastal scrub, pinyon and juniper woodland, valley and foothill grassland	No	None	None
Thread-leaved brodiaea	*Brodiaea filifolia*	T	E	1B.1	Covered	Chaparral, cismontane woodland, coastal scrub, playas, valley and foothill grassland, vernal pools	No	None	None
San Diego button celery	*Eryngium aristulatum parishii*	E	E	1B.1	Covered	Coastal scrub, valley and foothill grassland, vernal pools	No	None	None
Parish's meadow foam	*Limnanthes alba parishii*	--	E	1B.2	Covered	Lower montane coniferous forest, meadows and seeps, vernal pools	No	None	None
California Orcutt grass	*Orcuttia californica*	E	E	1B.1	Covered	Vernal pools	No	None	None
Arroyo toad	*Anaxyrus californicus*	E	SC	NA	Covered	Extremely specialized needs: washes, arroyos, sandy riverbanks, riparian areas with willows, sycamores, oaks, cottonwoods, exposed sandy stream sides with stable terraces for burrowing, quiet water or pools free of predatory fishes with sandy or gravel bottoms without silt for breeding	No	None	None

[1] California Natural Diversity Database
[2] Potential to occur on site based on presence/absence of suitable habitat and recorded occurrences in the vicinity of the project site (two miles)

California red-legged frog	*Rana draytonii*	T	SC	NA	Covered	Ponds in humid forests, woodlands, grasslands, coastal scrub, and stream sides	No	None	None
Burrowing Owl	*Athene cunicularia hypugaea*	SC	SC	NA	Covered	Dry open areas with low cover and generally no trees. Found in farmlands, on golf courses, airports, cemeteries, and vacant lots. Requires burrows or structures to nesting and escape.	No. Suitable burrows are not present.	One recorded occurrence 1.3 miles NE of project site	Moderate
Coastal California gnatcatcher	*Polioptila californica californica*	T	SC	NA	Covered	Coastal sage scrub obligate	No	Numerous recorded occurrences in the vicinity	Low
Stephens' kangaroo rat	*Dipodomys stephensi*	E	T	NA	Covered	Sparse grassland and coastal sage scrub	Yes, but of poor quality. Predation by feral dogs and cats.	None	Low

E-Endangered T-Threatened NA-Not Applicable SC – Species of Concern
1B.1 – Seriously endangered in California
1B.2 – Fairly endangered in California

APPENDIX C

Photographs

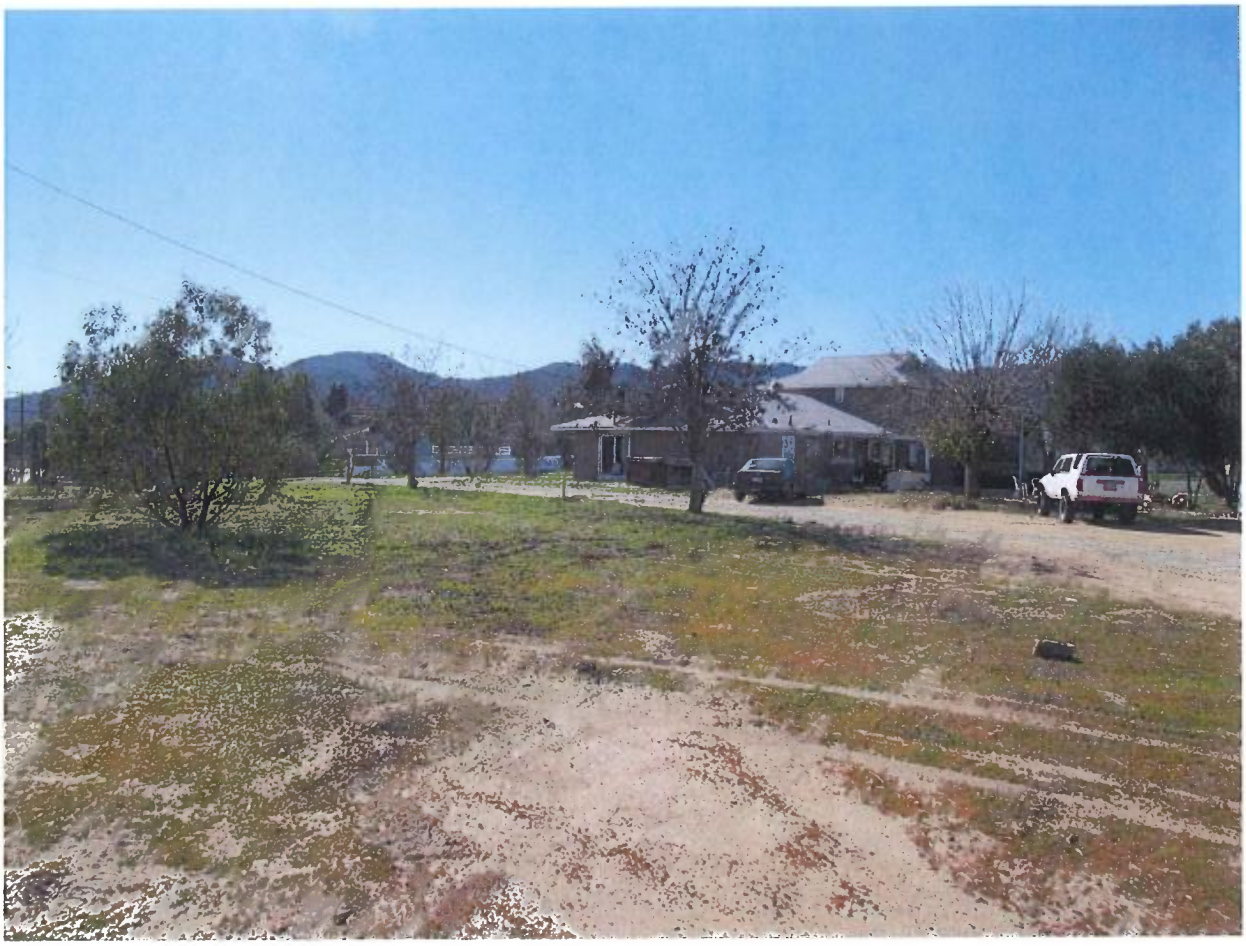

Photo 1: Residence Seen from the Vicinity of Orange Street

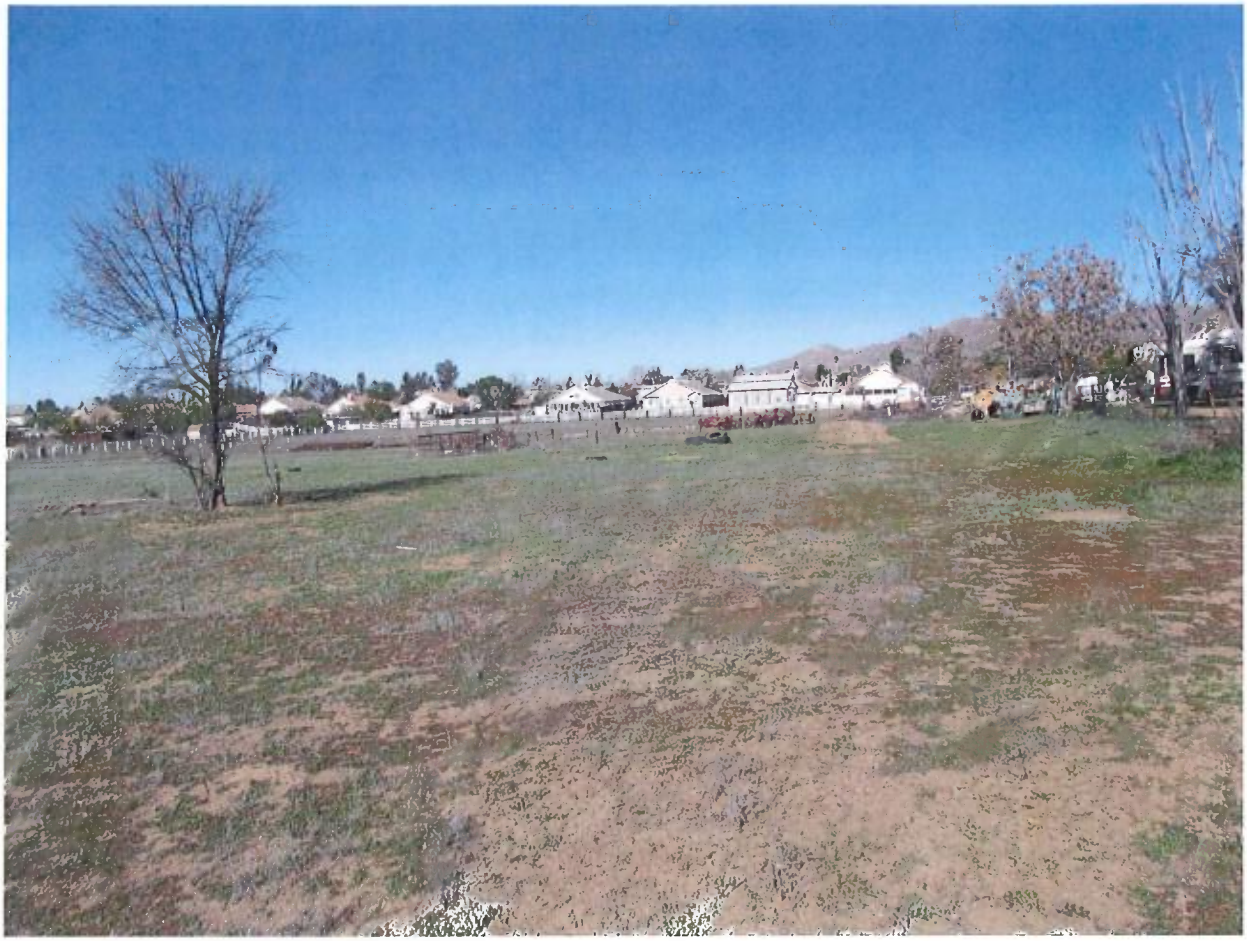

Photo 2: Looking North Across the Property

Photo 3: Looking Southwest Across the Property

Photo 4: Looking Southeast Parallel to Orange Street

Photo 5: Looking Southeast from the West Side of the Property

Photo 6: Residence Seen from the Southwest Side of the Property

APPENDIX 5 – CULTURAL RESOURCES SURVEY

PHASE I CULTURAL RESOURCES SURVEY FOR THE ORANGE STREET PROJECT

CITY OF WILDOMAR, COUNTY OF RIVERSIDE

Assessor's Parcel Number: 367-170-029

Project Site Location: Section 27, Township 6 South, Range 4 West of the *Wildomar* USGS Quadrangle Topographic Map

Prepared for:

Mike Lesle
21595 Marble Court
Wildomar, California 92595

Prepared by:

Jennifer R. Kraft and
Tracy A. Stropes, M.A., RPA
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Poway, California 92064

January 21, 2013
Fieldwork Date: January 14, 2013
Key Words: Negative Survey; City of Wildomar; 5.54 Acres; Wildomar Quadrangle

National Archaeological Data Base Information

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14010 Poway Road, Suite A
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Report Date: January 21, 2013

Report Title: Phase I Cultural Resources Survey for the Orange Street Project, City of Wildomar, County of Riverside

Prepared for: Mike Lesle
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USGS Quadrangle: *Wildomar, California* (7.5 minute)

Study Area: 5.54 Acres

Key Words: USGS *Wildomar* Quadrangle; negative survey; County of Riverside; moderate sensitivity; monitoring recommended.

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1.0 MANAGEMENT SUMMARY/ABSTRACT

The following report describes the results of a Phase I archaeological assessment conducted by Brian F. Smith and Associates, Inc. (BFSA) for the Orange Street Project. The survey covered approximately 5.54 acres located within the City of Wildomar, situated in Riverside County, California (Figure 2.0–1). The development will include 10 residential lots each with a minimum of 20,000 square feet.

Specifically, this project may be found in Section 27 of the USGS 7.5 minute *Wildomar, California* topographic map, Township 6 South, Range 4 West. BFSA, in compliance with the California Environmental Quality Act (CEQA), conducted the assessment to locate and record any cultural resources present within the project area.

The archaeological investigation of the subject property also included the review of an archaeological records search performed by the Eastern Information Center (EIC) at the University of California at Riverside (UCR) in order to assess previous archaeological studies and identify any previously recorded sites within the project boundaries or in the immediate vicinity. No previously recorded sites were identified within the project area as a result of the records search. According to the data obtained from the EIC, an adequate survey sample of the surrounding area has determined that there is a low to moderate potential that archaeological sites are present within the project boundaries.

The archaeological survey of the project was conducted on January 14, 2013. Survey conditions were generally good and ground visibility ranged from fair to good in most areas. Much of the property has been disturbed by domestic dogs, or has been disked or graded in the past. No prehistoric or historic cultural resources were identified during the survey. Based upon the results of the field survey and records searches, no prehistoric or historic sites are present within the boundaries of the current project. However, based on the moderate density of cultural resources surrounding the project Area of Potential Effect (APE), cultural resource monitoring is recommended as a mitigation requirement.

A copy of this report will be permanently filed with the EIC at UCR. All notes, photographs, and other materials related to this project will be curated at the archaeological laboratory of BFSA in Poway, California.

2.0 INTRODUCTION

BFSA was retained by the project applicant to conduct an archaeological assessment for the Orange Street Project. The archaeological survey and evaluation program for the project was conducted in order to comply with the CEQA with regard to potential impacts to cultural resources associated with the planned development. The project is located in an area of low to moderate cultural resource sensitivity as suggested by known site density and predictive modeling. Sensitivity for cultural resources in a given area is usually indicated by known settlement patterns, which in the northwest Riverside County area is focused around environments with accessible food and water.

The project is a 5.54-acre parcel located in the City of Wildomar within the County of Riverside, California. The project is identified as Assessor's Parcel Number (APN) 367-170-029. The project is situated immediately north of the intersection of Laguna Road and Orange Street in the city of Wildomar. The project is located in Section 27 of the USGS 7.5 minute *Wildomar*, *California* topographic map, Township 6 South, Range 4 West (Figures 2.0–1 and 2.0–2). The project as proposed by the applicant will consist of a residential development project (Figure 2.0–3) that includes the development of single-family detached homes. The project design incorporates 5.54 acres of residential development. The project as proposed will include 10 home sites, each at a minimum of 20,000 square feet.

Brian F. Smith, Principal Investigator, directed the Phase I archaeological assessment for the project. Associate archaeologist Michelle S. Courtney conducted the pedestrian survey, and Jennifer R. Kraft and Tracy A. Stropes prepared the technical report. Elena Buckley conducted the technical editing as well as the report distribution, and Tracy A. Stropes created the report graphics. Qualifications of key personnel are provided in Appendix A.

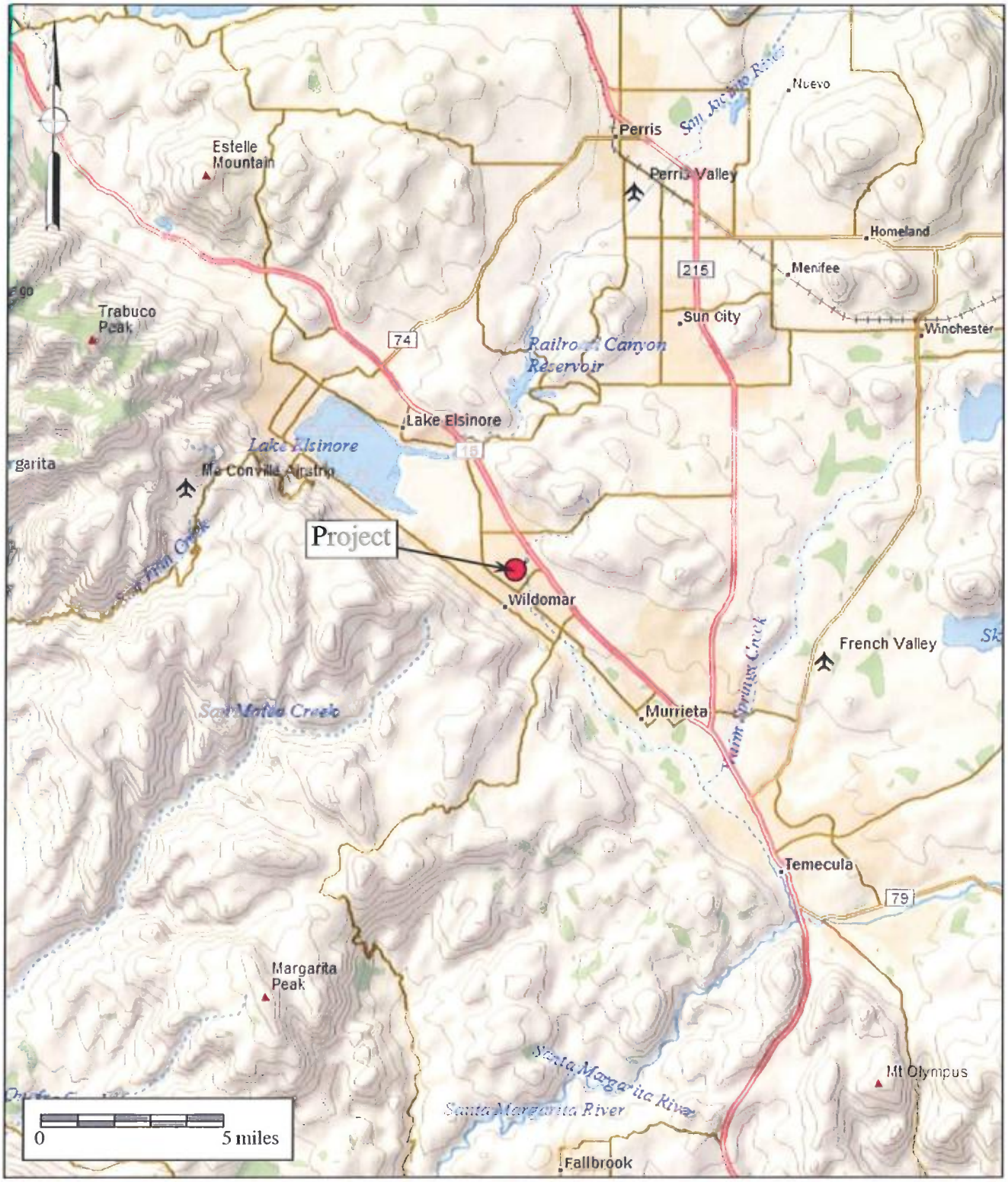

Figure 2.0–1

General Location Map

The Orange Street Project

DeLorme World Base Map Service (1:250,000 series)

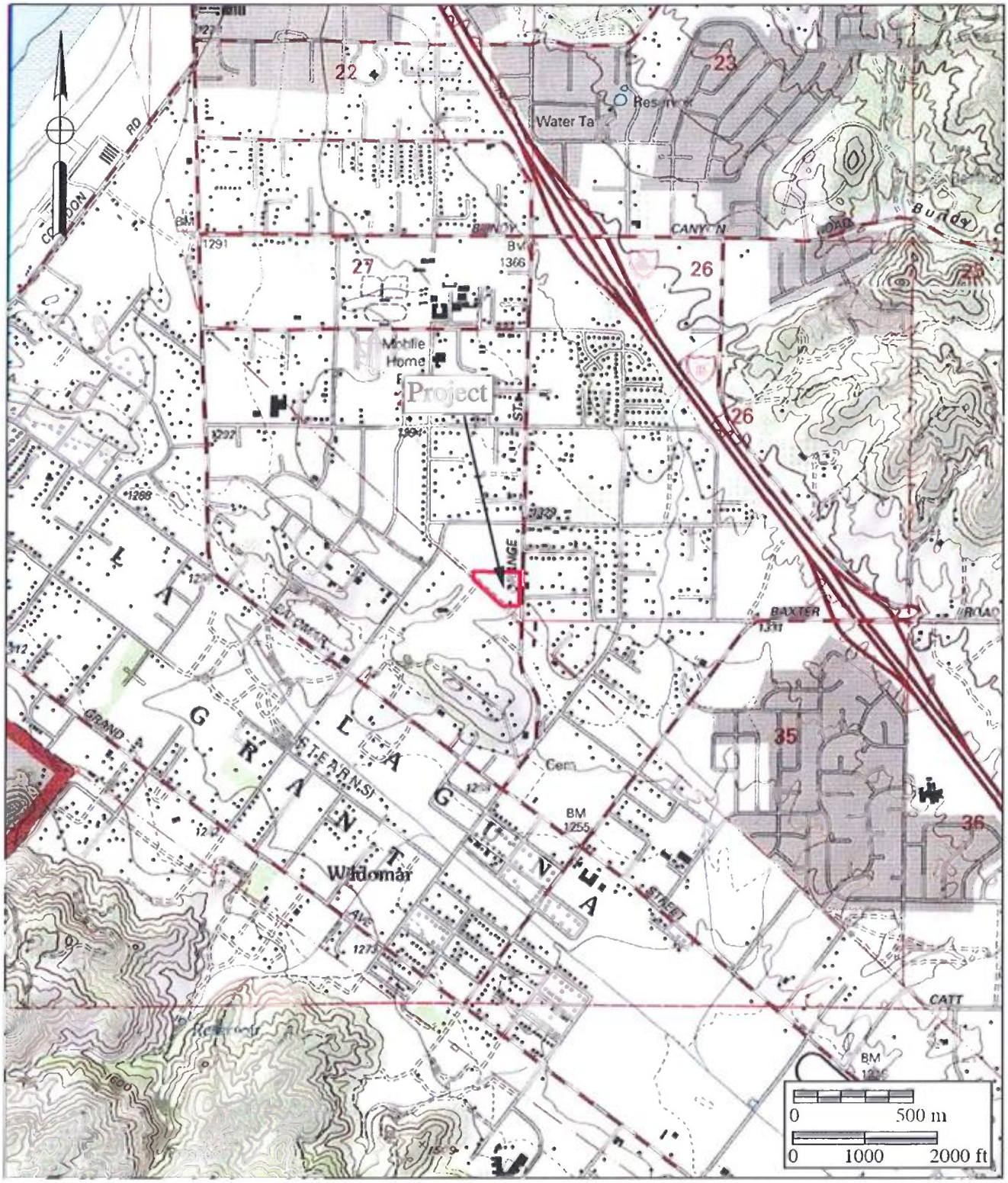

Figure 2.0–2

Project Location Map

The Orange Street Project

USGS Wildomar and Lake Elsinore Quadrangles (7.5 minute series)

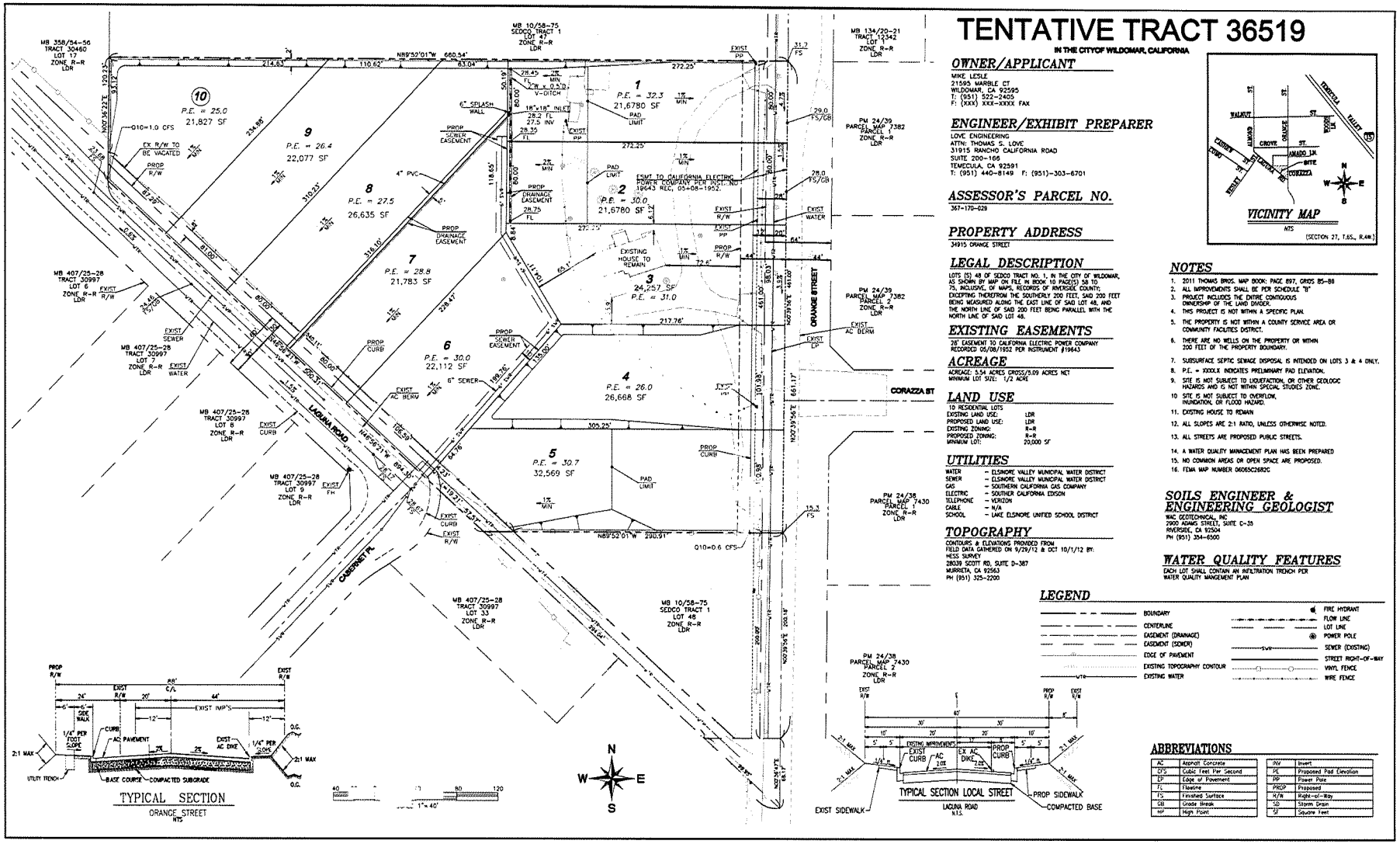

Figure 2.0–3

Project Development Map

The Orange Street Project

3.0 PROJECT SETTING

The project setting includes the natural, physical, geological, and biological contexts of the proposed project, as well as the cultural setting of prehistoric and historic human activities in the general area. The following sections discuss both the environmental and cultural settings at the subject property, the relationship between the two, and the relevance of that relationship to the project.

3.1 Environmental Setting

Riverside County lies in the Peninsular Range Geologic Province of Southern California. The range, which lies in a northwest to southeast trend through the county, extends some 1,000 miles from the Raymond-Malibu Fault Zone in western Los Angeles County to the southern tip of Baja California, Mexico. The subject property is located upon gentle slopes that lie east of the Santa Ana Mountains within the lower elevations of Temecula Valley. The project area is relatively flat, with the property's lowest point located at its southeast corner, and its highest point located at its northwest corner. Elevations within the project area range from approximately 1,324 to 1,330 feet above mean sea level (AMSL). The entire project area has been disturbed by some previous rural residential development within the northeast portion of the project area, in addition to periodic clearing and grubbing of vegetation. Currently, vegetation within the project area is characterized as including native grasses, weeds, and inland sage scrub vegetation.

3.2 Cultural Setting

3.2.1 Prehistoric Period

Paleo-Indian, Archaic Period Milling Stone Horizon, and the Late Prehistoric Shoshonean groups are the three general cultural periods represented in Riverside County. The following discussion of the cultural history of Riverside County references the San Dieguito Complex, Encinitas Tradition, Milling Stone Horizon, La Jolla Complex, Pauma Complex, and San Luis Rey Complex, since these culture sequences have been used to describe archaeological manifestations in the region. The Late Prehistoric component in the area of Riverside County was represented by the Cahuilla, Gabrielino, and Luiseño Indians.

Absolute chronological information, where possible, will be incorporated into this discussion to examine the effectiveness of continuing to interchangeably use these terms. Reference will be made to the geological framework that divides the culture chronology of the area into four segments: late Pleistocene (20,000 to 10,000 Years Before Present [YBP]), the early Holocene (10,000 to 6,650 YBP), the middle Holocene (6,650 to 3,350 YBP), and the late Holocene (3,350 to 200 YBP).

Paleo-Indian Period (Late Pleistocene: 11,500 to circa 9,000 YBP)

The Paleo-Indian Period is associated with the terminus of the late Pleistocene (12,000 to 10,000 YBP). The environment during the late Pleistocene was cool and moist, which allowed for glaciation in the mountains and the formation of deep, pluvial lakes in the deserts and basin lands (Morrato 1984). However, by the terminus of the late Pleistocene, the climate became warmer, which caused the glaciers to melt, sea levels to rise, greater coastal erosion, large lakes to recede and evaporate, the extinction of Pleistocene mega fauna, and major vegetation changes (Moratto 1984; Martin 1967, 1973; Fagan 1991). The coastal shoreline at 10,000 YBP, depending on the particular area of the coast, was near the 30-meter isobaths, or two to six kilometers further west than its present location (Masters 1983).

Paleo-Indians were likely attracted to multiple habitat types, including mountains, marshlands, estuaries, and lakeshores. These people likely subsisted using a more generalized hunting, gathering, and collecting adaptation, utilizing a variety of resources including birds, mollusks, and both large and small mammals (Erlandson and Colten 1991; Moratto 1984; Moss and Erlandson 1995).

Archaic Period (Early and Middle Holocene: circa 9,000 to 1,300 YBP)

Between 9,000 and 8,000 YBP, a widespread complex was established in the Southern California region, primarily along the coast (Warren and True 1961). This complex is locally known as the La Jolla Complex (Rogers 1939; Moriarty 1966), which is regionally associated with the Encinitas Tradition (Warren 1968), and which shared cultural components with the widespread Milling Stone Horizon (Wallace 1955). The coastal expression of this complex, with a focus on coastal resources and development of deeply stratified shell middens located primarily around bays and lagoons, appeared in the Southern California coastal areas. The older sites associated with this expression are located at Topanga Canyon, Newport Bay, Agua Hedionda Lagoon, and some of the Channel Islands. Radiocarbon dates from sites attributed to this complex span a period of over 7,000 years in this region, beginning over 9,000 YBP.

The Encinitas Tradition is best recognized for its pattern of large coastal sites characterized by shell middens, grinding tools closely associated with the marine resources of the area, cobble-based tools, and flexed human burials (Shumway et al. 1961; Smith and Moriarty 1985). While ground stone tools and scrapers are the most recognized tool types, coastal Encinitas Tradition sites also contain numerous utilized flakes, which may have been used to pry open shellfish. Artifact assemblages at coastal sites indicate a subsistence pattern focused on shellfish collection and near-shore fishing, suggesting an incipient maritime adaptation with regional similarities to more northern sites of the same period (Koerper et al. 1986). Other artifacts associated with Encinitas Tradition sites include stone bowls, doughnut stones, discoidals, stone balls, and stone, bone, and shell beads.

The coastal lagoons in Southern California supported large Milling Stone Horizon

populations circa 6,000 YBP, as shown by numerous radiocarbon dates from the many sites adjacent to the lagoons. The ensuing millennia were not stable environmentally, and by 3,000 YBP, many of the coastal sites in central San Diego County had been abandoned (Gallegos 1987, 1992). The abandonment of the area is usually attributed to the sedimentation of coastal lagoons and the resulting deterioration of fish and mollusk habitat (a situation well documented at Batiquitos Lagoon [Miller 1966; Gallegos 1987]). Over a two thousand year period at Batiquitos Lagoon, dominant mollusk species occurring in archaeological middens shifted from deep-water mollusks (*Argopecten* sp.) to species tolerant of tidal flat conditions (*Chione* sp.), indicating water depth and temperature changes (Miller 1966; Gallegos 1987). This situation likely occurred for other small drainages (Buena Vista, Agua Hedionda, San Marcos, and Escondido Creeks) along the central San Diego coast, where low flow rates did not produce sufficient discharge to flush the lagoons they fed (Buena Vista, Agua Hedionda, Batiquitos, and San Elijo Lagoons) (Byrd 1998). Drainages along the northern and southern San Diego coastlines were larger and flushed the coastal hydrological features they fed, keeping them open to the ocean and allowing for continued human exploitation (Byrd 1998). Peñasquitos Lagoon exhibits dates as late as 2355 YBP (Smith and Moriarty 1985). San Diego Bay showed continuous occupation until the close of the Milling Stone Horizon (Gallegos and Kyle 1988). Additionally, data from several drainages in Camp Pendleton indicate a continued occupation of shell midden sites until the close of the period. This implies that coastal sites were not entirely abandoned during this time (Byrd 1998).

By 5,000 YBP, an inland expression of the La Jolla Complex, which exhibits influences from the Campbell Tradition from the north, is evident in the archaeological record. These inland Milling Stone Horizon sites have been termed "Pauma Complex" (True 1958; Warren et al. 1961; Meighan 1954). By definition, Pauma Complex sites share a predominance of grinding implements (manos and metates), lack mollusk remains, have a greater tool variety (including atlatl dart points, quarry-based tools, and crescentics), and seem to express a more sedentary lifestyle with a subsistence economy based on the use of a broad variety of terrestrial resources. Although originally viewed as a separate culture from the coastal La Jolla Complex (True 1980), it appears that these inland sites may be part of a subsistence and settlement system utilized by the coastal peoples. Evidence from the 4S Project in inland San Diego County suggests that these inland sites may represent seasonal components within an annual subsistence found by La Jolla Complex populations (Raven-Jennings et al. 1996). This included both coastal and inland sites of the time period in discussions of the Encinitas Tradition, and therefore, provides a more complete appraisal of the settlement and subsistence system exhibited by this cultural complex.

Late Prehistoric Period (Late Holocene: 1,300 YBP to 1790 AD)

Approximately 1,350 YBP, a Shoshonean-speaking group from the Great Basin region moved into Riverside County, marking the transition to the Late Prehistoric Period. This period is characterized by higher population densities and elaborations in social, political, and technological systems. Economic systems diversified and intensified during this period, with the continued elaboration of trade networks, the use of shell-bead currency, and the appearance of more labor-intensive, yet effective, technological innovations. Technological developments during this period included the introduction of the bow and arrow between 400 and 600 A.D., as well as the introduction of ceramics. Atlatl darts were replaced by smaller arrow darts, including the Cottonwood series points. Other hallmarks of the Late Prehistoric Period include cremation of the dead and extensive trade networks that were as far-reaching as the Colorado River Basin.

Protohistoric Period (Late Holocene: 1790 to present)

Ethnohistorical and ethnographic evidence indicates that three Shoshonean-speaking groups occupied portions of Riverside County during the Protohistoric period, including the Cahuilla, the Gabrielino, and the Luiseño. The geographic boundaries between these groups in pre and protohistoric times are difficult to place.

At the time of Spanish contact in the sixteenth century, the Cahuilla occupied territory that included the San Bernardino Mountains, Orocopia Mountain, and the Chocolate Mountains to the east, the Salton Sea and Borrego Springs to the south, Palomar Mountain and Lake Mathews to the west, and the Santa Ana River to the north. The Cahuilla were a Takic-speaking people closely related to their Gabrielino and Luiseño neighbors, although relations with the Gabrielino were more intense than with the Luiseño. They differed from the Luiseño and Gabrielino in that their religion was more similar to the Mohave tribes of the eastern deserts than the *Chingichngish* cult of the Luiseño and Gabrielino.

The territory of the Gabrielino, at the time of Spanish contact in the sixteenth century, was located in much of current-day Los Angeles and Orange Counties. The southern extent of this group was bounded by Aliso Creek, the eastern extent was located east of current day San Bernardino along the Santa Ana River, the northern extent included the San Fernando Valley, and the western extent included portions of the Santa Monica Mountains. The Gabrielino also occupied several Channel Islands, including Santa Barbara Island, Santa Catalina Island, San Nicholas Island, and San Clemente Island. Because of their access to certain resources, including a steatite source from Santa Catalina Island, this group was among the wealthiest and most populous aboriginal groups in all of Southern California. Trade of materials and resources controlled by the Gabrielino extended as far north as the San Joaquin Valley, as far east as the Colorado River, and as far south as Baja California, Mexico (Bean and Smith 1978; Kroeber 1925).

The Luiseño were a seasonal hunting and gathering people, with cultural elements that were very distinct from the Archaic Period peoples, including cremation, the use of the bow and arrow, and use of the acorn as a main food staple (Moratto 1984). Along the coast, the Luiseño made use of the marine resources that were available by fishing and collecting mollusks for food. Seasonally available terrestrial resources, including acorns and game, were also sources of nourishment for Luiseño groups. The elaborate kinship and clan systems between the Luiseño and other groups facilitated a wide-reaching trade network that included the trade of Obsidian Butte obsidian and other resources from the eastern deserts, as well as steatite from the Channel Islands.

3.2.2 Historic Period

The historic background of the project area began with the Spanish colonization of Alta California. The first Spanish colonizing expedition reached Southern California in 1769 with the intention of converting and civilizing the indigenous populations, as well as expanding the knowledge of and access to new resources in the region (Brigandi 1998). In the late eighteenth century, the San Gabriel (Los Angeles County), San Juan Capistrano (Orange County), and San Luis Rey (San Diego County) missions began colonizing Southern California and gradually expanded their use of the interior valley (into what is now western Riverside County) for raising grain and cattle to support the missions (Riverside County n.d.). The San Gabriel Mission claimed lands in what is now Jurupa, Riverside, San Jacinto, and the San Gorgonio Pass, while the San Luis Rey Mission claimed land in what is now Lake Elsinore, Temecula, and Murrieta (American Local History Network: Riverside Co. CA 1998). The indigenous groups who occupied these lands were recruited by missionaries, converted, and put to work in the missions (Pourade 1964). Throughout this period, the Native American populations were decimated by introduced diseases, a drastic shift in diet which resulted in poor nutrition, and social conflicts due to the introduction of an entirely new social order (Cook 1976).

In the mid to late 1770s, Juan Bautista de Anza passed through much of Riverside County while searching for an overland route from Sonora, Mexico to San Gabriel, Los Angeles, and other described fertile valleys, lakes, and sub-desert areas (American Local History Network: Riverside Co. CA 1998; Riverside County n.d.). In 1797, Father Presidente Lausen, Father Norberto de Santiago, and Corporal Pedro Lisalde led an expedition from Mission San Juan Capistrano through southwestern Riverside County in search of a new mission site, before constructing Mission San Luis Rey in northern San Diego County (Brigandi 1998).

While no missions were ever built in what would become Riverside County (American Local History Network: Riverside Co. CA 1998), many mission outposts, or *asistencias,* were established in the early years of the nineteenth century to extend the missions' influence to the backcountry (Brigandi 1998). Two outposts that were located in Riverside County include San Jacinto and Temecula.

Mexico gained independence in 1822 and de-secularized the missions in 1832, signifying the end of the Mission Period (Brigandi 1998; Riverside County n.d.). By this time, the missions owned some of the best and most fertile land in Southern California. In order for California to develop, the land would have to be made productive enough to turn a profit (Brigandi 1998). The new government began distributing the vast mission holdings to wealthy and politically connected Mexican citizens. The "grants" were called "ranchos," including Jurupa, El Rincon, La Sierra, El Sobrante de San Jacinto, La Laguna (Lake Elsinore), Santa Rosa, Temecula, Pauba, San Jacinto Nuevo y Potrero, and San Jacinto Viejo. These ranchos were located in present-day Riverside County, and many of them have lent their names to modern-day locales (American Local History Network: Riverside Co. CA 1998). The first grant in present-day Riverside County was Rancho Jurupa, given to Juan Bandini in 1838. These ranchos were all located in the valley environments typical of western Riverside County. The current project is located within the northwest corner of the Pauba Land Grant/Rancho. Governor Manuel Micheltorena first deeded the 26,597 acres of Rancho Pauba to Vicente Moraga in 1844 (Van Horn 1974). Brigandi (1998) reports that the name 'Pauba' is Luiseño in origin and translates roughly as "traces of strangers," referencing a Luiseño legend and the observation that robbers lurked and found refuge in the mountainous area. Ownership of Rancho Pauba changed frequently; however, the use of the land as cattle pasture remained fairly consistent (Van Horn 1974; Brigandi 1998). In 1905, Walter L. Vail purchased much of the Rancho Pauba along with portions of Temecula and Little Temecula (Brigandi 1998). Ownership of much of the land rested with the Vail family until 1964. The land retained its importance as cattle pasture and gained some prominence for agriculture; corn and alfalfa were grown for silage while potatoes, beets, onions, and beans were grown to feed urban populations (Brigandi 1998). It is unclear as to what degree the early activities of the Pauba Rancho affected the current project area.

The treatment of Native Americans grew worse during the Rancho Period. Most of the Native Americans were forced off of the now privately owned ranchos or put to work, most often as slave labor. In light of the brutal ranchos, the degree to which Native Americans had become dependent on the mission system is evident when, in 1838, a group of Native Americans from the San Luis Rey Mission petitioned government officials in San Diego to relieve suffering at the hands of the rancheros:

> "...We have suffered incalculable losses, for some of which we are in part to be blamed for because many of us have abandoned the Mission...We plead and beseech you...to grant us a Rev. Father for this place. We have been accustomed to the Rev. Fathers and to their manner of managing the duties. We labored under their intelligent directions, and we were obedient to the Fathers according to the regulations, because we considered it as good for us." (Brigandi 1998:21)

Native American culture had been disrupted to the point where they could no longer rely on prehistoric subsistence and social patterns. Not only does this illustrate how dependent the Native Americans had become on the missionaries, but it also indicates a marked contrast in the way the Spanish treated the Native Americans compared to the Mexican and United States ranchers. Spanish colonialism (via missions) is based on utilizing human resources while integrating them into their society. The ranchers, both Mexican and American, did not accept Native Americans into their social order and used them specifically for the extraction of labor, resources, and profit. Rather than being incorporated, they were either subjugated or exterminated (Cook 1976).

In 1846, war erupted between Mexico and the United States. In 1848, with the signing of the Treaty of Guadalupe Hidalgo, the region was annexed as a territory of the United States, and in 1850 California became a state. These events generated a steady flow of settlers into the area, including gold miners, entrepreneurs, health-seekers, speculators, politicians, adventurers, seekers of religious freedom, and individuals desiring to create utopian colonies.

In early 1852, the Native Americans of southern Riverside County, including the Luiseño and the Cahuilla, had thought they had signed a treaty resulting in their ownership of all lands from Temecula to Aguanga east to the desert, including the San Jacinto Valley and the San Gorgonio Pass. The Temecula Treaty also included food and clothing provisions for the Indians. However, Congress never ratified the treaties, and the promise of one large reservation was rescinded (Brigandi 1998).

With the completion of the transcontinental railroad in 1869, land speculators, developers, and colonists began to invest in Southern California. The first colony in what was to become Riverside County was Riverside itself. Judge John Wesley North, an abolitionist from Tennessee, brought a group of associates and co-investors out to Southern California and founded Riverside on part of the Jurupa Rancho. A few years after, the navel orange was planted and found to be such a success that it quickly became the agricultural staple of the region. (American Local History Network: Riverside Co. CA 1998).

By the late 1880s and early 1890s, there was growing discontent between Riverside and San Bernardino, its neighbor ten miles to the north, due to differences in opinion concerning religion, morality, the Civil War, and politics, in addition to a fierce competition to attract settlers. After a series of instances in which charges were claimed about an unfair use of tax monies that would benefit the City of San Bernardino only, several people from Riverside decided to investigate the possibility of forming a new county. In May 1893, voters living within portions of San Bernardino County (to the north) and San Diego County (to the south) approved the formation of Riverside County. Early business opportunities were linked to the agriculture industry, but commerce, construction, manufacturing, transportation, and tourism also provided a healthy local economy. By the time of Riverside County's formation, Riverside had grown to

become the wealthiest city per capita in the country due to the successful cultivation of the navel orange (American Local History Network: Riverside Co. CA 1998; Riverside County n.d.).

The Wildomar townsite was recorded in December 1885. The name "Wildomar" was derived by combining the names of the new town's founders, "WIL" for William Collier, "DO" for Donald Graham, and "MAR" for Margaret Collier Graham, wife of Donald Graham and sister of William Collier.

In 1886, a new school, post office, and railroad depot were built. By 1887, Wildomar could boast a large hotel, livery stable, blacksmith shop, numerous stores, a lumber yard, and a park. In the same year, a map of the Santa Rosa addition to Wildomar was produced that included an addition of about 1,500 acres that were purchased from Parker Deer. This new map was recorded in 1892. The railroad that served as the foundation for the development of Wildomar was plagued by washouts, and within a few years, the rails that traveled south from Temecula to San Diego were abandoned. This eventually slowed the development of the town and rail service to Wildomar was abandoned by 1935. However, with the completion of Interstate 15 in the mid 1980s, the region began to prosper. The City of Wildomar voted to incorporate in 2008, becoming the 25th city in Riverside County.

3.3 Applicable Regulations

Resource importance is assigned to districts, sites, buildings, structures, and objects that possess exceptional value or quality illustrating or interpreting the heritage of Riverside County in history, architecture, archaeology, engineering, and culture. A number of criteria are used in demonstrating resource importance. Specifically, criteria outlined in the CEQA and Section 106 of the National Historic Preservation Act (NHPA) provides the guidance for making such a determination. The following sections detail the CEQA criteria that a resource must meet in order to be determined important.

3.3.1 California Environmental Quality Act (CEQA)

According to the CEQA (§15064.5a), the term "historical resource" includes the following:

1. A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR. Section 4850 et seq.).

2. A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code, or identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, shall be presumed to be historically or culturally

significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

3. Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be an historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14, Section 4852) including the following:

    - Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
    - Is associated with the lives of persons important in our past;
    - Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
    - Has yielded, or may be likely to yield, information important in prehistory or history.

4. The fact that a resource is not listed in, or determined eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to Section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in Section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code Section 5020.1(j) or 5024.1.

According to the CEQA (§15064.5b), a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. The CEQA defines a substantial adverse change as:

1. Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.

2. The significance of an historical resource is materially impaired when a project:

    a. Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or

    b. Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or,

    c. Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of the CEQA.

Section 15064.5(c) of the CEQA applies to effects on archaeological sites and contains the following additional provisions regarding archaeological sites:

1. When a project will impact an archaeological site, a lead agency shall first determine whether the site is an historical resource, as defined in subsection (a).

2. If a lead agency determines that the archaeological site is an historical resource, it shall refer to the provisions of Section 21084.1 of the Public Resources Code, Section 15126.4 of the Guidelines, and the limits contained in Section 21083.2 of the Public Resources Code do not apply.

3. If an archaeological site does not meet the criteria defined in subsection (a), but does meet the definition of a unique archaeological resource in Section 21803.2 of the Public Resources Code, the site shall be treated in accordance with the provisions of Section 21083.2. The time and cost limitations described in Public Resources Code Section 21083.2 (c-f) do not apply to surveys and site evaluation activities intended to determine whether the project location contains unique archaeological resources.

4. If an archaeological resource is neither a unique archaeological nor historical resource, the effects of the project on those resources shall not be considered a significant effect on the environment. It shall be sufficient that both the resource and the effect on it are noted in the Initial Study or the EIR, if one is prepared to address impacts on other resources, but they need not be considered further in the CEQA process.

Section 15064.5 (d) & (e) contain additional provisions regarding human remains. Regarding Native American human remains, paragraph (d) provides:

(d) When an initial study identifies the existence of, or the probable likelihood, of Native American human remains within the project, a lead agency shall work with the appropriate Native Americans as identified by the Native American Heritage Commission as provided in Public Resources Code SS5097.98. The applicant may develop an agreement for treating or disposing of, with appropriate dignity, the human remains and any items associated with Native American burials with the appropriate Native Americans as identified by the Native American Heritage Commission. Action implementing such an agreement is exempt from:

1) The general prohibition on disinterring, disturbing, or removing human remains from any location other than a dedicated cemetery (Health and Safety Code Section 7050.5)
2) The requirement of the CEQA and the Coastal Act

3.4 Research Design

The primary goal of the research design is to attempt to understand the way in which humans have used the land and resources within the project area through time, as well as to aid in the determination of resource significance. For the current project, the study area under investigation is the western portion of Riverside County. The scope of work for the archaeological program conducted for the Orange Street Project included the survey of an approximately 5.54-acre area. Given the small area involved and the narrow focus of a Phase I survey, the research design for this project was necessarily limited and general in nature. Since the main objective of the investigation was to identify the presence of and potential impacts to cultural resources, the goal here is not necessarily to answer wide-reaching theories regarding the development of early Southern California, but to investigate the role and importance of the identified resources. Nevertheless, the assessment of the significance of a resource must take into consideration of a variety of characteristics, as well as the ability of the resource to address regional research topics and issues.

Although survey level investigations are limited in terms of the amount of information available, several specific research questions were developed that could be used to guide the initial investigations of any observed cultural resources. The following research questions take into account the small size and location of the project area discussed above.

Research Questions

- Can located cultural resources be situated with a specific time period, population, or individual?
- Do the types of located cultural resources allow a site activity/function to be determined from a preliminary investigation? What are the site activities? What is the site function? What resources were exploited?
- How do the located sites compare to others reported from different surveys conducted in the area?
- How do the located sites fit existing models of settlement and subsistence for valley environments of the region?

Data Needs

At the survey level, the principle research objective is a generalized investigation of changing settlement patterns in both the prehistoric and historic periods within the study area. The overall goal is to understand settlement and resource procurement patterns of the project area occupants. Therefore, adequate information on site function, context, and chronology from an archaeological perspective is essential for the investigation. The fieldwork and archival research was undertaken with these primary research goals in mind:

1. To identify cultural resources occurring within the project area;

2. To determine, if possible, site type and function, context of the deposit, and chronological placement of each cultural resource identified;

2. To place each cultural resource identified within a regional perspective; and

4. To provide recommendations for the treatment of each of the cultural resources identified.

4.0 METHODOLOGY

The archaeological assessment conducted for the Orange Street Project consisted of a reconnaissance of the property by qualified archaeologists and an institutional records search. This archaeological study conformed to the statutory requirements of the CEQA for evaluating potential impacts.

4.1 Field Methodology

The archaeological survey of the project was conducted on January 14, 2013. The archaeological survey of the property was an intensive pedestrian reconnaissance consisting of a series of parallel transects, spaced at approximately five-meter intervals, covering all areas of the project. The entire project area was included in the survey process. Photographs were taken to document project conditions during the survey (see Section 5.2). Ground visibility throughout the property varied from good to fair, depending on the height and density of the ground cover. To mitigate the impact of less favorable ground visibility, all rodent spoil piles or patches of cleared soil were closely inspected for evidence of archaeological materials. No other constraints were encountered during the field survey.

4.2 Archaeological Records Search

The records search conducted by the EIC at UCR was reviewed for an area of one mile surrounding the project in order to determine the presence of any previously recorded sites. Results of the records search are provided in Appendix B and discussed in Section 5.1. The EIC also provided the standard review of the National Register of Historic Places and the Office of Historic Preservation Historic Property Directory. Land Patent records, held by the Bureau of Land Management (BLM), which are accessible through the BLM Government Land Office (GLO) website, were also reviewed for pertinent project information. In addition, the BFSA research library was consulted for any relevant historical information.

4.3 Report Preparation and Recordation

This report contains information regarding previous studies, statutory requirements for the project, and a brief description of the setting, research methods employed, and the overall results of the monitoring program and significance evaluation. The report includes all appropriate illustrations and tabular information needed to make a complete and comprehensive presentation of these activities, including the methodologies employed and the personnel involved. A copy of this report will be placed at the EIC at UCR. Any newly recorded sites, or sites requiring updated information, will be recorded on the appropriate Department of Parks and Recreation (DPR) forms which will be filed with the EIC.

5.0 REPORT OF FINDINGS

5.1 Results of the Institutional Records Search and Research

An archaeological records search for the immediate project area was conducted by the EIC at UCR, the results of which were reviewed by BFSA. The EIC did not report any previously recorded sites within the project boundaries. However, 11 cultural resource locations have been recorded within a one-mile radius of the project area. These sites include one prehistoric bedrock milling feature, one prehistoric isolate, one historic isolate, and eight historic structures. The majority of these sites occur to the east and southeast of the project area. The EIC reviewed the following historic sources:

- The National Register of Historic Places Index
- The Office of Historic Preservation, Archaeological Determinations of Eligibility
- The Office of Historic Preservation, Directory of Properties in the Historic Property Data File
- The 30' USGS *Elsinore* topographic map (1901)

These sources did not indicate the presence of cultural resources within the project. The complete records search results are provided in Appendix B.

The records search and literature review suggests that there is a potential for both historic and prehistoric sites to be contained within the boundaries of the property. Given the historic settlement of the region in addition to the frequency of prehistoric sites known to be surrounding the project APE, there is a moderate potential for archaeological discoveries. The largest number of sites indicated by the records search suggests that bedrock-milling features should be the primary site type within the property. However, based on the small quantity of observable granitic outcrops on the current aerial photos, the potential presence of milling features is low.

5.2 Results of the Field Survey

The archaeological survey took place on January 14, 2013. The survey was directed by Brian F. Smith, Principal Investigator. Associate archaeologist Michelle Courtney conducted the pedestrian survey. The archaeological survey of the property was an intensive reconnaissance consisting of a series of parallel survey transects spaced at approximately five-meter intervals. The entire property was accessible and approximately 85 percent of the ground surface was visible. The property has been partially disturbed from previous construction of residences. The property is bounded by a paved road and characterized by gentle slopes in a valley setting.

The pedestrian survey indicated that the majority of the project area had been generally cleared and disturbed for several years. This characterization of the property as moderately-to-severely surficially disturbed is relevant to the consideration of cultural resources on the

property. Many areas across the property have been disturbed by the construction of the residence in the northeast corner and brush clearing over the remainder of the parcel. When parcels are cleared, disked, or otherwise disturbed, evidence of surface artifact scatters is lost. Whether or not cultural resources have ever existed in this parcel, the current status of the property appears to have affected the potential to discover any surface scatters of artifacts. Photographs were taken to document project conditions at the time of the survey (Plates 5.2–1 through 5.2–4). The survey did not result in the identification of any historic or prehistoric cultural resources.

Plate 5.2–1: Project Overview (facing south)

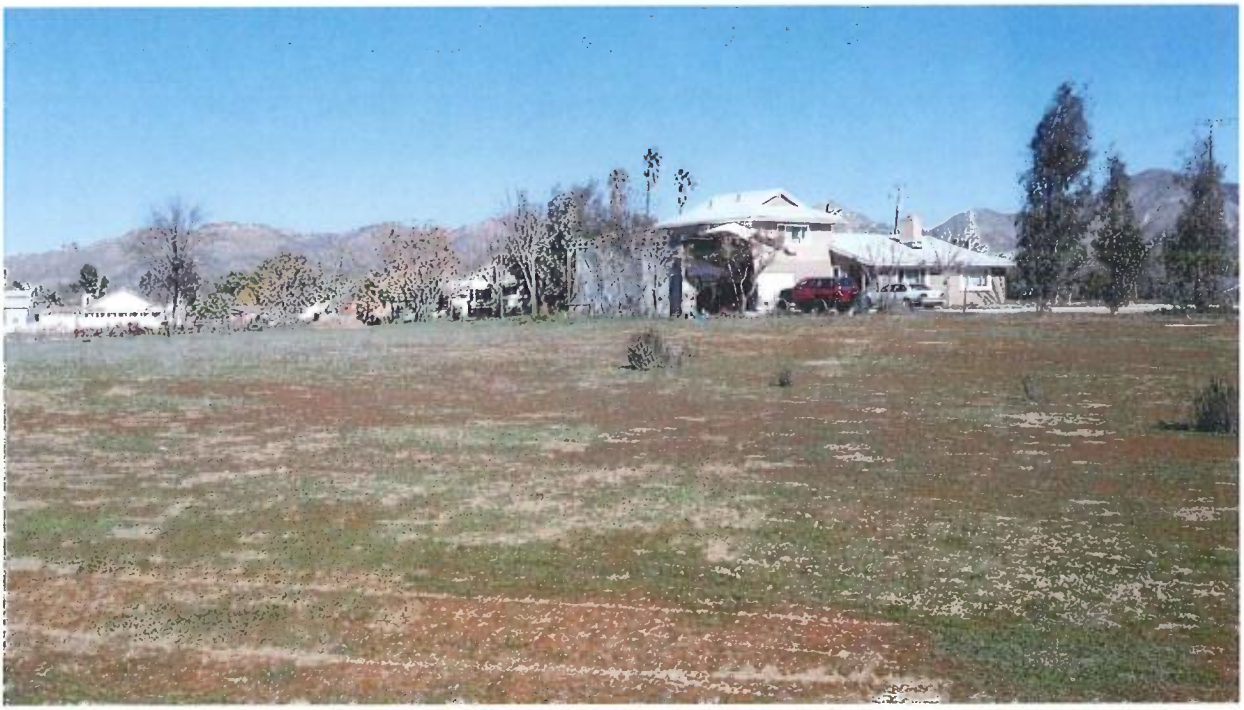

Plate 5.2–2: Project Overview (facing northeast)

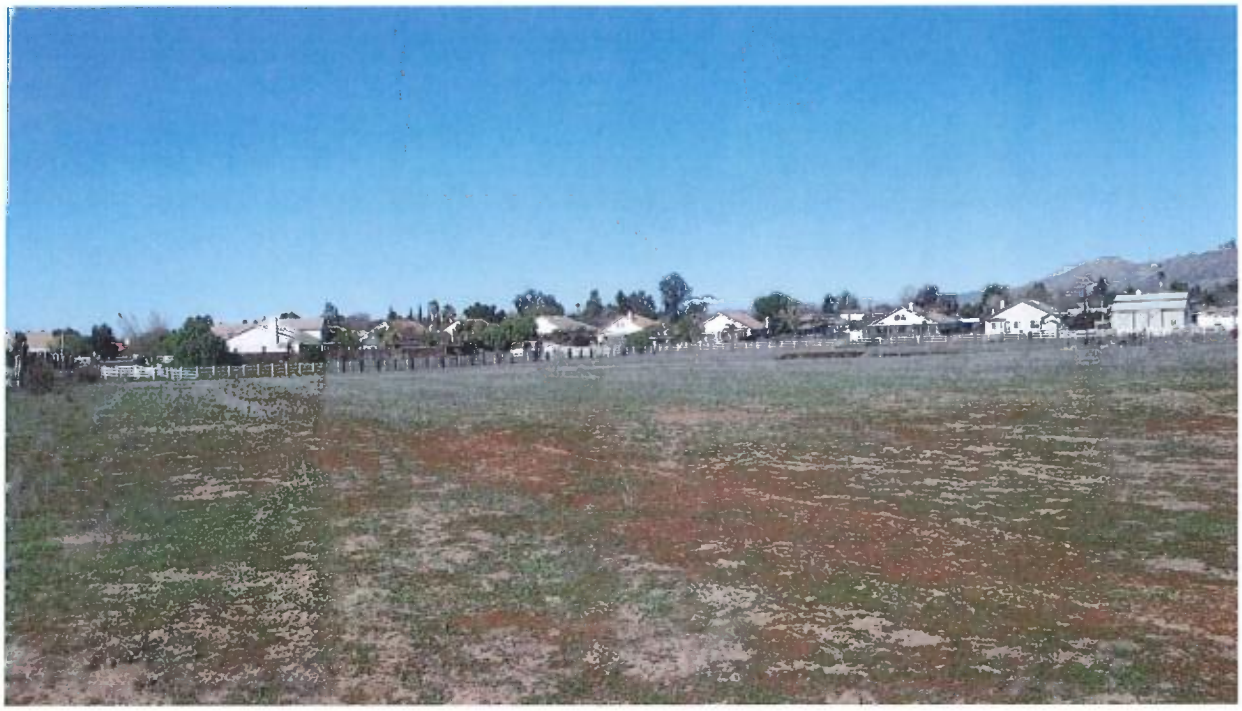

Plate 5.2–3: Project Overview (facing west)

Plate 5.2–4: Project Overview (facing east)

6.0 RECOMMENDED MITIGATION

The Phase I archaeological assessment for the Orange Street Project was negative for the presence of cultural resources. As stated previously, most of the subject property has been impacted or partially developed in the past. When land is cleared, disked, or otherwise disturbed, evidence of surface artifact scatters is typically lost. Whether or not cultural resources have ever existed on the Orange Street parcel is unclear. The current status of the property appears to have affected the potential to discover any surface scatters of artifacts. Cultural materials that may have been on site could have been masked by both disking or prior development across the property. Given that prior development within the APE might mask archaeological deposits, and the moderate frequency of archaeological deposits surrounding the project APE, there is the potential that buried archaeological deposits are present within the project boundaries. Therefore, it is recommended that the project be allowed to proceed with the implementation of a cultural resources monitoring program during grading of the project.

6.1 General Project Monitoring

It is recommended that a qualified archaeologist and a Native American monitor the Orange Street project area during ground-disturbing activities to ensure that if buried features (i.e., human remains, hearths, or historic deposits) are present, they will be handled in a timely and proper manner.

Recommended Grading Monitoring and Data Recovery Program

A grading monitoring and data recovery program to mitigate potential impacts to undiscovered buried archaeological resources within the Orange Street Project area shall be implemented to the satisfaction of the lead agency. This program shall include, but not be limited to, the following actions:

1. Prior to issuance of a grading permit, the applicant shall provide written verification that a certified archaeologist has been retained to implement the monitoring program. This verification shall be presented in a letter from the project archaeologist to the lead agency.

2. The certified archaeologist/historian shall attend the pre-grading meeting with the contractors to explain and coordinate the requirements of the monitoring program.

3. During the original cutting of previously undisturbed deposits, the archaeological monitor(s) shall be on-site, full-time to perform periodic inspections of the

excavations. The frequency of inspections will depend on the rate of excavation, the materials excavated, and the presence and abundance of artifacts and features.

4. Isolates and clearly non-significant deposits will be minimally documented in the field and the monitored grading can proceed.

5. In the event that previously unidentified cultural resources are discovered, the archaeologist shall have the authority to divert or temporarily halt ground-disturbing operation in the area of discovery to allow for an evaluation of potentially significant cultural resources. The archaeologist shall contact the lead agency at the time of discovery. The archaeologist, in consultation with the lead agency, shall determine the significance of the discovered resources. The lead agency must concur with the evaluation before construction activities will be allowed to resume in the affected area. For significant cultural resources, a Research Design and Data Recovery Program to mitigate impacts shall be prepared by the consulting archaeologist, approved by the lead agency, and then carried out using professional archaeological methods. If any human bones are discovered, the County coroner and lead agency shall be contacted. In the event that the remains are determined to be of Native American origin, the Most Likely Descendant, as identified by the Native American Heritage Commission, shall be contacted in order to determine proper treatment and disposition of the remains.

6. Before construction activities are allowed to resume in the affected area, the artifacts shall be recovered and features recorded using professional archaeological methods. The archaeological monitor(s) shall determine the amount of material to be recovered for an adequate artifact sample to be analyzed.

7. All cultural material collected during the grading monitoring program shall be processed and curated according to the current professional repository standards. The collections and associated records shall be transferred, including title, to an appropriate curation facility, to be accompanied by payment of the fees necessary for permanent curation.

8. A report documenting the field and analysis results that interprets the artifact and research data within the research context shall be completed and submitted to the satisfaction of the lead agency prior to the issuance of any building permits. The report will include Department of Parks and Recreation Primary and Archaeological Site Forms.

7.0 CERTIFICATION

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this archaeological report, and that the facts, statements, and information presented are true and correct to the best of my knowledge.

January 21, 2013

Brian F. Smith
Principal Investigator

Date

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APPENDIX A

Qualifications of Key Personnel

Brian F. Smith, MA

Owner, Principal Investigator
Brian F. Smith and Associates, Inc.
14010 Poway Road • Suite A •
Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: bsmith@bfsa-ca.com

Education

Master of Arts, History, University of San Diego, California **1982**

Bachelor of Arts, History and Anthropology, University of San Diego, California **1975**

Experience

Principal Investigator **1977–Present**
Brian F. Smith and Associates, Inc.

Brian F. Smith is the owner and principal historical and archaeological consultant for Brian F. Smith and Associates. In the past 35 years, he has conducted over 2,500 cultural resource studies in California, Arizona, Nevada, Montana, and Texas. These studies include every possible aspect of archaeology from literature searches and large-scale surveys to intensive data recovery excavations. Reports prepared by Brian Smith have been submitted to all facets of local, state, and federal review agencies, including the US Army Crops of Engineers (USACE), the Bureau of Land Management (BLM), Bureau of Reclamation (BR), the Department of Defense (DOD), and Department of Homeland Security. In addition, Mr. Smith has conducted studies for utility companies (Sempra Energy) and state highway departments (CalTrans).

Professional Accomplishments

These selected major professional accomplishments represent research efforts which have added significantly to the body of knowledge concerning the prehistoric lifeways of cultures once present in the southern California area and historic settlement since the late 18th century. Mr. Smith has been principal investigator on the following select projects, except where noted.

Downtown San Diego Mitigation and Monitoring Reporting Programs: Large number of downtown San Diego mitigation and monitoring projects submitted to the Centre City Development Corporation, some of which included Strata (2008), Hotel Indigo (2008), Lofts at 707 10th Avenue Project (2007), Breeza (2007), Bayside at the Embarcadero (2007), Aria (2007), Icon (2007), Vantage Pointe (2007), Aperture (2007), Sapphire Tower (2007), Lofts at 655 Sixth Avenue (2007), Metrowork (2007), The Legend (2006), The Mark (2006), Smart Corner (2006), Lofts at 677 7th Avenue (2005), Aloft on Cortez Hill (2005), Front and Beech Apartments (2003), Bella Via Condominiums (2003), Acqua Vista Residential Tower (2003), Northblock Lofts (2003), Westin Park Place Hotel (2001), Parkloft Apartment Complex (2001), Renaissance Park (2001), and Laurel Bay Apartments (2001).

Archaeology at the Padres Ballpark: Involved the analysis of historic resources within a seven block area of the "East Village" area of San Diego, where occupation spanned a period from the 1870s to

the 1940s. Over a period of two years, BFSA recovered over 200,000 artifacts and hundreds of pounds of metal, construction debris, unidentified broken glass, and wood. Collectively, the Ballpark project and the other downtown mitigation and monitoring projects represent the largest historical archaeological program anywhere in the country in the past decade. 2000-2007.

The Navy Broadway Complex: Architectural and historical assessment of over 25 structures that comprise the Naval Supply Depot, many of which have been in use since World War I and were used extensively during World War II. The EIR/EIS which was prepared included National Register evaluations of all structures. The archaeological component of the project involved the excavation of backhoe trenches to search for evidence of the remains of elements of the historic waterfront features that characterized the bay front in the latter half of the 19th century. This study was successful in locating portions of wharves and shanties that existed on the site prior to capping of this area after construction of the sea wall in the early 20th century.

4S Ranch Archaeological and Historical Cultural Resources Study: Data recovery program consisted of the excavation of over 2,000 square meters of archaeological deposits that produced over one million artifacts, primarily prehistoric materials. The archaeological program at 4S Ranch is the largest archaeological study ever undertaken in the San Diego County area and has produced data that has exceeded expectations regarding the resolution of long-standing research questions and regional prehistoric settlement patterns.

Charles H. Brown Site: Attracted international attention to the discovery of evidence of the antiquity of man in North America. Site located in Mission Valley, in the City of San Diego.

Del Mar Man Site: Study of the now famous Early Man Site in Del Mar, California, for the San Diego Science Foundation and the San Diego Museum of Man, under the direction of Dr. Spencer Rogers and Dr. James R. Moriarty.

Old Town State Park Projects: Consulting Historical Archaeologist. Projects completed in the Old Town State Park involved development of individual lots for commercial enterprises. The projects completed in Old Town include Archaeological and Historical Site Assessment for the Great Wall Cafe (1992), Archaeological Study for the Old Town Commercial Project (1991), and Cultural Resources Site Survey at the Old San Diego Inn (1988).

Site W-20, Del Mar, California: A two-year-long investigation of a major prehistoric site in the Del Mar area of the City of San Diego. This research effort documented the earliest practice of religious/ceremonial activities in San Diego County (circa 6,000 years ago), facilitated the projection of major non-material aspects of the La Jolla Complex, and revealed the pattern of civilization at this site over a continuous period of 5,000 years. The report for the investigation included over 600 pages, with nearly 500,000 words of text, illustrations, maps, and photographs which document this major study.

City of San Diego Reclaimed Water Distribution System: A cultural resource study of nearly 400 miles of pipeline in the City and County of San Diego.

Master Environmental Assessment Project, City of Poway: Conducted for the City of Poway to produce a complete inventory of all recorded historic and prehistoric properties within the City. The information was used in conjunction with the City's General Plan Update to produce a map matrix of the City showing areas of high, moderate, and low potential for the presence of cultural resources. The effort also included the development of the City's Cultural Resource Guidelines, which were adopted as City policy.

Draft of the City of Carlsbad Historical and Archaeological Guidelines: Contracted by the City of Carlsbad to produce the draft of the City's historical and archaeological guidelines for use by the Planning Department of the City.

The Midbayfront Project for the City of Chula Vista: Involved a large expanse of undeveloped agricultural land situated between the railroad and San Diego Bay in the northwestern portion of the City. The study included the analysis of some potentially historic features and numerous prehistoric sites.

Cultural resources survey and test of sites within the proposed development of the Audie Murphy Ranch, Riverside County, California: Project Manager/Director of the investigation of 1,113.4 acres and 43 sites, both prehistoric and historic—included project coordination; direction of field crews; evaluation of sites for significance based on County of Riverside and CEQA guidelines; assessment of cupule, pictograph, and rock shelter sites, co-authoring of cultural resources project report. February-September 2002.

Cultural resources evaluation of sites within the proposed development of the Otay Ranch Village 13 Project, San Diego County, California: Project Manager/Director of the investigation of 1,947 acres and 76 sites, both prehistoric and historic—included project coordination and budgeting; direction of field crews; assessment of sites for significance based on County of San Diego and CEQA guidelines; co-authoring of cultural resources project report. May-November 2002.

Cultural resources survey for the Remote Video Surveillance Project, El Centro Sector, Imperial County: Project Manager/Director for a survey of 29 individual sites near the U.S./Mexico Border for proposed video surveillance camera locations associated with the San Diego Border barrier Project—project coordination and budgeting; direction of field crews; site identification and recordation; assessment of potential impacts to cultural resources; meeting and coordinating with U.S. Army Corps of Engineers, U.S. Border Patrol, and other government agencies involved; co-authoring of cultural resources project report. January, February, and July 2002.

Cultural resources survey and test of sites within the proposed development of the Menifee West GPA, Riverside County, California: Project Manager/Director of the investigation of nine sites, both prehistoric and historic—included project coordination and budgeting; direction of field crews; assessment of sites for significance based on County of Riverside and CEQA guidelines; historic research; co-authoring of cultural resources project report. January-March 2002.

Mitigation of a Archaic cultural resource for the Eastlake III Woods Project for the City of Chula Vista, California: Project Archaeologist/ Director—included direction of field crews; development and completion of data recovery program including collection of material for specialized faunal and botanical analyses; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; co-authoring of cultural resources project report, in prep. September 2001-March 2002.

Cultural resources survey and test of sites within the proposed French Valley Specific Plan/EIR, Riverside County, California: Project Manager/Director of the investigation of two prehistoric and three historic sites—included project coordination and budgeting; survey of project area; Native American consultation; direction of field crews; assessment of sites for significance based on CEQA guidelines; cultural resources project report in prep. July-August 2000.

Cultural resources survey and test of sites within the proposed Lawson Valley Project, San Diego County, California: Project Manager/Director of the investigation of 28 prehistoric and two historic sites—included project coordination; direction of field crews; assessment of sites for significance based on CEQA guidelines; cultural resources project report in prep. July-August 2000.

Cultural resource survey and geotechnical monitoring for the Mohyi Residence Project, La Jolla, California: Project Manager/Director of the investigation of a single-dwelling parcel—included project coordination; field survey; assessment of parcel for potentially buried cultural deposits; monitoring of geotechnichal borings; authoring of cultural resources project report. Brian F. Smith and Associates, San Diego, California. June 2000.

Enhanced cultural resource survey and evaluation for the Prewitt/Schmucker/Cavadias Project, La Jolla, California: Project Manager/Director of the investigation of a single-dwelling parcel—included project coordination; direction of field crews; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. June 2000.

Cultural resources survey and test of sites within the proposed development of the Menifee Ranch, Riverside County, California: Project Manager/Director of the investigation of one prehistoric and five historic sites—included project coordination and budgeting; direction of field crews; feature recordation; historic structure assessments; assessment of sites for significance based on CEQA guidelines; historic research; co-authoring of cultural resources project report. February-June 2000.

Salvage mitigation of a portion of the San Diego Presidio identified during water pipe construction for the City of San Diego, California: Project Archaeologist/Director—included direction of field crews; development and completion of data recovery program; management of artifact collections cataloging and curation; data synthesis and authoring of cultural resources project report in prep. April 2000.

Enhanced cultural resource survey and evaluation for the Tyrian 3 Project, La Jolla, California: Project Manager/Director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. April 2000.

Enhanced cultural resource survey and evaluation for the Lamont 5 Project, Pacific Beach, California: Project Manager/Director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. April 2000.

Enhanced cultural resource survey and evaluation for the Reiss Residence Project, La Jolla, California: Project Manager/Director of the investigation of a single-dwelling parcel—included project coordination; assessment of parcel for potentially buried cultural deposits; authoring of cultural resources project report. March-April 2000.

Salvage mitigation of a portion of Site SDM-W-95 (CA-SDI-211) for the Poinsettia Shores Santalina Development Project and Caltrans, Carlsbad, California: Project Archaeologist/ Director—included direction of field crews; development and completion of data recovery program; management of artifact collections cataloging and curation; data synthesis and authoring of cultural resources project report in prep. December 1999-January 2000.

Survey and testing of two prehistoric cultural resources for the Airway Truck Parking Project, Otay Mesa, California: Project Archaeologist/Director—included direction of field crews; development and completion of testing recovery program; assessment of site for significance based on CEQA guidelines; authoring of cultural resources project report, in prep. December 1999-January 2000.

Cultural resources Phase I and II investigations for the Tin Can Hill Segment of the Immigration and Naturalization Services Triple Fence Project along the International Border, San Diego County,

California: Project Manager/Director for a survey and testing of a prehistoric quarry site along the border—NRHP eligibility assessment; project coordination and budgeting; direction of field crews; feature recordation; meeting and coordinating with U.S. Army Corps of Engineers; co-authoring of cultural resources project report. December 1999-January 2000.

Mitigation of a prehistoric cultural resource for the Westview High School Project for the City of San Diego, California: Project Archaeologist/ Director—included direction of field crews; development and completion of data recovery program including collection of material for specialized faunal and botanical analyses; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; co-authoring of cultural resources project report, in prep. October 1999-January 2000.

Mitigation of a prehistoric cultural resource for the Otay Ranch SPA-One West Project for the City of Chula Vista, California: Project Archaeologist/Director—included direction of field crews; development of data recovery program; management of artifact collections cataloging and curation; assessment of site for significance based on CEQA guidelines; data synthesis; authoring of cultural resources project report, in prep. September 1999-January 2000.

Monitoring of grading for the Herschel Place Project, La Jolla, California: Project Archaeologist/ Monitor—included monitoring of grading activities associated with the development of a single-dwelling parcel. September 1999.

Survey and testing of an historic resource for the Osterkamp Development Project, Valley Center, California: Project Archaeologist/ Director—included direction of field crews; development and completion of data recovery program; budget development; assessment of site for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July-August 1999.

Survey and testing of a prehistoric cultural resource for the Proposed College Boulevard Alignment Project, Carlsbad, California: Project Manager/Director —included direction of field crews; development and completion of testing recovery program; assessment of site for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report, in prep. July-August 1999.

Survey and evaluation of cultural resources for the Palomar Christian Conference Center Project, Palomar Mountain, California: Project Archaeologist—included direction of field crews; assessment of sites for significance based on CEQA guidelines; management of artifact collections cataloging and curation; data synthesis; authoring of cultural resources project report. July-August 1999.

Survey and evaluation of cultural resources at the Village 2 High School Site, Otay Ranch, City of Chula Vista, California: Project Manager/Director —management of artifact collections cataloging and curation; assessment of site for significance based on CEQA guidelines; data synthesis; authoring of cultural resources project report. July 1999.

Cultural resources Phase I, II, and III investigations for the Immigration and Naturalization Services Triple Fence Project along the International Border, San Diego County, California: Project Manager/Director for the survey, testing, and mitigation of sites along border—supervision of multiple field crews, NRHP eligibility assessments, Native American consultation, contribution to Environmental Assessment document, lithic and marine shell analysis, authoring of cultural resources project report. August 1997-January 2000.

Phase I, II, and II investigations for the Scripps Poway Parkway East Project, Poway California: Project

Archaeologist/Project Director—included recordation and assessment of multicomponent prehistoric and historic sites; direction of Phase II and III investigations; direction of laboratory analyses including prehistoric and historic collections; curation of collections; data synthesis; coauthorship of final cultural resources report. February 1994; March-September 1994; September-December 1995.

Archaeological evaluation of cultural resources within the proposed corridor for the San Elijo Water Reclamation System Project, San Elijo, California: Project Manager/Director —test excavations; direction of artifact identification and analysis; graphics production; coauthorship of final cultural resources report. December 1994-July 1995.

Evaluation of Cultural Resources for the Environmental Impact Report for the Rose Canyon Trunk Sewer Project, San Diego, California: Project Manager/Director —direction of test excavations; identification and analysis of prehistoric and historic artifact collections; data synthesis; co-authorship of final cultural resources report, San Diego, California. June 1991-March 1992.

Reports/Papers

Author, coauthor, or contributor, to over 2,500 cultural resources management publications, a selection of which are presented below.

2009 Cultural Resource Assessment of the North Ocean Beach Gateway Project City of San Diego #64A-003A; Project #154116.

2009 Archaeological constraints study of the Morgan Valley Wind Assessment Project, Lake County, California.

2008 Results of an archaeological review of the Helen Park Lane 3.1-acre Property (APN 314-561-31), Poway, California.

2008 Archaeological Letter Report for a Phase I Archaeological Assessment of the Valley Park Condominium Project, Ramona, California; APN 282-262-75-00.

2007 Archaeology at the Ballpark. Brian F. Smith and Associates, San Diego, California. Submitted to the Centre City Development Corporation.

2007 Result of an Archaeological Survey for the Villages at Promenade Project (APNs 115-180-007-3,115-180-049-1, 115-180-042-4, 115-180-047-9) in te City of Corona, Riverside County.

2007 Monitoring Results for the Capping of Site CA-SDI-6038/SDM-W-5517 within the Katzer Jamul Center Project; P00-017.

2006 Archaeological Assessment for The Johnson Project (APN 322-011-10), Poway, California.

2005 Results of archaeological monitoring at the El Camino Del Teatro Accelerated Sewer Replacement Project (Bid No. K041364; WO # 177741; CIP # 46-610.6.

2005 Results of archaeological monitoring at the Baltazar Draper Avenue Project (Project No. 15857; APN: 351-040-09).

2004 TM 5325 ER #03-14-043 Cultural Resources.

Tracy A. Stropes, MA, RPA

Senior Project Archaeologist
Brian F. Smith and Associates, Inc.
14010 Poway Road • Suite A •
Phone: (858) 679-8218 • Fax: (858) 679-9896 • E-Mail: tstropes@bfsa-ca.com

Education

Master of Arts, Anthropology, San Diego State University, California **2007**

Bachelor of Science, Anthropology, University of California, Riverside **2000**

Experience

Project Archaeologist **March 2009–Present**
Brian F. Smith and Associates, Inc.

Duties include project management of all phases of archaeological investigations for local, state and federal agencies; field supervisor of all phases of archaeological projects; lithic analysis; National Register of Historic Places (NRHP) and California Environmental Quality Act (CEQA) site evaluations; authoring and coauthoring of cultural resource management reports primarily for southern California.

Archaeological Principal Investigator **June 2008–February 2009**
TRC Solutions

Archaeological Principal Investigator for cultural resource segment of Natural Sciences and Permitting Division. Duties included management of all phases of archaeological investigations for private companies and local, state and federal agencies; personnel management, field supervision of all phases of archaeological projects; laboratory supervision; lithic analysis, Native American consultation, and reporting; National Register of Historic Places (NRHP) and California Environmental Quality Act (CEQA) site evaluations; authoring and coauthoring of cultural resource management reports primarily for southern California.

Principal Investigator and Project Archaeologist **June 2006–May 2008**
Archaeological Resource Analysts

As a sub consultant, served as Principal Investigator and Project Archaeologist for several projects for SRS Inc. Primary tasks included filed direction, project management, personnel management, lab analysis, and authorship of company reports throughout southern California.

Project Archaeologist **September 1996–June 2006**
Gallegos & Associates

Duties for Gallegos and Associates included project management, laboratory management, lithic analysis, field direction, Native American consultation, report authorship, and editing for several technical reports for various projects throughout southern California. In addition, composed several data recovery and preservation programs for sites throughout California for both CEQA and NEPA level compliance.

Project Archaeologist **September 1993–September 1996**
Macko Inc.

Duties for Macko Inc. included project management, laboratory management, lithic analysis, field supervision, report authorship, and editing for technical reports for various projects throughout southern California.

Archaeological Field Technician **January 1996–September 1993**
Chambers Group Inc.

Duties for Chambers Group Inc. included archaeological excavation, survey, monitoring, wet screen facilities management, and project logistics. —January 1993 – September 1993.

Archaeological Field Technician **May–September 1992**
John Minch and Associates

Duties for John Minch and Associates included archaeological excavation, survey, monitoring, wet screen facilities management, and project logistics.

Reports/Papers

Principal Author

2009 An Archaeological Assessment for the Rivera-Placentia Project, City of Riverside, California. Prepared for Riverside Construction Company.

2009 Cultural Resource Data Recovery Plan for the North Ocean Beach Gateway Project. Prepared for the City of San Diego and KTU+A.

2009 Cultural Resource Letter Report for the Borrego Substation Feasibility Study, Borrego Springs, California. Prepared for RBF Consulting.

2009 A Cultural Resource Study for the Gatto Residence Project, La Jolla, California. Prepared for Marengo Martin Architects Inc.

2008 Phase I Cultural Resource Survey for the 28220 Highridge Road Development Project, Rancho Palos Verdes, California. Prepared for REC Development.

2008 Wild Goose Expansion 3 Project Butte County, California Colusa County, California. Prepared for Niska Gas Storage LLC.

2008 Class III Cultural Resource Survey for the Burlington Northern Santa Fe Four Railway Bridge Renewal Project San Bernardino County, California. Prepared for BNSF Railway Company.

2008 I-80 Colfax Site Cultural Resource Records Search Report, Placer County California. Prepared for Granite Construction Company.

2008 I-80 Gold Run Site Cultural Resource Records Search Report, Placer County California. Prepared for Granite Construction Company.

2008 Cultural Resource Monitoring at 31431 Camino Capistrano, San Juan Capistrano California. Prepared for Herman Weissker, Inc.

2008 Cultural Resource Inventory for the Snow White Pumice Mine, Hinkley California. Prepared for U.S. Mining and Minerals Corporation.

2007 Nodule Industries of North Coastal San Diego: Change and Stasis in 10,000 Years of Lithic Technology. Masters Thesis on file, San Diego State University.

2007 Cultural Resource Inventory for Empire Homes (APN 104-180-04), Lake Forest, California. Prepared for Empire Homes.

2007 Phase I Archaeological Assessment for APN 104-200-09, Beumont, California. Prepared for Mary Chan.

2007 Cultural Resource Inventory for Empire Homes (APN 104-180-04), Lake Forest, California. Prepared for Empire Homes.

2006 Carlsbad Municipal Golf Course Data Recovery Program for CA-SDI-8694, and Indexing and Preservation Program Study for CA-SDI-8303 and CA-SDI-8797 Locus C, City of Carlsbad, CA. Prepared for City of Carlsbad.

2005 Grand Pacific Resorts Data Recovery and Index Sample Program for CA-SDI-8797, Area A, City of Carlsbad, CA. Prepared for Grand Pacific Resorts Inc.

2004 "Near the Harris Site Quarry" Cultural Resource Data Recovery and Preservation Program for CA-SDI-13028, San Diego County, California. Prepared for Harbrecht Development, L.P.

2004 Cultural Resource Survey and Boundary Test Report for the Lilac Ranch Project, San Diego County, California. Prepared for Empire Companies.

2003 Cultural Resource Data Recovery and Preservation Program for CA-SDI-12027, San Diego County, California. Prepared for Harbrecht Development Inc.

2002 Data Recovery Program for the Pacbell Site CA-SDI-5633, San Marcos, California. Prepared for Joseph Wong Design Associates.

2001 McCrink Ranch Cultural Resource Test Program Additional Information for Selected Sites, San Diego County, California. Prepared for Shapouri & Associates.

2001 The Quail Ridge Project Cultural Resource Test Program, San Diego County, California. Prepared for Helix Environmental Planning, Inc.

2000 Cultural Resource Survey and Evaluation for the North Sand Sheet Full Buildout Program, Owens Lake, California. Prepared for CH2MHill.

1995 Final Report: Archaeological Investigations Conducted for the Abalone Cove Dewatering Wells, City of Rancho Palos Verdes Los Angeles County, California. Prepared for the City of Rancho Palos Verdes, Environmental Services.

1995 Final Report: A Class III Intensive Survey of a 100-Acre Sand and Gravel Mining Area, Imperial County, California. Prepared for the Lilburn Corporation.

Jennifer R. Kraft, BA

Field Services Manager, Faunal Analyst
Brian F. Smith and Associates, Inc.
14010 Poway Road • Suite A •
Phone: (858) 484-0915 • Fax: (858) 679-9896 • E-Mail: jenni.kraft@gmail.com

Education

Bachelor of Arts, Anthropology, University of California, Santa Cruz **2004**

Experience

Field Services Manager, Faunal Analyst **November 2006–Present**
Brian F. Smith and Associates, Inc.

Duties include report writing, editing and production; construction monitoring management; coordination of field survey and excavation crews; laboratory and office management; faunal, prehistoric and historic laboratory analysis for over 400 projects over the past 6 years. Knowledge of recent archaeological and paleontological monitoring requirements for all Southern California lead agencies, as well as Native American monitoring requirements.

UC Santa Cruz Monterey Bay Archaeology Archives Supervisor **December 2003–March 2004**
Santa Cruz, California

Supervising intern for archaeological collections. Duties included volunteer management and general curation management for archaeological materials from the greater Monterey Bay region.

Faunal Analyst, Research Assistant **June 2003–December 2003**
University of California, Santa Cruz

Intern assisting in laboratory analysis and cataloging for faunal remains collected from CA-MNT-234. Analysis included detailed zoological identification and taphonomic analysis of prehistoric marine and terrestrial mammals, birds, and fish inhabiting the greater Monterey Bay region.

Archaeological Technician, Office Manager **January 2000-December 2001**
Archaeological Resource Management

Duties included construction monitoring, field survey, excavation, report editing, report production, and office management.

Reports

Co-Author

2012 "Cultural Resources Monitoring Report for the Pottery Court Project (TPM 36193), City of Lake Elsinore, Riverside County, California.' Prepared for BRIDGE Housing Corporation. Report on file at the California Eastern Information Center.

2011 "Mitigation Monitoring Report for the 15th & Island Project, City of San Diego, California." Prepared for Oliver McMillan. Report on file at the California South Coastal Information Center.

2011 "A Phase I Cultural Resource Study for the Wesley Palms Retirement Community Project, San Diego, California." Prepared for Front Porch Development Company. Report on file at the California South Coastal Information Center.

2011 "A Cultural Resource Monitoring Report for the Alvarado Apartments Project, San Diego, California." Prepared for The Dinerstein Companies. Report on file at the California South Coastal Information Center.

Contributing Author /Analyst

2011 Faunal Analysis and Report Section for "A Cultural Resource Data Recovery Program for SDI-4606 Locus B for St. Gabriel's Catholic Church, Poway, California." Prepared for St. Gabriel's Catholic Church. Report on file at the California South Coastal Information Center.

2010 Faunal Analysis and Report Section for "An Archaeological Study for the 1912 Spindrift Drive Project, La Jolla, California." Prepared for Island Architects. Report on file at the California South Coastal Information Center.

2010 Faunal Analysis and Report Sections for "Results of a Cultural Mitigation and Monitoring Program for Robertson Ranch: Archaic and Late Prehistoric Camps near the Aqua Hedionda Lagoon." Prepared for McMillan Land Development. Report on file at the California South Coastal Information Center.

2009 Faunal Identification for "An Earlier Extirpation of Fur Seals in the Monterey Bay Region: Recent Findings and Social Implications." *Proceedings of the Society for California Archaeology, Vol. 21, 2009*

APPENDIX B

Archaeological Record Search Results
(not for public review; bound separately)

APPENDIX 5A – PALEONTOLOGICAL RESOURCE ASSESSMENT

Brian F. Smith and Associates, Inc.
Archaeology / Biology / History / Paleontology / Air Quality / Traffic / Acoustics

31 January 2013

Mr. Michael Lesle
21595 Marble Court
Wildomar, California 92595

Subject: Paleontological resource assessment, 34915 Orange Street project, City of Wildomar, Riverside County, California (APN 367-170-029; Tentative Tract 36519)

Dear Mr. Lesle:

A paleontological resource assessment has been completed for the 34915 Orange Street project area (APN 367-170-029; Tentative Tract 36519), located between Laguna Road to the west, and Orange Street to the east, in the City of Wildomar about midway between the corporate boundaries with the adjacent cities of Lake Elsinore and Murrieta in Riverside County, California. On the U. S. Geological Survey 1:24,000 scale, 7.5 minute *Wildomar, California* topographic quadrangle, the project site is located in the extreme southeastern corner of Section 27, Township 6 South, Range 4 West, San Bernardino Base and Meridian (Attachments 1 and 2).

Geologically, the project area lies just east of the main eastern strands of the Elsinore fault zone in an area of Pliocene and Pleistocene sedimentary units of terrestrial origin (M. P. Kennedy, 1977, Recency and character of faulting along the Elsinore fault zone in southern Riverside County, California: California Division of Mines and Geology Special Report 131; D. M. Morton, 2004, Preliminary digital geologic map of the Santa Ana 30' x 60' quadrangle, southern California: U. S. Geological Survey Open-File Report 99-172, version 2.0). A detailed geologic map of the project area at a scale of 1:24,000 is shown in Attachment 3 (after Kennedy, 1977, pl. 1).

As mapped by Kennedy (1977), the project area overlies exposures of the middle Pleistocene (late Irvingtonian and early Rancholabrean) sandstone member of the Pauba Formation (Qps on Attachment 3). Morton (2004), however, on a more generalized map at a much larger scale (1:100,000), simply maps the area as sandy young valley fill sediments (Qyv_a) without assigning any formational name to the unit.

More than 400 terrestrial vertebrate fossil localities are known from the Pauba Formation and underlying units in the Elsinore fault zone across the greater Murrieta and Temecula areas. Because of the abundance of terrestrial vertebrate fossils that have been recorded from this area,

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the area has been assigned a high paleontological resource sensitivity by both the San Bernardino County Museum in numerous collections and records search reports, and by the Riverside County Land Information System. Based on the Riverside County Land Information System Paleontological Sensitivity Report generated on January 11, 2013 (Attachment 4), the subject property is located within an area that is assigned a High Paleontological Sensitivity (High A), *i.e.,* it is within an area of exposed "geologic formations or mappable rock units that contain fossilized body elements, and trace fossils ... on or below the surface." As such, the area will require paleontological monitoring of any construction activities (mass grading, excavation, trenching, etc.) to mitigate against the potential loss of undiscovered fossils and/or fossil deposits.

Previously conducted museum collections and records searches by the San Bernardino County Museum (SBCM) for other areas now within the City of Wildomar did not reveal any previously identified fossil localities on the subject property or immediately nearby. These records search reports do, however, document the high paleontological resource sensitivity of the locally exposed formations, and outline the monitoring and mitigation measures that should be implemented for any project in this area. The abundance of terrestrial vertebrate fossil localities known from the Pauba Formation (Qpf) supports the necessity of paleontological monitoring during all earth moving and excavation activities during project construction. Vertebrate fossils previously recovered from the Pauba Formation include mammoths, mastodons, ground sloths, saber-toothed cats, tapirs, horses, camels, llamas, and abundant small vertebrates and invertebrates.

Because of the known presence of abundant fossil localities and the documented high (High A) paleontological sensitivity of the area (Attachment 4), paleontological monitoring of mass grading and excavation activities, including utility trenching, in areas so mapped should be required to mitigate impacts to potential nonrenewable paleontological resources (*i.e.,* fossils). A mitigation program consistent with the provisions of the California Environmental Quality Act (CEQA), regulations currently implemented by the City of Wildomar, and proposed guidelines of the Society of Vertebrate Paleontology should be implemented for this project. At a minimum, mitigation requirements should include the following:

1. A foot survey by a qualified paleontologist or paleontological monitor prior to grading activities can be conducted following clearing and grubbing of any surface vegetation across the site. Fossils on relatively flat alluvial areas are rarely exposed above the zone of soil formation (pedogenic horizons), but may, nevertheless, reveal areas of special concern to the paleontologist.

2. Monitoring of mass grading and excavation activities in areas identified as likely to contain paleontological resources by a qualified paleontologist or paleontological monitor. Monitoring will be conducted in areas of grading or excavation in undisturbed formational sediments of the sandstone member of the Pauba Formation (Qps), as well as where over-excavation of surficial alluvial sediments will encounter these formations in the subsurface. Paleontological monitors will be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediment that are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor must be empowered to temporarily halt

or divert equipment to allow for the removal of abundant or large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or if present, are determined upon exposure and examination by qualified paleontological personnel to have low potential to contain fossil resources.

3. Preparation of recovered specimens to a point of identification and permanent preservation, including screen-washing of sediments to recover small invertebrates and vertebrates if necessary. Preparation of individual vertebrate fossils is often more time consuming than for accumulations of invertebrate fossils.

4. Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage (*e.g.,* the Western Center for Archaeology and Paleontology Museum on Searl Parkway in Hemet, Riverside County, California). The paleontological program should include a written repository agreement prior to the initiation of mitigation activities. The lead agency may select another repository if they so desire.

5. Preparation of a final monitoring and mitigation report of findings and significance, including lists of all fossils recovered and necessary maps and graphics to accurately record their original location. The report, when submitted to, and accepted by, the appropriate lead agency, will signify satisfactory completion of the project program to mitigate impacts to any potential nonrenewable paleontological resources (*i.e.,* fossils) that might have been lost or otherwise adversely affected without such a program in place.

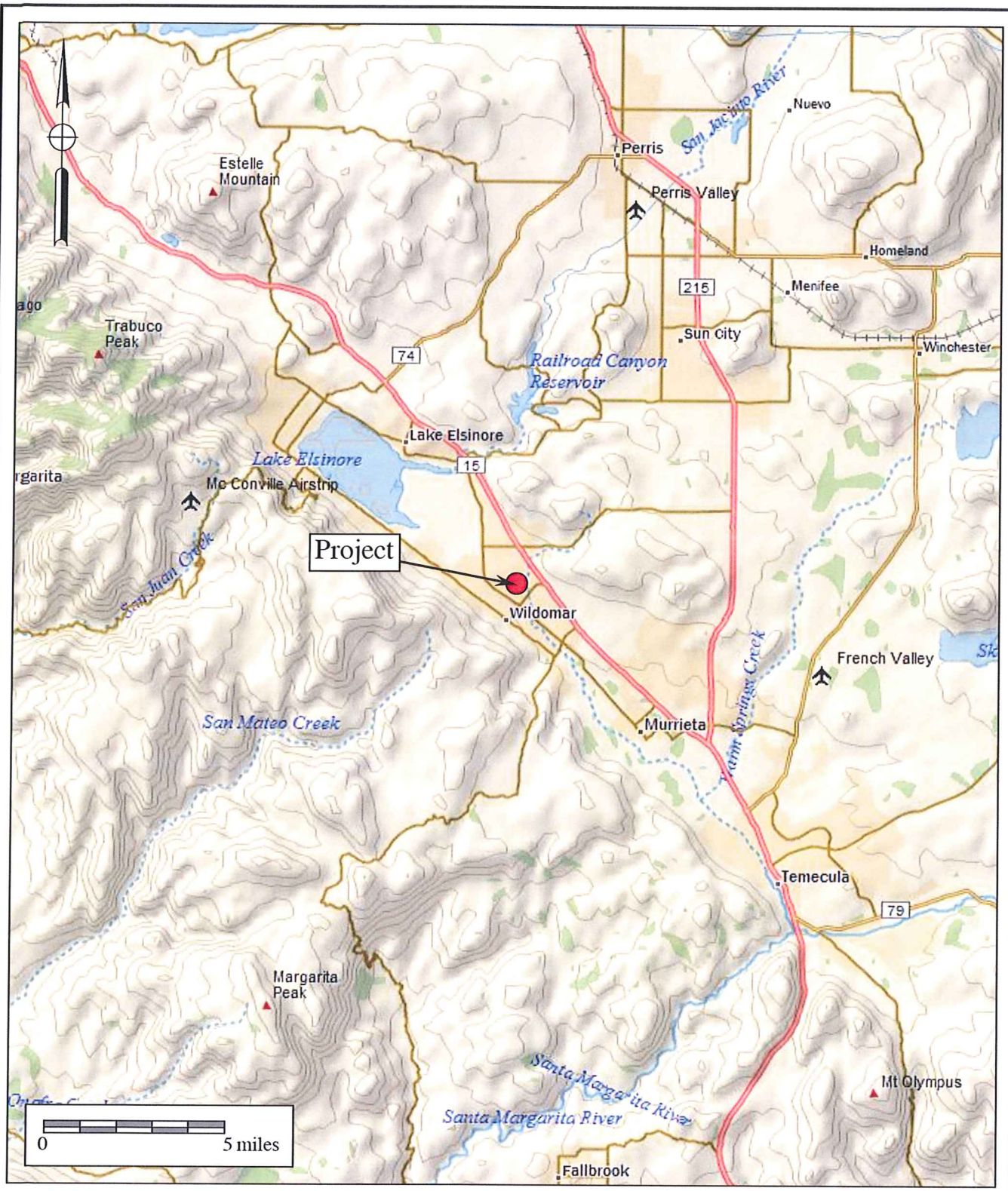
Thank you for the opportunity to provide paleontological services on this project. If you have any questions, please feel free to contact us at our Poway facility.

Sincerely,

George Kennedy

George L. Kennedy, Ph.D.
Senior Paleontologist

Attachments: Index maps, geologic map, paleontological sensitivity map

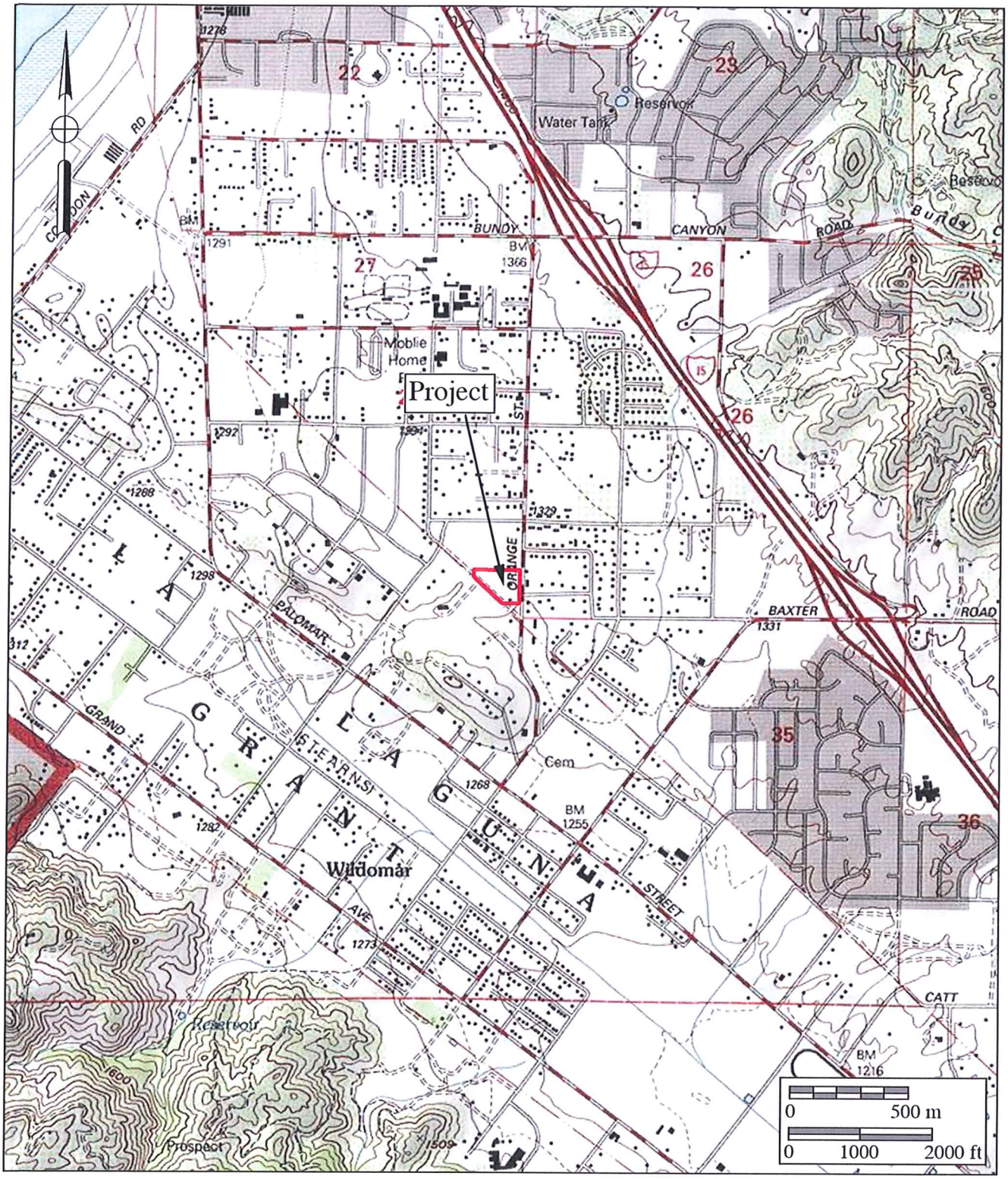


Attachment 1

General Location Map

The Orange Street Project

DeLorme World Base Map Service (1:250,000 series)

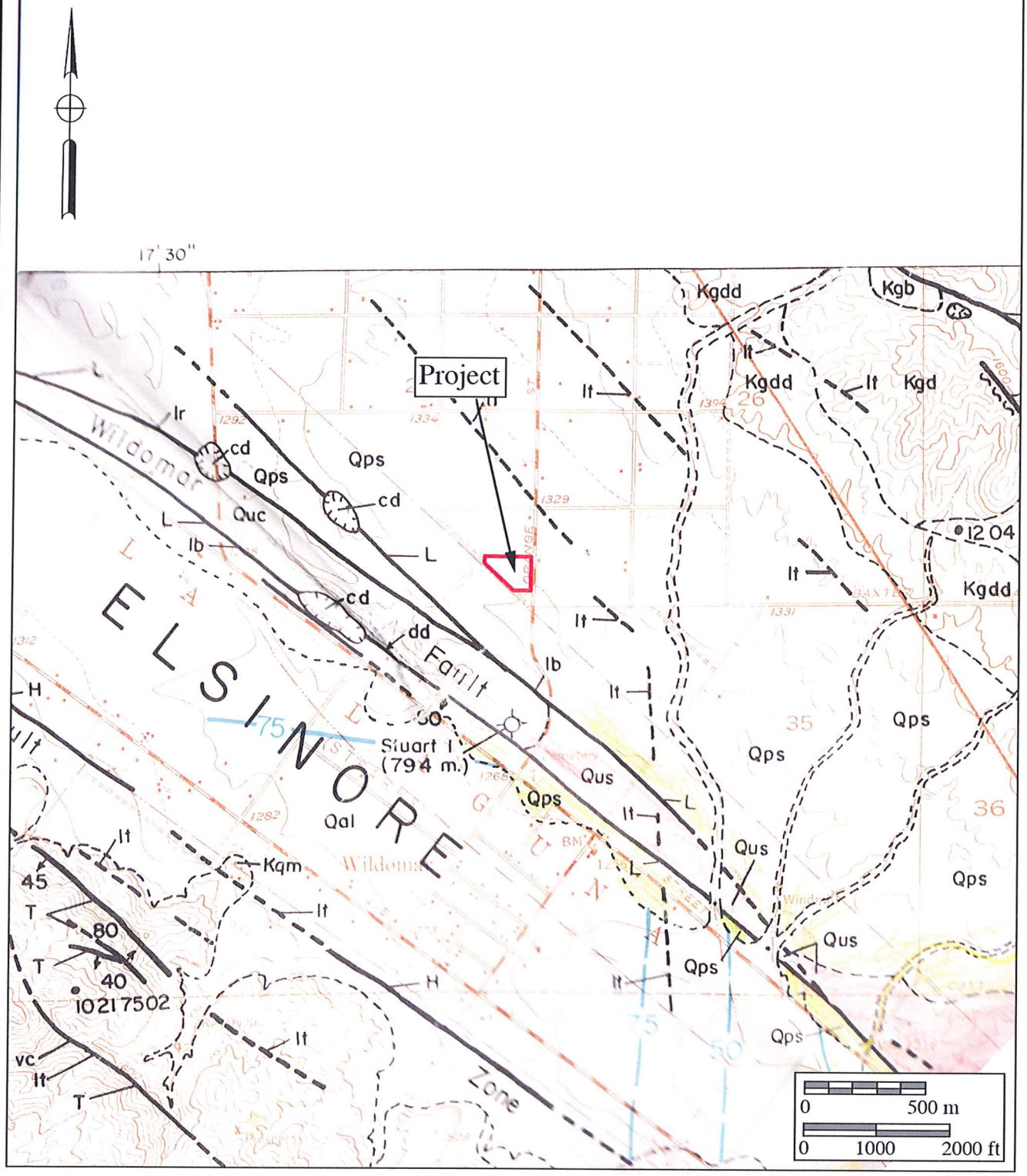


Attachment 2

Project Location Map

The Orange Street Project

USGS Wildomar and Lake Elsinore Quadrangles (7.5 minute series)

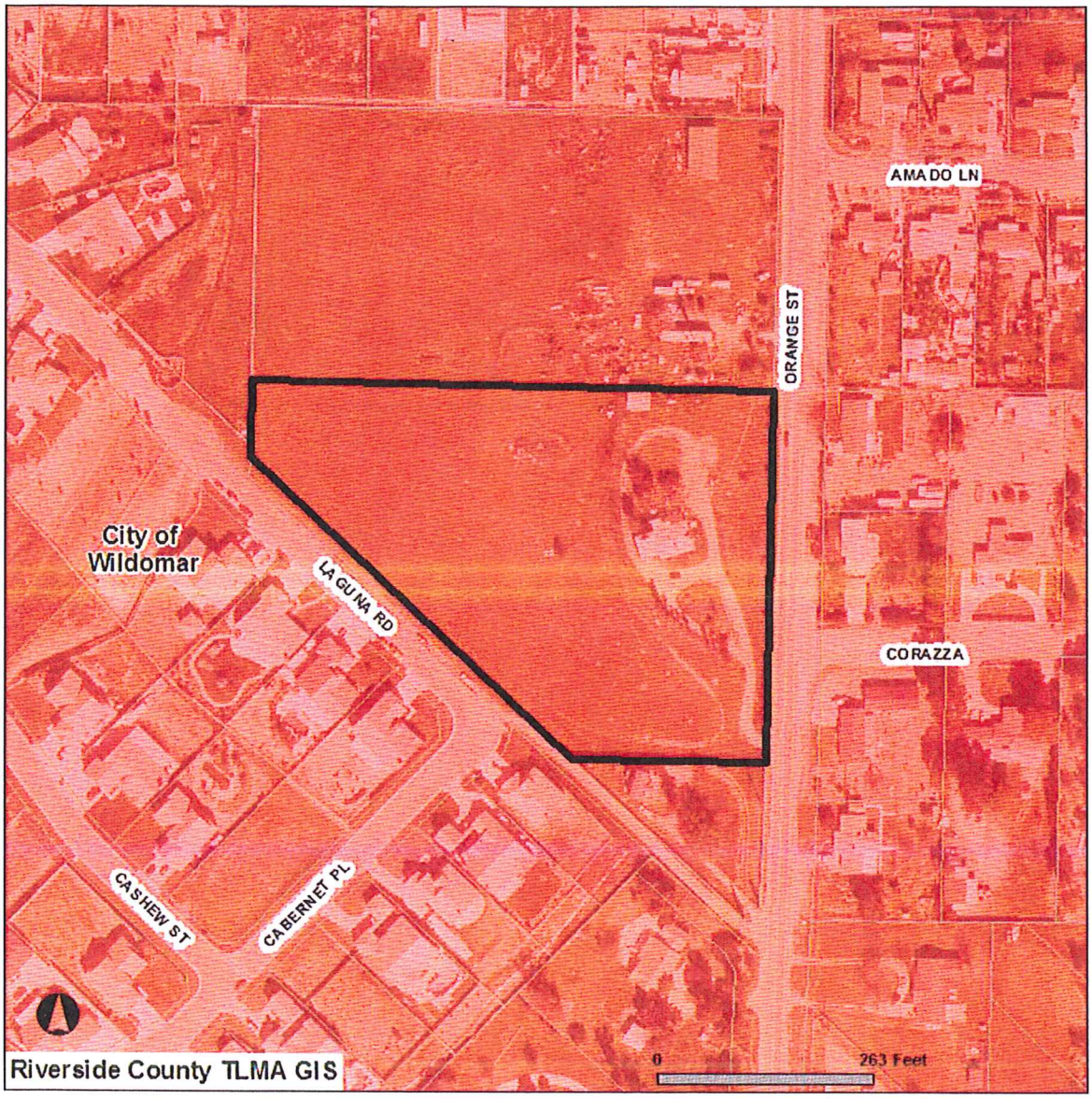


Attachment 3

Geologic Map

The Orange Street Project

Geology after Kennedy (1977)



Selected parcel(s):
367-170-029

PALEONTOLOGICAL SENSITIVITY

SELECTED PARCEL
PARCELS
INTERSTATES
HIGH POTENTIAL/SENSITIVITY (HIGH A)
HIGHWAYS
CITY

Attachment 4

Paleontological Sensitivity Map

The Orange Street Project

Riverside County TLMA GIS

APPENDIX 6 – PRELIMINARY SOILS REPORT

F

WAC GEOTECHNICAL INC.

PRELIMINARY SOILS REPORT

PROJECT DATE: JANUARY 28, 2013

PROJECT NUMBER: 13-892

PREPARED FOR:

MR. MIKE LESLE (951) 522-2405
21595 MARBLE CT. WILDOMAR, CA. 92595

SUBJECT:

SUBSURFACE SOILS ENGINEERING AND FOUNDATION EVALUATION INVESTIGATION FOR THE NINE, PROPOSED RESIDENTIAL STRUCTURES. T.T.M.# 36519

JOB SITE LOCATION:

TENTATIVE TRACT MAP # 36519

34915 ORANGE STREET WILDOMAR, CA. 92595

APN: 367-170-029

LONGITUDE: -117.277011 W, LATITUDE: 33.614122 N

P.O. BOX 545 • NORCO, CA 92860
OFC: (951) 354-6500 • FAX: (951) 354-8600

GENTLEMEN:

THE RESULTS OF OUR INVESTIGATION INDICATE THAT THE SOILS UNDERLYING THE PROPOSED BUILDING AREA ARE COMPRISED OF BROWN TO TANNISH BROWN SILTS AND FINE TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, IN A LOOSE TO FIRM AND SLIGHTLY MOIST STATE. BASED UPON INFORMATION SUPPLIED TO THIS OFFICE, IT IS PROPOSED TO CONSTRUCT NINE, CONVENTIONAL FRAME, STUCCO EXTERIOR AND CONCRETE TILE ROOF, SINGLE-FAMILY, RESIDENTIAL STRUCTURES.

THE PROPERTY IS LOCATED IN A WELL DEVELOPED, SEMI-RURAL, AREA, IN THE CITY OF WILDOMAR, COUNTY OF RIVERSIDE, CALIFORNIA. MINOR GRADING IS PROPOSED FOR THIS PROJECT. GRADING PLANS HAVE NOT YET BEEN PREPARED FOR THIS PROJECT. ANY PLANS PREPARED MUST BE APPROVED BY THIS OFFICE WITH RESPECT TO THE FINDINGS, RECOMMENDATIONS AND CONCLUSIONS HEREIN. THE PROPERTY FALLS IN ELEVATION FROM THE NORTHEAST DOWN TO THE SOUTHEAST CORNER APPROXIMATELY 30 FEET OVERALL.

IT IS PROPOSED TO CONSTRUCT CONVENTIONAL SPREAD FOOTINGS FOR SLAB-ON-GRADE RESIDENTIAL BUILDINGS. IT IS OUR OPINION THAT THE SITE SHOULD BE CONSIDERED SUITABLE FOR THE PLANNED DEVELOPMENT, PROVIDED THE RECOMMENDATIONS PRESENTED HEREIN ARE INCORPORATED INTO THE DESIGN AND IN CONSTRUCTION. ADEQUATELY CONSTRUCTED SPREAD FOOTINGS FOUNDED INTO COMPETENT, FIELD APPROVED DENSE COMPACTED FILL ARE EXPECTED TO PROVIDE NECESSARY SUPPORT FOR THE PLANNED RESIDENTIAL STRUCTURES.

THIS REPORT HAS BEEN PREPARED IN ACCORDANCE WITH THE GENERALLY ACCEPTED ENGINEERING STANDARDS CONSIDERED NECESSARY FOR THE PROPOSED DEVELOPMENT. DESIGN PARAMETERS AND RECOMMENDATIONS ARE BASED ON AND DERIVED FROM THE 2010 CBC/IBC.

THANK YOU FOR THE OPPORTUNITY TO BE OF SERVICE ON YOUR PROJECT. SHOULD YOU HAVE ANY QUESTIONS REGARDING THIS REPORT, PLEASE CALL THE UNDERSIGNED AT YOUR CONVENIENCE.

RESPECTFULLY SUBMITTED,
WAC GEOTECHNICAL, INC.

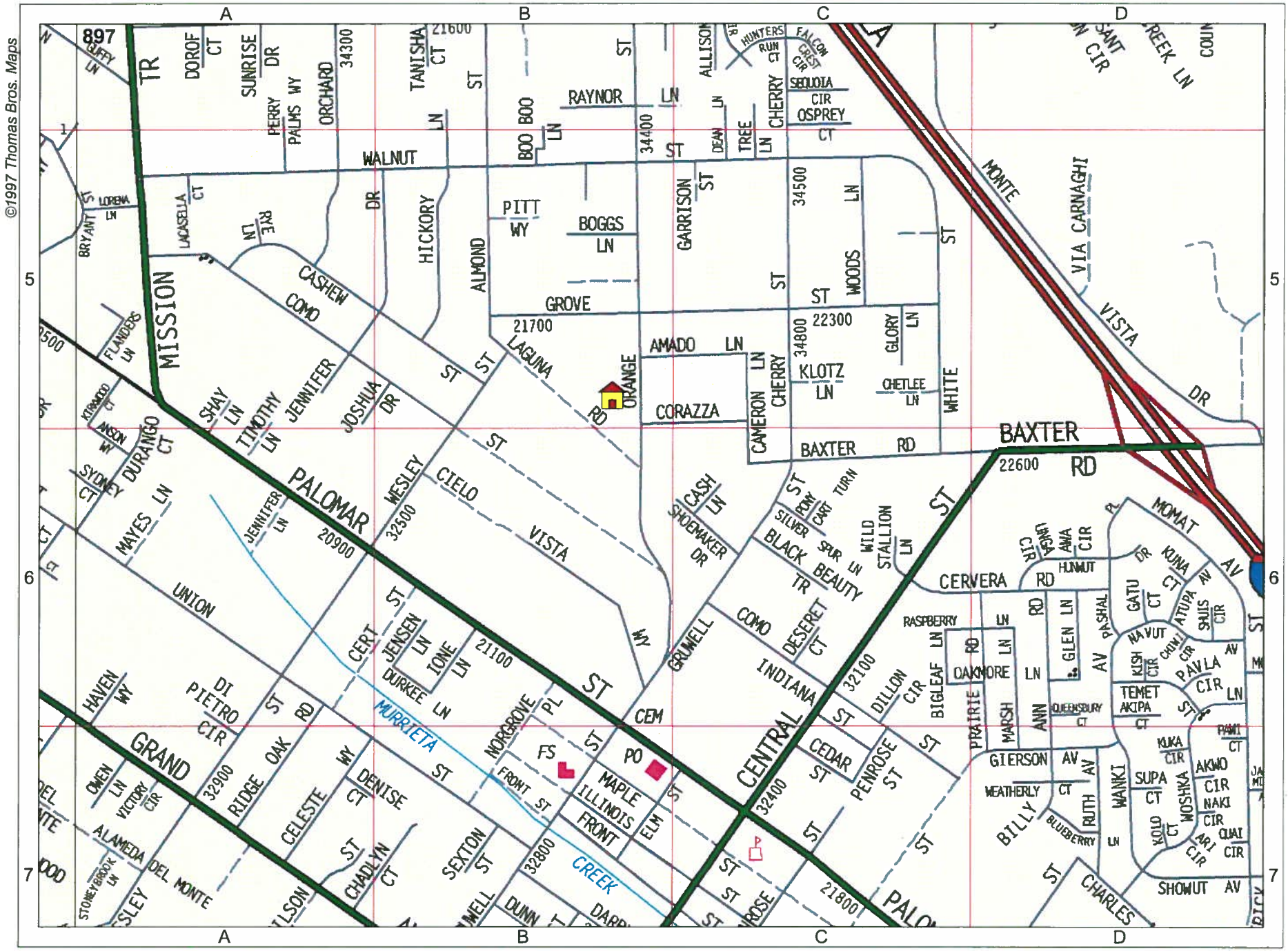
DAVID E. BARLINGER, PRESIDENT
WAC GEOTECHNICAL, INC.

GEORGE E. HAWES, VICE PRESIDENT
RCE C034779, STATE OF CALIFORNIA
LIC. EXP. 9-30-13

REGISTERED PROFESSIONAL ENGINEER
GEORGE E. HAWES
No. C034779
STATE OF CALIFORNIA

THIS OFFICIAL STAMP IS IN BLUE INK, OTHERWISE A COPY

DATE: 1/31/13



34915 Orange St, Wildomar, 92595, Page & Grid 897 B5

1.0 INTRODUCTION

THE PURPOSE OF THIS STUDY IS TO EVALUATE THE NATURE AND ENGINEERING PROPERTIES OF THE SUBSURFACE SOILS, AND TO PROVIDE NECESSARY GEOTECHNICAL RECOMMENDATIONS FOR FOUNDATION DESIGN, SITE GRADING, UTILITY TRENCH BACKFILL, AND FIELD REVIEW DURING CONSTRUCTION. THE FINDINGS AND RECOMMENDATIONS HEREIN ARE BASED ON THE 2010 CALIFORNIA BUILDING CODE, TITLE 24 AND 2010 IBC/UBC.

OUR EVALUATION INCLUDED SUBSURFACE EXPLORATION, SOIL SAMPLING, LABORATORY TESTING, ENGINEERING ANALYSES AND PREPARATION OF THIS REPORT. THE RECOMMENDATIONS CONTAINED HEREIN REFLECT OUR PROFESSIONAL OPINIONS FOR THE SUBSURFACE SOIL CONDITIONS ENCOUNTERED DURING FIELD INVESTIGATION.

1.1 PROPOSED DEVELOPMENT

IT IS PROPOSED TO CONSTRUCT NINE, CONVENTIONAL FRAME, STUCCO EXTERIOR AND CONCRETE TILE, SINGLE-FAMILY RESIDENTIAL STRUCTURES ON THE PROPERTY. CONVENTIONAL SPREAD FOOTINGS ARE EXPECTED FOR THE BUILDING.

IT IS OUR OPINION THAT THE SITE SHOULD BE CONSIDERED SUITABLE FOR THE PLANNED DEVELOPMENT, PROVIDED THE RECOMMENDATIONS PRESENTED HEREIN ARE INCORPORATED INTO DESIGN AND IN CONSTRUCTION. ADEQUATELY CONSTRUCTED SPREAD FOOTINGS FOUNDED INTO COMPETENT, FIELD APPROVED DENSE COMPACTED FILL ARE EXPECTED TO PROVIDE NECESSARY SUPPORT FOR THE PLANNED RESIDENTIAL STRUCTURE.

1.2 SITE DESCRIPTION

THE SUBJECT PROPERTY IS LOCATED AT 34915 ORANGE STREET WILDOMAR, CA. THE PROPERTY IS LOCATED IN A WELL DEVELOPED, SEMI-RURAL, CUSTOM HOME AREA IN THE CITY OF WILDOMAR, COUNTY OF RIVERSIDE, CALIFORNIA. MINOR GRADING IS PROPOSED FOR THIS PROJECT. NO GRADING PLANS HAVE BEEN PREPARED FOR THIS PROJECT AS YET. THE PROPERTY FALLS IN ELEVATION FROM THE NORTHEAST DOWN TO THE SOUTHEAST APPROXIMATELY 30 FEET OVERALL. NO BEDROCK ROCK OUTCROPS, WELLS OR DETRIMENTAL FEATURES WERE NOTED ON THE PARCEL. AN EXISTING HOME IS NOTED ON PROPOSED LOT NUMBER 3. THIS EXISTING RESIDENTIAL STRUCTURE IS TO REMAIN ON THE SITE.

2.0 SCOPE OF WORK

GEOTECHNICAL INVESTIGATION FOR THE SUBJECT SITE INCLUDED SUBSURFACE EXPLORATION UTILIZING A TRUCK MOUNTED MOBILE DRILL B-34 AUGER DRILL RIG, SOIL SAMPLING, LABORATORY TESTING, ENGINEERING ANALYSES AND PREPARATION OF THIS REPORT. IN GENERAL, THE SCOPE OF WORK INCLUDED THE FOLLOWING TASKS:

* NINE EXPLORATORY BORINGS WERE EXCAVATED USING A B-34 DRILL RIG, ADVANCED TO A MAXIMUM DEPTH OF 15 FEET BELOW THE EXISTING GRADE (SEE ATTACHED PLANS AND BORING LOGS, APPENDIX SECTION). DURING EXPLORATION, ENCOUNTERED SUBSURFACE SOILS WERE LOGGED BASED UPON VISUAL AND TACTILE METHODS WITH BULK SAMPLES AND IN-PLACE RING SAMPLES OBTAINED AT SUBSURFACE ZONES AT OR NEAR THE PROPOSED PAD GRADE. COLLECTED SAMPLES WERE TRANSFERRED TO A GEOTECHNICAL LABORATORY FOR TESTING AND ANALYSES.

DESCRIPTIONS OF ENCOUNTERED SUBSURFACE SOILS ARE PROVIDED ON THE BORING LOGS IN THE APPENDIX SECTION. THE APPROXIMATE LOCATIONS OF THE TEST BORINGS ARE SHOWN ON THE ATTACHED PLANS.

* LABORATORY TESTING WAS CONDUCTED ON SELECTED BULK, REMOLDED AND IN-PLACE RING SAMPLES ACCORDING TO THE PROJECT REQUIREMENTS. THE LABORATORY TESTING INCLUDED EVALUATIONS OF MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT, SOIL SHEAR STRENGTH (BASED UPON REMOLDED SAMPLES) UNDER ANTICIPATED STRUCTURAL LOADINGS, CONSOLIDATION TESTS, A CORROSION SERIES, R-VALUES AND EXPANSION INDEX. DESCRIPTIONS OF THE TEST PROCEDURES USED AND TEST RESULTS ARE PROVIDED IN APPENDIX SECTION.

* BASED ON OBTAINED DATA RESULTING FROM OUR FIELD INVESTIGATION, LABORATORY TESTING AND ENGINEERING ANALYSES, THIS REPORT PRESENTS THIS FIRMS RECOMMENDATIONS FOR FOUNDATION DESIGN, SITE PREPARATION, GRADING AND FIELD REVIEWS NECESSARY DURING SITE CONSTRUCTION. CALCULATIONS ARE BASED ON THE MINIMUM RECOMMENDATIONS SET FORTH IN THE 2010 CALIFORNIA BUILDING CODE, TITLE 24 AND THE 2010 IBC/UBC.

3.0 SUBSURFACE CONDITIONS

OUR EVALUATION OF THE SITE SUBSOIL CONDITIONS IS BASED UPON SUBSURFACE SOIL EXPLORATION AND THE NOTED LABORATORY TESTING. BASED UPON OUR FIELD INVESTIGATION, SOIL SAMPLING AND SUBSEQUENT LABORATORY AND ENGINEERING ANALYSES, THE FOLLOWING CHARACTERISTICS FOR THE SITE SOILS ARE OBSERVED:

DUE TO YEARS OF FARMING AND BIO-TURBATION, THE UPPER 3-4 FEET OF THE SITE SOILS APPEARS TO BE LOOSE AND COMPRESSIBLE. THE SUPPORTING SOILS ARE NOTED TO BE BROWN TO TANNISH BROWN SILTS AND FINE TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, IN A LOOSE TO FIRM AND SLIGHTLY MOIST STATE. THIS NATIVE SOIL IS CLASSIFIED AS SITE CLASS D, PER THE 2010 CALIFORNIA BUILDING CODE TABLE 1613.5.2.

DURING GRADING, OVER EXCAVATION TO THE DEPTHS OF 3-4 FEET BELOW THE CURRENT SURFACE IS REQUIRED. ANY PLANT ROOTS, POSSIBLE LARGE ROCKS AND OTHER DELETERIOUS MATERIALS FOUND IN ANY OVER-EXCAVATION MUST BE REMOVED PRIOR TO THE PLACEMENT OF THE CLEAN EXCAVATED SOILS AS COMPACTED FILL.

THESE SUB-SOILS WILL REQUIRE REMOVAL TO COMPETENT BEARING SUB-GRADE FOR FOUNDATION SUPPORT. SEE SECTION 4.1.1 FOR SPECIFIC REQUIREMENTS. THESE IN PLACE SUB-SOILS MAY BE CONSIDERED SUITABLE FOR USE AS STRUCTURAL FILLS INTENDED TO SUPPORT PROPOSED STRUCTURE OR FILL SLOPES. AT TIME OF CONSTRUCTION, ACTUAL FIELD EXPOSURES WILL DICTATE SITE SUITABILITY BASED UPON FIELD REVIEW BY THE PROJECT SOILS ENGINEERING CONSULTANT/REPRESENTATIVE.

LABORATORY SHEAR TESTS CONDUCTED ON THE BULK SAMPLES FROM THE UPPER LAYER, REMOLDED TO 90 PERCENT OF THE LABORATORY EVALUATED MAXIMUM DRY DENSITY, INDICATE VERY GOOD SHEAR STRENGTHS UNDER INCREASED MOISTURE CONDITIONS. THE SOIL IS CONSIDERED MODERATELY CORROSIVE. ALL METAL SHOULD BE PROTECTED FROM THE SOIL. RESULTS OF THE LABORATORY SHEAR TESTS ARE PROVIDED IN THE APPENDIX SECTION.

IF IMPORT SOILS ARE PROPOSED FOR THIS CONSTRUCTION AND FILL, THE MOST CONSERVATIVE TEST RESULT WILL APPLY TO DESIGNS.

3.1 EXCAVATIBILITY

CONSIDERING THE REMOVAL DEPTH AND THE ABSENCE OF BEDROCK TO AT LEAST 15' BELOW GRADE, IT IS OUR OPINION THAT GRADING AND EXCAVATION REQUIRED FOR THE PROJECT MAY BE ACCOMPLISHED USING CONVENTIONAL CONSTRUCTION EQUIPMENT TO THE PROPOSED DESIGN GRADES AND RECOMMENDED REMOVAL DEPTHS.

3.2 GROUNDWATER

GROUND WATER WAS NOT ENCOUNTERED IN OUR SUBSURFACE DRILLING EXCAVATION TO THE DEPTH OF 15' BELOW GRADE. THEREFORE, GROUND WATER IS NOT EXPECTED TO BE A PROBLEM FOR PROPOSED GRADING.

3.3 SUBSURFACE VARIATIONS

BASED UPON THE RESULTS OF OUR SUBSURFACE INVESTIGATION AND ON PAST EXPERIENCE, IT IS THE OPINION OF THIS FIRM THAT VARIATIONS IN THE CONTINUITY AND DEPTHS OF SUBSOIL DEPOSITS MAY BE EXPECTED. DUE TO THE NATURE AND CHARACTERISTICS OF THE SOILS UNDERLYING THE SUBJECT SITE, CARE SHOULD BE EXERCISED IN INTERPOLATING OR EXTRAPOLATING THE CONDITIONS AND PROPERTIES OF THE SUB-SOILS BEYOND THE BORING LOCATIONS.

3.4 LIQUEFACTION

LIQUEFACTION IS CAUSED BY THE BUILD UP OF EXCESS HYDROSTATIC PRESSURE IN SATURATED COHESIONLESS SOILS DUE TO CYCLIC STRESS GENERATED BY GROUND SHAKING DURING AN EARTHQUAKE. THE SIGNIFICANT FACTORS ON WHICH LIQUEFACTION POTENTIAL OF A SOIL DEPOSIT DEPENDS, AMONG OTHERS INCLUDE, SOIL TYPE, RELATIVE SOIL DENSITY, INTENSITY OF EARTHQUAKE, DURATION OF GROUND SHAKING, AND DEPTH OF GROUND WATER.

PROVIDING THE RECOMMENDATIONS SET FORTH IN THIS REPORT ARE MET, 3-4' OVER-EXCAVATION AND RE-COMPACT, THE LIQUEFACTION POTENTIAL MAY BE CONSIDERED LOW FOR THIS PARCEL. GROUND WATER WAS NOT ENCOUNTERED IN OUR SUBSURFACE EXPLORATION PROGRAM, THE UNDERLYING IN-PLACE MATERIALS HAVE AVERAGE COHESION. PER THE RIVERSIDE COUNTY GIS; THIS SITE IS NOT LOCATED IN A FLOOD ZONE, THE LIQUEFACTION POTENTIAL IS NOTED AS MODERATE AND THE SITE IS SUSCEPTIBLE TO SUBSIDENCE.

3.5 POTENTIAL SEISMIC HAZARDS

SEISMIC DESIGN PARAMETERS ARE BASED UPON THE 2010 CBC. THIS PROJECT IS LOCATED IN SEISMIC REGION 1. THIS PARCEL IS LOCATED WITHIN 2 KM OF A TYPE B FAULT. THIS SEISMIC SOURCE IS IDENTIFIED AS THE ELSINORE FAULT (GLEN IVY SEGMENT). THIS IS A TYPE B FAULT. THE SLIP RATE IS 5, THE MG MAX IS NOTED AS 6.8. PER THE RIVERSIDE COUNTY GIS; THIS SITE IS LOCATED WITHIN ½ MILE OF A FAULT.

FOR CALCULATIONS THE SEISMIC DESIGN PARAMETERS ARE PER USGS "DESIGN MAP" ATTACHED. THE DESIGN CRITERIA IS BASED ON SITE CLASS D SOILS AND THE 2010 CBC. THE SOILS UNDERLYING THE SUBJECT SITE, MEDIUM BROWN, SILTY TO MEDIUM GRAINED ALLUVIAL DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST, IS ASSIGNED THE SOIL TYPE PROFILE D.

THE USGS SEISMIC HAZARDS MAPPING GROUND MOTION PAGE IS ATTACHED TO THIS REPORT. A COPY OF THE CDC, DMG ACTIVE FAULT NEAR-SOURCE ZONE MAP IS ALSO ATTACHED TO THIS REPORT. THIS INFORMATION IS PROVIDED BY THE CALIFORNIA GEOLOGICAL SURVEY AND IS DESIGNED TO COMPLIMENT THE 2010 UBC/CBC CRITERIA. THE DATA SHEETS ARE FOUND IN THE APPENDIX PORTION OF THIS REPORT.

Ss = 2.301 (g)	Sms = 2.301 (g)	Sds = 1.534 (g)
S1 = 0.927 (g)	Sm1 = 1.391 (g)	Sd1 = 0.927 (g)

4.0 EVALUATIONS AND RECOMMENDATIONS

4.1 GENERAL EVALUATIONS

BASED ON THIS FIRM'S FIELD INVESTIGATION, LABORATORY TESTING AND SUBSEQUENT ENGINEERING ANALYSIS, IT IS OUR OPINION THAT, FROM A GEOTECHNICAL VIEWPOINT, THE SITE SHOULD BE CONSIDERED SUITABLE FOR THE PLANNED RESIDENTIAL DEVELOPMENT, PROVIDED THE RECOMMENDATIONS PRESENTED HEREIN, ARE INCORPORATED INTO FINAL DESIGN AND IN CONSTRUCTION.

SITE PREPARATION AND GRADING SHOULD BE PERFORMED IN ACCORDANCE WITH THE ENCLOSED RECOMMENDATIONS OF SECTION 5, EARTHWORK/GENERAL GRADING RECOMMENDATIONS OF THIS REPORT, EXCEPT AS MODIFIED IN THE MAIN TEXT AND WITH THE APPLICABLE PORTIONS OF APPENDIX CHAPTER 33 OF THE CURRENT UBC OR APPLICABLE LOCAL ORDINANCE.

STRUCTURAL DESIGN CONSIDERATIONS SHOULD INCLUDE THE PROBABILITY OF MODERATE PEAK GROUND ACCELERATIONS FROM RELATIVELY ACTIVE REGIONAL EARTHQUAKE FAULTS, AS NOTED IN SECTION 3.5. CHEMICAL TEST RESULTS INDICATE THE SOIL IS MODERATELY CORROSIVE; HOWEVER, ALL METAL SHOULD BE PROTECTED FROM THE CORROSIVE SOIL.

4.1.1 SUB-GRADE PREPARATIONS FOR STRUCTURAL PADS AND STREET AREAS

PROGRAMMED AREAS FOR BUILDING SUPPORT AND 5' OUTSIDE OF THE BUILDING PERIMETER, WILL REQUIRE REMOVAL OF LOOSE SOIL IN THE UPPER 3-4 FEET TO COMPETENT IN-PLACE SUB-GRADE. REMOVAL SHALL BE VERIFIED AND APPROVED IN THE FIELD BY A REPRESENTATIVE OF WAC GEOTECHNICAL, INC. PRIOR TO REPLACING AND COMPACTING REMOVED MATERIAL. A REPRESENTATIVE OF WAC GEOTECHNICAL, INC. SHALL VERIFY THAT ALL REPLACED MATERIAL HAS BEEN COMPACTED TO AT LEAST 90% RELATIVE COMPACTION PER ASTM D-1557-91 FOR STRUCTURAL SUPPORT OF THE PROPOSED FILL AND FOUNDATIONS.

AFTER THE ANTICIPATED SOIL REMOVAL (APPROXIMATELY 3-4 FEET), THE EXPOSED SOIL SHOULD BE SCARIFIED 6-INCHES AND MOISTURE CONDITIONED TO INSURE A UNIFORM FILL MAT FOR BUILDING SUPPORT. OVER EXCAVATION SHOULD INCLUDE THE AREA 5-FEET OUTSIDE THE BUILDING FOOTPRINT. ACTUAL DEPTH OF REMOVALS WILL BE PREDICATED ON EXPOSED FIELD CONDITIONS AND APPROVAL BY A REPRESENTATIVE OF WAC GEOTECHNICAL, INC.

ALL FILLS SHALL BE PLACED IN 6 TO 8 INCH LAYERS, MOISTURE CONDITIONED TO AT LEAST OPTIMUM MOISTURE CONTENT AND COMPACTED TO 90% OF MAXIMUM DRY DENSITY PER ASTM D-1557-91. FILL PLACEMENT SHALL BE OBSERVED BY AND COMPACTION TESTING PERFORMED BY A REPRESENTATIVE OF THE PROJECT SOILS ENGINEERING CONSULTANT AND AS NOTED IN SECTION 5.0 "EARTH WORK / GENERAL GRADING RECOMMENDATIONS".

4.2 SPREAD FOUNDATION

FOR ADEQUATE SUPPORT, THE PROPOSED STRUCTURE MAY BE CONSTRUCTED ON CONTINUOUS AND/OR ISOLATED SPREAD FOOTINGS FOUNDED EXCLUSIVELY INTO FIELD APPROVED COMPACTED FILL MATERIALS.

CONVENTIONAL SHALLOW FOUNDATION SYSTEM IS CONSIDERED SUITABLE FOR PLANNED RESIDENTIAL AND ANCILLARY STRUCTURES. DUE TO THE MODERATE CORROSION POTENTIAL, ALL METAL SHOULD BE PROTECTED FROM THE CORROSIVE SOIL.

FOUNDATIONS MAY BE DESIGNED BASED UPON THE FOLLOWING VALUES:

ALLOWABLE BEARING: 5000 LBS./SQ. FT.
LATERAL BEARING: 200 LBS./SQ. FT. PER FT. OF DEPTH TO A MAXIMUM OF 500 LBS./SQ. FT.
SLIDING COEFFICIENT: 0.30

ALLOWABLE BEARING MAY BE INCREASED TO 20 % OF THE ABOVE DESIGNATED VALUE FOR EACH ADDITIONAL FOOT OF DEPTH, UP TO THREE TIMES THE DESIGNATED VALUE. ADDITIONALLY, AN INCREASE OF 1/3 SHALL BE PERMITTED WHEN CONSIDERING LOAD COMBINATIONS, INCLUDING WIND OR EARTHQUAKE LOADS, AS PERMITTED BY 2010 CBC, SECTION 1613.

2. OTHER DESIGN RECOMMENDATIONS:

FOOTING DEPTH

EXTERIOR - 18-INCHES BELOW LOWEST ADJACENT GRADE FOR A ONE-STORY STRUCTURE 18-INCHES FOR A TWO-STORY STRUCTURE, ALL (IN APPROVED DENSE COMPACTED FILL MATERIALS)

INTERIOR - 18-INCHES BELOW LOWEST ADJACENT GRADE FOR A ONE-STORY STRUCTURE 18-INCHES BELOW LOWEST ADJACENT GRADE FOR A TWO-STORY STRUCTURE, ALL (IN APPROVED DENSE COMPACTED FILL MATERIALS)

FOOTING WIDTH

EXTERIOR - 15-INCHES MINIMUM FOR ONE-STORY, 18-INCHES MINIMUM FOR 2-STORY

INTERIOR - 15-INCHES MINIMUM FOR ONE AND 18-INCHES FOR 2-STORY, RESPECTIVELY.

FOOTING REINFORCEMENT

EXTERIOR & INTERIOR - ALL CONTINUOUS; FOUR NO. 4 BARS, TWO NEAR THE TOP AND TWO NEAR THE BOTTOM FOR EXTERIOR AND TWO NO. 4 BARS, ONE NEAR THE TOP AND ONE NEAR THE BOTTOM FOR INTERIOR.

CONCRETE SLABS - SLAB THICKNESS: 4-INCHES REINFORCED WITH NO. 3 BARS AT 24-INCHES ON CENTER EACH WAY.

UNDER-SLAB TREATMENT

10-MIL VISQUEEN; COVER WITH AT LEAST 2 INCHES OF SAND. SUB-GRADE SOILS SHOULD BE PRESOAKED TO CONTAIN AT LEAST OPTIMUM MOISTURE CONTENT IMMEDIATELY PRIOR TO PLACING VISQUEEN AND TO BE VERIFIED BY THE SOILS ENGINEERING CONSULTANT. THE SAND COVER SHOULD BE MOISTENED PRIOR TO PLACING CONCRETE. OPTIMUM MOISTURE CONTENT IN SUB-GRADE SOIL IS TO BE VERIFIED BY THE SOILS ENGINEERING CONSULTANT.

THE SETTLEMENT OF PROPERLY DESIGNED AND CONSTRUCTED FOUNDATIONS SUPPORTED ON APPROVED EARTH MATERIALS, CARRYING MAXIMUM ANTICIPATED VERTICAL LOADINGS, ARE EXPECTED TO BE WITHIN TOLERABLE LIMITS. ESTIMATED TOTAL AND DIFFERENTIAL SETTLEMENTS SHOULD BE NO MORE THAN 3/4 AND 1/2-INCH, RESPECTIVELY.

4.3 RESISTANCE TO LATERAL LOADS

RESISTANCE TO LATERAL LOADS CAN BE RESTRAINED BY FRICTION ACTING AT THE BASE OF FOUNDATIONS AND BY PASSIVE EARTH PRESSURE. REFER TO SECTION 4.2 FOR VALUES.

THE MAXIMUM LATERAL PASSIVE EARTH PRESSURE IS RECOMMENDED NOT TO EXCEED 500 POUNDS. FOR DESIGN, LATERAL EARTH PRESSURES OF LOCAL SOILS WHEN USED AS LEVEL BACKFILL MAY BE ESTIMATED FROM THE FOLLOWING EQUIVALENT FLUID DENSITY:

ACTIVE: 37 PCF
PASSIVE: 200 PCF
AT REST: 59 PCF

4.5 CONSTRUCTION CONSIDERATIONS

4.5.1 UNSUPPORTED EXCAVATION

TEMPORARY CONSTRUCTION EXCAVATION UP TO A MAXIMUM DEPTH OF 5 FEET MAY BE MADE WITHOUT ANY LATERAL SUPPORT. IT IS RECOMMENDED THAT NO SURCHARGE LOADS SUCH AS CONSTRUCTION EQUIPMENT, BE ALLOWED WITHIN A LINE DRAWN UPWARD AT 45 DEGREE FROM THE TOE OF EXCAVATION. USE OF SLOPING FOR DEEP EXCAVATION MAY BE APPLICABLE WHERE PLAN DIMENSIONS OF THE EXCAVATION ARE NOT CONSTRAINED BY ANY EXISTING STRUCTURE.

4.5.2 SUPPORTED EXCAVATIONS

IF VERTICAL EXCAVATIONS EXCEEDING 5 FEET IN DEPTH BECOME WARRANTED, USE OF SHORING TO SUPPORT SIDE WALLS IS RECOMMENDED.

4.6 SITE PREPARATION

SITE PREPARATIONS SHOULD INCLUDE CUT SUB-EXCAVATIONS, IMPORT SOILS, AND PLACEMENT OF SOILS AS ENGINEERED FILL. SUCH EARTH WORK SHOULD BE IN ACCORDANCE WITH THE APPLICABLE GRADING RECOMMENDATIONS PROVIDED IN THE 2010 CBC AND AS RECOMMENDED IN SECTION 5.0 OF THIS REPORT.

THIS OFFICE SHOULD BE NOTIFIED 72 HOURS IN ADVANCE OF IMPORTING SOILS TO SITE FOR PLACEMENT AS COMPACTED FILL. IT WILL BE NECESSARY FOR THE PROJECT SOILS ENGINEERING CONSULTANT TO SAMPLE IMPORT SOILS WITH SUBSEQUENT LABORATORY TESTING TO ASSESS THE SUITABILITY OF IMPORT SOILS FOR PROJECT CONSTRUCTION. IT IS STRONGLY RECOMMENDED THAT IMPORT SOILS BE SIMILAR TO SITE SOILS. THE USE OF CLAYEY SOILS FOR PAD CONSTRUCTION IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE SOILS ENGINEERING CONSULTANT.

4.7 SOIL CAVING

DURING EXCAVATIONS FOR DEEP UTILITY TRENCHES, 'SOME' CAVING MAY BE EXPECTED. ALL TEMPORARY DEEP EXCAVATIONS SHOULD BE MADE AT A 2:1 (HORIZONTAL TO VERTICAL) SLOPE RATIO OR FLATTER, AND/OR AS PER THE CONSTRUCTION GUIDELINES PROVIDED BY CAL-OSHA.

4.8 RETAINING WALL

RETAINING STRUCTURES, IF PLANNED, SHOULD BE DESIGNED USING THE FOLLOWING EQUIVALENT FLUID DENSITY:

SLOPE SURFACE OF RETAINED MATERIAL (HORIZONTAL TO VERTICAL)	EQUIVALENT FLUID DENSITY (PCF)	
	IMPORTED CLEAN SAND	LOCAL SITE SOIL
LEVEL	30	35
2:1	35	40

ONLY FREE-DRAINING GRANULAR MATERIALS (SAND OR GRAVEL) ARE TO BE USED AS RETAINING WALL BACKFILL. BACK-DRAINS AND / OR OMISSION OF HEAD JOINTS @ 32" O.C. IN THE FIRST COURSE ABOVE GRADE ARE REQUIRED BEHIND ALL RETAINING WALLS.

4.9 UTILITY TRENCH BACKFILL

UTILITY TRENCH BACKFILL WITHIN THE STRUCTURAL PAD AND BEYOND, SHOULD BE PLACED IN ACCORDANCE WITH THE FOLLOWING RECOMMENDATIONS:

* EXTERIOR TRENCHES ALONG A FOUNDATION OR A TOE OF A SLOPE AND EXTENDING BELOW A 1:1 IMAGINARY LINE PROJECTED FROM THE OUTSIDE BOTTOM EDGE OF THE FOOTING OR TOE OF THE SLOPE, EXCAVATIONS SHOULD BE COMPACTED TO A MINIMUM 90 PERCENT.

* ALL EXCAVATED TRENCHES SHOULD CONFORM TO THE REQUIREMENTS AND SAFETY AS SPECIFIED BY CAL-OSHA.

4.10 PRE-CONSTRUCTION MEETING

IT IS RECOMMENDED THAT NO CLEARING OF THE SITE OR ANY GRADING OPERATION BE PERFORMED WITHOUT THE PRESENCE OF A REPRESENTATIVE OF THIS OFFICE. AN ON-SITE PRE-GRADING MEETING SHOULD BE ARRANGED BETWEEN THE SOILS ENGINEERING CONSULTANT AND THE GRADING CONTRACTOR PRIOR TO ANY CONSTRUCTION.

4.11 SEASONAL LIMITATIONS

NO STRUCTURAL FILL SHALL BE PLACED, SPREAD OR ROLLED DURING UNFAVORABLE WEATHER CONDITIONS. WHERE THE WORK IS INTERRUPTED BY HEAVY RAINS, FILL OPERATIONS SHALL NOT BE RESUMED UNTIL MOISTURE CONDITIONS ARE CONSIDERED FAVORABLE BY THE SOILS ENGINEERING CONSULTANT.

4.12 PLANTERS

TO MINIMIZE POTENTIAL SETTLEMENT TO FOUNDATIONS DUE TO MIGRATING IRRIGATION WATER, PLANTERS REQUIRING IRRIGATION SHOULD BE RESTRICTED FROM USE IF ADJACENT TO FOOTINGS. IF UNAVOIDABLE, PLANTER BOXES WITH SEALED BOTTOMS AND DRAIN OUTLETS TO APPROVED AREAS, AWAY FROM THE FOUNDATION, SHOULD BE CONSTRUCTED.

4.13 LANDSCAPE MAINTENANCE/DRAINAGE

ONLY THE AMOUNT OF IRRIGATION NECESSARY TO SUSTAIN PLANT LIFE SHOULD BE PROVIDED. PAD DRAINAGE SHOULD BE DIRECTED TOWARDS STREETS AND/OR TO OTHER APPROVED AREAS AWAY FROM FOUNDATIONS. SLOPE AREAS, WHEN APPLICABLE, SHOULD BE PLANTED WITH DRAUGHT RESISTANT VEGETATION.

4.14 OBSERVATIONS AND TESTING DURING CONSTRUCTION

RECOMMENDATIONS PROVIDED IN THIS REPORT ARE BASED UPON THE ASSUMPTION THAT ALL FOUNDATIONS WILL BE PLACED UPON FIELD APPROVED FILL MATERIALS FOR STRUCTURES. EXCAVATED FOOTINGS SHALL BE FIELD REVIEWED, VERIFIED AND APPROVED BY SOILS ENGINEERING CONSULTANT PRIOR TO FORMING, STEEL AND CONCRETE PLACEMENT TO ENSURE THEIR SUFFICIENT EMBEDMENT AND PROPER BEARING ON APPROVED DENSE COMPACTED FILL MATERIALS.

ADDITIONAL FIELD REVIEWS BY SOILS ENGINEERING CONSULTANT IS RECOMMENDED TO VERIFY FOOTING EXCAVATIONS BEING FREE OF LOOSE AND DISTURBED MATERIAL. ALL STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED UNDER DIRECT OBSERVATION AND TESTING BY THIS FACILITY. EXCESS SOILS GENERATED FROM FOOTING EXCAVATIONS SHOULD BE REMOVED FROM PAD AREAS AND SHOULD NOT BE ALLOWED ON SUB GRADES AS UNCOMPACTED FILL FOR AREAS PROGRAMMED TO RECEIVE CONCRETE SLAB-ON-GRADE.

5.0 EARTH WORK/GENERAL GRADING RECOMMENDATIONS

STRUCTURAL BACKFILL:

DURING GRADING, EXCAVATED SITE SOILS MAY BE CONSIDERED SUITABLE FOR REUSE AS BACKFILL MATERIAL. LOOSE SOILS, FORMWORK AND DEBRIS SHOULD BE REMOVED PRIOR TO BACKFILLING THE WALLS. ON-SITE SAND BACKFILL SHOULD BE PLACED AND COMPACTED IN ACCORDANCE WITH THE RECOMMENDED SPECIFICATIONS PROVIDED BELOW. WHERE SPACE LIMITATIONS DO NOT ALLOW CONVENTIONAL BACKFILLING OPERATIONS, SPECIAL BACKFILL MATERIALS AND PROCEDURES MAY BE REQUIRED. PEA GRAVEL OR OTHER SELECT BACKFILL CAN BE USED IN LIMITED SPACE AREAS.

RECOMMENDATIONS FOR PLACEMENT AND DENSIFICATION OF PEA GRAVEL OR OTHER SPECIAL BACKFILL CAN BE PROVIDED DURING CONSTRUCTION.

SITE DRAINAGE:

ADEQUATE POSITIVE DRAINAGE SHOULD BE PROVIDED AWAY FROM THE STRUCTURE TO PREVENT WATER FROM PONDING AND TO REDUCE PERCOLATION OF WATER INTO SUBSOIL AT FOUNDATION AREAS. A DESIRABLE SLOPE FOR SURFACE DRAINAGE SHOULD BE A MINIMUM OF 2 PERCENT IN LANDSCAPE AREAS AND 1 PERCENT IN PAVED AREAS. PLANTERS AND LANDSCAPED AREAS ADJACENT TO BUILDING PERIMETER SHOULD BE AVOIDED OR DESIGNED BY A QUALIFIED LANDSCAPE ARCHITECT UTILIZING A SEALED PLANTER BOX WITH DRAINS AWAY FROM FOOTINGS TO MINIMIZE WATER FILTRATION INTO SUB-SOILS.

UTILITY TRENCHES:

BURIED UTILITY CONDUITS SHOULD BE BEDDED AND BACKFILLED AROUND THE CONDUIT IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. WHERE CONDUIT UNDERLIES CONCRETE SLAB-ON-GRADE AND PAVEMENT, THE REMAINING TRENCH BACKFILL ABOVE THE PIPE SHOULD BE PLACED AND COMPACTED IN ACCORDANCE WITH THE FOLLOWING GRADING SPECIFICATIONS.

GENERAL GRADING RECOMMENDATIONS:

RECOMMENDED GENERAL SPECIFICATIONS FOR SURFACE PREPARATION TO RECEIVE FILL AND COMPACTION FOR STRUCTURAL AND UTILITY TRENCH BACKFILL AND OTHER EXCAVATIONS, ARE PRESENTED BELOW.

1. AREAS TO BE GRADED, BACKFILLED OR PAVED, SHALL BE GRUBBED, STRIPPED AND CLEANED OF ALL BURIED AND UNDETECTED DEBRIS, STRUCTURES, CONCRETE, VEGETATION AND OTHER DELETERIOUS MATERIALS PRIOR TO GRADING.

2. WHERE COMPACTED FILL IS TO PROVIDE VERTICAL SUPPORT FOR FOUNDATIONS, ALL LOOSE, SOFT AND OTHER INCOMPETENT SOILS SHOULD BE REMOVED TO FULL DEPTH AS APPROVED BY SOILS ENGINEERING CONSULTANT, OR AT LEAST UP TO THE DEPTH AS PREVIOUSLY DESCRIBED IN THIS REPORT. THE AREAS OF SUCH REMOVAL SHOULD EXTEND AT LEAST 5 FEET BEYOND THE PERIMETER OF EXTERIOR FOUNDATION LIMIT OR TO THE EXTENT AS APPROVED BY SOILS ENGINEERING CONSULTANT DURING GRADING.

3. THE REQUIRED COMPACTION FOR FILL TO SUPPORT FOUNDATIONS AND SLAB-ON-GRADE IS 90% OF THE MAXIMUM DRY DENSITY AT OR NEAR OPTIMUM MOISTURE CONTENT. TO MINIMIZE ANY POTENTIAL DIFFERENTIAL SETTLEMENT FOR FOUNDATIONS AND SLAB-ON-GRADE STRADDLING OVER DAYLIGHT LINES, THE CUT PORTION SHOULD BE OVER EXCAVATED A MINIMUM OF 3 FEET AND REPLACED AS COMPACTED FILL, COMPACTED TO AT LEAST 90% OF THE MAXIMUM DRY DENSITY AS DESCRIBED IN THIS REPORT.

4. UTILITY TRENCHES WITHIN BUILDING PAD AREAS AND BEYOND SHOULD BE BACKFILLED WITH GRANULAR MATERIAL AND SUCH SHOULD BE COMPACTED TO AT LEAST 90% OF THE MAXIMUM DENSITY FOR THE MATERIAL USED.

5. FIELD DENSITY FOR ALL STRUCTURAL FILLS SHALL BE COMPARED TO THE MAXIMUM DRY DENSITY AS EVALUATED BY ASTM D1557-90 COMPACTION METHODS. ALL IN-SITU FIELD DENSITY OF COMPACTED FILL SHALL BE DETERMINED BY THE ASTM D1556 STANDARD METHODS OR BY OTHER APPROVED PROCEDURES.

6. ALL NEW IMPORTED SOILS, IF REQUIRED, SHALL BE CLEAN, GRANULAR, NON-EXPANSIVE MATERIAL OR AS APPROVED BY THE SOILS ENGINEERING CONSULTANT.

7. ALL FILLS SHALL BE PLACED IN 6 TO 8 INCH LAYERS, MOISTURE CONDITIONED TO AT LEAST OPTIMUM MOISTURE CONTENT AND COMPACTED TO 90% OF MAXIMUM DRY DENSITY PER ASTM D 1557-91

8. NO ROCKS OVER EIGHT INCHES IN DIAMETER, SHALL BE PERMITTED IN FILL SLOPES OR WITHIN 3 FEET OF THE SURFACE WITHOUT PRIOR APPROVAL OF THE SOILS ENGINEERING CONSULTANT.

9. NO JETTING AND/OR WATER TAMPING MAY BE CONSIDERED FOR BACKFILL COMPACTION FOR UTILITY TRENCHES WITHOUT PRIOR APPROVAL OF THE SOILS ENGINEERING CONSULTANT. FOR SUCH BACKFILL, HAND TAMPING WITH FILL LAYERS OF 8 TO 12 INCHES IN THICKNESS, OR AS APPROVED BY THE SOILS ENGINEERING CONSULTANT IS RECOMMENDED.

10. ANY AND ALL UTILITY TRENCHES AT DEPTH AS WELL AS CESSPOOL AND ABANDONED SEPTIC TANKS WITHIN BUILDING PAD AREA AND BEYOND, SHOULD EITHER BE COMPLETELY EXCAVATED AND REMOVED FROM THE SITE, OR SHOULD BE BACKFILLED WITH GRAVEL, SLURRY OR BY OTHER MATERIAL, AS APPROVED BY SOILS ENGINEERING CONSULTANT.

11. ANY AND ALL IMPORT SOILS IF REQUIRED DURING GRADING, SHALL BE EQUIVALENT TO THE SITE SOILS OR BETTER. SUCH SHOULD BE APPROVED BY THE SOILS ENGINEERING CONSULTANT PRIOR TO IMPORT. AT LEAST 72 HOURS OF ADVANCE NOTICE IS REQUIRED PRIOR TO IMPORTING SOILS FOR SITE USE TO ALLOW THE SOILS ENGINEERING CONSULTANT TIME TO SAMPLE AND ANALYZE THE IMPORT SOILS.

12. ANY AND ALL GRADING REQUIRED FOR PAVEMENT, SIDEWALK OR OTHER FACILITIES TO BE USED BY GENERAL PUBLIC, SHOULD BE CONSTRUCTED UNDER DIRECT OBSERVATION OF SOILS ENGINEERING CONSULTANT, OR AS REQUIRED BY THE LOCAL PUBLIC AGENCIES.

13. A SITE MEETING (PRE-GRADE MEETING) SHALL BE HELD BETWEEN THE GRADING CONTRACTOR AND SOILS ENGINEERING CONSULTANT PRIOR TO ACTUAL CONSTRUCTION. THREE DAYS OF PRIOR NOTICE WILL BE REQUIRED FOR SUCH MEETING.

14. ALL FILL SLOPES ARE TO BE KEYED INTO FIELD APPROVED DENSE EARTH MATERIALS AND APPROVED BY THE PROJECT SOILS CONSULTANTS. KEYWAY IS TO BE 1/2 THE SLOPE HEIGHT IN WIDTH OR 15 FEET, WHICHEVER IS GREATER. HEEL SHALL HAVE A 1-FOOT DIFFERENTIAL FROM TOE (SLOPING TO HEEL).

15. FILL OVER CUT SHALL BE BENCHED INTO APPROVED DENSE EARTH MATERIALS AND FOUNDED UPON A KEYWAY, A MINIMUM WIDTH OF 10-FEET WITH THE HEEL 1-FOOT DEEPER THAN TOE (SLOPING TO HEEL).

16. FOR GRADIENTS STEEPER THAN 5:1, FILL SHALL BE BENCHED A MINIMUM OF 4-FEET HORIZONTALLY INTO NATIVE EARTH MATERIALS FOR EVERY 4 VERTICAL FEET OF FILL PLACED.

6.0 CLOSURE

THE CONCLUSIONS AND RECOMMENDATIONS CONTAINED HEREIN ARE BASED UPON THE FINDINGS AND OBSERVATIONS MADE AT THE TIME OF THE SUBSURFACE INVESTIGATION. THE RECOMMENDATIONS PRESENTED, SHOULD BE CONSIDERED "PRELIMINARY" SINCE THEY ARE BASED ON SOIL SAMPLES ONLY. IF DURING CONSTRUCTION, THE SUBSOIL CONDITIONS APPEAR TO BE DIFFERENT FROM THOSE DISCLOSED DURING FIELD INVESTIGATION, THIS OFFICE SHOULD BE NOTIFIED TO CONSIDER ANY POSSIBLE NEED FOR MODIFICATION FOR THE GEOTECHNICAL RECOMMENDATIONS PROVIDED IN THIS REPORT.

RECOMMENDATIONS PROVIDED ARE BASED ON THE ASSUMPTIONS THAT STRUCTURAL FOOTINGS WILL BE ESTABLISHED EXCLUSIVELY INTO FIELD APPROVED COMPACTED FILL.

IT IS RECOMMENDED THAT FINAL PRECISE GRADING AND FOUNDATION PLANS SHOULD BE REVIEWED BY THIS OFFICE WHEN THEY BECOME AVAILABLE (IF DIFFERENT THAN NOTED PLAN REVIEW UTILIZED FOR THIS REPORT). SITE GRADING MUST BE PERFORMED UNDER REVIEW BY GEOTECHNICAL REPRESENTATIVES OF THIS OFFICE. ALL FOOTING EXCAVATIONS SHOULD BE FIELD REVIEWED (BY THIS OFFICE) PRIOR TO FORMING, STEEL AND CONCRETE PLACEMENT TO ENSURE THAT FOUNDATIONS ARE FOUNDED INTO SATISFACTORY SOILS AND EXCAVATIONS ARE FREE OF LOOSE AND DISTURBED MATERIALS.

THIS REPORT HAS BEEN PREPARED EXCLUSIVELY FOR THE USE OF THE ADDRESSEE FOR THE PROJECT REFERENCED IN CONTEXT. IT SHALL NOT BE TRANSFERRED OR BE USED BY OTHER PARTIES WITHOUT WRITTEN CONSENT BY WAC GEOTECHNICAL, INC. WE CANNOT BE RESPONSIBLE FOR USE OF THIS REPORT BY OTHERS WITHOUT REVIEW OF THE GRADING OPERATION BY OUR PERSONNEL.

SHOULD THE PROJECT BE DELAYED BEYOND ONE YEAR AFTER THE DATE OF THIS REPORT, THE RECOMMENDATIONS PRESENTED SHALL BE REVIEWED TO CONSIDER ANY POSSIBLE CHANGE IN SITE CONDITIONS OR CODE REQUIREMENTS.

THE RECOMMENDATIONS PRESENTED ARE BASED ON THE ASSUMPTION THAT THE NECESSARY GEOTECHNICAL OBSERVATIONS AND TESTING DURING CONSTRUCTION WILL BE PERFORMED BY A REPRESENTATIVE OF THIS OFFICE. THE FIELD OBSERVATIONS ARE CONSIDERED A CONTINUATION OF THE GEOTECHNICAL INVESTIGATION PERFORMED. IF ANOTHER FIRM IS RETAINED FOR GEOTECHNICAL OBSERVATIONS AND TESTING, OUR PROFESSIONAL LIABILITY AND RESPONSIBILITY SHALL BE DEEMED TO HAVE BEEN ASSUMED BY THE FIRM REPLACING WAC GEOTECHNICAL, INC. EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF WAC GEOTECHNICAL, INC.

7.0 APPENDIX SECTION

BORING LOGS

B-1

1-3'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
3-10'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
10-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

B-2

1-5'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
5-10'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
10-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

B-3

1-4'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
4-10'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
10-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

B-4

1-3'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
3-8'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
8-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

B-5

1-3'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
3-10'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
10-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

B-6

1-5'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
5-10'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
10-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

B-7

1-2'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
2-7'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
7-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

B-8

1-3'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
3-10'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
10-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

B-9

1-4'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
4-11'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
11-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

NO GROUND WATER, BEDROCK OR REFUSAL NOTED IN ANY BORING

8.0 APPENDIX B

LABORATORY TESTING

LABORATORY TESTS WERE CONDUCTED ON REPRESENTATIVE SOILS FOR THE PURPOSE OF CLASSIFICATION AND FOR THE ASSESSMENT OF THE PHYSICAL PROPERTIES AND ENGINEERING CHARACTERISTICS. THE NUMBER AND SELECTION OF THE TYPES OF TESTING FOR A GIVEN STUDY ARE BASED ON THE GEOTECHNICAL CONDITIONS OF THE SITE. A SUMMARY OF THE VARIOUS LABORATORY TESTS PERFORMED FOR THE PROJECT IS PRESENTED BELOW.

MAXIMUM DENSITY OPTIMUM MOISTURE CONTENT (ASTM D1557)
IN-SITU SOILS SAMPLES WERE OBTAINED USING A SPLIT SPOON SAMPLER.

DIRECT SHEAR (ASTM D 3080)
DATA OBTAINED FROM THIS TEST PERFORMED AT INCREASED MOISTURE CONDITIONS ON REMOLDED TO 90 % SOIL SAMPLES WERE USED TO EVALUATE SOIL SHEAR STRENGTHS. SAMPLES CONTAINED IN BRASS SAMPLER RINGS, PLACED DIRECTLY ON TEST APPARATUS ARE SHEARED AT A CONSTANT STRAIN RATE UNDER A NORMAL LOAD, APPROPRIATE TO REPRESENT ANTICIPATED STRUCTURAL LOADINGS. SHEARING DEFORMATIONS ARE RECORDED TO FAILURE. PEAK AND/OR RESIDUAL SHEAR STRENGTHS ARE OBTAINED FROM THE MEASURED SHEARING LOAD VERSUS DEFLECTION CURVE. TEST RESULTS, PLOTTED ON GRAPHICAL FORM, ARE PRESENTED IN THE SOILS TEST RESULTS.

EXPANSION INDEX (ASTM D4829)

CONSOLIDATION TEST REPORT (ASTM D2435)

RESISTANCE R-VALUE AND EXPANSION PRESSURE (ASTM D 2844)

LABORATORY TEST RESULTS;

MAXIMUM DRY DENSITY/OPTIMUM MOISTURE CONTENT RELATIONSHIP(ASTM D1557-07)

SAMPLE LOCATION	MAX. DRY DENSITY	OPT. MOISTURE CONTENT
B-1, 0-5' (BULK SAMPLE)	135.0 (PCF)	8.5 %

SHEAR ANGLE OF INTERNAL FRICTION

B-1 = 31.1 DEGREES

EXPANSION INDEX = 21 (LOW POTENTIAL FOR EXPANSION)

PAVEMENT DESIGN

R-VALUE TESTING OF SOIL SAMPLES COLLECTED AT THE SITE GAVE RESULTS OF 17 BY EXUDATION AT 300 PSI. SECTIONS CALCULATED USING THE R-VALUE OF 17 ARE PRESENTED FOR VARIOUS TRAFFIC INDEXES. ALL RECOMMENDATIONS ARE IN INCHES THICKNESS.

TRAFFIC INDEX:	6	7	8	9	10
ASPHALT CONC.	6	6	6	7	8
ASPHALT BASE	5	8	10	11	13

ASPHALT BASE MUST MEET OR EXCEED CAL-TRANS CLASS II AND BE COMPACTED TO 95% OF ITS MAXIMUM DENSITY.

CORROSION SERIES

PH = 6.7 **SOL. SULFATES PPM = 119** **SOLUBLE CHLORIDES PPM = 72**

MIN. RESISTIVITY = 6800

SEE ATTACHED LAB TEST RESULTS:

PROFESSIONAL LIMITATIONS

OUR INVESTIGATION WAS PERFORMED USING THE DEGREE OF CARE AND SKILL ORDINARILY EXERCISED, UNDER SIMILAR CIRCUMSTANCES BY OTHER REPUTABLE SOILS ENGINEERS PRACTICING IN THESE GENERAL OR SIMILAR LOCALITIES. NO OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE AS TO THE CONCLUSIONS AND PROFESSIONAL ADVICE INCLUDED IN THIS REPORT.

THE INVESTIGATIONS ARE BASED ON SOIL SAMPLES ONLY; CONSEQUENTLY THE RECOMMENDATIONS PROVIDED SHALL BE CONSIDERED 'PRELIMINARY'. THE SAMPLES TAKEN AND USED FOR TESTING AND THE OBSERVATIONS MADE ARE BELIEVED REPRESENTATIVE OF SITE CONDITIONS; HOWEVER, SOIL AND GEOLOGIC CONDITIONS CAN VARY SIGNIFICANTLY BETWEEN TEST BORINGS. AS IN MOST MAJOR PROJECTS, CONDITIONS REVEALED BY EXCAVATIONS MAY VARY WITH PRELIMINARY FINDINGS. IF THIS OCCURS, THE CHANGED CONDITIONS MUST BE EVALUATED BY THE PROJECT SOILS ENGINEERING CONSULTANT AND DESIGNS ADJUSTED AS REQUIRED OR ALTERNATE DESIGN RECOMMENDED.

THE REPORT IS ISSUED WITH THE UNDERSTANDING THAT IT IS THE RESPONSIBILITY OF THE OWNER, OR OF HIS REPRESENTATIVE, TO ENSURE THAT THE INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN ARE BROUGHT TO THE ATTENTION OF THE PROJECT ARCHITECT AND ENGINEERS. APPROPRIATE RECOMMENDATIONS SHOULD BE INCORPORATED INTO STRUCTURAL PLANS. THE NECESSARY STEPS SHOULD BE TAKEN TO SEE THAT THE CONTRACTOR AND SUBCONTRACTORS CARRY OUT SUCH RECOMMENDATIONS IN THE FIELD.

THE FINDINGS OF THIS REPORT ARE VALID AS OF THIS PRESENT DATE. HOWEVER, CHANGES IN THE CONDITIONS OF A PROPERTY CAN OCCUR WITH THE PASSAGE OF TIME, WHETHER THEY DUE TO NATURAL PROCESS OR THE WORKS OF MAN ON THIS OR ADJACENT PROPERTIES. IN ADDITION, CHANGES IN APPLICABLE OR APPROPRIATE STANDARDS MAY OCCUR FROM LEGISLATION OR BROADENING OF KNOWLEDGE. ACCORDINGLY, THE FINDINGS OF THIS REPORT MAY BE INVALIDATED WHOLLY OR PARTIALLY BY CHANGE OUTSIDE OF OUR CONTROL. THEREFORE, THIS REPORT IS SUBJECT TO REVIEW AND SHOULD BE UPDATED AFTER A PERIOD OF ONE YEAR.

RECOMMENDED SERVICES

THE REVIEW OF GRADING PLANS AND SPECIFICATIONS, FIELD OBSERVATIONS AND TESTING BY THE GEOTECHNICAL REPRESENTATIVE IS AN INTEGRAL PART OF THE CONCLUSIONS AND RECOMMENDATIONS MADE IN THIS REPORT. IF WAC GEOTECHNICAL, INC. IS NOT RETAINED FOR THESE SERVICES, THE CLIENT AGREES TO ASSUME WAC GEOTECHNICAL, INC. RESPONSIBILITY FOR ANY POTENTIAL CLAIMS THAT MAY ARISE DURING AND AFTER CONSTRUCTION, OR DURING THE LIFETIME USE OF THE STRUCTURE AND ITS APPURTENANT. THE REQUIRED TESTS, OBSERVATIONS AND CONSULTATION BY THE GEOTECHNICAL CONSULTANT DURING CONSTRUCTION INCLUDES, BUT NOT BE LIMITED TO:

A. CONTINUOUS OBSERVATION AND TESTING DURING SITE PREPARATION AND GRADING, AND PLACEMENT OF ENGINEERED FILL.

B. OBSERVATION AND INSPECTION OF FOOTING TRENCH PRIOR TO STEEL AND CONCRETE PLACEMENT,

C. CONSULTATIONS AS REQUIRED DURING CONSTRUCTION, OR UPON YOUR REQUEST.

EXPANSION INDEX

ASTM D 4829 / U.B.C. 18-2

Project Name:	WAC Geotechnical #13-892	Tested By :	RV
Project No. :	7802A22	Date Tested:	1/23/2013
Client:	WAC Geotechnical	Input By:	IC
Sampled By:	Client	Checked By:	IC
Date Sampled:	1/18/2013	Depth(ft.):	-
Sample Location:	-	Lab No.:	#173
Visual Sample Description:	Brown Sandy Clay w/ Gravel	Sample No.:	1

ASTM D 4829 [X] U.B.C. 18-2 [ ]

Initial Moisture Content					Oven Moist. Cont.		Final Moist. Cont.	
wet wt.	268.1				wet wt.	326.1	wet wt.	
dry wt.	245.5				dry wt.	300.9	dry wt.	
wt. water	22.6				wt. water	25.2	wt. water	
% moist	9.2%				% moist	8.4%	% moist	

	INITIAL	INITIAL	INITIAL	FINAL
wt. Soil & Ring	624.4			624.4
wt. Ring	208.3			208.3
wt. Soil	416.1			416.1
Volume of Ring	0.007159486			0.007159486
Wet Density (pcf)	128.1			128.1
Moisture %	9.2%			8.4%
Dry Density (pcf)	117.3			118.2
% Saturation	57.3%			53.5%
RAW INDEX				
CORRECTED INDEX				

EI *meas* = measured expansion index

S meas = degree of saturation

EI(50) = estimate of the expansion inde:

$$EI\ meas = \frac{\Delta H \times 1000}{H1}$$

21

$$EI = EI\ meas - (50 - S\ meas)\ \frac{65 + EI\ meas}{220 - S\ meas}$$

	INITIAL	OVEN	
S =	57%	53%	Percent Saturation
w =	9.2%	8.4%	Water Content, %
Gs =	2.7	2.7	Specific Gravity, 2.7 , unless known
Yw =	62.3	62.3	Unit Weight of Water
Yd =	117.3	118.2	Dry Unit Weight

ΔH = change in height (D2 - D1)	0.021
H1 = initial Height	0.9845
D1 = Initial Dial	0.000
D2 = Final Dial	0.0207

$$S = \frac{wGsYd}{GsYw - Yd}$$

S= 57% INITIAL

53% OVEN

EXPANSION MEASUREMENTS

DATE	TIME	LOAD	READING	% SWELL
1/22/2013	9:50	10:00	0.0000	0.0%
1/23/2013	8:00	N/A	0.0207	2.1%

EXPANSION INDEX

0-20 **Very Low**

21-50 **Low**

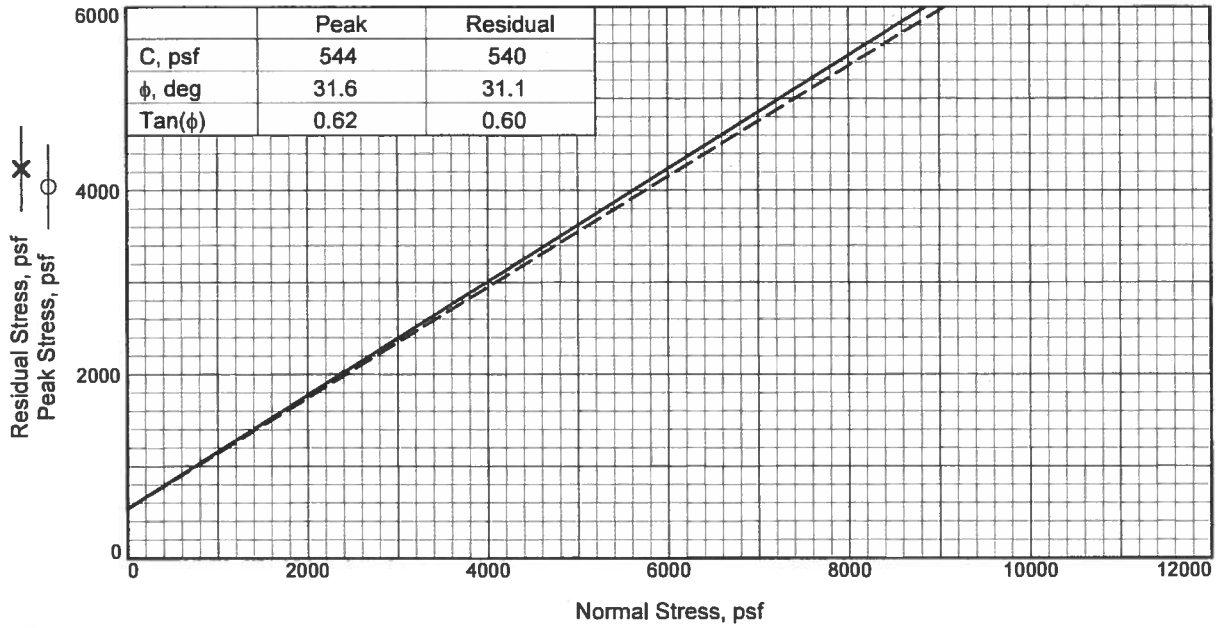
51-90 **Medium**

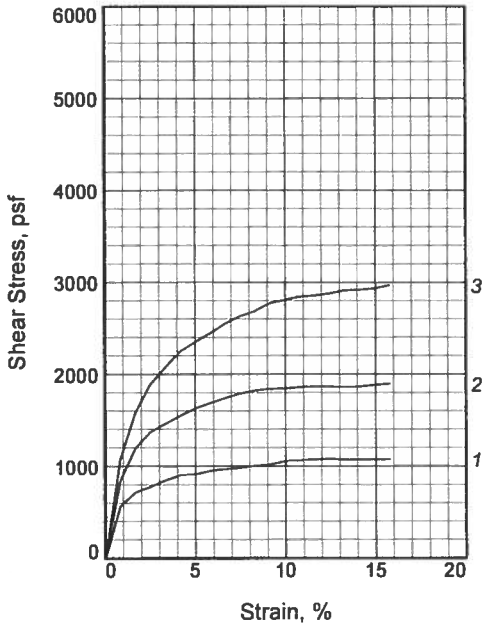
91-130 **High**

Above 130 **Very High**

Wet Density = (wt. wet soil/453.6)/vol

Dry Density = wet den/(1+(w/100))





Sample No.		1	2	3
Initial	Water Content, %	9.5	9.8	8.6
	Dry Density, pcf	116.1	117.2	117.8
	Saturation, %	55.3	59.1	52.4
	Void Ratio	0.4682	0.4546	0.4473
	Diameter, in.	2.41	2.41	2.41
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	17.1	16.9	15.7
	Dry Density, pcf	116.1	117.2	117.8
	Saturation, %	99.6	101.7	95.7
	Void Ratio	0.4682	0.4546	0.4473
	Diameter, in.	2.41	2.41	2.41
	Height, in.	1.00	1.00	1.00
Normal Stress, psf		1000	2000	4000
Peak Stress, psf		1080	1894	2967
Strain, %		12.4	15.8	15.8
Residual Stress, psf		1066	1859	2911
Strain, %		13.3	13.3	13.3
Strain rate, in./min.		N/A	N/A	N/A

Sample Type: Remolded
Description: Brown Sandy Clay w/ Gravel

Assumed Specific Gravity= 2.73
Remarks:

Figure _____

Client: WAC Geotechnical

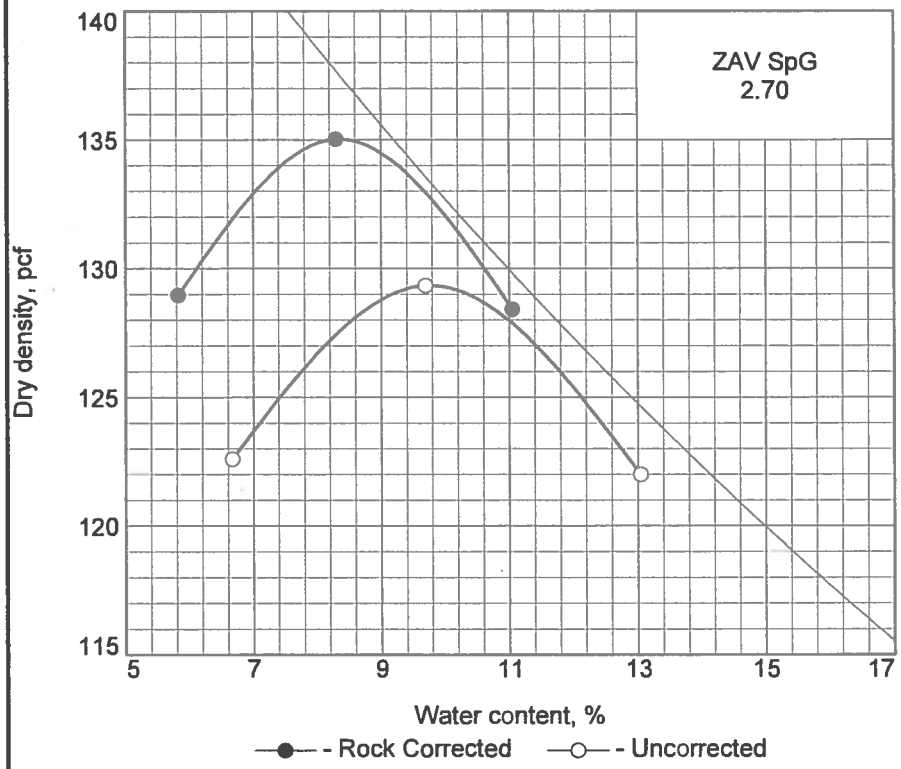
Project: Mike Leslie (#13-892)

Sample Number: 1

Proj. No.: 7802A22 **Date Sampled:** 1/18/13

DIRECT SHEAR TEST REPORT
MTGL, Inc.
Anaheim, CA

COMPACTION TEST REPORT



Curve No.
#13-892

Test Specification:
ASTM D 1557 Method B Modified
ASTM D 4718-87 Oversize Corr. Applied to Each Test Point

Preparation Method Moist
Hammer Wt. 10 lb.
Hammer Drop 18 in.
Number of Layers five
Blows per Layer 25
Mold Size 0.03333 cu. ft.

Test Performed on Material Passing 3/8 in. **Sieve**

NM ____ **LL** ____ **PI** ____
Sp.G. (ASTM D 854) 2.7
%>3/8 in. 18.1 **%<No.200** ____
USCS CL **AASHTO** ____
Date Sampled 1/18/13
Date Tested 1/22/13
Tested By RV

TESTING DATA

	1	2	3	4	5	6
WM + WS	6492.0	6432.0	6324.0			
WM	4347.0	4347.0	4347.0			
WW + T #1	623.3	624.8	590.3			
WD + T #1	568.2	552.7	553.4			
TARE #1	0.0	0.0	0.0			
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	8.3	11.0	5.8			
DRY DENSITY	135.0	128.4	129.0			

ROCK CORRECTED TEST RESULTS	UNCORRECTED	Material Description
Maximum dry density = 135.0 pcf	129.5 pcf	Brown Sandy Clay w/ Gravel
Optimum moisture = 8.5 %	10.0 %	

Remarks:

Project No. 7802A22 **Client:** WAC Geotechnical
Project: Mike Leslie (#13-892)

○ **Sample Number:** 1

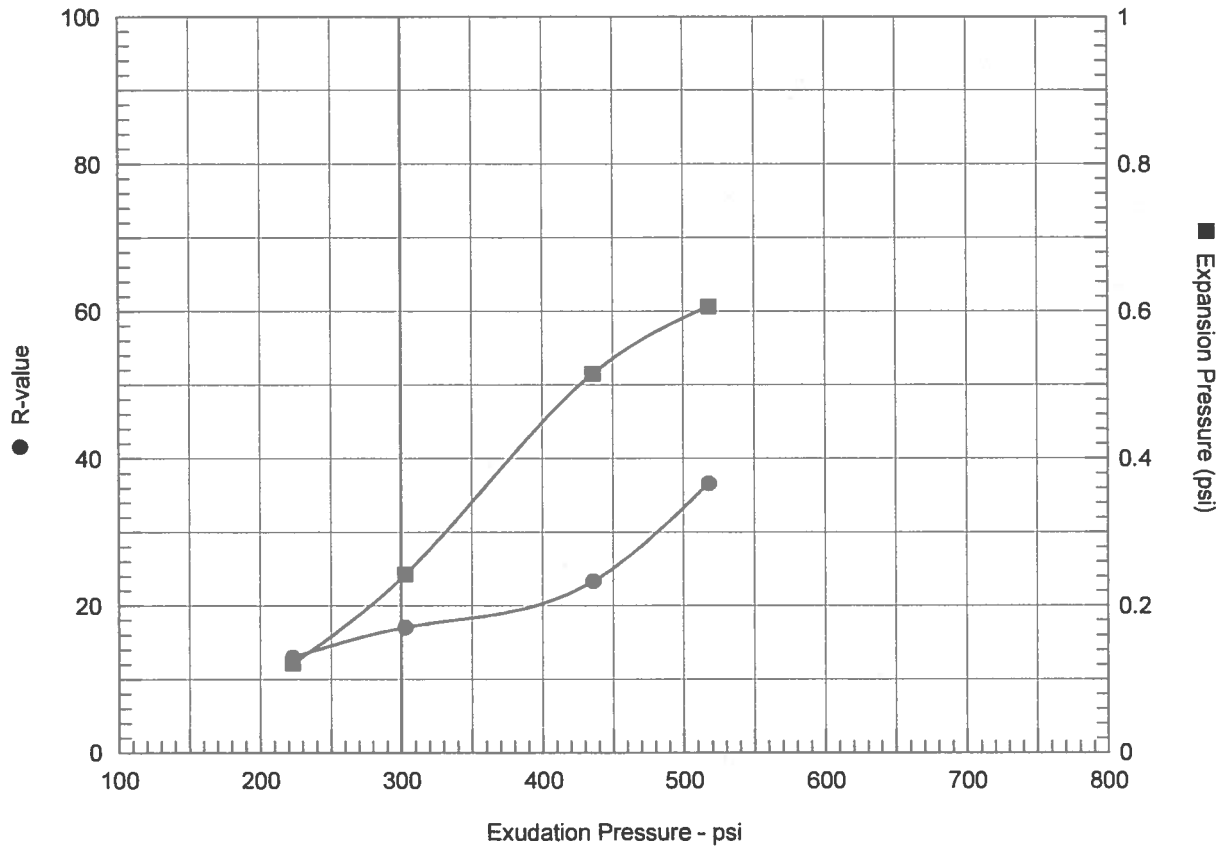
Checked by: IC
Title:

MTGL, Inc.

Anaheim, CA

Figure

R-VALUE TEST REPORT



Resistance R-Value and Expansion Pressure - ASTM D 2844

No.	Compact. Pressure psi	Density pcf	Moist. %	Expansion Pressure psi	Horizontal Press. psi @ 160 psi	Sample Height in.	Exud. Pressure psi	R Value	R Value Corr.
1	300	127.9	11.8	0.61	93	2.63	518	34	37
2	300	125.0	13.9	0.52	116	2.69	436	21	23
3	250	124.0	14.6	0.24	126	2.67	303	15	17
4	200	122.1	15.8	0.12	130	2.54	223	13	13

Test Results	Material Description
R-value at 300 psi exudation pressure = 17 **Exp. pressure at 300 psi exudation pressure =** 0.24 psi	Brown Sandy Clay w/ Gravel
Project No.: 7802A22 **Project:** Mike Leslie (#13-892) **Sample Number:** 1 **Date:** 1/23/2013	**Tested by:** RV **Checked by:** IC **Remarks:**
R-VALUE TEST REPORT **MTGL, Inc.**	**Figure** _____

ANAHEIM TEST LABORATORY

3008 ORANGE AVENUE
SANTA ANA, CALIFORNIA 92707
PHONE (714) 549-7267

TO:

WAC GEOTECHNICAL
2900 ADAMS STREET, STE. C-35
RIVERSIDE, CA 92504

ATTN: DAVE BALLINGER

DATE: 1/23/13

P.O. NO: TRANSMITTAL

LAB NO: B-6201

SPECIFICATION: CA-417/422/643

MATERIAL: SOIL

CLIENT: Mike Lesle
JOB#
APN#: 367-170-029
34915 Orange St.
Wildomar, CA

ANALYTICAL REPORT

CORROSION SERIES
SUMMARY OF DATA

PH	SOLUBLE SULFATES per CA. 417 ppm	SOLUBLE CHLORIDES per CA. 422 ppm	MIN. RESISTIVITY per CA. 643 ohm-cm
6.7	119	72	6,800

RESPECTFULLY SUBMITTED

WES BRIDGER CHEMIST

USGS Design Maps Summary Report

User-Specified Input

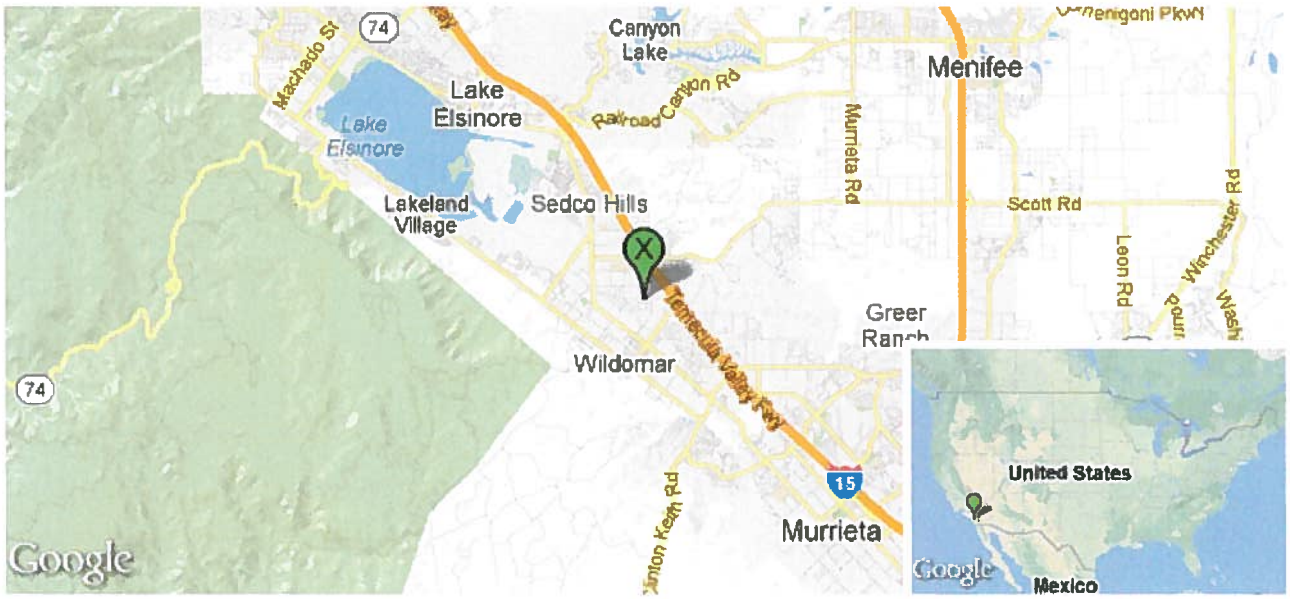
Report Title PRELIMINARY SOILS REPORT T.T.M. 36519
Mon January 28, 2013 19:58:12 UTC

Building Code Reference Document ASCE 7-10 Standard
(which makes use of 2008 USGS hazard data)

Site Coordinates 33.61598°N, 117.27337°W

Site Soil Classification Site Class D – "Stiff Soil"

Risk Category I/II/III

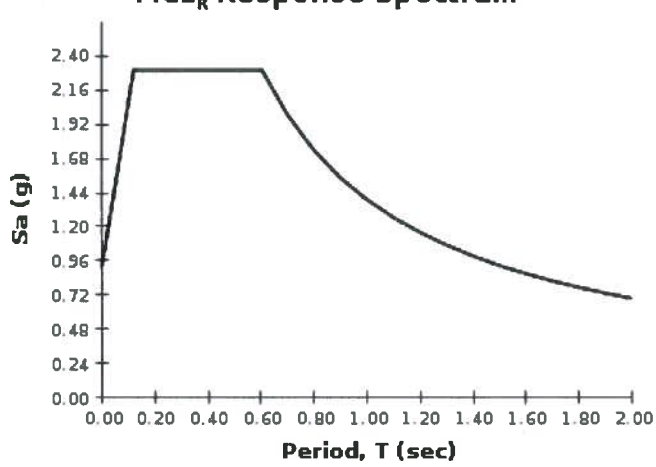


USGS-Provided Output

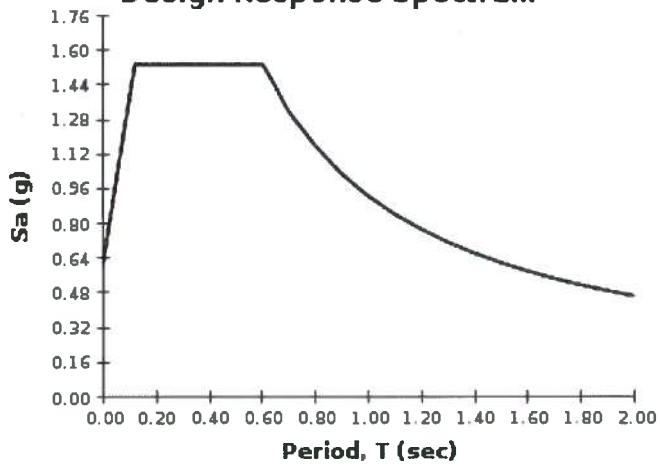
S_S =	2.301 g	S_{MS} =	2.301 g	S_{DS} =	1.534 g
S_1 =	0.927 g	S_{M1} =	1.391 g	S_{D1} =	0.927 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.

MCE_R Response Spectrum



Design Response Spectrum



For PGA_M, T_L, C_{RS}, and C_{R1} values, please view the detailed report.

USGS Design Maps Detailed Report

ASCE 7-10 Standard (33.61598°N, 117.27337°W)

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1] $S_S = 2.301$ g

From Figure 22-2 [2] $S_1 = 0.927$ g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index $PI > 20$, • Moisture content $w \geq 40\%$, and • Undrained shear strength $\bar{s}_u < 500$ psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk-Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4-1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_S \leq 0.25$	$S_S = 0.5$	$S_S = 0.75$	$S_S = 1$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of S_S

For Site Class = D and S_S = 2.301 g, F_a = 1.000

Table 11.4-2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1-s Period				
	$S_1 \leq 0.1$	$S_1 = 0.2$	$S_1 = 0.3$	$S_1 = 0.4$	$S_1 \geq 0.5$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 0.927 g, F_v = 1.500

Equation (11.4-1): $S_{MS} = F_a S_S = 1.000 \times 2.301 = 2.301$ g

Equation (11.4-2): $S_{M1} = F_v S_1 = 1.500 \times 0.927 = 1.391$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

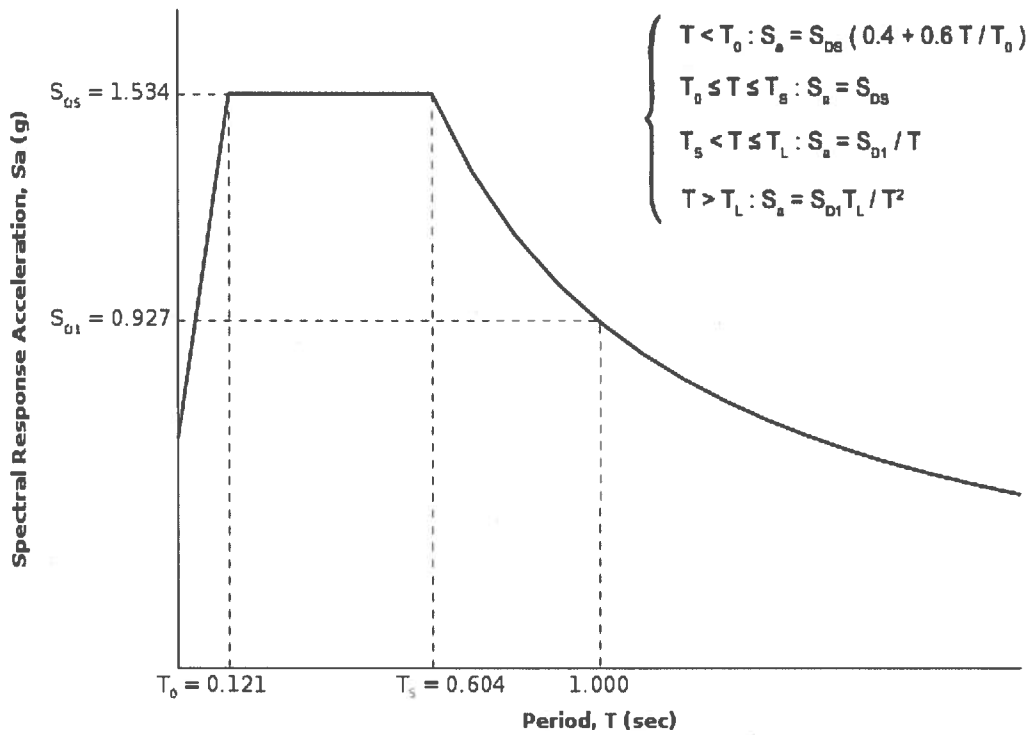
Equation (11.4-3): $S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 2.301 = 1.534$ g

Equation (11.4-4): $S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 1.391 = 0.927$ g

Section 11.4.5 — Design Response Spectrum

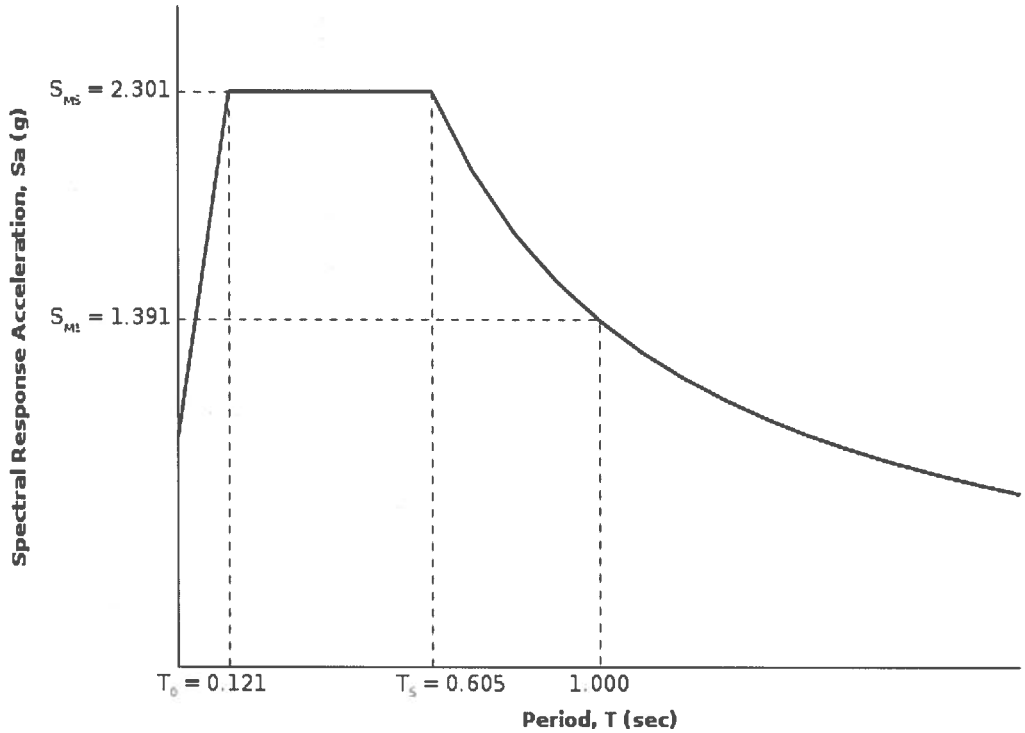
From Figure 22-12 [3] $T_L = 8$ seconds

Figure 11.4-1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 0.916

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 1.000 \times 0.916 = 0.916$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.1	PGA = 0.2	PGA = 0.3	PGA = 0.4	PGA ≥ 0.5
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = D and PGA = 0.916 g, F_{PGA} = 1.000

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 0.906

From Figure 22-18 [6] C_{R1} = 0.894

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 1.534 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 0.927 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = E

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

RIVERSIDE COUNTY GIS

Selected parcel(s):
367-170-029

IMPORTANT
Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

STANDARD WITH PERMITS REPORT

APNs
367-170-029-3

OWNER NAME
NOT AVAILABLE ONLINE

ADDRESS

ADDRESS
367-170-029
34915 ORANGE ST
WILDOMAR, CA. 92595

MAILING ADDRESS
(SEE OWNER)
21595 MARBLE CT
WILDOMAR CA. 92595

LEGAL DESCRIPTION
RECORDED BOOK/PAGE: MB 10/58
SUBDIVISION NAME: SEDCO TRACT 1
LOT/PARCEL: 48, BLOCK: NOT AVAILABLE
, Por.TRACT NUMBER: NOT AVAILABLE

LOT SIZE
RECORDED LOT SIZE IS 5.09 ACRES

PROPERTY CHARACTERISTICS
WOOD FRAME, 1760 SQFT., 1 BDRM/ 2 BATH, 4 STORY, ATTACHED GARAGE(480 SQ. FT), CONST'D 1968COMPOSITION, ROOF, CENTRAL HEATING

THOMAS BROS. MAPS PAGE/GRID
PAGE: 897 GRID: B5, B6

CITY BOUNDARY/SPHERE
CITY OF WILDOMAR
NOT WITHIN A CITY SPHERE
ANNEXATION DATE: NOT APPLICABLE
LAFCO CASE #: NOT APPLICABLE
PROPOSALS: NOT APPLICABLE

MARCH JOINT POWERS AUTHORITY
NOT IN THE JURISDICTION OF THE MARCH JOINT POWERS AUTHORITY

INDIAN TRIBAL LAND
NOT IN A TRIBAL LAND

SUPERVISORIAL DISTRICT 2011 (ORD. 813)
KEVIN JEFFRIES, DISTRICT 1

SUPERVISORIAL DISTRICT (2001 BOUNDARIES)
BOB BUSTER, DISTRICT 1

TOWNSHIP/RANGE
T6SR4W SEC 27

ELEVATION RANGE
1320/1332 FEET

PREVIOUS APN
367-170-004

PLANNING

LAND USE DESIGNATIONS
Consult with the city for land use information.

SANTA ROSA ESCARPMENT BOUNDARY
NOT IN THE SANTA ROSA ESCARPMENT BOUNDARY

AREA PLAN (RCIP)
ELSINORE

COMMUNITY ADVISORY COUNCILS
NOT IN A COMMUNITY ADVISORY COUNCIL AREA

GENERAL PLAN POLICY OVERLAYS

NOT IN A GENERAL PLAN POLICY OVERLAY AREA

GENERAL PLAN POLICY AREAS
NONE

ZONING CLASSIFICATIONS (ORD. 348)
See the city for more information

ZONING DISTRICTS AND ZONING AREAS
RANCHO CALIFORNIA AREA

ZONING OVERLAYS
NOT IN A ZONING OVERLAY

HISTORIC PRESERVATION DISTRICTS
NOT IN AN HISTORIC PRESERVATION DISTRICT

SPECIFIC PLANS
NOT WITHIN A SPECIFIC PLAN

AGRICULTURAL PRESERVE
NOT IN AN AGRICULTURAL PRESERVE

REDEVELOPMENT AREAS
NOT IN A REDEVELOPMENT AREA

AIRPORT INFLUENCE AREAS
NOT IN AN AIRPORT INFLUENCE AREA

AIRPORT COMPATIBLITY ZONES
NOT IN AN AIRPORT COMPATIBILTY ZONE

ENVIRONMENTAL

CVMSHCP (COACHELLA VALLEY MULTI-SPECIES HABITAT CONSERVATION PLAN) CONSERVATION AREA
NOT IN A CONSERVATION AREA

CVMSHCP FLUVIAL SAND TRANSPORT SPECIAL PROVISION AREAS
NOT IN A FLUVIAL SAND TRANSPORT SPECIAL PROVISION AREA

WRMSHCP (WESTERN RIVERSIDE COUNTY MULTI-SPECIES HABITAT CONSERVATION PLAN) CELL GROUP
NOT IN A CELL GROUP

WRMSHCP CELL NUMBER
NOT IN A CELL

HANS/ERP (HABITAT ACQUISITION AND NEGOTIATION STRATEGY/EXPEDITED REVIEW PROCESS)
NONE

VEGETATION (2005)
AGRICULTURAL LAND
DEVELOPED/DISTURBED LAND

FIRE

HIGH FIRE AREA (ORD. 787)
NOT IN A HIGH FIRE AREA

FIRE RESPONSIBLITY AREA
NOT IN A FIRE RESPONSIBILITY AREA

DEVELOPMENT FEES

CVMSHCP FEE AREA (ORD. 875)

CVMSHCP FEE AREA (ORD. 875)
NOT WITHIN THE COACHELLA VALLEY MSHCP FEE AREA

WRMSHCP FEE AREA (ORD. 810)
IN OR PARTIALLY WITHIN THE WESTERN RIVERSIDE MSHCP FEE AREA. SEE MAP FOR MORE INFORMATION.

ROAD & BRIDGE DISTRICT
SOUTHWEST AREA A

EASTERN TUMF (TRANSPORTATION UNIFORM MITIGATION FEE ORD. 673)
NOT WITHIN THE EASTERN TUMF FEE AREA

WESTERN TUMF (TRANSPORTATION UNIFORM MITIGATION FEE ORD. 824)
IN OR PARTIALLY WITHIN A TUMF FEE AREA. SEE MAP FOR MORE INFORMATION.SOUTHWEST

DIF (DEVELOPMENT IMPACT FEE AREA ORD. 659)
ELSINORE

SKR FEE AREA (STEPHEN'S KANGAROO RAT ORD. 663.10)
NOT WITHIN AN SKR FEE AREA.

DEVELOPMENT AGREEMENTS
NOT IN A DEVELOPMENT AGREEMENT AREA

TRANSPORTATION

CIRCULATION ELEMENT ULTIMATE RIGHT-OF-WAY
IN OR PARTIALLY WITHIN A CIRCULATION ELEMENT RIGHT-OF-WAY. SEE MAP FOR MORE INFORMATION. CONTACT THE TRANSPORTATION DEPT. PERMITS SECTION AT (951) 955-6790 FOR INFORMATION REGARDING THIS PARCEL IF IT IS IN AN UNINCORPORATED AREA.

ROAD BOOK PAGE
77

TRANSPORTATION AGREEMENTS
NOT IN A TRANSPORTATION AGREEMENT

CETAP (COMMUNITY AND ENVIRONMENTAL TRANSPORTATION ACCEPTABILITY PROCESS) CORRIDORS
NOT IN A CETAP CORRIDOR.

HYDROLOGY

FLOOD PLAIN REVIEW
NOT REQUIRED

WATER DISTRICT
WMWD

FLOOD CONTROL DISTRICT
RIVERSIDE COUNTY FLOOD CONTROL DISTRICT

WATERSHED
SANTA MARGARITA

GEOLOGIC

FAULT ZONE
NOT IN A FAULT ZONE

FAULTS
WITHIN A 1/2 MILE OF
ELSINORE FAULT
ELSINORE FAULTS
UNNAMED FAULT IN ELSINORE FAULT ZONE
WILDOMAR FAULT

LIQUEFACTION POTENTIAL
MODERATE

SUBSIDENCE
SUSCEPTIBLE

PALEONTOLOGICAL SENSITIVITY
HIGH SENSITIVITY (HIGH A).
BASED ON GEOLOGIC FORMATIONS OR MAPPABLE ROCK UNITS THAT ARE ROCKS THAT CONTAIN FOSSILIZED BODY ELEMENTS, AND TRACE FOSSILS SUCH AS TRACKS, NESTS AND EGGS. THESE FOSSILS OCCUR ON OR BELOW THE SURFACE.

MISCELLANEOUS

SCHOOL DISTRICT
LAKE ELSINORE UNIFIED

COMMUNITIES
NOT IN A COMMUNITY

COUNTY SERVICE AREA
NOT IN A COUNTY SERVICE AREA.

LIGHTING (ORD. 655)
ZONE B, 29.59 MILES FROM MT. PALOMAR OBSERVATORY

2000 CENSUS TRACT
046405

FARMLAND
OTHER LANDS

TAX RATE AREAS
025005
•CITY OF WILDOMAR
•COUNTY FREE LIBRARY
•CSA 152
•ELS MURRIETA ANZA RESOURCE CONS
•ELSINORE AREA ELEM SCHOOL FUND
•ELSINORE VALLEY MUNICIPAL WATER
•FLOOD CONTROL ADMINISTRATION
•FLOOD CONTROL ZONE 3
•GENERAL
•GENERAL PURPOSE
•LAKE ELSINORE UNIF IMP NO 96-1
•LAKE ELSINORE UNIFIED
•METRO WATER EAST 1301999
•METRO WATER WEST
•MT SAN JACINTO JUNIOR COLLEGE
•RIV CO REG PARK & OPEN SPACE
•RIV. CO. OFFICE OF EDUCATION
•WESTERN MUNICIPAL WATER
•WILDOMAR CEMETERY
•WILDOMAR FIRE PROTECTION

SPECIAL NOTES
NO SPECIAL NOTES

BUILDING PERMITS

Case #	Description	Status
027769	GAS CONVERSION	CONTACT THE BUILDING AND SAFETY RECORDS DEPARTMENT AT 951-955-2017
BZ160795	DWLG & ATT GARAGE	CONTACT THE BUILDING AND SAFETY RECORDS DEPARTMENT AT 951-955-2017
BZ261368	ADD RM OVER GARAGE	CONTACT THE BUILDING AND SAFETY RECORDS DEPARTMENT AT 951-955-2017

ENVIRONMENTAL HEALTH PERMITS

Case #	Description	Status
NO ENVIRONMENTAL PERMITS	NOT APPLICABLE	NOT APPLICABLE

PLANNING PERMITS

Case #	Description	Status
NO PLANNING PERMITS	NOT APPLICABLE	NOT APPLICABLE

REPORT PRINTED ON...Wed Jan 30 2013 14:38:28 GMT-0800 (Pacific Standard Time)
Version 121101

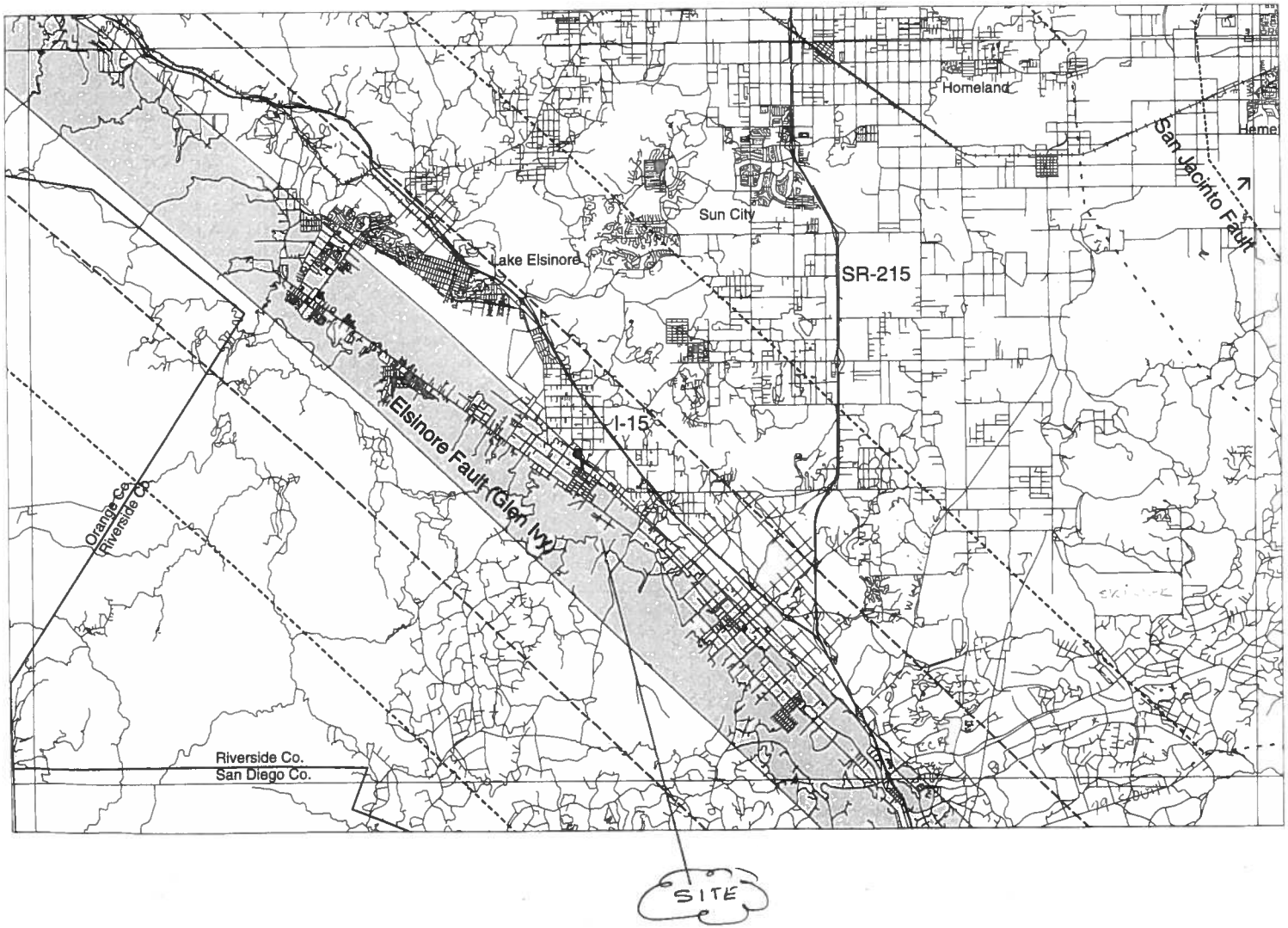
O-34

Active Fault Near-Source Zones

This map is intended to be used in conjunction with
the 1997 Uniform Building Code, Tables 16-S and 16-T

O-34

California Department of Conservation
Division of Mines and Geology



LEGEND

See expanded legend and index map

Shaded zones are within 2 km of known seismic sources.

A fault

B fault

Contours of closest horizontal distance to known seismic sources.

5 km

10 km

15 km

0 5 10

Kilometers

1/4" is approximately equal to 1 km

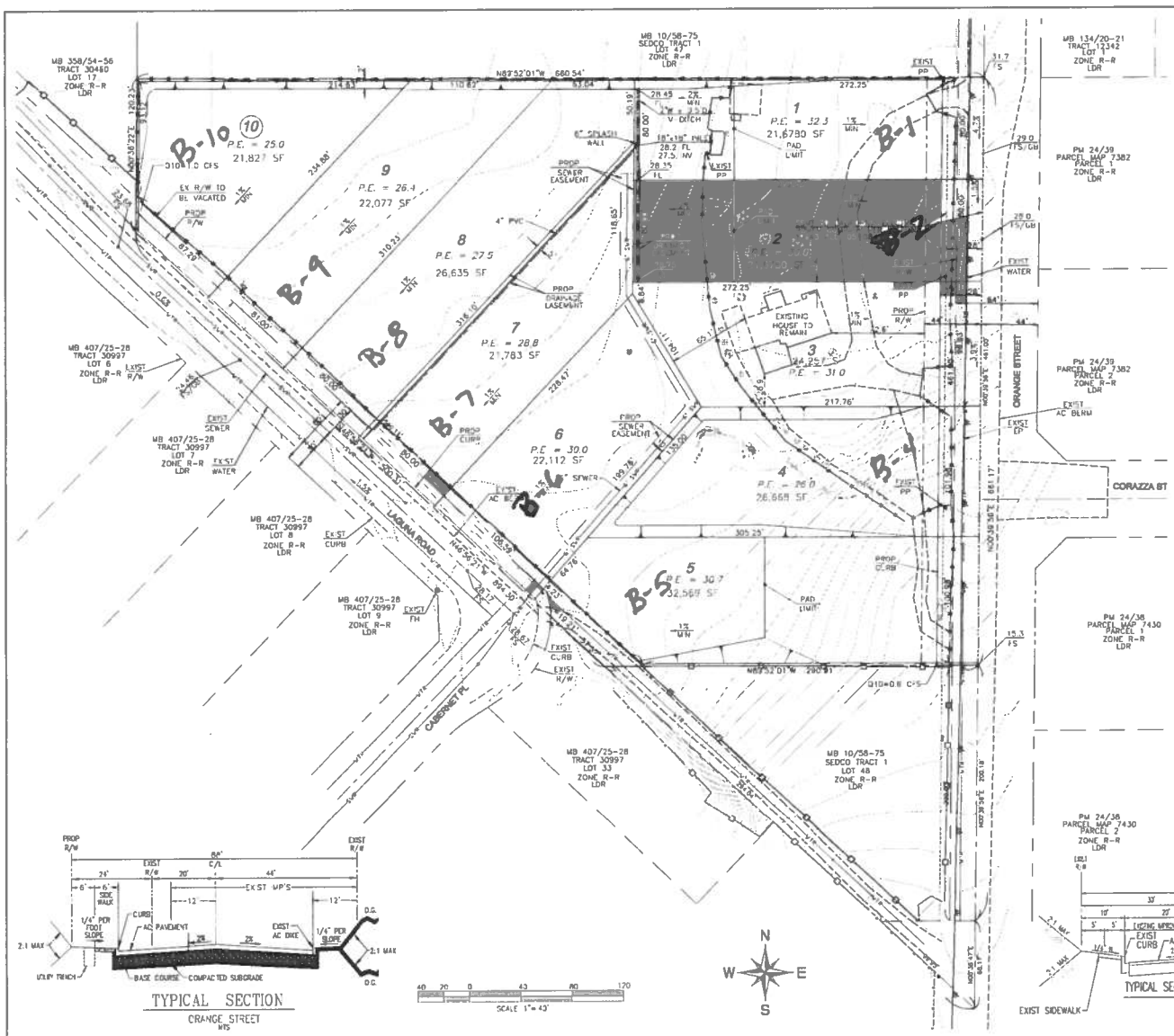
August, 1997

B-1~10 = BORE SITES

WAC # 13-892
1-28-13

TENTATIVE TRACT 36519

IN THE CITY OF WILDOMAR, CALIFORNIA



OWNER/APPLICANT

MIKE LESLE
21595 MARBLE CT
WILDOMAR, CA 92595
T (951) 522-2405
F (xxx) XXX-XXXX FAX

ENGINEER/EXHIBIT PREPARER

LOVE ENGINEERING
ATTN: THOMAS S. LOVE
31915 RANCHO CALIFORNIA ROAD
SUITE 200-166
TEMECULA, CA 92591
T (951) 440-8149 F (951)-303-6701

ASSESSOR'S PARCEL NO.

367-170-029

PROPERTY ADDRESS

34915 ORANGE STREET

LEGAL DESCRIPTION

LOTS (S) 48 OF SEDCO TRACT NO. 1, IN THE CITY OF WILDOMAR, AS SHOWN BY MAP ON FILE IN BOOK 10 PAGE(S) 58 TO 75, INCLUSIVE, OF MAPS, RECORDS OF RIVERSIDE COUNTY; EXCEPTING THEREFROM THE SOUTHERLY 200 FEET, SAID 200 FEET BEING MEASURED ALONG THE EAST LINE OF SAID LOT 48, AND THE NORTH LINE OF SAID 200 FEET BEING PARALLEL WITH THE NORTH LINE OF SAID LOT 48

EXISTING EASEMENTS

26' EASEMENT TO CALIFORNIA ELECTRIC POWER COMPANY RECORDED 05/08/1952 PER INSTRUMENT #18643

ACREAGE

ACREAGE: 5.54 ACRES GROSS/5.09 ACRES NET
MINIMUM LOT SIZE: 1/2 ACRE

LAND USE

10 RESIDENTIAL LOTS

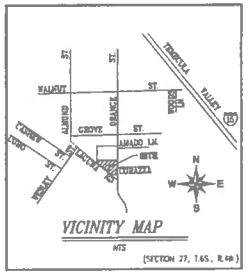
EXISTING LAND USE:	LDR
PROPOSED LAND USE:	LDR
EXISTING ZONING:	R-R
PROPOSED ZONING:	R-R
MINIMUM LOT:	20,000 SF

UTILITIES

WATER	- ELSINORE VALLEY MUNICIPAL WATER DISTRICT
SEWER	- ELSINORE VALLEY MUNICIPAL WATER DISTRICT
GAS	- SOUTHERN CALIFORNIA GAS COMPANY
ELECTRIC	- SOUTHER CALIFORNIA EDISON
TELEPHONE	- VERIZON
CABLE	- N/A
SCHOOL	- LAKE ELSINORE UNIFIED SCHOOL DISTRICT

TOPOGRAPHY

CONTOURS & ELEVATIONS PROVIDED FROM FIELD DATA GATHERED ON 9/29/12 & OCT 10/1/12 BY:
HESS SURVEY
28639 SCOTT RD, SUITE D-387
MURRIETA, CA 92563
PH (951) 325-7200



VICINITY MAP
NTS
(SECTION 27, T.6S., R.4W.)

NOTES

1. 2011 THOMAS BROS. MAP BOOK: PAGE 897, GRIDS B5-B6
2. ALL IMPROVEMENTS SHALL BE PER SCHEDULE "B"
3. PROJECT INCLUDES THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DARKER.
4. THIS PROJECT IS NOT WITHIN A SPECIFIC PLAN
5. THE PROPERTY IS NOT WITHIN A COUNTY SERVICE AREA OR COMMUNITY FACILITIES DISTRICT.
6. THERE ARE NO WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THE PROPERTY BOUNDARY.
7. SUBSURFACE SEPTIC SEWAGE DISPOSAL IS INTENDED ON LOTS 3 & 4 ONLY.
8. P.E. = XXXX.X INDICATES PRELIMINARY PAD ELEVATION.
9. SITE IS NOT SUBJECT TO LIQUEFACTION, OR OTHER GEOLOGIC HAZARDS AND IS NOT WITHIN SPECIAL STUDIES ZONE.
10. SITE IS NOT SUBJECT TO OVERFLOW, INUNDATION, OR FLOOD HAZARD.
11. EXISTING HOUSE TO REMAIN
12. ALL SLOPES ARE 2:1 RATIO, UNLESS OTHERWISE NOTED.
13. ALL STREETS ARE PROPOSED PUBLIC STREETS.
14. A WATER QUALITY MANAGEMENT PLAN HAS BEEN PREPARED
15. NO COMMON AREAS OR OPEN SPACE ARE PROPOSED.
16. FEMA MAP NUMBER 06065C0825G

SOILS ENGINEER & ENGINEERING GEOLOGIST

WAC GEOTECHNICAL, INC
2900 ADAMS STREET, SUITE C-35
RIVERSIDE, CA 92504
PH (951) 354-4500

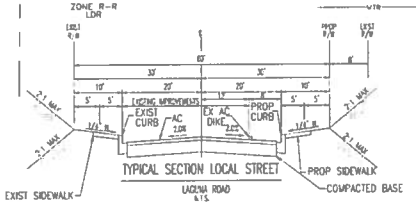
WATER QUALITY FEATURES

EACH LOT SHALL CONTAIN AN INFILTRATION TRENCH PER WATER QUALITY MANAGEMENT PLAN

LEGEND

BOUNDARY	FIRE HYDRANT
CENTERLINE	FLOW LINE
EASEMENT (DRAINAGE)	LOT LINE
EASEMENT (SEWER)	POWER POLE
EDGE OF PAVEMENT	SEWER (EXISTING)
EXISTING TOPOGRAPHY CONTOUR	STREET RIGHT-OF-WAY
EXISTING WATER	VINYL FENCE
	WIRE FENCE

TYPICAL SECTION
ORANGE STREET
NTS



TYPICAL SECTION LOCAL STREET
LAGUNA ROAD
NTS

ABBREVIATIONS

AC	Asphalt Concrete	BW	Invert
CFS	Cubic Feet Per Second	PE	Proposed Pad Elevation
EP	Edge of Pavement	PP	Power Pole
FL	Flowline	PROP	Proposed
FS	Finished Surface	R/W	Right-of-Way
GB	Grade Break	SD	Storm Drain
HP	High Point	SF	Square Feet

PLATE # 1

Underground Service Alert
DIAL BEFORE YOU DIG — TWO WORKING DAYS YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

EXHIBIT AMENDMENTS

DATE	BY	DESCRIPTION

SEAL

LOVE ENGINEERING
PLANNING - ENGINEERING - SURVEYING
31915 Rancho California Road, Suite 200-166, Temecula, CA 92591
TEL (951) 440 - 8149 / FAX (951) 303 - 6701

PREPARED UNDER THE SUPERVISION OF: R.C.E. NO: EXP. DATE: 9-30-13
THOMAS S. LOVE — DATE

BENCHMARK: USGS BM #1254 RESET
AT THE SOUTHWEST CORNER OF CENTRAL STREET AND PALOMAR STREET.
ELEVATION = 1288.07
DATUM = NAVD 88

SCALE: 1"=40'
DATE: NOVEMBER 13, 2012

IN THE CITY OF WILDOMAR, CALIFORNIA

TENTATIVE TRACT 36519

SHEET NO. 1 OF 1 SHTS.

ID: 10-001

COUNTY FILE NO.

APPENDIX 7 – PRELIMINARY HYDROLOGY-DRAINAGE STUDY

HYDROLOGY/DRAINAGE STUDY
FOR
TENTATIVE TRACT 36519

Prepared By: Love Engineering
31915 Rancho California Road
Suite 200-166
Temecula, CA 92591
(951) 440-8149

Thomas S. Love

February 11, 2013

SECTION 1 – PURPOSE/METHODOLOGY/RESULTS

Purpose

Methodology

Vicinity Map

Site Summary

Hydrology Results Summary

Precipitation Data

SECTION 2 – EXISTING CONDITION HYDROLOGY

2 Year - 24 Hour Storm Unit Hydrograph

10 Year - 24 Hour Storm Unit Hydrograph

SECTION 3 – PROPOSED CONDITION HYDROLOGY

2 Year - 24 Hour Storm Unit Hydrograph

10 Year - 24 Hour Storm Unit Hydrograph

100 Year - 3 Hour Storm Unit Hydrograph

HYDRAULIC CALCULATIONS

V-Ditch

4" PVC

SECTION 5 – MAPS

Hydrology Map – Undeveloped Condition

Hydrology Map – Developed Condition

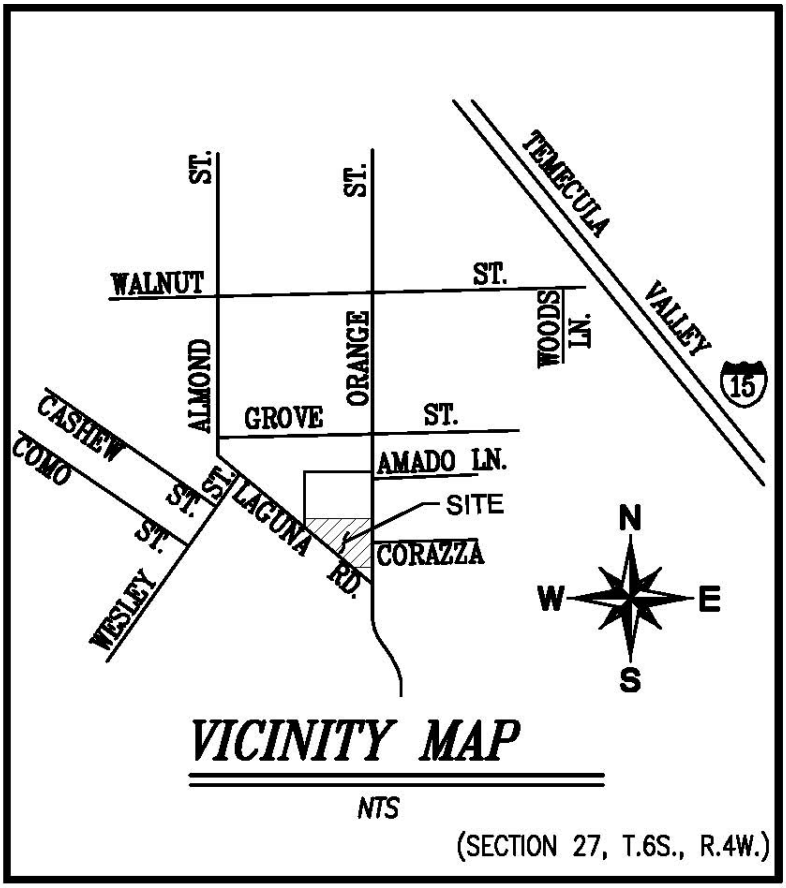
HYDROLOGY CALCULATIONS
FOR
TENTATIVE TRACT 36519

PURPOSE

Tentative Tract 36519 is composed of 10 (1/2 acre minimum) lots and is located in the City of Wildomar, just south of the intersection of Grove Street and Orange Street. The purpose of this study is to investigate the storm flow runoff associated with developing the Tract and provide calculations supporting the Water Quality Management Plan.

METHODOLOGY

Storm flows were calculated by using the Unit Hydrograph method described in the Riverside County Flood Control Hydrology Manual. To analyze the post condition site runoff compared to the pre-condition site runoff, the 2 year and 10 year storm events with 24-hour duration were computed. The 100 year storm event with 3-hour duration was computed to determine the peak Q into the proposed drainage systems.



SITE SUMMARY

There are two tributary drainage areas that divide the site. Area A drains to the northeast and exiting stormwater flows north along Laguna Road to an existing catch basin. Area B drains to the southwest and exiting stormwater flows south along Orange Street.

HYDROLOGY RESULTS SUMMARY

The results of the hydrology study show that the flows exiting the site for tributary drainage areas A and B in the developed condition are less than the flows exiting these two areas in the existing condition. Although development often increases stormwater runoff there are factors that can contribute to it actually being reduced. In this case the reduced runoff from the site in the developed condition was mostly controlled by the substantial increase in the length of the path of travel for Area B and the slight reduction of the tributary drainage area for Area A.

Since the developed stormwater runoff is less than the existing condition runoff, mitigation is not necessary and there will be no downstream impacts. There is no offsite run-on and all lots will be protected from the 100 year storm through existing/proposed street improvements and existing storm drain facilities.

	2 year – 24 hour Runoff (CFS)		10 year – 24 hour Runoff (CFS)	
	Existing Condition	**Developed Condition**	**Existing Condition**	**Developed Condition**
AREA A	0.6	0.4	1.6	1.1
AREA B	0.3	0.2	0.8	0.7
TOTAL	0.9	0.6	2.4	1.8

	100 year – 3 hour Runoff (CFS)
	PEAK Q
AREA A	6.4
AREA B	4.0
TOTAL	10.4

*Peak Q Flowrate = 2.1 CFS/Acre (Based on average of 100 year, 3 hour runoff)

Section 2 – Existing Condition Hydrology

2 Year – 24 Hour Storm Unit Hydrograph

10 Year – 24 Hour Storm Unit Hydrograph

```
       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  02/10/13 File: tr36519ae242.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
----------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



--------------------------------------------------------------------
TRACT 36519
AREA A - EXISTING CONDITION
24 HOUR, 2 Year Storm

-------------------------------------------------------------------
Drainage Area =       3.50(Ac.)  =      0.005 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       3.50(Ac.)  =      0.005 Sq. Mi.
Length along longest watercourse =     624.00(Ft.)
Length along longest watercourse measured to centroid =     387.00(Ft.)
Length along longest watercourse =      0.118 Mi.
Length along longest watercourse measured to centroid =      0.073 Mi.
Difference in elevation =      10.50(Ft.)
Slope along watercourse =     88.8462 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.042 Hr.
Lag time =     2.53 Min.
25% of lag time =     0.63 Min.
40% of lag time =     1.01 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]
        3.50           2.70                  9.45

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        3.50           8.00                 28.00

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.700(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    2.700(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.700(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     3.500           78.00         0.100
```

Total Area Entered = 3.50(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
78.0	78.0	0.268	0.100	0.244	1.000	0.244
					Sum (F) =	0.244

Area averaged mean soil loss (F) (In/Hr) = 0.244
Minimum soil loss rate ((In/Hr)) = 0.122
(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
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	197.975	43.049	1.518
2	0.167	395.950	43.509	1.535
3	0.250	593.925	8.877	0.313
4	0.333	791.900	3.462	0.122
5	0.417	989.875	1.103	0.039
			Sum = 100.000	Sum= 3.527

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.022	0.432	0.019	0.00
2	0.17	0.07	0.022	0.430	0.019	0.00
3	0.25	0.07	0.022	0.428	0.019	0.00
4	0.33	0.10	0.032	0.427	0.029	0.00
5	0.42	0.10	0.032	0.425	0.029	0.00
6	0.50	0.10	0.032	0.423	0.029	0.00
7	0.58	0.10	0.032	0.422	0.029	0.00
8	0.67	0.10	0.032	0.420	0.029	0.00
9	0.75	0.10	0.032	0.418	0.029	0.00
10	0.83	0.13	0.043	0.417	0.039	0.00
11	0.92	0.13	0.043	0.415	0.039	0.00
12	1.00	0.13	0.043	0.414	0.039	0.00
13	1.08	0.10	0.032	0.412	0.029	0.00
14	1.17	0.10	0.032	0.410	0.029	0.00
15	1.25	0.10	0.032	0.409	0.029	0.00
16	1.33	0.10	0.032	0.407	0.029	0.00
17	1.42	0.10	0.032	0.405	0.029	0.00
18	1.50	0.10	0.032	0.404	0.029	0.00
19	1.58	0.10	0.032	0.402	0.029	0.00
20	1.67	0.10	0.032	0.401	0.029	0.00
21	1.75	0.10	0.032	0.399	0.029	0.00
22	1.83	0.13	0.043	0.397	0.039	0.00
23	1.92	0.13	0.043	0.396	0.039	0.00
24	2.00	0.13	0.043	0.394	0.039	0.00
25	2.08	0.13	0.043	0.393	0.039	0.00
26	2.17	0.13	0.043	0.391	0.039	0.00
27	2.25	0.13	0.043	0.389	0.039	0.00
28	2.33	0.13	0.043	0.388	0.039	0.00
29	2.42	0.13	0.043	0.386	0.039	0.00
30	2.50	0.13	0.043	0.385	0.039	0.00
31	2.58	0.17	0.054	0.383	0.049	0.01
32	2.67	0.17	0.054	0.381	0.049	0.01
33	2.75	0.17	0.054	0.380	0.049	0.01
34	2.83	0.17	0.054	0.378	0.049	0.01
35	2.92	0.17	0.054	0.377	0.049	0.01
36	3.00	0.17	0.054	0.375	0.049	0.01
37	3.08	0.17	0.054	0.374	0.049	0.01
38	3.17	0.17	0.054	0.372	0.049	0.01

39	3.25	0.17	0.054	0.371	0.049	0.01
40	3.33	0.17	0.054	0.369	0.049	0.01
41	3.42	0.17	0.054	0.367	0.049	0.01
42	3.50	0.17	0.054	0.366	0.049	0.01
43	3.58	0.17	0.054	0.364	0.049	0.01
44	3.67	0.17	0.054	0.363	0.049	0.01
45	3.75	0.17	0.054	0.361	0.049	0.01
46	3.83	0.20	0.065	0.360	0.058	0.01
47	3.92	0.20	0.065	0.358	0.058	0.01
48	4.00	0.20	0.065	0.357	0.058	0.01
49	4.08	0.20	0.065	0.355	0.058	0.01
50	4.17	0.20	0.065	0.354	0.058	0.01
51	4.25	0.20	0.065	0.352	0.058	0.01
52	4.33	0.23	0.076	0.351	0.068	0.01
53	4.42	0.23	0.076	0.349	0.068	0.01
54	4.50	0.23	0.076	0.348	0.068	0.01
55	4.58	0.23	0.076	0.346	0.068	0.01
56	4.67	0.23	0.076	0.345	0.068	0.01
57	4.75	0.23	0.076	0.343	0.068	0.01
58	4.83	0.27	0.086	0.342	0.078	0.01
59	4.92	0.27	0.086	0.340	0.078	0.01
60	5.00	0.27	0.086	0.339	0.078	0.01
61	5.08	0.20	0.065	0.337	0.058	0.01
62	5.17	0.20	0.065	0.336	0.058	0.01
63	5.25	0.20	0.065	0.334	0.058	0.01
64	5.33	0.23	0.076	0.333	0.068	0.01
65	5.42	0.23	0.076	0.332	0.068	0.01
66	5.50	0.23	0.076	0.330	0.068	0.01
67	5.58	0.27	0.086	0.329	0.078	0.01
68	5.67	0.27	0.086	0.327	0.078	0.01
69	5.75	0.27	0.086	0.326	0.078	0.01
70	5.83	0.27	0.086	0.324	0.078	0.01
71	5.92	0.27	0.086	0.323	0.078	0.01
72	6.00	0.27	0.086	0.321	0.078	0.01
73	6.08	0.30	0.097	0.320	0.087	0.01
74	6.17	0.30	0.097	0.319	0.087	0.01
75	6.25	0.30	0.097	0.317	0.087	0.01
76	6.33	0.30	0.097	0.316	0.087	0.01
77	6.42	0.30	0.097	0.314	0.087	0.01
78	6.50	0.30	0.097	0.313	0.087	0.01
79	6.58	0.33	0.108	0.312	0.097	0.01
80	6.67	0.33	0.108	0.310	0.097	0.01
81	6.75	0.33	0.108	0.309	0.097	0.01
82	6.83	0.33	0.108	0.307	0.097	0.01
83	6.92	0.33	0.108	0.306	0.097	0.01
84	7.00	0.33	0.108	0.305	0.097	0.01
85	7.08	0.33	0.108	0.303	0.097	0.01
86	7.17	0.33	0.108	0.302	0.097	0.01
87	7.25	0.33	0.108	0.300	0.097	0.01
88	7.33	0.37	0.119	0.299	0.107	0.01
89	7.42	0.37	0.119	0.298	0.107	0.01
90	7.50	0.37	0.119	0.296	0.107	0.01
91	7.58	0.40	0.130	0.295	0.117	0.01
92	7.67	0.40	0.130	0.294	0.117	0.01
93	7.75	0.40	0.130	0.292	0.117	0.01
94	7.83	0.43	0.140	0.291	0.126	0.01
95	7.92	0.43	0.140	0.290	0.126	0.01
96	8.00	0.43	0.140	0.288	0.126	0.01
97	8.08	0.50	0.162	0.287	0.146	0.02
98	8.17	0.50	0.162	0.286	0.146	0.02
99	8.25	0.50	0.162	0.284	0.146	0.02
100	8.33	0.50	0.162	0.283	0.146	0.02
101	8.42	0.50	0.162	0.282	0.146	0.02
102	8.50	0.50	0.162	0.280	0.146	0.02
103	8.58	0.53	0.173	0.279	0.156	0.02
104	8.67	0.53	0.173	0.278	0.156	0.02
105	8.75	0.53	0.173	0.276	0.156	0.02
106	8.83	0.57	0.184	0.275	0.165	0.02
107	8.92	0.57	0.184	0.274	0.165	0.02
108	9.00	0.57	0.184	0.272	0.165	0.02

109	9.08	0.63	0.205	0.271	0.185	0.02
110	9.17	0.63	0.205	0.270	0.185	0.02
111	9.25	0.63	0.205	0.269	0.185	0.02
112	9.33	0.67	0.216	0.267	0.194	0.02
113	9.42	0.67	0.216	0.266	0.194	0.02
114	9.50	0.67	0.216	0.265	0.194	0.02
115	9.58	0.70	0.227	0.263	0.204	0.02
116	9.67	0.70	0.227	0.262	0.204	0.02
117	9.75	0.70	0.227	0.261	0.204	0.02
118	9.83	0.73	0.238	0.260	0.214	0.02
119	9.92	0.73	0.238	0.258	0.214	0.02
120	10.00	0.73	0.238	0.257	0.214	0.02
121	10.08	0.50	0.162	0.256	0.146	0.02
122	10.17	0.50	0.162	0.255	0.146	0.02
123	10.25	0.50	0.162	0.253	0.146	0.02
124	10.33	0.50	0.162	0.252	0.146	0.02
125	10.42	0.50	0.162	0.251	0.146	0.02
126	10.50	0.50	0.162	0.250	0.146	0.02
127	10.58	0.67	0.216	0.249	0.194	0.02
128	10.67	0.67	0.216	0.247	0.194	0.02
129	10.75	0.67	0.216	0.246	0.194	0.02
130	10.83	0.67	0.216	0.245	0.194	0.02
131	10.92	0.67	0.216	0.244	0.194	0.02
132	11.00	0.67	0.216	0.243	0.194	0.02
133	11.08	0.63	0.205	0.241	0.185	0.02
134	11.17	0.63	0.205	0.240	0.185	0.02
135	11.25	0.63	0.205	0.239	0.185	0.02
136	11.33	0.63	0.205	0.238	0.185	0.02
137	11.42	0.63	0.205	0.237	0.185	0.02
138	11.50	0.63	0.205	0.235	0.185	0.02
139	11.58	0.57	0.184	0.234	0.165	0.02
140	11.67	0.57	0.184	0.233	0.165	0.02
141	11.75	0.57	0.184	0.232	0.165	0.02
142	11.83	0.60	0.194	0.231	0.175	0.02
143	11.92	0.60	0.194	0.230	0.175	0.02
144	12.00	0.60	0.194	0.228	0.175	0.02
145	12.08	0.83	0.270	0.227	---	0.04
146	12.17	0.83	0.270	0.226	---	0.04
147	12.25	0.83	0.270	0.225	---	0.04
148	12.33	0.87	0.281	0.224	---	0.06
149	12.42	0.87	0.281	0.223	---	0.06
150	12.50	0.87	0.281	0.222	---	0.06
151	12.58	0.93	0.302	0.221	---	0.08
152	12.67	0.93	0.302	0.219	---	0.08
153	12.75	0.93	0.302	0.218	---	0.08
154	12.83	0.97	0.313	0.217	---	0.10
155	12.92	0.97	0.313	0.216	---	0.10
156	13.00	0.97	0.313	0.215	---	0.10
157	13.08	1.13	0.367	0.214	---	0.15
158	13.17	1.13	0.367	0.213	---	0.15
159	13.25	1.13	0.367	0.212	---	0.16
160	13.33	1.13	0.367	0.211	---	0.16
161	13.42	1.13	0.367	0.210	---	0.16
162	13.50	1.13	0.367	0.209	---	0.16
163	13.58	0.77	0.248	0.208	---	0.04
164	13.67	0.77	0.248	0.206	---	0.04
165	13.75	0.77	0.248	0.205	---	0.04
166	13.83	0.77	0.248	0.204	---	0.04
167	13.92	0.77	0.248	0.203	---	0.05
168	14.00	0.77	0.248	0.202	---	0.05
169	14.08	0.90	0.292	0.201	---	0.09
170	14.17	0.90	0.292	0.200	---	0.09
171	14.25	0.90	0.292	0.199	---	0.09
172	14.33	0.87	0.281	0.198	---	0.08
173	14.42	0.87	0.281	0.197	---	0.08
174	14.50	0.87	0.281	0.196	---	0.08
175	14.58	0.87	0.281	0.195	---	0.09
176	14.67	0.87	0.281	0.194	---	0.09
177	14.75	0.87	0.281	0.193	---	0.09
178	14.83	0.83	0.270	0.192	---	0.08

179	14.92	0.83	0.270	0.191	---	0.08
180	15.00	0.83	0.270	0.190	---	0.08
181	15.08	0.80	0.259	0.189	---	0.07
182	15.17	0.80	0.259	0.188	---	0.07
183	15.25	0.80	0.259	0.187	---	0.07
184	15.33	0.77	0.248	0.186	---	0.06
185	15.42	0.77	0.248	0.185	---	0.06
186	15.50	0.77	0.248	0.184	---	0.06
187	15.58	0.63	0.205	0.183	---	0.02
188	15.67	0.63	0.205	0.183	---	0.02
189	15.75	0.63	0.205	0.182	---	0.02
190	15.83	0.63	0.205	0.181	---	0.02
191	15.92	0.63	0.205	0.180	---	0.03
192	16.00	0.63	0.205	0.179	---	0.03
193	16.08	0.13	0.043	0.178	0.039	0.00
194	16.17	0.13	0.043	0.177	0.039	0.00
195	16.25	0.13	0.043	0.176	0.039	0.00
196	16.33	0.13	0.043	0.175	0.039	0.00
197	16.42	0.13	0.043	0.174	0.039	0.00
198	16.50	0.13	0.043	0.173	0.039	0.00
199	16.58	0.10	0.032	0.173	0.029	0.00
200	16.67	0.10	0.032	0.172	0.029	0.00
201	16.75	0.10	0.032	0.171	0.029	0.00
202	16.83	0.10	0.032	0.170	0.029	0.00
203	16.92	0.10	0.032	0.169	0.029	0.00
204	17.00	0.10	0.032	0.168	0.029	0.00
205	17.08	0.17	0.054	0.167	0.049	0.01
206	17.17	0.17	0.054	0.167	0.049	0.01
207	17.25	0.17	0.054	0.166	0.049	0.01
208	17.33	0.17	0.054	0.165	0.049	0.01
209	17.42	0.17	0.054	0.164	0.049	0.01
210	17.50	0.17	0.054	0.163	0.049	0.01
211	17.58	0.17	0.054	0.162	0.049	0.01
212	17.67	0.17	0.054	0.162	0.049	0.01
213	17.75	0.17	0.054	0.161	0.049	0.01
214	17.83	0.13	0.043	0.160	0.039	0.00
215	17.92	0.13	0.043	0.159	0.039	0.00
216	18.00	0.13	0.043	0.158	0.039	0.00
217	18.08	0.13	0.043	0.158	0.039	0.00
218	18.17	0.13	0.043	0.157	0.039	0.00
219	18.25	0.13	0.043	0.156	0.039	0.00
220	18.33	0.13	0.043	0.155	0.039	0.00
221	18.42	0.13	0.043	0.155	0.039	0.00
222	18.50	0.13	0.043	0.154	0.039	0.00
223	18.58	0.10	0.032	0.153	0.029	0.00
224	18.67	0.10	0.032	0.152	0.029	0.00
225	18.75	0.10	0.032	0.152	0.029	0.00
226	18.83	0.07	0.022	0.151	0.019	0.00
227	18.92	0.07	0.022	0.150	0.019	0.00
228	19.00	0.07	0.022	0.149	0.019	0.00
229	19.08	0.10	0.032	0.149	0.029	0.00
230	19.17	0.10	0.032	0.148	0.029	0.00
231	19.25	0.10	0.032	0.147	0.029	0.00
232	19.33	0.13	0.043	0.147	0.039	0.00
233	19.42	0.13	0.043	0.146	0.039	0.00
234	19.50	0.13	0.043	0.145	0.039	0.00
235	19.58	0.10	0.032	0.145	0.029	0.00
236	19.67	0.10	0.032	0.144	0.029	0.00
237	19.75	0.10	0.032	0.143	0.029	0.00
238	19.83	0.07	0.022	0.143	0.019	0.00
239	19.92	0.07	0.022	0.142	0.019	0.00
240	20.00	0.07	0.022	0.141	0.019	0.00
241	20.08	0.10	0.032	0.141	0.029	0.00
242	20.17	0.10	0.032	0.140	0.029	0.00
243	20.25	0.10	0.032	0.140	0.029	0.00
244	20.33	0.10	0.032	0.139	0.029	0.00
245	20.42	0.10	0.032	0.138	0.029	0.00
246	20.50	0.10	0.032	0.138	0.029	0.00
247	20.58	0.10	0.032	0.137	0.029	0.00
248	20.67	0.10	0.032	0.137	0.029	0.00

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249  20.75     0.10      0.032         0.136     0.029         0.00
250  20.83     0.07      0.022         0.135     0.019         0.00
251  20.92     0.07      0.022         0.135     0.019         0.00
252  21.00     0.07      0.022         0.134     0.019         0.00
253  21.08     0.10      0.032         0.134     0.029         0.00
254  21.17     0.10      0.032         0.133     0.029         0.00
255  21.25     0.10      0.032         0.133     0.029         0.00
256  21.33     0.07      0.022         0.132     0.019         0.00
257  21.42     0.07      0.022         0.132     0.019         0.00
258  21.50     0.07      0.022         0.131     0.019         0.00
259  21.58     0.10      0.032         0.131     0.029         0.00
260  21.67     0.10      0.032         0.130     0.029         0.00
261  21.75     0.10      0.032         0.130     0.029         0.00
262  21.83     0.07      0.022         0.129     0.019         0.00
263  21.92     0.07      0.022         0.129     0.019         0.00
264  22.00     0.07      0.022         0.129     0.019         0.00
265  22.08     0.10      0.032         0.128     0.029         0.00
266  22.17     0.10      0.032         0.128     0.029         0.00
267  22.25     0.10      0.032         0.127     0.029         0.00
268  22.33     0.07      0.022         0.127     0.019         0.00
269  22.42     0.07      0.022         0.127     0.019         0.00
270  22.50     0.07      0.022         0.126     0.019         0.00
271  22.58     0.07      0.022         0.126     0.019         0.00
272  22.67     0.07      0.022         0.125     0.019         0.00
273  22.75     0.07      0.022         0.125     0.019         0.00
274  22.83     0.07      0.022         0.125     0.019         0.00
275  22.92     0.07      0.022         0.124     0.019         0.00
276  23.00     0.07      0.022         0.124     0.019         0.00
277  23.08     0.07      0.022         0.124     0.019         0.00
278  23.17     0.07      0.022         0.124     0.019         0.00
279  23.25     0.07      0.022         0.123     0.019         0.00
280  23.33     0.07      0.022         0.123     0.019         0.00
281  23.42     0.07      0.022         0.123     0.019         0.00
282  23.50     0.07      0.022         0.123     0.019         0.00
283  23.58     0.07      0.022         0.122     0.019         0.00
284  23.67     0.07      0.022         0.122     0.019         0.00
285  23.75     0.07      0.022         0.122     0.019         0.00
286  23.83     0.07      0.022         0.122     0.019         0.00
287  23.92     0.07      0.022         0.122     0.019         0.00
288  24.00     0.07      0.022         0.122     0.019         0.00
    Sum =     100.0                                   Sum =     5.5
      Flood volume = Effective rainfall      0.46(In)
       times area       3.5(Ac.)/[(In)/(Ft.)] =       0.1(Ac.Ft)
      Total soil loss =      2.24(In)
      Total soil loss =     0.653(Ac.Ft)
      Total rainfall =      2.70(In)
      Flood volume =        5842.5 Cubic Feet
      Total soil loss =       28460.8 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      0.557(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        2.5       5.0       7.5      10.0
 ----------------------------------------------------------------------
   0+ 5       0.0000      0.00  Q         |         |         |         |
   0+10       0.0001      0.01  Q         |         |         |         |
   0+15       0.0001      0.01  Q         |         |         |         |
   0+20       0.0002      0.01  Q         |         |         |         |
   0+25       0.0003      0.01  Q         |         |         |         |
   0+30       0.0003      0.01  Q         |         |         |         |
   0+35       0.0004      0.01  Q         |         |         |         |
   0+40       0.0005      0.01  Q         |         |         |         |
   0+45       0.0006      0.01  Q         |         |         |         |
   0+50       0.0007      0.01  Q         |         |         |         |
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0+55	0.0008	0.01	Q	|	|	|	|
1+ 0	0.0009	0.02	Q	|	|	|	|
1+ 5	0.0010	0.01	Q	|	|	|	|
1+10	0.0010	0.01	Q	|	|	|	|
1+15	0.0011	0.01	Q	|	|	|	|
1+20	0.0012	0.01	Q	|	|	|	|
1+25	0.0013	0.01	Q	|	|	|	|
1+30	0.0014	0.01	Q	|	|	|	|
1+35	0.0014	0.01	Q	|	|	|	|
1+40	0.0015	0.01	Q	|	|	|	|
1+45	0.0016	0.01	Q	|	|	|	|
1+50	0.0017	0.01	Q	|	|	|	|
1+55	0.0018	0.01	Q	|	|	|	|
2+ 0	0.0019	0.02	Q	|	|	|	|
2+ 5	0.0020	0.02	Q	|	|	|	|
2+10	0.0021	0.02	Q	|	|	|	|
2+15	0.0022	0.02	Q	|	|	|	|
2+20	0.0023	0.02	Q	|	|	|	|
2+25	0.0024	0.02	Q	|	|	|	|
2+30	0.0025	0.02	Q	|	|	|	|
2+35	0.0026	0.02	Q	|	|	|	|
2+40	0.0028	0.02	Q	|	|	|	|
2+45	0.0029	0.02	Q	|	|	|	|
2+50	0.0030	0.02	Q	|	|	|	|
2+55	0.0032	0.02	Q	|	|	|	|
3+ 0	0.0033	0.02	Q	|	|	|	|
3+ 5	0.0034	0.02	QV	|	|	|	|
3+10	0.0035	0.02	QV	|	|	|	|
3+15	0.0037	0.02	QV	|	|	|	|
3+20	0.0038	0.02	QV	|	|	|	|
3+25	0.0039	0.02	QV	|	|	|	|
3+30	0.0041	0.02	QV	|	|	|	|
3+35	0.0042	0.02	QV	|	|	|	|
3+40	0.0043	0.02	QV	|	|	|	|
3+45	0.0045	0.02	QV	|	|	|	|
3+50	0.0046	0.02	QV	|	|	|	|
3+55	0.0048	0.02	QV	|	|	|	|
4+ 0	0.0049	0.02	QV	|	|	|	|
4+ 5	0.0051	0.02	QV	|	|	|	|
4+10	0.0052	0.02	QV	|	|	|	|
4+15	0.0054	0.02	QV	|	|	|	|
4+20	0.0056	0.02	QV	|	|	|	|
4+25	0.0057	0.03	QV	|	|	|	|
4+30	0.0059	0.03	QV	|	|	|	|
4+35	0.0061	0.03	QV	|	|	|	|
4+40	0.0063	0.03	QV	|	|	|	|
4+45	0.0065	0.03	QV	|	|	|	|
4+50	0.0067	0.03	QV	|	|	|	|
4+55	0.0069	0.03	Q V	|	|	|	|
5+ 0	0.0071	0.03	Q V	|	|	|	|
5+ 5	0.0073	0.03	Q V	|	|	|	|
5+10	0.0074	0.02	Q V	|	|	|	|
5+15	0.0076	0.02	Q V	|	|	|	|
5+20	0.0078	0.02	Q V	|	|	|	|
5+25	0.0079	0.03	Q V	|	|	|	|
5+30	0.0081	0.03	Q V	|	|	|	|
5+35	0.0083	0.03	Q V	|	|	|	|
5+40	0.0085	0.03	Q V	|	|	|	|
5+45	0.0087	0.03	Q V	|	|	|	|
5+50	0.0089	0.03	Q V	|	|	|	|
5+55	0.0092	0.03	Q V	|	|	|	|
6+ 0	0.0094	0.03	Q V	|	|	|	|
6+ 5	0.0096	0.03	Q V	|	|	|	|
6+10	0.0098	0.03	Q V	|	|	|	|
6+15	0.0101	0.03	Q V	|	|	|	|
6+20	0.0103	0.03	Q V	|	|	|	|
6+25	0.0105	0.03	Q V	|	|	|	|
6+30	0.0108	0.03	Q V	|	|	|	|
6+35	0.0110	0.04	Q V	|	|	|	|
6+40	0.0113	0.04	Q V	|	|	|	|

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 6+45       0.0115      0.04  Q  V      |         |         |         |
 6+50       0.0118      0.04  Q  V      |         |         |         |
 6+55       0.0121      0.04  Q  V      |         |         |         |
 7+ 0       0.0123      0.04  Q  V      |         |         |         |
 7+ 5       0.0126      0.04  Q  V      |         |         |         |
 7+10       0.0128      0.04  Q  V      |         |         |         |
 7+15       0.0131      0.04  Q  V      |         |         |         |
 7+20       0.0134      0.04  Q  V      |         |         |         |
 7+25       0.0137      0.04  Q   V     |         |         |         |
 7+30       0.0140      0.04  Q   V     |         |         |         |
 7+35       0.0143      0.04  Q   V     |         |         |         |
 7+40       0.0146      0.05  Q   V     |         |         |         |
 7+45       0.0149      0.05  Q   V     |         |         |         |
 7+50       0.0152      0.05  Q   V     |         |         |         |
 7+55       0.0155      0.05  Q   V     |         |         |         |
 8+ 0       0.0159      0.05  Q   V     |         |         |         |
 8+ 5       0.0162      0.05  Q   V     |         |         |         |
 8+10       0.0166      0.06  Q   V     |         |         |         |
 8+15       0.0170      0.06  Q    V    |         |         |         |
 8+20       0.0174      0.06  Q    V    |         |         |         |
 8+25       0.0178      0.06  Q    V    |         |         |         |
 8+30       0.0182      0.06  Q    V    |         |         |         |
 8+35       0.0186      0.06  Q    V    |         |         |         |
 8+40       0.0190      0.06  Q    V    |         |         |         |
 8+45       0.0194      0.06  Q    V    |         |         |         |
 8+50       0.0199      0.06  Q    V    |         |         |         |
 8+55       0.0203      0.06  Q     V   |         |         |         |
 9+ 0       0.0208      0.06  Q     V   |         |         |         |
 9+ 5       0.0212      0.07  Q     V   |         |         |         |
 9+10       0.0217      0.07  Q     V   |         |         |         |
 9+15       0.0222      0.07  Q     V   |         |         |         |
 9+20       0.0227      0.07  Q     V   |         |         |         |
 9+25       0.0233      0.08  Q     V   |         |         |         |
 9+30       0.0238      0.08  Q      V  |         |         |         |
 9+35       0.0243      0.08  Q      V  |         |         |         |
 9+40       0.0249      0.08  Q      V  |         |         |         |
 9+45       0.0254      0.08  Q      V  |         |         |         |
 9+50       0.0260      0.08  Q      V  |         |         |         |
 9+55       0.0265      0.08  Q      V  |         |         |         |
10+ 0       0.0271      0.08  Q       V |         |         |         |
10+ 5       0.0276      0.07  Q       V |         |         |         |
10+10       0.0280      0.06  Q       V |         |         |         |
10+15       0.0284      0.06  Q       V |         |         |         |
10+20       0.0288      0.06  Q       V |         |         |         |
10+25       0.0292      0.06  Q       V |         |         |         |
10+30       0.0296      0.06  Q       V |         |         |         |
10+35       0.0301      0.07  Q       V |         |         |         |
10+40       0.0306      0.07  Q        V|         |         |         |
10+45       0.0311      0.08  Q        V|         |         |         |
10+50       0.0316      0.08  Q        V|         |         |         |
10+55       0.0322      0.08  Q        V|         |         |         |
11+ 0       0.0327      0.08  Q        V|         |         |         |
11+ 5       0.0332      0.07  Q        V|         |         |         |
11+10       0.0337      0.07  Q         V         |         |         |
11+15       0.0342      0.07  Q         V         |         |         |
11+20       0.0347      0.07  Q         V         |         |         |
11+25       0.0352      0.07  Q         V         |         |         |
11+30       0.0357      0.07  Q         V         |         |         |
11+35       0.0362      0.07  Q         V         |         |         |
11+40       0.0366      0.07  Q         V         |         |         |
11+45       0.0371      0.07  Q         |V        |         |         |
11+50       0.0375      0.07  Q         |V        |         |         |
11+55       0.0380      0.07  Q         |V        |         |         |
12+ 0       0.0385      0.07  Q         |V        |         |         |
12+ 5       0.0392      0.10  Q         |V        |         |         |
12+10       0.0402      0.14  Q         |V        |         |         |
12+15       0.0412      0.15  Q         | V       |         |         |
12+20       0.0424      0.18  Q         | V       |         |         |
12+25       0.0438      0.20  Q         |  V      |         |         |
12+30       0.0452      0.20  Q         |  V      |         |         |
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12+35       0.0468      0.24  Q         |  V      |         |         |
12+40       0.0488      0.28  |Q        |   V     |         |         |
12+45       0.0508      0.29  |Q        |    V    |         |         |
12+50       0.0529      0.31  |Q        |    V    |         |         |
12+55       0.0552      0.33  |Q        |     V   |         |         |
13+ 0       0.0576      0.34  |Q        |      V  |         |         |
13+ 5       0.0605      0.43  |Q        |       V |         |         |
13+10       0.0641      0.52  | Q       |        V|         |         |
13+15       0.0678      0.54  | Q       |         V         |         |
13+20       0.0715      0.55  | Q       |         |V        |         |
13+25       0.0754      0.55  | Q       |         | V       |         |
13+30       0.0792      0.56  | Q       |         |  V      |         |
13+35       0.0818      0.38  |Q        |         |   V     |         |
13+40       0.0832      0.20  Q         |         |   V     |         |
13+45       0.0844      0.17  Q         |         |    V    |         |
13+50       0.0854      0.16  Q         |         |    V    |         |
13+55       0.0865      0.16  Q         |         |    V    |         |
14+ 0       0.0876      0.16  Q         |         |     V   |         |
14+ 5       0.0892      0.23  Q         |         |     V   |         |
14+10       0.0913      0.30  |Q        |         |      V  |         |
14+15       0.0934      0.32  |Q        |         |      V  |         |
14+20       0.0956      0.31  |Q        |         |       V |         |
14+25       0.0976      0.30  |Q        |         |        V|         |
14+30       0.0997      0.30  |Q        |         |        V|         |
14+35       0.1017      0.30  |Q        |         |         V         |
14+40       0.1038      0.30  |Q        |         |         V         |
14+45       0.1059      0.31  |Q        |         |         |V        |
14+50       0.1079      0.29  |Q        |         |         | V       |
14+55       0.1099      0.28  |Q        |         |         | V       |
15+ 0       0.1118      0.28  |Q        |         |         |  V      |
15+ 5       0.1137      0.27  |Q        |         |         |  V      |
15+10       0.1154      0.25  |Q        |         |         |   V     |
15+15       0.1171      0.25  |Q        |         |         |   V     |
15+20       0.1188      0.24  Q         |         |         |    V    |
15+25       0.1203      0.22  Q         |         |         |    V    |
15+30       0.1219      0.22  Q         |         |         |     V   |
15+35       0.1230      0.16  Q         |         |         |     V   |
15+40       0.1237      0.10  Q         |         |         |     V   |
15+45       0.1243      0.09  Q         |         |         |      V  |
15+50       0.1249      0.09  Q         |         |         |      V  |
15+55       0.1255      0.09  Q         |         |         |      V  |
16+ 0       0.1261      0.09  Q         |         |         |      V  |
16+ 5       0.1265      0.06  Q         |         |         |      V  |
16+10       0.1267      0.03  Q         |         |         |      V  |
16+15       0.1268      0.02  Q         |         |         |      V  |
16+20       0.1269      0.02  Q         |         |         |      V  |
16+25       0.1270      0.02  Q         |         |         |      V  |
16+30       0.1271      0.02  Q         |         |         |      V  |
16+35       0.1272      0.01  Q         |         |         |      V  |
16+40       0.1273      0.01  Q         |         |         |      V  |
16+45       0.1274      0.01  Q         |         |         |      V  |
16+50       0.1275      0.01  Q         |         |         |       V |
16+55       0.1275      0.01  Q         |         |         |       V |
17+ 0       0.1276      0.01  Q         |         |         |       V |
17+ 5       0.1277      0.01  Q         |         |         |       V |
17+10       0.1278      0.02  Q         |         |         |       V |
17+15       0.1280      0.02  Q         |         |         |       V |
17+20       0.1281      0.02  Q         |         |         |       V |
17+25       0.1282      0.02  Q         |         |         |       V |
17+30       0.1284      0.02  Q         |         |         |       V |
17+35       0.1285      0.02  Q         |         |         |       V |
17+40       0.1286      0.02  Q         |         |         |       V |
17+45       0.1287      0.02  Q         |         |         |       V |
17+50       0.1289      0.02  Q         |         |         |       V |
17+55       0.1290      0.02  Q         |         |         |       V |
18+ 0       0.1291      0.02  Q         |         |         |       V |
18+ 5       0.1292      0.02  Q         |         |         |       V |
18+10       0.1293      0.02  Q         |         |         |       V |
18+15       0.1294      0.02  Q         |         |         |       V |
18+20       0.1295      0.02  Q         |         |         |       V |
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18+25       0.1296      0.02  Q         |         |         |       V |
18+30       0.1297      0.02  Q         |         |         |       V |
18+35       0.1298      0.01  Q         |         |         |       V |
18+40       0.1299      0.01  Q         |         |         |       V |
18+45       0.1300      0.01  Q         |         |         |       V |
18+50       0.1300      0.01  Q         |         |         |       V |
18+55       0.1301      0.01  Q         |         |         |       V |
19+ 0       0.1301      0.01  Q         |         |         |       V |
19+ 5       0.1302      0.01  Q         |         |         |       V |
19+10       0.1303      0.01  Q         |         |         |       V |
19+15       0.1304      0.01  Q         |         |         |       V |
19+20       0.1305      0.01  Q         |         |         |       V |
19+25       0.1306      0.01  Q         |         |         |       V |
19+30       0.1307      0.02  Q         |         |         |       V |
19+35       0.1308      0.01  Q         |         |         |       V |
19+40       0.1308      0.01  Q         |         |         |        V|
19+45       0.1309      0.01  Q         |         |         |        V|
19+50       0.1310      0.01  Q         |         |         |        V|
19+55       0.1310      0.01  Q         |         |         |        V|
20+ 0       0.1311      0.01  Q         |         |         |        V|
20+ 5       0.1312      0.01  Q         |         |         |        V|
20+10       0.1312      0.01  Q         |         |         |        V|
20+15       0.1313      0.01  Q         |         |         |        V|
20+20       0.1314      0.01  Q         |         |         |        V|
20+25       0.1315      0.01  Q         |         |         |        V|
20+30       0.1315      0.01  Q         |         |         |        V|
20+35       0.1316      0.01  Q         |         |         |        V|
20+40       0.1317      0.01  Q         |         |         |        V|
20+45       0.1318      0.01  Q         |         |         |        V|
20+50       0.1318      0.01  Q         |         |         |        V|
20+55       0.1319      0.01  Q         |         |         |        V|
21+ 0       0.1320      0.01  Q         |         |         |        V|
21+ 5       0.1320      0.01  Q         |         |         |        V|
21+10       0.1321      0.01  Q         |         |         |        V|
21+15       0.1322      0.01  Q         |         |         |        V|
21+20       0.1322      0.01  Q         |         |         |        V|
21+25       0.1323      0.01  Q         |         |         |        V|
21+30       0.1324      0.01  Q         |         |         |        V|
21+35       0.1324      0.01  Q         |         |         |        V|
21+40       0.1325      0.01  Q         |         |         |        V|
21+45       0.1326      0.01  Q         |         |         |        V|
21+50       0.1326      0.01  Q         |         |         |        V|
21+55       0.1327      0.01  Q         |         |         |        V|
22+ 0       0.1327      0.01  Q         |         |         |        V|
22+ 5       0.1328      0.01  Q         |         |         |        V|
22+10       0.1329      0.01  Q         |         |         |        V|
22+15       0.1330      0.01  Q         |         |         |        V|
22+20       0.1330      0.01  Q         |         |         |        V|
22+25       0.1331      0.01  Q         |         |         |        V|
22+30       0.1331      0.01  Q         |         |         |        V|
22+35       0.1332      0.01  Q         |         |         |        V|
22+40       0.1332      0.01  Q         |         |         |        V|
22+45       0.1333      0.01  Q         |         |         |        V|
22+50       0.1334      0.01  Q         |         |         |        V|
22+55       0.1334      0.01  Q         |         |         |        V|
23+ 0       0.1335      0.01  Q         |         |         |        V|
23+ 5       0.1335      0.01  Q         |         |         |        V|
23+10       0.1336      0.01  Q         |         |         |        V|
23+15       0.1336      0.01  Q         |         |         |        V|
23+20       0.1337      0.01  Q         |         |         |        V|
23+25       0.1337      0.01  Q         |         |         |        V|
23+30       0.1338      0.01  Q         |         |         |        V|
23+35       0.1338      0.01  Q         |         |         |        V|
23+40       0.1339      0.01  Q         |         |         |        V|
23+45       0.1339      0.01  Q         |         |         |        V|
23+50       0.1340      0.01  Q         |         |         |        V|
23+55       0.1340      0.01  Q         |         |         |        V|
24+ 0       0.1341      0.01  Q         |         |         |        V|
24+ 5       0.1341      0.00  Q         |         |         |        V|
24+10       0.1341      0.00  Q         |         |         |        V|
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   24+15       0.1341      0.00  Q         |         |         |        V|
   24+20       0.1341      0.00  Q         |         |         |         V
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       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  02/10/13 File: TR36519eb242.out


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--------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

-------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



-------------------------------------------------------------------
TR 36519
AREA B - EXISTINC CONDITION
24 HOUR, 10 YEAR STORM

------------------------------------------------------------------
Drainage Area =       1.70(Ac.)  =      0.003 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       1.70(Ac.)  =      0.003 Sq. Mi.
Length along longest watercourse =     330.00(Ft.)
Length along longest watercourse measured to centroid =     103.00(Ft.)
Length along longest watercourse =      0.063 Mi.
Length along longest watercourse measured to centroid =      0.020 Mi.
Difference in elevation =      13.50(Ft.)
Slope along watercourse =    216.0000 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.017 Hr.
Lag time =     1.01 Min.
25% of lag time =     0.25 Min.
40% of lag time =     0.41 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]
        1.70           2.70                  4.59

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        1.70           8.00                 13.60

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.700(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    2.700(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.700(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     1.700           78.00         0.100
```

Total Area Entered = 1.70(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
78.0	78.0	0.268	0.100	0.244	1.000	0.244
					Sum (F) =	0.244

Area averaged mean soil loss (F) (In/Hr) = 0.244
Minimum soil loss rate ((In/Hr)) = 0.122
(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
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	493.744	70.609	1.210
2	0.167	987.489	29.391	0.504
		Sum = 100.000	Sum=	1.713

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.022	0.432	0.019	0.00
2	0.17	0.07	0.022	0.430	0.019	0.00
3	0.25	0.07	0.022	0.428	0.019	0.00
4	0.33	0.10	0.032	0.427	0.029	0.00
5	0.42	0.10	0.032	0.425	0.029	0.00
6	0.50	0.10	0.032	0.423	0.029	0.00
7	0.58	0.10	0.032	0.422	0.029	0.00
8	0.67	0.10	0.032	0.420	0.029	0.00
9	0.75	0.10	0.032	0.418	0.029	0.00
10	0.83	0.13	0.043	0.417	0.039	0.00
11	0.92	0.13	0.043	0.415	0.039	0.00
12	1.00	0.13	0.043	0.414	0.039	0.00
13	1.08	0.10	0.032	0.412	0.029	0.00
14	1.17	0.10	0.032	0.410	0.029	0.00
15	1.25	0.10	0.032	0.409	0.029	0.00
16	1.33	0.10	0.032	0.407	0.029	0.00
17	1.42	0.10	0.032	0.405	0.029	0.00
18	1.50	0.10	0.032	0.404	0.029	0.00
19	1.58	0.10	0.032	0.402	0.029	0.00
20	1.67	0.10	0.032	0.401	0.029	0.00
21	1.75	0.10	0.032	0.399	0.029	0.00
22	1.83	0.13	0.043	0.397	0.039	0.00
23	1.92	0.13	0.043	0.396	0.039	0.00
24	2.00	0.13	0.043	0.394	0.039	0.00
25	2.08	0.13	0.043	0.393	0.039	0.00
26	2.17	0.13	0.043	0.391	0.039	0.00
27	2.25	0.13	0.043	0.389	0.039	0.00
28	2.33	0.13	0.043	0.388	0.039	0.00
29	2.42	0.13	0.043	0.386	0.039	0.00
30	2.50	0.13	0.043	0.385	0.039	0.00
31	2.58	0.17	0.054	0.383	0.049	0.01
32	2.67	0.17	0.054	0.381	0.049	0.01
33	2.75	0.17	0.054	0.380	0.049	0.01
34	2.83	0.17	0.054	0.378	0.049	0.01
35	2.92	0.17	0.054	0.377	0.049	0.01
36	3.00	0.17	0.054	0.375	0.049	0.01
37	3.08	0.17	0.054	0.374	0.049	0.01
38	3.17	0.17	0.054	0.372	0.049	0.01
39	3.25	0.17	0.054	0.371	0.049	0.01
40	3.33	0.17	0.054	0.369	0.049	0.01
41	3.42	0.17	0.054	0.367	0.049	0.01

42	3.50	0.17	0.054	0.366	0.049	0.01
43	3.58	0.17	0.054	0.364	0.049	0.01
44	3.67	0.17	0.054	0.363	0.049	0.01
45	3.75	0.17	0.054	0.361	0.049	0.01
46	3.83	0.20	0.065	0.360	0.058	0.01
47	3.92	0.20	0.065	0.358	0.058	0.01
48	4.00	0.20	0.065	0.357	0.058	0.01
49	4.08	0.20	0.065	0.355	0.058	0.01
50	4.17	0.20	0.065	0.354	0.058	0.01
51	4.25	0.20	0.065	0.352	0.058	0.01
52	4.33	0.23	0.076	0.351	0.068	0.01
53	4.42	0.23	0.076	0.349	0.068	0.01
54	4.50	0.23	0.076	0.348	0.068	0.01
55	4.58	0.23	0.076	0.346	0.068	0.01
56	4.67	0.23	0.076	0.345	0.068	0.01
57	4.75	0.23	0.076	0.343	0.068	0.01
58	4.83	0.27	0.086	0.342	0.078	0.01
59	4.92	0.27	0.086	0.340	0.078	0.01
60	5.00	0.27	0.086	0.339	0.078	0.01
61	5.08	0.20	0.065	0.337	0.058	0.01
62	5.17	0.20	0.065	0.336	0.058	0.01
63	5.25	0.20	0.065	0.334	0.058	0.01
64	5.33	0.23	0.076	0.333	0.068	0.01
65	5.42	0.23	0.076	0.332	0.068	0.01
66	5.50	0.23	0.076	0.330	0.068	0.01
67	5.58	0.27	0.086	0.329	0.078	0.01
68	5.67	0.27	0.086	0.327	0.078	0.01
69	5.75	0.27	0.086	0.326	0.078	0.01
70	5.83	0.27	0.086	0.324	0.078	0.01
71	5.92	0.27	0.086	0.323	0.078	0.01
72	6.00	0.27	0.086	0.321	0.078	0.01
73	6.08	0.30	0.097	0.320	0.087	0.01
74	6.17	0.30	0.097	0.319	0.087	0.01
75	6.25	0.30	0.097	0.317	0.087	0.01
76	6.33	0.30	0.097	0.316	0.087	0.01
77	6.42	0.30	0.097	0.314	0.087	0.01
78	6.50	0.30	0.097	0.313	0.087	0.01
79	6.58	0.33	0.108	0.312	0.097	0.01
80	6.67	0.33	0.108	0.310	0.097	0.01
81	6.75	0.33	0.108	0.309	0.097	0.01
82	6.83	0.33	0.108	0.307	0.097	0.01
83	6.92	0.33	0.108	0.306	0.097	0.01
84	7.00	0.33	0.108	0.305	0.097	0.01
85	7.08	0.33	0.108	0.303	0.097	0.01
86	7.17	0.33	0.108	0.302	0.097	0.01
87	7.25	0.33	0.108	0.300	0.097	0.01
88	7.33	0.37	0.119	0.299	0.107	0.01
89	7.42	0.37	0.119	0.298	0.107	0.01
90	7.50	0.37	0.119	0.296	0.107	0.01
91	7.58	0.40	0.130	0.295	0.117	0.01
92	7.67	0.40	0.130	0.294	0.117	0.01
93	7.75	0.40	0.130	0.292	0.117	0.01
94	7.83	0.43	0.140	0.291	0.126	0.01
95	7.92	0.43	0.140	0.290	0.126	0.01
96	8.00	0.43	0.140	0.288	0.126	0.01
97	8.08	0.50	0.162	0.287	0.146	0.02
98	8.17	0.50	0.162	0.286	0.146	0.02
99	8.25	0.50	0.162	0.284	0.146	0.02
100	8.33	0.50	0.162	0.283	0.146	0.02
101	8.42	0.50	0.162	0.282	0.146	0.02
102	8.50	0.50	0.162	0.280	0.146	0.02
103	8.58	0.53	0.173	0.279	0.156	0.02
104	8.67	0.53	0.173	0.278	0.156	0.02
105	8.75	0.53	0.173	0.276	0.156	0.02
106	8.83	0.57	0.184	0.275	0.165	0.02
107	8.92	0.57	0.184	0.274	0.165	0.02
108	9.00	0.57	0.184	0.272	0.165	0.02
109	9.08	0.63	0.205	0.271	0.185	0.02
110	9.17	0.63	0.205	0.270	0.185	0.02
111	9.25	0.63	0.205	0.269	0.185	0.02

112	9.33	0.67	0.216	0.267	0.194	0.02
113	9.42	0.67	0.216	0.266	0.194	0.02
114	9.50	0.67	0.216	0.265	0.194	0.02
115	9.58	0.70	0.227	0.263	0.204	0.02
116	9.67	0.70	0.227	0.262	0.204	0.02
117	9.75	0.70	0.227	0.261	0.204	0.02
118	9.83	0.73	0.238	0.260	0.214	0.02
119	9.92	0.73	0.238	0.258	0.214	0.02
120	10.00	0.73	0.238	0.257	0.214	0.02
121	10.08	0.50	0.162	0.256	0.146	0.02
122	10.17	0.50	0.162	0.255	0.146	0.02
123	10.25	0.50	0.162	0.253	0.146	0.02
124	10.33	0.50	0.162	0.252	0.146	0.02
125	10.42	0.50	0.162	0.251	0.146	0.02
126	10.50	0.50	0.162	0.250	0.146	0.02
127	10.58	0.67	0.216	0.249	0.194	0.02
128	10.67	0.67	0.216	0.247	0.194	0.02
129	10.75	0.67	0.216	0.246	0.194	0.02
130	10.83	0.67	0.216	0.245	0.194	0.02
131	10.92	0.67	0.216	0.244	0.194	0.02
132	11.00	0.67	0.216	0.243	0.194	0.02
133	11.08	0.63	0.205	0.241	0.185	0.02
134	11.17	0.63	0.205	0.240	0.185	0.02
135	11.25	0.63	0.205	0.239	0.185	0.02
136	11.33	0.63	0.205	0.238	0.185	0.02
137	11.42	0.63	0.205	0.237	0.185	0.02
138	11.50	0.63	0.205	0.235	0.185	0.02
139	11.58	0.57	0.184	0.234	0.165	0.02
140	11.67	0.57	0.184	0.233	0.165	0.02
141	11.75	0.57	0.184	0.232	0.165	0.02
142	11.83	0.60	0.194	0.231	0.175	0.02
143	11.92	0.60	0.194	0.230	0.175	0.02
144	12.00	0.60	0.194	0.228	0.175	0.02
145	12.08	0.83	0.270	0.227	---	0.04
146	12.17	0.83	0.270	0.226	---	0.04
147	12.25	0.83	0.270	0.225	---	0.04
148	12.33	0.87	0.281	0.224	---	0.06
149	12.42	0.87	0.281	0.223	---	0.06
150	12.50	0.87	0.281	0.222	---	0.06
151	12.58	0.93	0.302	0.221	---	0.08
152	12.67	0.93	0.302	0.219	---	0.08
153	12.75	0.93	0.302	0.218	---	0.08
154	12.83	0.97	0.313	0.217	---	0.10
155	12.92	0.97	0.313	0.216	---	0.10
156	13.00	0.97	0.313	0.215	---	0.10
157	13.08	1.13	0.367	0.214	---	0.15
158	13.17	1.13	0.367	0.213	---	0.15
159	13.25	1.13	0.367	0.212	---	0.16
160	13.33	1.13	0.367	0.211	---	0.16
161	13.42	1.13	0.367	0.210	---	0.16
162	13.50	1.13	0.367	0.209	---	0.16
163	13.58	0.77	0.248	0.208	---	0.04
164	13.67	0.77	0.248	0.206	---	0.04
165	13.75	0.77	0.248	0.205	---	0.04
166	13.83	0.77	0.248	0.204	---	0.04
167	13.92	0.77	0.248	0.203	---	0.05
168	14.00	0.77	0.248	0.202	---	0.05
169	14.08	0.90	0.292	0.201	---	0.09
170	14.17	0.90	0.292	0.200	---	0.09
171	14.25	0.90	0.292	0.199	---	0.09
172	14.33	0.87	0.281	0.198	---	0.08
173	14.42	0.87	0.281	0.197	---	0.08
174	14.50	0.87	0.281	0.196	---	0.08
175	14.58	0.87	0.281	0.195	---	0.09
176	14.67	0.87	0.281	0.194	---	0.09
177	14.75	0.87	0.281	0.193	---	0.09
178	14.83	0.83	0.270	0.192	---	0.08
179	14.92	0.83	0.270	0.191	---	0.08
180	15.00	0.83	0.270	0.190	---	0.08
181	15.08	0.80	0.259	0.189	---	0.07

182	15.17	0.80	0.259	0.188	---	0.07
183	15.25	0.80	0.259	0.187	---	0.07
184	15.33	0.77	0.248	0.186	---	0.06
185	15.42	0.77	0.248	0.185	---	0.06
186	15.50	0.77	0.248	0.184	---	0.06
187	15.58	0.63	0.205	0.183	---	0.02
188	15.67	0.63	0.205	0.183	---	0.02
189	15.75	0.63	0.205	0.182	---	0.02
190	15.83	0.63	0.205	0.181	---	0.02
191	15.92	0.63	0.205	0.180	---	0.03
192	16.00	0.63	0.205	0.179	---	0.03
193	16.08	0.13	0.043	0.178	0.039	0.00
194	16.17	0.13	0.043	0.177	0.039	0.00
195	16.25	0.13	0.043	0.176	0.039	0.00
196	16.33	0.13	0.043	0.175	0.039	0.00
197	16.42	0.13	0.043	0.174	0.039	0.00
198	16.50	0.13	0.043	0.173	0.039	0.00
199	16.58	0.10	0.032	0.173	0.029	0.00
200	16.67	0.10	0.032	0.172	0.029	0.00
201	16.75	0.10	0.032	0.171	0.029	0.00
202	16.83	0.10	0.032	0.170	0.029	0.00
203	16.92	0.10	0.032	0.169	0.029	0.00
204	17.00	0.10	0.032	0.168	0.029	0.00
205	17.08	0.17	0.054	0.167	0.049	0.01
206	17.17	0.17	0.054	0.167	0.049	0.01
207	17.25	0.17	0.054	0.166	0.049	0.01
208	17.33	0.17	0.054	0.165	0.049	0.01
209	17.42	0.17	0.054	0.164	0.049	0.01
210	17.50	0.17	0.054	0.163	0.049	0.01
211	17.58	0.17	0.054	0.162	0.049	0.01
212	17.67	0.17	0.054	0.162	0.049	0.01
213	17.75	0.17	0.054	0.161	0.049	0.01
214	17.83	0.13	0.043	0.160	0.039	0.00
215	17.92	0.13	0.043	0.159	0.039	0.00
216	18.00	0.13	0.043	0.158	0.039	0.00
217	18.08	0.13	0.043	0.158	0.039	0.00
218	18.17	0.13	0.043	0.157	0.039	0.00
219	18.25	0.13	0.043	0.156	0.039	0.00
220	18.33	0.13	0.043	0.155	0.039	0.00
221	18.42	0.13	0.043	0.155	0.039	0.00
222	18.50	0.13	0.043	0.154	0.039	0.00
223	18.58	0.10	0.032	0.153	0.029	0.00
224	18.67	0.10	0.032	0.152	0.029	0.00
225	18.75	0.10	0.032	0.152	0.029	0.00
226	18.83	0.07	0.022	0.151	0.019	0.00
227	18.92	0.07	0.022	0.150	0.019	0.00
228	19.00	0.07	0.022	0.149	0.019	0.00
229	19.08	0.10	0.032	0.149	0.029	0.00
230	19.17	0.10	0.032	0.148	0.029	0.00
231	19.25	0.10	0.032	0.147	0.029	0.00
232	19.33	0.13	0.043	0.147	0.039	0.00
233	19.42	0.13	0.043	0.146	0.039	0.00
234	19.50	0.13	0.043	0.145	0.039	0.00
235	19.58	0.10	0.032	0.145	0.029	0.00
236	19.67	0.10	0.032	0.144	0.029	0.00
237	19.75	0.10	0.032	0.143	0.029	0.00
238	19.83	0.07	0.022	0.143	0.019	0.00
239	19.92	0.07	0.022	0.142	0.019	0.00
240	20.00	0.07	0.022	0.141	0.019	0.00
241	20.08	0.10	0.032	0.141	0.029	0.00
242	20.17	0.10	0.032	0.140	0.029	0.00
243	20.25	0.10	0.032	0.140	0.029	0.00
244	20.33	0.10	0.032	0.139	0.029	0.00
245	20.42	0.10	0.032	0.138	0.029	0.00
246	20.50	0.10	0.032	0.138	0.029	0.00
247	20.58	0.10	0.032	0.137	0.029	0.00
248	20.67	0.10	0.032	0.137	0.029	0.00
249	20.75	0.10	0.032	0.136	0.029	0.00
250	20.83	0.07	0.022	0.135	0.019	0.00
251	20.92	0.07	0.022	0.135	0.019	0.00

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252  21.00     0.07      0.022         0.134     0.019         0.00
253  21.08     0.10      0.032         0.134     0.029         0.00
254  21.17     0.10      0.032         0.133     0.029         0.00
255  21.25     0.10      0.032         0.133     0.029         0.00
256  21.33     0.07      0.022         0.132     0.019         0.00
257  21.42     0.07      0.022         0.132     0.019         0.00
258  21.50     0.07      0.022         0.131     0.019         0.00
259  21.58     0.10      0.032         0.131     0.029         0.00
260  21.67     0.10      0.032         0.130     0.029         0.00
261  21.75     0.10      0.032         0.130     0.029         0.00
262  21.83     0.07      0.022         0.129     0.019         0.00
263  21.92     0.07      0.022         0.129     0.019         0.00
264  22.00     0.07      0.022         0.129     0.019         0.00
265  22.08     0.10      0.032         0.128     0.029         0.00
266  22.17     0.10      0.032         0.128     0.029         0.00
267  22.25     0.10      0.032         0.127     0.029         0.00
268  22.33     0.07      0.022         0.127     0.019         0.00
269  22.42     0.07      0.022         0.127     0.019         0.00
270  22.50     0.07      0.022         0.126     0.019         0.00
271  22.58     0.07      0.022         0.126     0.019         0.00
272  22.67     0.07      0.022         0.125     0.019         0.00
273  22.75     0.07      0.022         0.125     0.019         0.00
274  22.83     0.07      0.022         0.125     0.019         0.00
275  22.92     0.07      0.022         0.124     0.019         0.00
276  23.00     0.07      0.022         0.124     0.019         0.00
277  23.08     0.07      0.022         0.124     0.019         0.00
278  23.17     0.07      0.022         0.124     0.019         0.00
279  23.25     0.07      0.022         0.123     0.019         0.00
280  23.33     0.07      0.022         0.123     0.019         0.00
281  23.42     0.07      0.022         0.123     0.019         0.00
282  23.50     0.07      0.022         0.123     0.019         0.00
283  23.58     0.07      0.022         0.122     0.019         0.00
284  23.67     0.07      0.022         0.122     0.019         0.00
285  23.75     0.07      0.022         0.122     0.019         0.00
286  23.83     0.07      0.022         0.122     0.019         0.00
287  23.92     0.07      0.022         0.122     0.019         0.00
288  24.00     0.07      0.022         0.122     0.019         0.00
    Sum =     100.0                                       Sum =     5.5
      Flood volume = Effective rainfall      0.46(In)
       times area       1.7(Ac.)/[(In)/(Ft.)] =       0.1(Ac.Ft)
      Total soil loss =      2.24(In)
      Total soil loss =     0.317(Ac.Ft)
      Total rainfall =      2.70(In)
      Flood volume =        2837.8 Cubic Feet
      Total soil loss =       13823.8 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      0.271(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        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0000      0.00  Q         |         |         |         |
   0+10       0.0000      0.00  Q         |         |         |         |
   0+15       0.0001      0.00  Q         |         |         |         |
   0+20       0.0001      0.01  Q         |         |         |         |
   0+25       0.0001      0.01  Q         |         |         |         |
   0+30       0.0002      0.01  Q         |         |         |         |
   0+35       0.0002      0.01  Q         |         |         |         |
   0+40       0.0003      0.01  Q         |         |         |         |
   0+45       0.0003      0.01  Q         |         |         |         |
   0+50       0.0003      0.01  Q         |         |         |         |
   0+55       0.0004      0.01  Q         |         |         |         |
   1+ 0       0.0004      0.01  Q         |         |         |         |
   1+ 5       0.0005      0.01  Q         |         |         |         |
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1+10	0.0005	0.01	Q	|	|	|	|
1+15	0.0006	0.01	Q	|	|	|	|
1+20	0.0006	0.01	Q	|	|	|	|
1+25	0.0006	0.01	Q	|	|	|	|
1+30	0.0007	0.01	Q	|	|	|	|
1+35	0.0007	0.01	Q	|	|	|	|
1+40	0.0008	0.01	Q	|	|	|	|
1+45	0.0008	0.01	Q	|	|	|	|
1+50	0.0008	0.01	Q	|	|	|	|
1+55	0.0009	0.01	Q	|	|	|	|
2+ 0	0.0009	0.01	Q	|	|	|	|
2+ 5	0.0010	0.01	Q	|	|	|	|
2+10	0.0010	0.01	Q	|	|	|	|
2+15	0.0011	0.01	Q	|	|	|	|
2+20	0.0011	0.01	Q	|	|	|	|
2+25	0.0012	0.01	Q	|	|	|	|
2+30	0.0012	0.01	Q	|	|	|	|
2+35	0.0013	0.01	Q	|	|	|	|
2+40	0.0014	0.01	Q	|	|	|	|
2+45	0.0014	0.01	Q	|	|	|	|
2+50	0.0015	0.01	Q	|	|	|	|
2+55	0.0016	0.01	Q	|	|	|	|
3+ 0	0.0016	0.01	Q	|	|	|	|
3+ 5	0.0017	0.01	QV	|	|	|	|
3+10	0.0018	0.01	QV	|	|	|	|
3+15	0.0018	0.01	QV	|	|	|	|
3+20	0.0019	0.01	QV	|	|	|	|
3+25	0.0019	0.01	QV	|	|	|	|
3+30	0.0020	0.01	QV	|	|	|	|
3+35	0.0021	0.01	QV	|	|	|	|
3+40	0.0021	0.01	QV	|	|	|	|
3+45	0.0022	0.01	QV	|	|	|	|
3+50	0.0023	0.01	QV	|	|	|	|
3+55	0.0023	0.01	QV	|	|	|	|
4+ 0	0.0024	0.01	QV	|	|	|	|
4+ 5	0.0025	0.01	QV	|	|	|	|
4+10	0.0026	0.01	QV	|	|	|	|
4+15	0.0027	0.01	QV	|	|	|	|
4+20	0.0027	0.01	QV	|	|	|	|
4+25	0.0028	0.01	QV	|	|	|	|
4+30	0.0029	0.01	QV	|	|	|	|
4+35	0.0030	0.01	QV	|	|	|	|
4+40	0.0031	0.01	QV	|	|	|	|
4+45	0.0032	0.01	QV	|	|	|	|
4+50	0.0033	0.01	Q V	|	|	|	|
4+55	0.0034	0.01	Q V	|	|	|	|
5+ 0	0.0035	0.01	Q V	|	|	|	|
5+ 5	0.0036	0.01	Q V	|	|	|	|
5+10	0.0036	0.01	Q V	|	|	|	|
5+15	0.0037	0.01	Q V	|	|	|	|
5+20	0.0038	0.01	Q V	|	|	|	|
5+25	0.0039	0.01	Q V	|	|	|	|
5+30	0.0040	0.01	Q V	|	|	|	|
5+35	0.0041	0.01	Q V	|	|	|	|
5+40	0.0042	0.01	Q V	|	|	|	|
5+45	0.0043	0.01	Q V	|	|	|	|
5+50	0.0044	0.01	Q V	|	|	|	|
5+55	0.0045	0.01	Q V	|	|	|	|
6+ 0	0.0046	0.01	Q V	|	|	|	|
6+ 5	0.0047	0.02	Q V	|	|	|	|
6+10	0.0048	0.02	Q V	|	|	|	|
6+15	0.0049	0.02	Q V	|	|	|	|
6+20	0.0051	0.02	Q V	|	|	|	|
6+25	0.0052	0.02	Q V	|	|	|	|
6+30	0.0053	0.02	Q V	|	|	|	|
6+35	0.0054	0.02	Q V	|	|	|	|
6+40	0.0055	0.02	Q V	|	|	|	|
6+45	0.0057	0.02	Q V	|	|	|	|
6+50	0.0058	0.02	Q V	|	|	|	|
6+55	0.0059	0.02	Q V	|	|	|	|

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 7+ 0       0.0060      0.02  Q  V      |         |         |         |
 7+ 5       0.0062      0.02  Q  V      |         |         |         |
 7+10       0.0063      0.02  Q  V      |         |         |         |
 7+15       0.0064      0.02  Q  V      |         |         |         |
 7+20       0.0066      0.02  Q   V     |         |         |         |
 7+25       0.0067      0.02  Q   V     |         |         |         |
 7+30       0.0068      0.02  Q   V     |         |         |         |
 7+35       0.0070      0.02  Q   V     |         |         |         |
 7+40       0.0071      0.02  Q   V     |         |         |         |
 7+45       0.0073      0.02  Q   V     |         |         |         |
 7+50       0.0075      0.02  Q   V     |         |         |         |
 7+55       0.0076      0.02  Q   V     |         |         |         |
 8+ 0       0.0078      0.02  Q   V     |         |         |         |
 8+ 5       0.0080      0.03  Q   V     |         |         |         |
 8+10       0.0082      0.03  Q    V    |         |         |         |
 8+15       0.0084      0.03  Q    V    |         |         |         |
 8+20       0.0086      0.03  Q    V    |         |         |         |
 8+25       0.0087      0.03  Q    V    |         |         |         |
 8+30       0.0089      0.03  Q    V    |         |         |         |
 8+35       0.0091      0.03  Q    V    |         |         |         |
 8+40       0.0093      0.03  Q    V    |         |         |         |
 8+45       0.0095      0.03  Q    V    |         |         |         |
 8+50       0.0098      0.03  Q    V    |         |         |         |
 8+55       0.0100      0.03  Q     V   |         |         |         |
 9+ 0       0.0102      0.03  Q     V   |         |         |         |
 9+ 5       0.0104      0.03  Q     V   |         |         |         |
 9+10       0.0107      0.04  Q     V   |         |         |         |
 9+15       0.0109      0.04  Q     V   |         |         |         |
 9+20       0.0112      0.04  Q     V   |         |         |         |
 9+25       0.0114      0.04  Q      V  |         |         |         |
 9+30       0.0117      0.04  Q      V  |         |         |         |
 9+35       0.0119      0.04  Q      V  |         |         |         |
 9+40       0.0122      0.04  Q      V  |         |         |         |
 9+45       0.0125      0.04  Q      V  |         |         |         |
 9+50       0.0127      0.04  Q      V  |         |         |         |
 9+55       0.0130      0.04  Q      V  |         |         |         |
10+ 0       0.0133      0.04  Q       V |         |         |         |
10+ 5       0.0135      0.03  Q       V |         |         |         |
10+10       0.0137      0.03  Q       V |         |         |         |
10+15       0.0139      0.03  Q       V |         |         |         |
10+20       0.0141      0.03  Q       V |         |         |         |
10+25       0.0143      0.03  Q       V |         |         |         |
10+30       0.0145      0.03  Q       V |         |         |         |
10+35       0.0147      0.03  Q        V|         |         |         |
10+40       0.0150      0.04  Q        V|         |         |         |
10+45       0.0152      0.04  Q        V|         |         |         |
10+50       0.0155      0.04  Q        V|         |         |         |
10+55       0.0157      0.04  Q        V|         |         |         |
11+ 0       0.0160      0.04  Q        V|         |         |         |
11+ 5       0.0162      0.04  Q        V|         |         |         |
11+10       0.0165      0.04  Q         V         |         |         |
11+15       0.0167      0.04  Q         V         |         |         |
11+20       0.0170      0.04  Q         V         |         |         |
11+25       0.0172      0.04  Q         V         |         |         |
11+30       0.0174      0.04  Q         V         |         |         |
11+35       0.0177      0.03  Q         V         |         |         |
11+40       0.0179      0.03  Q         V         |         |         |
11+45       0.0181      0.03  Q         |V        |         |         |
11+50       0.0183      0.03  Q         |V        |         |         |
11+55       0.0186      0.03  Q         |V        |         |         |
12+ 0       0.0188      0.03  Q         |V        |         |         |
12+ 5       0.0192      0.06  Q         |V        |         |         |
12+10       0.0197      0.07  Q         | V       |         |         |
12+15       0.0203      0.08  Q         | V       |         |         |
12+20       0.0209      0.09  Q         | V       |         |         |
12+25       0.0216      0.10  Q         |  V      |         |         |
12+30       0.0223      0.10  Q         |  V      |         |         |
12+35       0.0231      0.13  Q         |   V     |         |         |
12+40       0.0241      0.14  Q         |   V     |         |         |
12+45       0.0251      0.14  Q         |    V    |         |         |
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12+50       0.0262      0.16  Q         |     V   |         |         |
12+55       0.0273      0.17  Q         |     V   |         |         |
13+ 0       0.0285      0.17  Q         |      V  |         |         |
13+ 5       0.0301      0.23  Q         |       V |         |         |
13+10       0.0319      0.26  |Q        |        V|         |         |
13+15       0.0338      0.27  |Q        |         V         |         |
13+20       0.0356      0.27  |Q        |         |V        |         |
13+25       0.0375      0.27  |Q        |         |  V      |         |
13+30       0.0393      0.27  |Q        |         |   V     |         |
13+35       0.0402      0.13  Q         |         |   V     |         |
13+40       0.0407      0.07  Q         |         |    V    |         |
13+45       0.0412      0.07  Q         |         |    V    |         |
13+50       0.0417      0.07  Q         |         |    V    |         |
13+55       0.0423      0.08  Q         |         |    V    |         |
14+ 0       0.0428      0.08  Q         |         |     V   |         |
14+ 5       0.0437      0.13  Q         |         |     V   |         |
14+10       0.0448      0.16  Q         |         |      V  |         |
14+15       0.0459      0.16  Q         |         |       V |         |
14+20       0.0469      0.15  Q         |         |       V |         |
14+25       0.0479      0.14  Q         |         |        V|         |
14+30       0.0489      0.14  Q         |         |         V         |
14+35       0.0499      0.15  Q         |         |         V         |
14+40       0.0509      0.15  Q         |         |         |V        |
14+45       0.0519      0.15  Q         |         |         |V        |
14+50       0.0529      0.14  Q         |         |         | V       |
14+55       0.0538      0.13  Q         |         |         |  V      |
15+ 0       0.0547      0.14  Q         |         |         |  V      |
15+ 5       0.0556      0.12  Q         |         |         |   V     |
15+10       0.0564      0.12  Q         |         |         |   V     |
15+15       0.0573      0.12  Q         |         |         |    V    |
15+20       0.0581      0.11  Q         |         |         |    V    |
15+25       0.0588      0.11  Q         |         |         |     V   |
15+30       0.0595      0.11  Q         |         |         |     V   |
15+35       0.0600      0.06  Q         |         |         |     V   |
15+40       0.0602      0.04  Q         |         |         |     V   |
15+45       0.0605      0.04  Q         |         |         |      V  |
15+50       0.0608      0.04  Q         |         |         |      V  |
15+55       0.0611      0.04  Q         |         |         |      V  |
16+ 0       0.0614      0.04  Q         |         |         |      V  |
16+ 5       0.0615      0.02  Q         |         |         |      V  |
16+10       0.0616      0.01  Q         |         |         |      V  |
16+15       0.0616      0.01  Q         |         |         |      V  |
16+20       0.0617      0.01  Q         |         |         |      V  |
16+25       0.0617      0.01  Q         |         |         |      V  |
16+30       0.0618      0.01  Q         |         |         |      V  |
16+35       0.0618      0.01  Q         |         |         |      V  |
16+40       0.0618      0.01  Q         |         |         |      V  |
16+45       0.0619      0.01  Q         |         |         |      V  |
16+50       0.0619      0.01  Q         |         |         |       V |
16+55       0.0620      0.01  Q         |         |         |       V |
17+ 0       0.0620      0.01  Q         |         |         |       V |
17+ 5       0.0621      0.01  Q         |         |         |       V |
17+10       0.0621      0.01  Q         |         |         |       V |
17+15       0.0622      0.01  Q         |         |         |       V |
17+20       0.0622      0.01  Q         |         |         |       V |
17+25       0.0623      0.01  Q         |         |         |       V |
17+30       0.0624      0.01  Q         |         |         |       V |
17+35       0.0624      0.01  Q         |         |         |       V |
17+40       0.0625      0.01  Q         |         |         |       V |
17+45       0.0626      0.01  Q         |         |         |       V |
17+50       0.0626      0.01  Q         |         |         |       V |
17+55       0.0627      0.01  Q         |         |         |       V |
18+ 0       0.0627      0.01  Q         |         |         |       V |
18+ 5       0.0628      0.01  Q         |         |         |       V |
18+10       0.0628      0.01  Q         |         |         |       V |
18+15       0.0629      0.01  Q         |         |         |       V |
18+20       0.0629      0.01  Q         |         |         |       V |
18+25       0.0630      0.01  Q         |         |         |       V |
18+30       0.0630      0.01  Q         |         |         |       V |
18+35       0.0631      0.01  Q         |         |         |       V |
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  18+40       0.0631      0.01  Q         |         |         |       V |
  18+45       0.0631      0.01  Q         |         |         |       V |
  18+50       0.0632      0.00  Q         |         |         |       V |
  18+55       0.0632      0.00  Q         |         |         |       V |
  19+ 0       0.0632      0.00  Q         |         |         |       V |
  19+ 5       0.0633      0.01  Q         |         |         |       V |
  19+10       0.0633      0.01  Q         |         |         |       V |
  19+15       0.0633      0.01  Q         |         |         |       V |
  19+20       0.0634      0.01  Q         |         |         |       V |
  19+25       0.0634      0.01  Q         |         |         |       V |
  19+30       0.0635      0.01  Q         |         |         |       V |
  19+35       0.0635      0.01  Q         |         |         |        V|
  19+40       0.0636      0.01  Q         |         |         |        V|
  19+45       0.0636      0.01  Q         |         |         |        V|
  19+50       0.0636      0.00  Q         |         |         |        V|
  19+55       0.0637      0.00  Q         |         |         |        V|
  20+ 0       0.0637      0.00  Q         |         |         |        V|
  20+ 5       0.0637      0.01  Q         |         |         |        V|
  20+10       0.0638      0.01  Q         |         |         |        V|
  20+15       0.0638      0.01  Q         |         |         |        V|
  20+20       0.0638      0.01  Q         |         |         |        V|
  20+25       0.0639      0.01  Q         |         |         |        V|
  20+30       0.0639      0.01  Q         |         |         |        V|
  20+35       0.0640      0.01  Q         |         |         |        V|
  20+40       0.0640      0.01  Q         |         |         |        V|
  20+45       0.0640      0.01  Q         |         |         |        V|
  20+50       0.0641      0.00  Q         |         |         |        V|
  20+55       0.0641      0.00  Q         |         |         |        V|
  21+ 0       0.0641      0.00  Q         |         |         |        V|
  21+ 5       0.0641      0.01  Q         |         |         |        V|
  21+10       0.0642      0.01  Q         |         |         |        V|
  21+15       0.0642      0.01  Q         |         |         |        V|
  21+20       0.0642      0.00  Q         |         |         |        V|
  21+25       0.0643      0.00  Q         |         |         |        V|
  21+30       0.0643      0.00  Q         |         |         |        V|
  21+35       0.0643      0.01  Q         |         |         |        V|
  21+40       0.0644      0.01  Q         |         |         |        V|
  21+45       0.0644      0.01  Q         |         |         |        V|
  21+50       0.0644      0.00  Q         |         |         |        V|
  21+55       0.0645      0.00  Q         |         |         |        V|
  22+ 0       0.0645      0.00  Q         |         |         |        V|
  22+ 5       0.0645      0.01  Q         |         |         |        V|
  22+10       0.0646      0.01  Q         |         |         |        V|
  22+15       0.0646      0.01  Q         |         |         |        V|
  22+20       0.0646      0.00  Q         |         |         |        V|
  22+25       0.0647      0.00  Q         |         |         |        V|
  22+30       0.0647      0.00  Q         |         |         |        V|
  22+35       0.0647      0.00  Q         |         |         |        V|
  22+40       0.0647      0.00  Q         |         |         |        V|
  22+45       0.0648      0.00  Q         |         |         |        V|
  22+50       0.0648      0.00  Q         |         |         |        V|
  22+55       0.0648      0.00  Q         |         |         |        V|
  23+ 0       0.0648      0.00  Q         |         |         |        V|
  23+ 5       0.0649      0.00  Q         |         |         |        V|
  23+10       0.0649      0.00  Q         |         |         |        V|
  23+15       0.0649      0.00  Q         |         |         |        V|
  23+20       0.0649      0.00  Q         |         |         |        V|
  23+25       0.0650      0.00  Q         |         |         |        V|
  23+30       0.0650      0.00  Q         |         |         |        V|
  23+35       0.0650      0.00  Q         |         |         |        V|
  23+40       0.0650      0.00  Q         |         |         |        V|
  23+45       0.0651      0.00  Q         |         |         |        V|
  23+50       0.0651      0.00  Q         |         |         |        V|
  23+55       0.0651      0.00  Q         |         |         |        V|
  24+ 0       0.0651      0.00  Q         |         |         |        V|
  24+ 5       0.0651      0.00  Q         |         |         |        V|
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       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  02/10/13 File: TR36519ae2410.out


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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



--------------------------------------------------------------------
TRACT 36519
AREA A - EXISTING CONDITION
24 HOUR, 10 YEAR STORM

-------------------------------------------------------------------
Drainage Area =       3.50(Ac.)  =      0.005 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       3.50(Ac.)  =      0.005 Sq. Mi.
Length along longest watercourse =     624.00(Ft.)
Length along longest watercourse measured to centroid =     387.00(Ft.)
Length along longest watercourse =      0.118 Mi.
Length along longest watercourse measured to centroid =      0.073 Mi.
Difference in elevation =      10.50(Ft.)
Slope along watercourse =     88.8462 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.042 Hr.
Lag time =     2.53 Min.
25% of lag time =     0.63 Min.
40% of lag time =     1.01 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]
        3.50           2.70                  9.45

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        3.50           8.00                 28.00

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    2.700(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    4.880(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    4.880(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     3.500           78.00         0.100
```

Total Area Entered = 3.50(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
78.0	78.0	0.268	0.100	0.244	1.000	0.244
					Sum (F) =	0.244

Area averaged mean soil loss (F) (In/Hr) = 0.244
Minimum soil loss rate ((In/Hr)) = 0.122
(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
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	197.975	43.049	1.518
2	0.167	395.950	43.509	1.535
3	0.250	593.925	8.877	0.313
4	0.333	791.900	3.462	0.122
5	0.417	989.875	1.103	0.039
			Sum = 100.000	Sum= 3.527

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.039	0.432	0.035	0.00
2	0.17	0.07	0.039	0.430	0.035	0.00
3	0.25	0.07	0.039	0.428	0.035	0.00
4	0.33	0.10	0.059	0.427	0.053	0.01
5	0.42	0.10	0.059	0.425	0.053	0.01
6	0.50	0.10	0.059	0.423	0.053	0.01
7	0.58	0.10	0.059	0.422	0.053	0.01
8	0.67	0.10	0.059	0.420	0.053	0.01
9	0.75	0.10	0.059	0.418	0.053	0.01
10	0.83	0.13	0.078	0.417	0.070	0.01
11	0.92	0.13	0.078	0.415	0.070	0.01
12	1.00	0.13	0.078	0.414	0.070	0.01
13	1.08	0.10	0.059	0.412	0.053	0.01
14	1.17	0.10	0.059	0.410	0.053	0.01
15	1.25	0.10	0.059	0.409	0.053	0.01
16	1.33	0.10	0.059	0.407	0.053	0.01
17	1.42	0.10	0.059	0.405	0.053	0.01
18	1.50	0.10	0.059	0.404	0.053	0.01
19	1.58	0.10	0.059	0.402	0.053	0.01
20	1.67	0.10	0.059	0.401	0.053	0.01
21	1.75	0.10	0.059	0.399	0.053	0.01
22	1.83	0.13	0.078	0.397	0.070	0.01
23	1.92	0.13	0.078	0.396	0.070	0.01
24	2.00	0.13	0.078	0.394	0.070	0.01
25	2.08	0.13	0.078	0.393	0.070	0.01
26	2.17	0.13	0.078	0.391	0.070	0.01
27	2.25	0.13	0.078	0.389	0.070	0.01
28	2.33	0.13	0.078	0.388	0.070	0.01
29	2.42	0.13	0.078	0.386	0.070	0.01
30	2.50	0.13	0.078	0.385	0.070	0.01
31	2.58	0.17	0.098	0.383	0.088	0.01
32	2.67	0.17	0.098	0.381	0.088	0.01
33	2.75	0.17	0.098	0.380	0.088	0.01
34	2.83	0.17	0.098	0.378	0.088	0.01
35	2.92	0.17	0.098	0.377	0.088	0.01
36	3.00	0.17	0.098	0.375	0.088	0.01
37	3.08	0.17	0.098	0.374	0.088	0.01
38	3.17	0.17	0.098	0.372	0.088	0.01

39	3.25	0.17	0.098	0.371	0.088	0.01
40	3.33	0.17	0.098	0.369	0.088	0.01
41	3.42	0.17	0.098	0.367	0.088	0.01
42	3.50	0.17	0.098	0.366	0.088	0.01
43	3.58	0.17	0.098	0.364	0.088	0.01
44	3.67	0.17	0.098	0.363	0.088	0.01
45	3.75	0.17	0.098	0.361	0.088	0.01
46	3.83	0.20	0.117	0.360	0.105	0.01
47	3.92	0.20	0.117	0.358	0.105	0.01
48	4.00	0.20	0.117	0.357	0.105	0.01
49	4.08	0.20	0.117	0.355	0.105	0.01
50	4.17	0.20	0.117	0.354	0.105	0.01
51	4.25	0.20	0.117	0.352	0.105	0.01
52	4.33	0.23	0.137	0.351	0.123	0.01
53	4.42	0.23	0.137	0.349	0.123	0.01
54	4.50	0.23	0.137	0.348	0.123	0.01
55	4.58	0.23	0.137	0.346	0.123	0.01
56	4.67	0.23	0.137	0.345	0.123	0.01
57	4.75	0.23	0.137	0.343	0.123	0.01
58	4.83	0.27	0.156	0.342	0.141	0.02
59	4.92	0.27	0.156	0.340	0.141	0.02
60	5.00	0.27	0.156	0.339	0.141	0.02
61	5.08	0.20	0.117	0.337	0.105	0.01
62	5.17	0.20	0.117	0.336	0.105	0.01
63	5.25	0.20	0.117	0.334	0.105	0.01
64	5.33	0.23	0.137	0.333	0.123	0.01
65	5.42	0.23	0.137	0.332	0.123	0.01
66	5.50	0.23	0.137	0.330	0.123	0.01
67	5.58	0.27	0.156	0.329	0.141	0.02
68	5.67	0.27	0.156	0.327	0.141	0.02
69	5.75	0.27	0.156	0.326	0.141	0.02
70	5.83	0.27	0.156	0.324	0.141	0.02
71	5.92	0.27	0.156	0.323	0.141	0.02
72	6.00	0.27	0.156	0.321	0.141	0.02
73	6.08	0.30	0.176	0.320	0.158	0.02
74	6.17	0.30	0.176	0.319	0.158	0.02
75	6.25	0.30	0.176	0.317	0.158	0.02
76	6.33	0.30	0.176	0.316	0.158	0.02
77	6.42	0.30	0.176	0.314	0.158	0.02
78	6.50	0.30	0.176	0.313	0.158	0.02
79	6.58	0.33	0.195	0.312	0.176	0.02
80	6.67	0.33	0.195	0.310	0.176	0.02
81	6.75	0.33	0.195	0.309	0.176	0.02
82	6.83	0.33	0.195	0.307	0.176	0.02
83	6.92	0.33	0.195	0.306	0.176	0.02
84	7.00	0.33	0.195	0.305	0.176	0.02
85	7.08	0.33	0.195	0.303	0.176	0.02
86	7.17	0.33	0.195	0.302	0.176	0.02
87	7.25	0.33	0.195	0.300	0.176	0.02
88	7.33	0.37	0.215	0.299	0.193	0.02
89	7.42	0.37	0.215	0.298	0.193	0.02
90	7.50	0.37	0.215	0.296	0.193	0.02
91	7.58	0.40	0.234	0.295	0.211	0.02
92	7.67	0.40	0.234	0.294	0.211	0.02
93	7.75	0.40	0.234	0.292	0.211	0.02
94	7.83	0.43	0.254	0.291	0.228	0.03
95	7.92	0.43	0.254	0.290	0.228	0.03
96	8.00	0.43	0.254	0.288	0.228	0.03
97	8.08	0.50	0.293	0.287	---	0.01
98	8.17	0.50	0.293	0.286	---	0.01
99	8.25	0.50	0.293	0.284	---	0.01
100	8.33	0.50	0.293	0.283	---	0.01
101	8.42	0.50	0.293	0.282	---	0.01
102	8.50	0.50	0.293	0.280	---	0.01
103	8.58	0.53	0.312	0.279	---	0.03
104	8.67	0.53	0.312	0.278	---	0.03
105	8.75	0.53	0.312	0.276	---	0.04
106	8.83	0.57	0.332	0.275	---	0.06
107	8.92	0.57	0.332	0.274	---	0.06
108	9.00	0.57	0.332	0.272	---	0.06

109	9.08	0.63	0.371	0.271	---	0.10
110	9.17	0.63	0.371	0.270	---	0.10
111	9.25	0.63	0.371	0.269	---	0.10
112	9.33	0.67	0.390	0.267	---	0.12
113	9.42	0.67	0.390	0.266	---	0.12
114	9.50	0.67	0.390	0.265	---	0.13
115	9.58	0.70	0.410	0.263	---	0.15
116	9.67	0.70	0.410	0.262	---	0.15
117	9.75	0.70	0.410	0.261	---	0.15
118	9.83	0.73	0.429	0.260	---	0.17
119	9.92	0.73	0.429	0.258	---	0.17
120	10.00	0.73	0.429	0.257	---	0.17
121	10.08	0.50	0.293	0.256	---	0.04
122	10.17	0.50	0.293	0.255	---	0.04
123	10.25	0.50	0.293	0.253	---	0.04
124	10.33	0.50	0.293	0.252	---	0.04
125	10.42	0.50	0.293	0.251	---	0.04
126	10.50	0.50	0.293	0.250	---	0.04
127	10.58	0.67	0.390	0.249	---	0.14
128	10.67	0.67	0.390	0.247	---	0.14
129	10.75	0.67	0.390	0.246	---	0.14
130	10.83	0.67	0.390	0.245	---	0.15
131	10.92	0.67	0.390	0.244	---	0.15
132	11.00	0.67	0.390	0.243	---	0.15
133	11.08	0.63	0.371	0.241	---	0.13
134	11.17	0.63	0.371	0.240	---	0.13
135	11.25	0.63	0.371	0.239	---	0.13
136	11.33	0.63	0.371	0.238	---	0.13
137	11.42	0.63	0.371	0.237	---	0.13
138	11.50	0.63	0.371	0.235	---	0.14
139	11.58	0.57	0.332	0.234	---	0.10
140	11.67	0.57	0.332	0.233	---	0.10
141	11.75	0.57	0.332	0.232	---	0.10
142	11.83	0.60	0.351	0.231	---	0.12
143	11.92	0.60	0.351	0.230	---	0.12
144	12.00	0.60	0.351	0.228	---	0.12
145	12.08	0.83	0.488	0.227	---	0.26
146	12.17	0.83	0.488	0.226	---	0.26
147	12.25	0.83	0.488	0.225	---	0.26
148	12.33	0.87	0.508	0.224	---	0.28
149	12.42	0.87	0.508	0.223	---	0.28
150	12.50	0.87	0.508	0.222	---	0.29
151	12.58	0.93	0.547	0.221	---	0.33
152	12.67	0.93	0.547	0.219	---	0.33
153	12.75	0.93	0.547	0.218	---	0.33
154	12.83	0.97	0.566	0.217	---	0.35
155	12.92	0.97	0.566	0.216	---	0.35
156	13.00	0.97	0.566	0.215	---	0.35
157	13.08	1.13	0.664	0.214	---	0.45
158	13.17	1.13	0.664	0.213	---	0.45
159	13.25	1.13	0.664	0.212	---	0.45
160	13.33	1.13	0.664	0.211	---	0.45
161	13.42	1.13	0.664	0.210	---	0.45
162	13.50	1.13	0.664	0.209	---	0.46
163	13.58	0.77	0.449	0.208	---	0.24
164	13.67	0.77	0.449	0.206	---	0.24
165	13.75	0.77	0.449	0.205	---	0.24
166	13.83	0.77	0.449	0.204	---	0.24
167	13.92	0.77	0.449	0.203	---	0.25
168	14.00	0.77	0.449	0.202	---	0.25
169	14.08	0.90	0.527	0.201	---	0.33
170	14.17	0.90	0.527	0.200	---	0.33
171	14.25	0.90	0.527	0.199	---	0.33
172	14.33	0.87	0.508	0.198	---	0.31
173	14.42	0.87	0.508	0.197	---	0.31
174	14.50	0.87	0.508	0.196	---	0.31
175	14.58	0.87	0.508	0.195	---	0.31
176	14.67	0.87	0.508	0.194	---	0.31
177	14.75	0.87	0.508	0.193	---	0.31
178	14.83	0.83	0.488	0.192	---	0.30

179	14.92	0.83	0.488	0.191	---	0.30
180	15.00	0.83	0.488	0.190	---	0.30
181	15.08	0.80	0.469	0.189	---	0.28
182	15.17	0.80	0.469	0.188	---	0.28
183	15.25	0.80	0.469	0.187	---	0.28
184	15.33	0.77	0.449	0.186	---	0.26
185	15.42	0.77	0.449	0.185	---	0.26
186	15.50	0.77	0.449	0.184	---	0.26
187	15.58	0.63	0.371	0.183	---	0.19
188	15.67	0.63	0.371	0.183	---	0.19
189	15.75	0.63	0.371	0.182	---	0.19
190	15.83	0.63	0.371	0.181	---	0.19
191	15.92	0.63	0.371	0.180	---	0.19
192	16.00	0.63	0.371	0.179	---	0.19
193	16.08	0.13	0.078	0.178	0.070	0.01
194	16.17	0.13	0.078	0.177	0.070	0.01
195	16.25	0.13	0.078	0.176	0.070	0.01
196	16.33	0.13	0.078	0.175	0.070	0.01
197	16.42	0.13	0.078	0.174	0.070	0.01
198	16.50	0.13	0.078	0.173	0.070	0.01
199	16.58	0.10	0.059	0.173	0.053	0.01
200	16.67	0.10	0.059	0.172	0.053	0.01
201	16.75	0.10	0.059	0.171	0.053	0.01
202	16.83	0.10	0.059	0.170	0.053	0.01
203	16.92	0.10	0.059	0.169	0.053	0.01
204	17.00	0.10	0.059	0.168	0.053	0.01
205	17.08	0.17	0.098	0.167	0.088	0.01
206	17.17	0.17	0.098	0.167	0.088	0.01
207	17.25	0.17	0.098	0.166	0.088	0.01
208	17.33	0.17	0.098	0.165	0.088	0.01
209	17.42	0.17	0.098	0.164	0.088	0.01
210	17.50	0.17	0.098	0.163	0.088	0.01
211	17.58	0.17	0.098	0.162	0.088	0.01
212	17.67	0.17	0.098	0.162	0.088	0.01
213	17.75	0.17	0.098	0.161	0.088	0.01
214	17.83	0.13	0.078	0.160	0.070	0.01
215	17.92	0.13	0.078	0.159	0.070	0.01
216	18.00	0.13	0.078	0.158	0.070	0.01
217	18.08	0.13	0.078	0.158	0.070	0.01
218	18.17	0.13	0.078	0.157	0.070	0.01
219	18.25	0.13	0.078	0.156	0.070	0.01
220	18.33	0.13	0.078	0.155	0.070	0.01
221	18.42	0.13	0.078	0.155	0.070	0.01
222	18.50	0.13	0.078	0.154	0.070	0.01
223	18.58	0.10	0.059	0.153	0.053	0.01
224	18.67	0.10	0.059	0.152	0.053	0.01
225	18.75	0.10	0.059	0.152	0.053	0.01
226	18.83	0.07	0.039	0.151	0.035	0.00
227	18.92	0.07	0.039	0.150	0.035	0.00
228	19.00	0.07	0.039	0.149	0.035	0.00
229	19.08	0.10	0.059	0.149	0.053	0.01
230	19.17	0.10	0.059	0.148	0.053	0.01
231	19.25	0.10	0.059	0.147	0.053	0.01
232	19.33	0.13	0.078	0.147	0.070	0.01
233	19.42	0.13	0.078	0.146	0.070	0.01
234	19.50	0.13	0.078	0.145	0.070	0.01
235	19.58	0.10	0.059	0.145	0.053	0.01
236	19.67	0.10	0.059	0.144	0.053	0.01
237	19.75	0.10	0.059	0.143	0.053	0.01
238	19.83	0.07	0.039	0.143	0.035	0.00
239	19.92	0.07	0.039	0.142	0.035	0.00
240	20.00	0.07	0.039	0.141	0.035	0.00
241	20.08	0.10	0.059	0.141	0.053	0.01
242	20.17	0.10	0.059	0.140	0.053	0.01
243	20.25	0.10	0.059	0.140	0.053	0.01
244	20.33	0.10	0.059	0.139	0.053	0.01
245	20.42	0.10	0.059	0.138	0.053	0.01
246	20.50	0.10	0.059	0.138	0.053	0.01
247	20.58	0.10	0.059	0.137	0.053	0.01
248	20.67	0.10	0.059	0.137	0.053	0.01

249	20.75	0.10	0.059	0.136	0.053	0.01
250	20.83	0.07	0.039	0.135	0.035	0.00
251	20.92	0.07	0.039	0.135	0.035	0.00
252	21.00	0.07	0.039	0.134	0.035	0.00
253	21.08	0.10	0.059	0.134	0.053	0.01
254	21.17	0.10	0.059	0.133	0.053	0.01
255	21.25	0.10	0.059	0.133	0.053	0.01
256	21.33	0.07	0.039	0.132	0.035	0.00
257	21.42	0.07	0.039	0.132	0.035	0.00
258	21.50	0.07	0.039	0.131	0.035	0.00
259	21.58	0.10	0.059	0.131	0.053	0.01
260	21.67	0.10	0.059	0.130	0.053	0.01
261	21.75	0.10	0.059	0.130	0.053	0.01
262	21.83	0.07	0.039	0.129	0.035	0.00
263	21.92	0.07	0.039	0.129	0.035	0.00
264	22.00	0.07	0.039	0.129	0.035	0.00
265	22.08	0.10	0.059	0.128	0.053	0.01
266	22.17	0.10	0.059	0.128	0.053	0.01
267	22.25	0.10	0.059	0.127	0.053	0.01
268	22.33	0.07	0.039	0.127	0.035	0.00
269	22.42	0.07	0.039	0.127	0.035	0.00
270	22.50	0.07	0.039	0.126	0.035	0.00
271	22.58	0.07	0.039	0.126	0.035	0.00
272	22.67	0.07	0.039	0.125	0.035	0.00
273	22.75	0.07	0.039	0.125	0.035	0.00
274	22.83	0.07	0.039	0.125	0.035	0.00
275	22.92	0.07	0.039	0.124	0.035	0.00
276	23.00	0.07	0.039	0.124	0.035	0.00
277	23.08	0.07	0.039	0.124	0.035	0.00
278	23.17	0.07	0.039	0.124	0.035	0.00
279	23.25	0.07	0.039	0.123	0.035	0.00
280	23.33	0.07	0.039	0.123	0.035	0.00
281	23.42	0.07	0.039	0.123	0.035	0.00
282	23.50	0.07	0.039	0.123	0.035	0.00
283	23.58	0.07	0.039	0.122	0.035	0.00
284	23.67	0.07	0.039	0.122	0.035	0.00
285	23.75	0.07	0.039	0.122	0.035	0.00
286	23.83	0.07	0.039	0.122	0.035	0.00
287	23.92	0.07	0.039	0.122	0.035	0.00
288	24.00	0.07	0.039	0.122	0.035	0.00
Sum =		100.0			Sum =	20.7

```
    Flood volume = Effective rainfall      1.72(In)
     times area       3.5(Ac.)/[(In)/(Ft.)] =       0.5(Ac.Ft)
    Total soil loss =      3.16(In)
    Total soil loss =     0.921(Ac.Ft)
    Total rainfall =      4.88(In)
    Flood volume =       21875.1 Cubic Feet
    Total soil loss =       40130.7 Cubic Feet
    ---------------------------------------------------------------------
     Peak flow rate of this hydrograph =      1.603(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        2.5       5.0       7.5      10.0
 ---------------------------------------------------------------------
   0+ 5       0.0000      0.01  Q         |         |         |         |
   0+10       0.0001      0.01  Q         |         |         |         |
   0+15       0.0002      0.01  Q         |         |         |         |
   0+20       0.0003      0.02  Q         |         |         |         |
   0+25       0.0005      0.02  Q         |         |         |         |
   0+30       0.0006      0.02  Q         |         |         |         |
   0+35       0.0007      0.02  Q         |         |         |         |
   0+40       0.0009      0.02  Q         |         |         |         |
   0+45       0.0010      0.02  Q         |         |         |         |
   0+50       0.0012      0.02  Q         |         |         |         |
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0+55	0.0014	0.03	Q	|	|	|	|
1+ 0	0.0016	0.03	Q	|	|	|	|
1+ 5	0.0017	0.02	Q	|	|	|	|
1+10	0.0019	0.02	Q	|	|	|	|
1+15	0.0020	0.02	Q	|	|	|	|
1+20	0.0022	0.02	Q	|	|	|	|
1+25	0.0023	0.02	Q	|	|	|	|
1+30	0.0025	0.02	Q	|	|	|	|
1+35	0.0026	0.02	Q	|	|	|	|
1+40	0.0027	0.02	Q	|	|	|	|
1+45	0.0029	0.02	Q	|	|	|	|
1+50	0.0030	0.02	Q	|	|	|	|
1+55	0.0032	0.03	Q	|	|	|	|
2+ 0	0.0034	0.03	Q	|	|	|	|
2+ 5	0.0036	0.03	Q	|	|	|	|
2+10	0.0038	0.03	Q	|	|	|	|
2+15	0.0040	0.03	Q	|	|	|	|
2+20	0.0042	0.03	Q	|	|	|	|
2+25	0.0044	0.03	Q	|	|	|	|
2+30	0.0046	0.03	Q	|	|	|	|
2+35	0.0048	0.03	Q	|	|	|	|
2+40	0.0050	0.03	Q	|	|	|	|
2+45	0.0052	0.03	Q	|	|	|	|
2+50	0.0055	0.03	Q	|	|	|	|
2+55	0.0057	0.03	Q	|	|	|	|
3+ 0	0.0059	0.03	Q	|	|	|	|
3+ 5	0.0062	0.03	Q	|	|	|	|
3+10	0.0064	0.03	Q	|	|	|	|
3+15	0.0067	0.03	Q	|	|	|	|
3+20	0.0069	0.03	Q	|	|	|	|
3+25	0.0071	0.03	Q	|	|	|	|
3+30	0.0074	0.03	Q	|	|	|	|
3+35	0.0076	0.03	Q	|	|	|	|
3+40	0.0078	0.03	Q	|	|	|	|
3+45	0.0081	0.03	Q	|	|	|	|
3+50	0.0083	0.04	Q	|	|	|	|
3+55	0.0086	0.04	Q	|	|	|	|
4+ 0	0.0089	0.04	Q	|	|	|	|
4+ 5	0.0092	0.04	Q	|	|	|	|
4+10	0.0095	0.04	Q	|	|	|	|
4+15	0.0097	0.04	Q	|	|	|	|
4+20	0.0101	0.04	Q	|	|	|	|
4+25	0.0104	0.05	Q	|	|	|	|
4+30	0.0107	0.05	Q	|	|	|	|
4+35	0.0110	0.05	Q	|	|	|	|
4+40	0.0114	0.05	Q	|	|	|	|
4+45	0.0117	0.05	Q	|	|	|	|
4+50	0.0121	0.05	Q	|	|	|	|
4+55	0.0124	0.05	Q	|	|	|	|
5+ 0	0.0128	0.05	QV	|	|	|	|
5+ 5	0.0131	0.05	QV	|	|	|	|
5+10	0.0134	0.04	QV	|	|	|	|
5+15	0.0137	0.04	QV	|	|	|	|
5+20	0.0140	0.04	QV	|	|	|	|
5+25	0.0144	0.05	QV	|	|	|	|
5+30	0.0147	0.05	QV	|	|	|	|
5+35	0.0150	0.05	QV	|	|	|	|
5+40	0.0154	0.05	QV	|	|	|	|
5+45	0.0158	0.05	QV	|	|	|	|
5+50	0.0162	0.06	QV	|	|	|	|
5+55	0.0166	0.06	QV	|	|	|	|
6+ 0	0.0169	0.06	QV	|	|	|	|
6+ 5	0.0173	0.06	QV	|	|	|	|
6+10	0.0178	0.06	QV	|	|	|	|
6+15	0.0182	0.06	QV	|	|	|	|
6+20	0.0186	0.06	QV	|	|	|	|
6+25	0.0190	0.06	QV	|	|	|	|
6+30	0.0195	0.06	QV	|	|	|	|
6+35	0.0199	0.06	QV	|	|	|	|
6+40	0.0204	0.07	QV	|	|	|	|

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 6+45       0.0208      0.07  QV        |         |         |         |
 6+50       0.0213      0.07  QV        |         |         |         |
 6+55       0.0218      0.07  QV        |         |         |         |
 7+ 0       0.0223      0.07  QV        |         |         |         |
 7+ 5       0.0227      0.07  QV        |         |         |         |
 7+10       0.0232      0.07  QV        |         |         |         |
 7+15       0.0237      0.07  QV        |         |         |         |
 7+20       0.0242      0.07  QV        |         |         |         |
 7+25       0.0247      0.07  QV        |         |         |         |
 7+30       0.0252      0.08  Q V       |         |         |         |
 7+35       0.0258      0.08  Q V       |         |         |         |
 7+40       0.0263      0.08  Q V       |         |         |         |
 7+45       0.0269      0.08  Q V       |         |         |         |
 7+50       0.0275      0.09  Q V       |         |         |         |
 7+55       0.0281      0.09  Q V       |         |         |         |
 8+ 0       0.0287      0.09  Q V       |         |         |         |
 8+ 5       0.0291      0.06  Q V       |         |         |         |
 8+10       0.0293      0.03  Q V       |         |         |         |
 8+15       0.0296      0.03  Q V       |         |         |         |
 8+20       0.0298      0.03  Q V       |         |         |         |
 8+25       0.0300      0.04  Q V       |         |         |         |
 8+30       0.0303      0.04  Q V       |         |         |         |
 8+35       0.0308      0.08  Q V       |         |         |         |
 8+40       0.0316      0.11  Q V       |         |         |         |
 8+45       0.0324      0.12  Q V       |         |         |         |
 8+50       0.0335      0.16  Q V       |         |         |         |
 8+55       0.0348      0.19  Q V       |         |         |         |
 9+ 0       0.0362      0.20  Q V       |         |         |         |
 9+ 5       0.0381      0.27  |Q V      |         |         |         |
 9+10       0.0404      0.33  |Q V      |         |         |         |
 9+15       0.0428      0.35  |Q V      |         |         |         |
 9+20       0.0455      0.39  |Q V      |         |         |         |
 9+25       0.0484      0.43  |Q V      |         |         |         |
 9+30       0.0514      0.44  |Q  V     |         |         |         |
 9+35       0.0547      0.47  |Q  V     |         |         |         |
 9+40       0.0582      0.51  | Q V     |         |         |         |
 9+45       0.0618      0.52  | Q V     |         |         |         |
 9+50       0.0656      0.56  | Q  V    |         |         |         |
 9+55       0.0697      0.59  | Q  V    |         |         |         |
10+ 0       0.0738      0.60  | Q  V    |         |         |         |
10+ 5       0.0766      0.40  |Q    V   |         |         |         |
10+10       0.0779      0.20  Q     V   |         |         |         |
10+15       0.0790      0.16  Q     V   |         |         |         |
10+20       0.0800      0.15  Q     V   |         |         |         |
10+25       0.0810      0.14  Q     V   |         |         |         |
10+30       0.0821      0.15  Q     V   |         |         |         |
10+35       0.0841      0.30  |Q    V   |         |         |         |
10+40       0.0873      0.46  |Q    V   |         |         |         |
10+45       0.0906      0.49  |Q     V  |         |         |         |
10+50       0.0941      0.51  | Q    V  |         |         |         |
10+55       0.0977      0.51  | Q    V  |         |         |         |
11+ 0       0.1013      0.52  | Q     V |         |         |         |
11+ 5       0.1046      0.49  |Q      V |         |         |         |
11+10       0.1079      0.47  |Q      V |         |         |         |
11+15       0.1111      0.47  |Q      V |         |         |         |
11+20       0.1143      0.47  |Q       V|         |         |         |
11+25       0.1175      0.47  |Q       V|         |         |         |
11+30       0.1208      0.48  |Q       V|         |         |         |
11+35       0.1237      0.42  |Q       V|         |         |         |
11+40       0.1262      0.36  |Q        V         |         |         |
11+45       0.1287      0.36  |Q        V         |         |         |
11+50       0.1313      0.38  |Q        V         |         |         |
11+55       0.1342      0.42  |Q        V         |         |         |
12+ 0       0.1371      0.43  |Q        V         |         |         |
12+ 5       0.1416      0.64  | Q       |V        |         |         |
12+10       0.1475      0.86  |  Q      |V        |         |         |
12+15       0.1537      0.90  |  Q      | V       |         |         |
12+20       0.1602      0.95  |  Q      | V       |         |         |
12+25       0.1671      0.99  |  Q      |  V      |         |         |
12+30       0.1740      1.00  |   Q     |  V      |         |         |
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12+35       0.1813      1.07  |   Q     |   V     |         |         |
12+40       0.1891      1.13  |   Q     |    V    |         |         |
12+45       0.1971      1.15  |   Q     |    V    |         |         |
12+50       0.2052      1.19  |   Q     |     V   |         |         |
12+55       0.2137      1.22  |   Q     |      V  |         |         |
13+ 0       0.2222      1.23  |   Q     |      V  |         |         |
13+ 5       0.2317      1.39  |    Q    |       V |         |         |
13+10       0.2423      1.54  |     Q   |        V|         |         |
13+15       0.2532      1.58  |     Q   |         V         |         |
13+20       0.2641      1.59  |     Q   |         |V        |         |
13+25       0.2752      1.60  |     Q   |         |V        |         |
13+30       0.2862      1.60  |     Q   |         | V       |         |
13+35       0.2950      1.28  |    Q    |         |  V      |         |
13+40       0.3016      0.95  |  Q      |         |   V     |         |
13+45       0.3077      0.89  |  Q      |         |   V     |         |
13+50       0.3137      0.87  |  Q      |         |   V     |         |
13+55       0.3197      0.86  |  Q      |         |    V    |         |
14+ 0       0.3257      0.87  |  Q      |         |    V    |         |
14+ 5       0.3325      0.99  |  Q      |         |     V   |         |
14+10       0.3402      1.11  |   Q     |         |      V  |         |
14+15       0.3480      1.14  |   Q     |         |      V  |         |
14+20       0.3558      1.13  |   Q     |         |       V |         |
14+25       0.3634      1.10  |   Q     |         |       V |         |
14+30       0.3709      1.10  |   Q     |         |        V|         |
14+35       0.3785      1.10  |   Q     |         |         V         |
14+40       0.3861      1.10  |   Q     |         |         V         |
14+45       0.3937      1.11  |   Q     |         |         |V        |
14+50       0.4012      1.08  |   Q     |         |         |V        |
14+55       0.4084      1.05  |   Q     |         |         | V       |
15+ 0       0.4157      1.05  |   Q     |         |         |  V      |
15+ 5       0.4227      1.02  |   Q     |         |         |  V      |
15+10       0.4296      1.00  |  Q      |         |         |   V     |
15+15       0.4364      0.99  |  Q      |         |         |   V     |
15+20       0.4431      0.96  |  Q      |         |         |    V    |
15+25       0.4495      0.94  |  Q      |         |         |    V    |
15+30       0.4560      0.93  |  Q      |         |         |     V   |
15+35       0.4616      0.82  |  Q      |         |         |     V   |
15+40       0.4664      0.70  | Q       |         |         |      V  |
15+45       0.4711      0.68  | Q       |         |         |      V  |
15+50       0.4757      0.67  | Q       |         |         |      V  |
15+55       0.4803      0.67  | Q       |         |         |       V |
16+ 0       0.4850      0.68  | Q       |         |         |       V |
16+ 5       0.4877      0.40  |Q        |         |         |       V |
16+10       0.4885      0.11  Q         |         |         |       V |
16+15       0.4889      0.06  Q         |         |         |       V |
16+20       0.4891      0.03  Q         |         |         |       V |
16+25       0.4893      0.03  Q         |         |         |       V |
16+30       0.4895      0.03  Q         |         |         |       V |
16+35       0.4897      0.02  Q         |         |         |        V|
16+40       0.4898      0.02  Q         |         |         |        V|
16+45       0.4900      0.02  Q         |         |         |        V|
16+50       0.4901      0.02  Q         |         |         |        V|
16+55       0.4903      0.02  Q         |         |         |        V|
17+ 0       0.4904      0.02  Q         |         |         |        V|
17+ 5       0.4906      0.03  Q         |         |         |        V|
17+10       0.4908      0.03  Q         |         |         |        V|
17+15       0.4910      0.03  Q         |         |         |        V|
17+20       0.4913      0.03  Q         |         |         |        V|
17+25       0.4915      0.03  Q         |         |         |        V|
17+30       0.4918      0.03  Q         |         |         |        V|
17+35       0.4920      0.03  Q         |         |         |        V|
17+40       0.4922      0.03  Q         |         |         |        V|
17+45       0.4925      0.03  Q         |         |         |        V|
17+50       0.4927      0.03  Q         |         |         |        V|
17+55       0.4929      0.03  Q         |         |         |        V|
18+ 0       0.4931      0.03  Q         |         |         |        V|
18+ 5       0.4933      0.03  Q         |         |         |        V|
18+10       0.4935      0.03  Q         |         |         |        V|
18+15       0.4936      0.03  Q         |         |         |        V|
18+20       0.4938      0.03  Q         |         |         |        V|
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18+25       0.4940      0.03  Q         |         |         |        V|
18+30       0.4942      0.03  Q         |         |         |        V|
18+35       0.4944      0.02  Q         |         |         |        V|
18+40       0.4945      0.02  Q         |         |         |        V|
18+45       0.4947      0.02  Q         |         |         |        V|
18+50       0.4948      0.02  Q         |         |         |        V|
18+55       0.4949      0.01  Q         |         |         |        V|
19+ 0       0.4950      0.01  Q         |         |         |        V|
19+ 5       0.4951      0.02  Q         |         |         |        V|
19+10       0.4952      0.02  Q         |         |         |        V|
19+15       0.4954      0.02  Q         |         |         |        V|
19+20       0.4955      0.02  Q         |         |         |        V|
19+25       0.4957      0.03  Q         |         |         |        V|
19+30       0.4959      0.03  Q         |         |         |        V|
19+35       0.4961      0.02  Q         |         |         |        V|
19+40       0.4962      0.02  Q         |         |         |        V|
19+45       0.4964      0.02  Q         |         |         |        V|
19+50       0.4965      0.02  Q         |         |         |        V|
19+55       0.4966      0.01  Q         |         |         |        V|
20+ 0       0.4967      0.01  Q         |         |         |        V|
20+ 5       0.4968      0.02  Q         |         |         |        V|
20+10       0.4970      0.02  Q         |         |         |        V|
20+15       0.4971      0.02  Q         |         |         |        V|
20+20       0.4972      0.02  Q         |         |         |        V|
20+25       0.4974      0.02  Q         |         |         |        V|
20+30       0.4975      0.02  Q         |         |         |        V|
20+35       0.4977      0.02  Q         |         |         |        V|
20+40       0.4978      0.02  Q         |         |         |        V|
20+45       0.4979      0.02  Q         |         |         |        V|
20+50       0.4981      0.02  Q         |         |         |        V|
20+55       0.4982      0.01  Q         |         |         |        V|
21+ 0       0.4983      0.01  Q         |         |         |        V|
21+ 5       0.4984      0.02  Q         |         |         |        V|
21+10       0.4985      0.02  Q         |         |         |        V|
21+15       0.4987      0.02  Q         |         |         |        V|
21+20       0.4988      0.02  Q         |         |         |        V|
21+25       0.4989      0.01  Q         |         |         |        V|
21+30       0.4990      0.01  Q         |         |         |        V|
21+35       0.4991      0.02  Q         |         |         |        V|
21+40       0.4992      0.02  Q         |         |         |        V|
21+45       0.4994      0.02  Q         |         |         |        V|
21+50       0.4995      0.02  Q         |         |         |        V|
21+55       0.4996      0.01  Q         |         |         |        V|
22+ 0       0.4997      0.01  Q         |         |         |        V|
22+ 5       0.4998      0.02  Q         |         |         |        V|
22+10       0.4999      0.02  Q         |         |         |        V|
22+15       0.5001      0.02  Q         |         |         |        V|
22+20       0.5002      0.02  Q         |         |         |        V|
22+25       0.5003      0.01  Q         |         |         |        V|
22+30       0.5004      0.01  Q         |         |         |        V|
22+35       0.5005      0.01  Q         |         |         |        V|
22+40       0.5006      0.01  Q         |         |         |        V|
22+45       0.5007      0.01  Q         |         |         |        V|
22+50       0.5008      0.01  Q         |         |         |        V|
22+55       0.5009      0.01  Q         |         |         |        V|
23+ 0       0.5010      0.01  Q         |         |         |        V|
23+ 5       0.5011      0.01  Q         |         |         |        V|
23+10       0.5012      0.01  Q         |         |         |        V|
23+15       0.5013      0.01  Q         |         |         |        V|
23+20       0.5014      0.01  Q         |         |         |        V|
23+25       0.5014      0.01  Q         |         |         |        V|
23+30       0.5015      0.01  Q         |         |         |        V|
23+35       0.5016      0.01  Q         |         |         |        V|
23+40       0.5017      0.01  Q         |         |         |        V|
23+45       0.5018      0.01  Q         |         |         |        V|
23+50       0.5019      0.01  Q         |         |         |        V|
23+55       0.5020      0.01  Q         |         |         |        V|
24+ 0       0.5021      0.01  Q         |         |         |        V|
24+ 5       0.5022      0.01  Q         |         |         |        V|
24+10       0.5022      0.00  Q         |         |         |        V|
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   24+15       0.5022      0.00  Q         |         |         |        V|
   24+20       0.5022      0.00  Q         |         |         |        V|
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       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  02/10/13 File: tr36519eb2410.out


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----------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



--------------------------------------------------------------------
TR 36519
AREA B - EXISTINC CONDITION
24 HOUR, 10 YEAR STORM

-------------------------------------------------------------------
Drainage Area =       1.70(Ac.)  =      0.003 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       1.70(Ac.)  =      0.003 Sq. Mi.
Length along longest watercourse =     330.00(Ft.)
Length along longest watercourse measured to centroid =     103.00(Ft.)
Length along longest watercourse =      0.063 Mi.
Length along longest watercourse measured to centroid =      0.020 Mi.
Difference in elevation =      13.50(Ft.)
Slope along watercourse =    216.0000 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.017 Hr.
Lag time =     1.01 Min.
25% of lag time =     0.25 Min.
40% of lag time =     0.41 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]
        1.70           2.70                  4.59

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        1.70           8.00                 13.60

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    2.700(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    4.880(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    4.880(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     1.700           78.00         0.100
```

Total Area Entered = 1.70(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
78.0	78.0	0.268	0.100	0.244	1.000	0.244
					Sum (F) =	0.244

Area averaged mean soil loss (F) (In/Hr) = 0.244
Minimum soil loss rate ((In/Hr)) = 0.122
(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
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	493.744	70.609	1.210
2	0.167	987.489	29.391	0.504
		Sum = 100.000	Sum=	1.713

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.039	0.432	0.035	0.00
2	0.17	0.07	0.039	0.430	0.035	0.00
3	0.25	0.07	0.039	0.428	0.035	0.00
4	0.33	0.10	0.059	0.427	0.053	0.01
5	0.42	0.10	0.059	0.425	0.053	0.01
6	0.50	0.10	0.059	0.423	0.053	0.01
7	0.58	0.10	0.059	0.422	0.053	0.01
8	0.67	0.10	0.059	0.420	0.053	0.01
9	0.75	0.10	0.059	0.418	0.053	0.01
10	0.83	0.13	0.078	0.417	0.070	0.01
11	0.92	0.13	0.078	0.415	0.070	0.01
12	1.00	0.13	0.078	0.414	0.070	0.01
13	1.08	0.10	0.059	0.412	0.053	0.01
14	1.17	0.10	0.059	0.410	0.053	0.01
15	1.25	0.10	0.059	0.409	0.053	0.01
16	1.33	0.10	0.059	0.407	0.053	0.01
17	1.42	0.10	0.059	0.405	0.053	0.01
18	1.50	0.10	0.059	0.404	0.053	0.01
19	1.58	0.10	0.059	0.402	0.053	0.01
20	1.67	0.10	0.059	0.401	0.053	0.01
21	1.75	0.10	0.059	0.399	0.053	0.01
22	1.83	0.13	0.078	0.397	0.070	0.01
23	1.92	0.13	0.078	0.396	0.070	0.01
24	2.00	0.13	0.078	0.394	0.070	0.01
25	2.08	0.13	0.078	0.393	0.070	0.01
26	2.17	0.13	0.078	0.391	0.070	0.01
27	2.25	0.13	0.078	0.389	0.070	0.01
28	2.33	0.13	0.078	0.388	0.070	0.01
29	2.42	0.13	0.078	0.386	0.070	0.01
30	2.50	0.13	0.078	0.385	0.070	0.01
31	2.58	0.17	0.098	0.383	0.088	0.01
32	2.67	0.17	0.098	0.381	0.088	0.01
33	2.75	0.17	0.098	0.380	0.088	0.01
34	2.83	0.17	0.098	0.378	0.088	0.01
35	2.92	0.17	0.098	0.377	0.088	0.01
36	3.00	0.17	0.098	0.375	0.088	0.01
37	3.08	0.17	0.098	0.374	0.088	0.01
38	3.17	0.17	0.098	0.372	0.088	0.01
39	3.25	0.17	0.098	0.371	0.088	0.01
40	3.33	0.17	0.098	0.369	0.088	0.01
41	3.42	0.17	0.098	0.367	0.088	0.01

42	3.50	0.17	0.098	0.366	0.088	0.01
43	3.58	0.17	0.098	0.364	0.088	0.01
44	3.67	0.17	0.098	0.363	0.088	0.01
45	3.75	0.17	0.098	0.361	0.088	0.01
46	3.83	0.20	0.117	0.360	0.105	0.01
47	3.92	0.20	0.117	0.358	0.105	0.01
48	4.00	0.20	0.117	0.357	0.105	0.01
49	4.08	0.20	0.117	0.355	0.105	0.01
50	4.17	0.20	0.117	0.354	0.105	0.01
51	4.25	0.20	0.117	0.352	0.105	0.01
52	4.33	0.23	0.137	0.351	0.123	0.01
53	4.42	0.23	0.137	0.349	0.123	0.01
54	4.50	0.23	0.137	0.348	0.123	0.01
55	4.58	0.23	0.137	0.346	0.123	0.01
56	4.67	0.23	0.137	0.345	0.123	0.01
57	4.75	0.23	0.137	0.343	0.123	0.01
58	4.83	0.27	0.156	0.342	0.141	0.02
59	4.92	0.27	0.156	0.340	0.141	0.02
60	5.00	0.27	0.156	0.339	0.141	0.02
61	5.08	0.20	0.117	0.337	0.105	0.01
62	5.17	0.20	0.117	0.336	0.105	0.01
63	5.25	0.20	0.117	0.334	0.105	0.01
64	5.33	0.23	0.137	0.333	0.123	0.01
65	5.42	0.23	0.137	0.332	0.123	0.01
66	5.50	0.23	0.137	0.330	0.123	0.01
67	5.58	0.27	0.156	0.329	0.141	0.02
68	5.67	0.27	0.156	0.327	0.141	0.02
69	5.75	0.27	0.156	0.326	0.141	0.02
70	5.83	0.27	0.156	0.324	0.141	0.02
71	5.92	0.27	0.156	0.323	0.141	0.02
72	6.00	0.27	0.156	0.321	0.141	0.02
73	6.08	0.30	0.176	0.320	0.158	0.02
74	6.17	0.30	0.176	0.319	0.158	0.02
75	6.25	0.30	0.176	0.317	0.158	0.02
76	6.33	0.30	0.176	0.316	0.158	0.02
77	6.42	0.30	0.176	0.314	0.158	0.02
78	6.50	0.30	0.176	0.313	0.158	0.02
79	6.58	0.33	0.195	0.312	0.176	0.02
80	6.67	0.33	0.195	0.310	0.176	0.02
81	6.75	0.33	0.195	0.309	0.176	0.02
82	6.83	0.33	0.195	0.307	0.176	0.02
83	6.92	0.33	0.195	0.306	0.176	0.02
84	7.00	0.33	0.195	0.305	0.176	0.02
85	7.08	0.33	0.195	0.303	0.176	0.02
86	7.17	0.33	0.195	0.302	0.176	0.02
87	7.25	0.33	0.195	0.300	0.176	0.02
88	7.33	0.37	0.215	0.299	0.193	0.02
89	7.42	0.37	0.215	0.298	0.193	0.02
90	7.50	0.37	0.215	0.296	0.193	0.02
91	7.58	0.40	0.234	0.295	0.211	0.02
92	7.67	0.40	0.234	0.294	0.211	0.02
93	7.75	0.40	0.234	0.292	0.211	0.02
94	7.83	0.43	0.254	0.291	0.228	0.03
95	7.92	0.43	0.254	0.290	0.228	0.03
96	8.00	0.43	0.254	0.288	0.228	0.03
97	8.08	0.50	0.293	0.287	---	0.01
98	8.17	0.50	0.293	0.286	---	0.01
99	8.25	0.50	0.293	0.284	---	0.01
100	8.33	0.50	0.293	0.283	---	0.01
101	8.42	0.50	0.293	0.282	---	0.01
102	8.50	0.50	0.293	0.280	---	0.01
103	8.58	0.53	0.312	0.279	---	0.03
104	8.67	0.53	0.312	0.278	---	0.03
105	8.75	0.53	0.312	0.276	---	0.04
106	8.83	0.57	0.332	0.275	---	0.06
107	8.92	0.57	0.332	0.274	---	0.06
108	9.00	0.57	0.332	0.272	---	0.06
109	9.08	0.63	0.371	0.271	---	0.10
110	9.17	0.63	0.371	0.270	---	0.10
111	9.25	0.63	0.371	0.269	---	0.10

112	9.33	0.67	0.390	0.267	---	0.12
113	9.42	0.67	0.390	0.266	---	0.12
114	9.50	0.67	0.390	0.265	---	0.13
115	9.58	0.70	0.410	0.263	---	0.15
116	9.67	0.70	0.410	0.262	---	0.15
117	9.75	0.70	0.410	0.261	---	0.15
118	9.83	0.73	0.429	0.260	---	0.17
119	9.92	0.73	0.429	0.258	---	0.17
120	10.00	0.73	0.429	0.257	---	0.17
121	10.08	0.50	0.293	0.256	---	0.04
122	10.17	0.50	0.293	0.255	---	0.04
123	10.25	0.50	0.293	0.253	---	0.04
124	10.33	0.50	0.293	0.252	---	0.04
125	10.42	0.50	0.293	0.251	---	0.04
126	10.50	0.50	0.293	0.250	---	0.04
127	10.58	0.67	0.390	0.249	---	0.14
128	10.67	0.67	0.390	0.247	---	0.14
129	10.75	0.67	0.390	0.246	---	0.14
130	10.83	0.67	0.390	0.245	---	0.15
131	10.92	0.67	0.390	0.244	---	0.15
132	11.00	0.67	0.390	0.243	---	0.15
133	11.08	0.63	0.371	0.241	---	0.13
134	11.17	0.63	0.371	0.240	---	0.13
135	11.25	0.63	0.371	0.239	---	0.13
136	11.33	0.63	0.371	0.238	---	0.13
137	11.42	0.63	0.371	0.237	---	0.13
138	11.50	0.63	0.371	0.235	---	0.14
139	11.58	0.57	0.332	0.234	---	0.10
140	11.67	0.57	0.332	0.233	---	0.10
141	11.75	0.57	0.332	0.232	---	0.10
142	11.83	0.60	0.351	0.231	---	0.12
143	11.92	0.60	0.351	0.230	---	0.12
144	12.00	0.60	0.351	0.228	---	0.12
145	12.08	0.83	0.488	0.227	---	0.26
146	12.17	0.83	0.488	0.226	---	0.26
147	12.25	0.83	0.488	0.225	---	0.26
148	12.33	0.87	0.508	0.224	---	0.28
149	12.42	0.87	0.508	0.223	---	0.28
150	12.50	0.87	0.508	0.222	---	0.29
151	12.58	0.93	0.547	0.221	---	0.33
152	12.67	0.93	0.547	0.219	---	0.33
153	12.75	0.93	0.547	0.218	---	0.33
154	12.83	0.97	0.566	0.217	---	0.35
155	12.92	0.97	0.566	0.216	---	0.35
156	13.00	0.97	0.566	0.215	---	0.35
157	13.08	1.13	0.664	0.214	---	0.45
158	13.17	1.13	0.664	0.213	---	0.45
159	13.25	1.13	0.664	0.212	---	0.45
160	13.33	1.13	0.664	0.211	---	0.45
161	13.42	1.13	0.664	0.210	---	0.45
162	13.50	1.13	0.664	0.209	---	0.46
163	13.58	0.77	0.449	0.208	---	0.24
164	13.67	0.77	0.449	0.206	---	0.24
165	13.75	0.77	0.449	0.205	---	0.24
166	13.83	0.77	0.449	0.204	---	0.24
167	13.92	0.77	0.449	0.203	---	0.25
168	14.00	0.77	0.449	0.202	---	0.25
169	14.08	0.90	0.527	0.201	---	0.33
170	14.17	0.90	0.527	0.200	---	0.33
171	14.25	0.90	0.527	0.199	---	0.33
172	14.33	0.87	0.508	0.198	---	0.31
173	14.42	0.87	0.508	0.197	---	0.31
174	14.50	0.87	0.508	0.196	---	0.31
175	14.58	0.87	0.508	0.195	---	0.31
176	14.67	0.87	0.508	0.194	---	0.31
177	14.75	0.87	0.508	0.193	---	0.31
178	14.83	0.83	0.488	0.192	---	0.30
179	14.92	0.83	0.488	0.191	---	0.30
180	15.00	0.83	0.488	0.190	---	0.30
181	15.08	0.80	0.469	0.189	---	0.28

182	15.17	0.80	0.469	0.188	---	0.28
183	15.25	0.80	0.469	0.187	---	0.28
184	15.33	0.77	0.449	0.186	---	0.26
185	15.42	0.77	0.449	0.185	---	0.26
186	15.50	0.77	0.449	0.184	---	0.26
187	15.58	0.63	0.371	0.183	---	0.19
188	15.67	0.63	0.371	0.183	---	0.19
189	15.75	0.63	0.371	0.182	---	0.19
190	15.83	0.63	0.371	0.181	---	0.19
191	15.92	0.63	0.371	0.180	---	0.19
192	16.00	0.63	0.371	0.179	---	0.19
193	16.08	0.13	0.078	0.178	0.070	0.01
194	16.17	0.13	0.078	0.177	0.070	0.01
195	16.25	0.13	0.078	0.176	0.070	0.01
196	16.33	0.13	0.078	0.175	0.070	0.01
197	16.42	0.13	0.078	0.174	0.070	0.01
198	16.50	0.13	0.078	0.173	0.070	0.01
199	16.58	0.10	0.059	0.173	0.053	0.01
200	16.67	0.10	0.059	0.172	0.053	0.01
201	16.75	0.10	0.059	0.171	0.053	0.01
202	16.83	0.10	0.059	0.170	0.053	0.01
203	16.92	0.10	0.059	0.169	0.053	0.01
204	17.00	0.10	0.059	0.168	0.053	0.01
205	17.08	0.17	0.098	0.167	0.088	0.01
206	17.17	0.17	0.098	0.167	0.088	0.01
207	17.25	0.17	0.098	0.166	0.088	0.01
208	17.33	0.17	0.098	0.165	0.088	0.01
209	17.42	0.17	0.098	0.164	0.088	0.01
210	17.50	0.17	0.098	0.163	0.088	0.01
211	17.58	0.17	0.098	0.162	0.088	0.01
212	17.67	0.17	0.098	0.162	0.088	0.01
213	17.75	0.17	0.098	0.161	0.088	0.01
214	17.83	0.13	0.078	0.160	0.070	0.01
215	17.92	0.13	0.078	0.159	0.070	0.01
216	18.00	0.13	0.078	0.158	0.070	0.01
217	18.08	0.13	0.078	0.158	0.070	0.01
218	18.17	0.13	0.078	0.157	0.070	0.01
219	18.25	0.13	0.078	0.156	0.070	0.01
220	18.33	0.13	0.078	0.155	0.070	0.01
221	18.42	0.13	0.078	0.155	0.070	0.01
222	18.50	0.13	0.078	0.154	0.070	0.01
223	18.58	0.10	0.059	0.153	0.053	0.01
224	18.67	0.10	0.059	0.152	0.053	0.01
225	18.75	0.10	0.059	0.152	0.053	0.01
226	18.83	0.07	0.039	0.151	0.035	0.00
227	18.92	0.07	0.039	0.150	0.035	0.00
228	19.00	0.07	0.039	0.149	0.035	0.00
229	19.08	0.10	0.059	0.149	0.053	0.01
230	19.17	0.10	0.059	0.148	0.053	0.01
231	19.25	0.10	0.059	0.147	0.053	0.01
232	19.33	0.13	0.078	0.147	0.070	0.01
233	19.42	0.13	0.078	0.146	0.070	0.01
234	19.50	0.13	0.078	0.145	0.070	0.01
235	19.58	0.10	0.059	0.145	0.053	0.01
236	19.67	0.10	0.059	0.144	0.053	0.01
237	19.75	0.10	0.059	0.143	0.053	0.01
238	19.83	0.07	0.039	0.143	0.035	0.00
239	19.92	0.07	0.039	0.142	0.035	0.00
240	20.00	0.07	0.039	0.141	0.035	0.00
241	20.08	0.10	0.059	0.141	0.053	0.01
242	20.17	0.10	0.059	0.140	0.053	0.01
243	20.25	0.10	0.059	0.140	0.053	0.01
244	20.33	0.10	0.059	0.139	0.053	0.01
245	20.42	0.10	0.059	0.138	0.053	0.01
246	20.50	0.10	0.059	0.138	0.053	0.01
247	20.58	0.10	0.059	0.137	0.053	0.01
248	20.67	0.10	0.059	0.137	0.053	0.01
249	20.75	0.10	0.059	0.136	0.053	0.01
250	20.83	0.07	0.039	0.135	0.035	0.00
251	20.92	0.07	0.039	0.135	0.035	0.00

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252  21.00     0.07      0.039         0.134     0.035         0.00
253  21.08     0.10      0.059         0.134     0.053         0.01
254  21.17     0.10      0.059         0.133     0.053         0.01
255  21.25     0.10      0.059         0.133     0.053         0.01
256  21.33     0.07      0.039         0.132     0.035         0.00
257  21.42     0.07      0.039         0.132     0.035         0.00
258  21.50     0.07      0.039         0.131     0.035         0.00
259  21.58     0.10      0.059         0.131     0.053         0.01
260  21.67     0.10      0.059         0.130     0.053         0.01
261  21.75     0.10      0.059         0.130     0.053         0.01
262  21.83     0.07      0.039         0.129     0.035         0.00
263  21.92     0.07      0.039         0.129     0.035         0.00
264  22.00     0.07      0.039         0.129     0.035         0.00
265  22.08     0.10      0.059         0.128     0.053         0.01
266  22.17     0.10      0.059         0.128     0.053         0.01
267  22.25     0.10      0.059         0.127     0.053         0.01
268  22.33     0.07      0.039         0.127     0.035         0.00
269  22.42     0.07      0.039         0.127     0.035         0.00
270  22.50     0.07      0.039         0.126     0.035         0.00
271  22.58     0.07      0.039         0.126     0.035         0.00
272  22.67     0.07      0.039         0.125     0.035         0.00
273  22.75     0.07      0.039         0.125     0.035         0.00
274  22.83     0.07      0.039         0.125     0.035         0.00
275  22.92     0.07      0.039         0.124     0.035         0.00
276  23.00     0.07      0.039         0.124     0.035         0.00
277  23.08     0.07      0.039         0.124     0.035         0.00
278  23.17     0.07      0.039         0.124     0.035         0.00
279  23.25     0.07      0.039         0.123     0.035         0.00
280  23.33     0.07      0.039         0.123     0.035         0.00
281  23.42     0.07      0.039         0.123     0.035         0.00
282  23.50     0.07      0.039         0.123     0.035         0.00
283  23.58     0.07      0.039         0.122     0.035         0.00
284  23.67     0.07      0.039         0.122     0.035         0.00
285  23.75     0.07      0.039         0.122     0.035         0.00
286  23.83     0.07      0.039         0.122     0.035         0.00
287  23.92     0.07      0.039         0.122     0.035         0.00
288  24.00     0.07      0.039         0.122     0.035         0.00
    Sum =     100.0                                       Sum =    20.7
      Flood volume = Effective rainfall      1.72(In)
       times area       1.7(Ac.)/[(In)/(Ft.)] =       0.2(Ac.Ft)
      Total soil loss =      3.16(In)
      Total soil loss =     0.447(Ac.Ft)
      Total rainfall =      4.88(In)
      Flood volume =       10625.1 Cubic Feet
      Total soil loss =       19492.1 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      0.780(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        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0000      0.00  Q         |         |         |         |
   0+10       0.0001      0.01  Q         |         |         |         |
   0+15       0.0001      0.01  Q         |         |         |         |
   0+20       0.0002      0.01  Q         |         |         |         |
   0+25       0.0003      0.01  Q         |         |         |         |
   0+30       0.0003      0.01  Q         |         |         |         |
   0+35       0.0004      0.01  Q         |         |         |         |
   0+40       0.0005      0.01  Q         |         |         |         |
   0+45       0.0005      0.01  Q         |         |         |         |
   0+50       0.0006      0.01  Q         |         |         |         |
   0+55       0.0007      0.01  Q         |         |         |         |
   1+ 0       0.0008      0.01  Q         |         |         |         |
   1+ 5       0.0009      0.01  Q         |         |         |         |
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1+10	0.0009	0.01	Q	|	|	|	|
1+15	0.0010	0.01	Q	|	|	|	|
1+20	0.0011	0.01	Q	|	|	|	|
1+25	0.0012	0.01	Q	|	|	|	|
1+30	0.0012	0.01	Q	|	|	|	|
1+35	0.0013	0.01	Q	|	|	|	|
1+40	0.0014	0.01	Q	|	|	|	|
1+45	0.0014	0.01	Q	|	|	|	|
1+50	0.0015	0.01	Q	|	|	|	|
1+55	0.0016	0.01	Q	|	|	|	|
2+ 0	0.0017	0.01	Q	|	|	|	|
2+ 5	0.0018	0.01	Q	|	|	|	|
2+10	0.0019	0.01	Q	|	|	|	|
2+15	0.0020	0.01	Q	|	|	|	|
2+20	0.0021	0.01	Q	|	|	|	|
2+25	0.0022	0.01	Q	|	|	|	|
2+30	0.0023	0.01	Q	|	|	|	|
2+35	0.0024	0.02	Q	|	|	|	|
2+40	0.0025	0.02	Q	|	|	|	|
2+45	0.0026	0.02	Q	|	|	|	|
2+50	0.0027	0.02	Q	|	|	|	|
2+55	0.0028	0.02	Q	|	|	|	|
3+ 0	0.0029	0.02	Q	|	|	|	|
3+ 5	0.0031	0.02	Q	|	|	|	|
3+10	0.0032	0.02	Q	|	|	|	|
3+15	0.0033	0.02	Q	|	|	|	|
3+20	0.0034	0.02	Q	|	|	|	|
3+25	0.0035	0.02	Q	|	|	|	|
3+30	0.0036	0.02	Q	|	|	|	|
3+35	0.0037	0.02	Q	|	|	|	|
3+40	0.0039	0.02	Q	|	|	|	|
3+45	0.0040	0.02	Q	|	|	|	|
3+50	0.0041	0.02	Q	|	|	|	|
3+55	0.0042	0.02	Q	|	|	|	|
4+ 0	0.0044	0.02	Q	|	|	|	|
4+ 5	0.0045	0.02	Q	|	|	|	|
4+10	0.0047	0.02	Q	|	|	|	|
4+15	0.0048	0.02	Q	|	|	|	|
4+20	0.0050	0.02	Q	|	|	|	|
4+25	0.0051	0.02	Q	|	|	|	|
4+30	0.0053	0.02	Q	|	|	|	|
4+35	0.0054	0.02	Q	|	|	|	|
4+40	0.0056	0.02	Q	|	|	|	|
4+45	0.0058	0.02	Q	|	|	|	|
4+50	0.0059	0.03	Q	|	|	|	|
4+55	0.0061	0.03	QV	|	|	|	|
5+ 0	0.0063	0.03	QV	|	|	|	|
5+ 5	0.0065	0.02	QV	|	|	|	|
5+10	0.0066	0.02	QV	|	|	|	|
5+15	0.0067	0.02	QV	|	|	|	|
5+20	0.0069	0.02	QV	|	|	|	|
5+25	0.0071	0.02	QV	|	|	|	|
5+30	0.0072	0.02	QV	|	|	|	|
5+35	0.0074	0.03	QV	|	|	|	|
5+40	0.0076	0.03	QV	|	|	|	|
5+45	0.0078	0.03	QV	|	|	|	|
5+50	0.0079	0.03	QV	|	|	|	|
5+55	0.0081	0.03	QV	|	|	|	|
6+ 0	0.0083	0.03	QV	|	|	|	|
6+ 5	0.0085	0.03	QV	|	|	|	|
6+10	0.0087	0.03	QV	|	|	|	|
6+15	0.0089	0.03	QV	|	|	|	|
6+20	0.0091	0.03	QV	|	|	|	|
6+25	0.0093	0.03	QV	|	|	|	|
6+30	0.0095	0.03	QV	|	|	|	|
6+35	0.0098	0.03	QV	|	|	|	|
6+40	0.0100	0.03	QV	|	|	|	|
6+45	0.0102	0.03	QV	|	|	|	|
6+50	0.0105	0.03	QV	|	|	|	|
6+55	0.0107	0.03	QV	|	|	|	|

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 7+ 0       0.0109      0.03  QV        |         |         |         |
 7+ 5       0.0112      0.03  QV        |         |         |         |
 7+10       0.0114      0.03  QV        |         |         |         |
 7+15       0.0116      0.03  QV        |         |         |         |
 7+20       0.0119      0.04  QV        |         |         |         |
 7+25       0.0121      0.04  QV        |         |         |         |
 7+30       0.0124      0.04  Q V       |         |         |         |
 7+35       0.0126      0.04  Q V       |         |         |         |
 7+40       0.0129      0.04  Q V       |         |         |         |
 7+45       0.0132      0.04  Q V       |         |         |         |
 7+50       0.0135      0.04  Q V       |         |         |         |
 7+55       0.0138      0.04  Q V       |         |         |         |
 8+ 0       0.0141      0.04  Q V       |         |         |         |
 8+ 5       0.0142      0.02  Q V       |         |         |         |
 8+10       0.0143      0.01  Q V       |         |         |         |
 8+15       0.0144      0.01  Q V       |         |         |         |
 8+20       0.0145      0.02  Q V       |         |         |         |
 8+25       0.0146      0.02  Q V       |         |         |         |
 8+30       0.0148      0.02  Q V       |         |         |         |
 8+35       0.0151      0.05  Q V       |         |         |         |
 8+40       0.0155      0.06  Q V       |         |         |         |
 8+45       0.0159      0.06  Q V       |         |         |         |
 8+50       0.0165      0.09  Q V       |         |         |         |
 8+55       0.0172      0.10  Q V       |         |         |         |
 9+ 0       0.0179      0.10  Q V       |         |         |         |
 9+ 5       0.0190      0.15  Q  V      |         |         |         |
 9+10       0.0201      0.17  Q  V      |         |         |         |
 9+15       0.0213      0.17  Q  V      |         |         |         |
 9+20       0.0227      0.20  Q  V      |         |         |         |
 9+25       0.0242      0.21  Q  V      |         |         |         |
 9+30       0.0257      0.21  Q   V     |         |         |         |
 9+35       0.0273      0.24  Q   V     |         |         |         |
 9+40       0.0291      0.25  |Q  V     |         |         |         |
 9+45       0.0308      0.25  |Q   V    |         |         |         |
 9+50       0.0328      0.28  |Q   V    |         |         |         |
 9+55       0.0348      0.29  |Q   V    |         |         |         |
10+ 0       0.0368      0.29  |Q    V   |         |         |         |
10+ 5       0.0377      0.13  Q     V   |         |         |         |
10+10       0.0382      0.06  Q     V   |         |         |         |
10+15       0.0386      0.07  Q     V   |         |         |         |
10+20       0.0391      0.07  Q     V   |         |         |         |
10+25       0.0396      0.07  Q     V   |         |         |         |
10+30       0.0401      0.07  Q     V   |         |         |         |
10+35       0.0414      0.19  Q     V   |         |         |         |
10+40       0.0431      0.24  Q      V  |         |         |         |
10+45       0.0448      0.25  Q      V  |         |         |         |
10+50       0.0465      0.25  Q      V  |         |         |         |
10+55       0.0482      0.25  |Q     V  |         |         |         |
11+ 0       0.0500      0.25  |Q      V |         |         |         |
11+ 5       0.0516      0.23  Q       V |         |         |         |
11+10       0.0531      0.22  Q       V |         |         |         |
11+15       0.0547      0.23  Q       V |         |         |         |
11+20       0.0562      0.23  Q        V|         |         |         |
11+25       0.0578      0.23  Q        V|         |         |         |
11+30       0.0594      0.23  Q        V|         |         |         |
11+35       0.0607      0.19  Q        V|         |         |         |
11+40       0.0619      0.17  Q         V         |         |         |
11+45       0.0630      0.17  Q         V         |         |         |
11+50       0.0644      0.20  Q         V         |         |         |
11+55       0.0658      0.21  Q         V         |         |         |
12+ 0       0.0673      0.21  Q         |V        |         |         |
12+ 5       0.0699      0.38  |Q        |V        |         |         |
12+10       0.0730      0.45  |Q        |V        |         |         |
12+15       0.0761      0.45  |Q        | V       |         |         |
12+20       0.0793      0.48  |Q        |  V      |         |         |
12+25       0.0827      0.49  |Q        |  V      |         |         |
12+30       0.0861      0.49  |Q        |   V     |         |         |
12+35       0.0898      0.54  | Q       |   V     |         |         |
12+40       0.0936      0.56  | Q       |    V    |         |         |
12+45       0.0975      0.56  | Q       |    V    |         |         |
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12+50       0.1016      0.59  | Q       |     V   |         |         |
12+55       0.1057      0.60  | Q       |      V  |         |         |
13+ 0       0.1098      0.60  | Q       |       V |         |         |
13+ 5       0.1148      0.72  | Q       |       V |         |         |
13+10       0.1201      0.77  |  Q      |        V|         |         |
13+15       0.1254      0.77  |  Q      |         V         |         |
13+20       0.1308      0.78  |  Q      |         |V        |         |
13+25       0.1362      0.78  |  Q      |         | V       |         |
13+30       0.1415      0.78  |  Q      |         |  V      |         |
13+35       0.1451      0.52  | Q       |         |  V      |         |
13+40       0.1480      0.42  |Q        |         |   V     |         |
13+45       0.1508      0.42  |Q        |         |   V     |         |
13+50       0.1537      0.42  |Q        |         |    V    |         |
13+55       0.1566      0.42  |Q        |         |    V    |         |
14+ 0       0.1595      0.42  |Q        |         |     V   |         |
14+ 5       0.1631      0.52  | Q       |         |     V   |         |
14+10       0.1670      0.56  | Q       |         |      V  |         |
14+15       0.1708      0.56  | Q       |         |       V |         |
14+20       0.1745      0.54  | Q       |         |       V |         |
14+25       0.1782      0.53  | Q       |         |        V|         |
14+30       0.1819      0.53  | Q       |         |        V|         |
14+35       0.1856      0.54  | Q       |         |         V         |
14+40       0.1893      0.54  | Q       |         |         |V        |
14+45       0.1930      0.54  | Q       |         |         |V        |
14+50       0.1965      0.52  | Q       |         |         | V       |
14+55       0.2000      0.51  | Q       |         |         | V       |
15+ 0       0.2035      0.51  | Q       |         |         |  V      |
15+ 5       0.2069      0.49  |Q        |         |         |  V      |
15+10       0.2102      0.48  |Q        |         |         |   V     |
15+15       0.2135      0.48  |Q        |         |         |    V    |
15+20       0.2167      0.46  |Q        |         |         |    V    |
15+25       0.2198      0.45  |Q        |         |         |     V   |
15+30       0.2229      0.45  |Q        |         |         |     V   |
15+35       0.2254      0.36  |Q        |         |         |     V   |
15+40       0.2276      0.32  |Q        |         |         |      V  |
15+45       0.2299      0.32  |Q        |         |         |      V  |
15+50       0.2321      0.33  |Q        |         |         |       V |
15+55       0.2344      0.33  |Q        |         |         |       V |
16+ 0       0.2366      0.33  |Q        |         |         |       V |
16+ 5       0.2373      0.11  Q         |         |         |       V |
16+10       0.2374      0.01  Q         |         |         |       V |
16+15       0.2375      0.01  Q         |         |         |       V |
16+20       0.2376      0.01  Q         |         |         |       V |
16+25       0.2377      0.01  Q         |         |         |       V |
16+30       0.2378      0.01  Q         |         |         |       V |
16+35       0.2379      0.01  Q         |         |         |        V|
16+40       0.2380      0.01  Q         |         |         |        V|
16+45       0.2380      0.01  Q         |         |         |        V|
16+50       0.2381      0.01  Q         |         |         |        V|
16+55       0.2382      0.01  Q         |         |         |        V|
17+ 0       0.2382      0.01  Q         |         |         |        V|
17+ 5       0.2383      0.01  Q         |         |         |        V|
17+10       0.2384      0.02  Q         |         |         |        V|
17+15       0.2386      0.02  Q         |         |         |        V|
17+20       0.2387      0.02  Q         |         |         |        V|
17+25       0.2388      0.02  Q         |         |         |        V|
17+30       0.2389      0.02  Q         |         |         |        V|
17+35       0.2390      0.02  Q         |         |         |        V|
17+40       0.2391      0.02  Q         |         |         |        V|
17+45       0.2393      0.02  Q         |         |         |        V|
17+50       0.2394      0.01  Q         |         |         |        V|
17+55       0.2394      0.01  Q         |         |         |        V|
18+ 0       0.2395      0.01  Q         |         |         |        V|
18+ 5       0.2396      0.01  Q         |         |         |        V|
18+10       0.2397      0.01  Q         |         |         |        V|
18+15       0.2398      0.01  Q         |         |         |        V|
18+20       0.2399      0.01  Q         |         |         |        V|
18+25       0.2400      0.01  Q         |         |         |        V|
18+30       0.2401      0.01  Q         |         |         |        V|
18+35       0.2402      0.01  Q         |         |         |        V|
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  18+40       0.2402      0.01  Q         |         |         |        V|
  18+45       0.2403      0.01  Q         |         |         |        V|
  18+50       0.2404      0.01  Q         |         |         |        V|
  18+55       0.2404      0.01  Q         |         |         |        V|
  19+ 0       0.2404      0.01  Q         |         |         |        V|
  19+ 5       0.2405      0.01  Q         |         |         |        V|
  19+10       0.2406      0.01  Q         |         |         |        V|
  19+15       0.2406      0.01  Q         |         |         |        V|
  19+20       0.2407      0.01  Q         |         |         |        V|
  19+25       0.2408      0.01  Q         |         |         |        V|
  19+30       0.2409      0.01  Q         |         |         |        V|
  19+35       0.2410      0.01  Q         |         |         |        V|
  19+40       0.2411      0.01  Q         |         |         |        V|
  19+45       0.2411      0.01  Q         |         |         |        V|
  19+50       0.2412      0.01  Q         |         |         |        V|
  19+55       0.2412      0.01  Q         |         |         |        V|
  20+ 0       0.2413      0.01  Q         |         |         |        V|
  20+ 5       0.2413      0.01  Q         |         |         |        V|
  20+10       0.2414      0.01  Q         |         |         |        V|
  20+15       0.2415      0.01  Q         |         |         |        V|
  20+20       0.2415      0.01  Q         |         |         |        V|
  20+25       0.2416      0.01  Q         |         |         |        V|
  20+30       0.2417      0.01  Q         |         |         |        V|
  20+35       0.2418      0.01  Q         |         |         |        V|
  20+40       0.2418      0.01  Q         |         |         |        V|
  20+45       0.2419      0.01  Q         |         |         |        V|
  20+50       0.2419      0.01  Q         |         |         |        V|
  20+55       0.2420      0.01  Q         |         |         |        V|
  21+ 0       0.2420      0.01  Q         |         |         |        V|
  21+ 5       0.2421      0.01  Q         |         |         |        V|
  21+10       0.2422      0.01  Q         |         |         |        V|
  21+15       0.2422      0.01  Q         |         |         |        V|
  21+20       0.2423      0.01  Q         |         |         |        V|
  21+25       0.2423      0.01  Q         |         |         |        V|
  21+30       0.2424      0.01  Q         |         |         |        V|
  21+35       0.2424      0.01  Q         |         |         |        V|
  21+40       0.2425      0.01  Q         |         |         |        V|
  21+45       0.2426      0.01  Q         |         |         |        V|
  21+50       0.2426      0.01  Q         |         |         |        V|
  21+55       0.2427      0.01  Q         |         |         |        V|
  22+ 0       0.2427      0.01  Q         |         |         |        V|
  22+ 5       0.2428      0.01  Q         |         |         |        V|
  22+10       0.2429      0.01  Q         |         |         |        V|
  22+15       0.2429      0.01  Q         |         |         |        V|
  22+20       0.2430      0.01  Q         |         |         |        V|
  22+25       0.2430      0.01  Q         |         |         |        V|
  22+30       0.2431      0.01  Q         |         |         |        V|
  22+35       0.2431      0.01  Q         |         |         |        V|
  22+40       0.2432      0.01  Q         |         |         |        V|
  22+45       0.2432      0.01  Q         |         |         |        V|
  22+50       0.2433      0.01  Q         |         |         |        V|
  22+55       0.2433      0.01  Q         |         |         |        V|
  23+ 0       0.2434      0.01  Q         |         |         |        V|
  23+ 5       0.2434      0.01  Q         |         |         |        V|
  23+10       0.2434      0.01  Q         |         |         |        V|
  23+15       0.2435      0.01  Q         |         |         |        V|
  23+20       0.2435      0.01  Q         |         |         |        V|
  23+25       0.2436      0.01  Q         |         |         |        V|
  23+30       0.2436      0.01  Q         |         |         |        V|
  23+35       0.2437      0.01  Q         |         |         |        V|
  23+40       0.2437      0.01  Q         |         |         |        V|
  23+45       0.2438      0.01  Q         |         |         |        V|
  23+50       0.2438      0.01  Q         |         |         |        V|
  23+55       0.2439      0.01  Q         |         |         |        V|
  24+ 0       0.2439      0.01  Q         |         |         |        V|
  24+ 5       0.2439      0.00  Q         |         |         |         V
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Section 3 – Proposed Condition Hydrology

2 Year – 24 Hour Storm Unit Hydrograph

10 Year – 24 Hour Storm Unit Hydrograph

100 Year – 3 Hour Storm Unit Hydrograph

```
       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  02/10/13 File: TR36519da242.out


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--------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

-------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



-------------------------------------------------------------------
TRACT 36519
Area A - Developed Condition
24 HOUR, 2 YEAR STORM

------------------------------------------------------------------
Drainage Area =       3.10(Ac.)  =      0.005 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       3.10(Ac.)  =      0.005 Sq. Mi.
Length along longest watercourse =     625.00(Ft.)
Length along longest watercourse measured to centroid =     263.00(Ft.)
Length along longest watercourse =      0.118 Mi.
Length along longest watercourse measured to centroid =      0.050 Mi.
Difference in elevation =       7.00(Ft.)
Slope along watercourse =     59.1360 Ft./Mi.
Average Manning's 'N' = 0.020
Lag time =    0.031 Hr.
Lag time =     1.89 Min.
25% of lag time =     0.47 Min.
40% of lag time =     0.75 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]
        3.10           2.70                  8.37

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        3.10           8.00                 24.80

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.700(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    2.700(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.700(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     3.100           56.00         0.350
```

Total Area Entered = 3.10(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.350	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.620

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	265.102	52.791	1.649
2	0.167	530.205	39.136	1.223
3	0.250	795.307	6.553	0.205
4	0.333	1060.409	1.520	0.048
		Sum = 100.000	Sum=	3.124

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.022	0.620	0.013	0.01
2	0.17	0.07	0.022	0.618	0.013	0.01
3	0.25	0.07	0.022	0.615	0.013	0.01
4	0.33	0.10	0.032	0.613	0.020	0.01
5	0.42	0.10	0.032	0.611	0.020	0.01
6	0.50	0.10	0.032	0.608	0.020	0.01
7	0.58	0.10	0.032	0.606	0.020	0.01
8	0.67	0.10	0.032	0.604	0.020	0.01
9	0.75	0.10	0.032	0.601	0.020	0.01
10	0.83	0.13	0.043	0.599	0.027	0.02
11	0.92	0.13	0.043	0.596	0.027	0.02
12	1.00	0.13	0.043	0.594	0.027	0.02
13	1.08	0.10	0.032	0.592	0.020	0.01
14	1.17	0.10	0.032	0.589	0.020	0.01
15	1.25	0.10	0.032	0.587	0.020	0.01
16	1.33	0.10	0.032	0.585	0.020	0.01
17	1.42	0.10	0.032	0.582	0.020	0.01
18	1.50	0.10	0.032	0.580	0.020	0.01
19	1.58	0.10	0.032	0.578	0.020	0.01
20	1.67	0.10	0.032	0.575	0.020	0.01
21	1.75	0.10	0.032	0.573	0.020	0.01
22	1.83	0.13	0.043	0.571	0.027	0.02
23	1.92	0.13	0.043	0.569	0.027	0.02
24	2.00	0.13	0.043	0.566	0.027	0.02
25	2.08	0.13	0.043	0.564	0.027	0.02
26	2.17	0.13	0.043	0.562	0.027	0.02
27	2.25	0.13	0.043	0.559	0.027	0.02
28	2.33	0.13	0.043	0.557	0.027	0.02
29	2.42	0.13	0.043	0.555	0.027	0.02
30	2.50	0.13	0.043	0.553	0.027	0.02
31	2.58	0.17	0.054	0.550	0.033	0.02
32	2.67	0.17	0.054	0.548	0.033	0.02
33	2.75	0.17	0.054	0.546	0.033	0.02
34	2.83	0.17	0.054	0.544	0.033	0.02
35	2.92	0.17	0.054	0.541	0.033	0.02
36	3.00	0.17	0.054	0.539	0.033	0.02
37	3.08	0.17	0.054	0.537	0.033	0.02
38	3.17	0.17	0.054	0.535	0.033	0.02
39	3.25	0.17	0.054	0.532	0.033	0.02

40	3.33	0.17	0.054	0.530	0.033	0.02
41	3.42	0.17	0.054	0.528	0.033	0.02
42	3.50	0.17	0.054	0.526	0.033	0.02
43	3.58	0.17	0.054	0.524	0.033	0.02
44	3.67	0.17	0.054	0.521	0.033	0.02
45	3.75	0.17	0.054	0.519	0.033	0.02
46	3.83	0.20	0.065	0.517	0.040	0.02
47	3.92	0.20	0.065	0.515	0.040	0.02
48	4.00	0.20	0.065	0.513	0.040	0.02
49	4.08	0.20	0.065	0.510	0.040	0.02
50	4.17	0.20	0.065	0.508	0.040	0.02
51	4.25	0.20	0.065	0.506	0.040	0.02
52	4.33	0.23	0.076	0.504	0.047	0.03
53	4.42	0.23	0.076	0.502	0.047	0.03
54	4.50	0.23	0.076	0.500	0.047	0.03
55	4.58	0.23	0.076	0.498	0.047	0.03
56	4.67	0.23	0.076	0.495	0.047	0.03
57	4.75	0.23	0.076	0.493	0.047	0.03
58	4.83	0.27	0.086	0.491	0.054	0.03
59	4.92	0.27	0.086	0.489	0.054	0.03
60	5.00	0.27	0.086	0.487	0.054	0.03
61	5.08	0.20	0.065	0.485	0.040	0.02
62	5.17	0.20	0.065	0.483	0.040	0.02
63	5.25	0.20	0.065	0.481	0.040	0.02
64	5.33	0.23	0.076	0.478	0.047	0.03
65	5.42	0.23	0.076	0.476	0.047	0.03
66	5.50	0.23	0.076	0.474	0.047	0.03
67	5.58	0.27	0.086	0.472	0.054	0.03
68	5.67	0.27	0.086	0.470	0.054	0.03
69	5.75	0.27	0.086	0.468	0.054	0.03
70	5.83	0.27	0.086	0.466	0.054	0.03
71	5.92	0.27	0.086	0.464	0.054	0.03
72	6.00	0.27	0.086	0.462	0.054	0.03
73	6.08	0.30	0.097	0.460	0.060	0.04
74	6.17	0.30	0.097	0.458	0.060	0.04
75	6.25	0.30	0.097	0.456	0.060	0.04
76	6.33	0.30	0.097	0.454	0.060	0.04
77	6.42	0.30	0.097	0.452	0.060	0.04
78	6.50	0.30	0.097	0.450	0.060	0.04
79	6.58	0.33	0.108	0.448	0.067	0.04
80	6.67	0.33	0.108	0.446	0.067	0.04
81	6.75	0.33	0.108	0.444	0.067	0.04
82	6.83	0.33	0.108	0.442	0.067	0.04
83	6.92	0.33	0.108	0.440	0.067	0.04
84	7.00	0.33	0.108	0.438	0.067	0.04
85	7.08	0.33	0.108	0.436	0.067	0.04
86	7.17	0.33	0.108	0.434	0.067	0.04
87	7.25	0.33	0.108	0.432	0.067	0.04
88	7.33	0.37	0.119	0.430	0.074	0.05
89	7.42	0.37	0.119	0.428	0.074	0.05
90	7.50	0.37	0.119	0.426	0.074	0.05
91	7.58	0.40	0.130	0.424	0.080	0.05
92	7.67	0.40	0.130	0.422	0.080	0.05
93	7.75	0.40	0.130	0.420	0.080	0.05
94	7.83	0.43	0.140	0.418	0.087	0.05
95	7.92	0.43	0.140	0.416	0.087	0.05
96	8.00	0.43	0.140	0.414	0.087	0.05
97	8.08	0.50	0.162	0.412	0.100	0.06
98	8.17	0.50	0.162	0.410	0.100	0.06
99	8.25	0.50	0.162	0.408	0.100	0.06
100	8.33	0.50	0.162	0.406	0.100	0.06
101	8.42	0.50	0.162	0.405	0.100	0.06
102	8.50	0.50	0.162	0.403	0.100	0.06
103	8.58	0.53	0.173	0.401	0.107	0.07
104	8.67	0.53	0.173	0.399	0.107	0.07
105	8.75	0.53	0.173	0.397	0.107	0.07
106	8.83	0.57	0.184	0.395	0.114	0.07
107	8.92	0.57	0.184	0.393	0.114	0.07
108	9.00	0.57	0.184	0.391	0.114	0.07
109	9.08	0.63	0.205	0.390	0.127	0.08

110	9.17	0.63	0.205	0.388	0.127	0.08
111	9.25	0.63	0.205	0.386	0.127	0.08
112	9.33	0.67	0.216	0.384	0.134	0.08
113	9.42	0.67	0.216	0.382	0.134	0.08
114	9.50	0.67	0.216	0.380	0.134	0.08
115	9.58	0.70	0.227	0.379	0.141	0.09
116	9.67	0.70	0.227	0.377	0.141	0.09
117	9.75	0.70	0.227	0.375	0.141	0.09
118	9.83	0.73	0.238	0.373	0.147	0.09
119	9.92	0.73	0.238	0.371	0.147	0.09
120	10.00	0.73	0.238	0.369	0.147	0.09
121	10.08	0.50	0.162	0.368	0.100	0.06
122	10.17	0.50	0.162	0.366	0.100	0.06
123	10.25	0.50	0.162	0.364	0.100	0.06
124	10.33	0.50	0.162	0.362	0.100	0.06
125	10.42	0.50	0.162	0.361	0.100	0.06
126	10.50	0.50	0.162	0.359	0.100	0.06
127	10.58	0.67	0.216	0.357	0.134	0.08
128	10.67	0.67	0.216	0.355	0.134	0.08
129	10.75	0.67	0.216	0.354	0.134	0.08
130	10.83	0.67	0.216	0.352	0.134	0.08
131	10.92	0.67	0.216	0.350	0.134	0.08
132	11.00	0.67	0.216	0.348	0.134	0.08
133	11.08	0.63	0.205	0.347	0.127	0.08
134	11.17	0.63	0.205	0.345	0.127	0.08
135	11.25	0.63	0.205	0.343	0.127	0.08
136	11.33	0.63	0.205	0.342	0.127	0.08
137	11.42	0.63	0.205	0.340	0.127	0.08
138	11.50	0.63	0.205	0.338	0.127	0.08
139	11.58	0.57	0.184	0.337	0.114	0.07
140	11.67	0.57	0.184	0.335	0.114	0.07
141	11.75	0.57	0.184	0.333	0.114	0.07
142	11.83	0.60	0.194	0.332	0.121	0.07
143	11.92	0.60	0.194	0.330	0.121	0.07
144	12.00	0.60	0.194	0.328	0.121	0.07
145	12.08	0.83	0.270	0.327	0.167	0.10
146	12.17	0.83	0.270	0.325	0.167	0.10
147	12.25	0.83	0.270	0.323	0.167	0.10
148	12.33	0.87	0.281	0.322	0.174	0.11
149	12.42	0.87	0.281	0.320	0.174	0.11
150	12.50	0.87	0.281	0.319	0.174	0.11
151	12.58	0.93	0.302	0.317	0.187	0.11
152	12.67	0.93	0.302	0.315	0.187	0.11
153	12.75	0.93	0.302	0.314	0.187	0.11
154	12.83	0.97	0.313	0.312	---	0.00
155	12.92	0.97	0.313	0.311	---	0.00
156	13.00	0.97	0.313	0.309	---	0.00
157	13.08	1.13	0.367	0.307	---	0.06
158	13.17	1.13	0.367	0.306	---	0.06
159	13.25	1.13	0.367	0.304	---	0.06
160	13.33	1.13	0.367	0.303	---	0.06
161	13.42	1.13	0.367	0.301	---	0.07
162	13.50	1.13	0.367	0.300	---	0.07
163	13.58	0.77	0.248	0.298	0.154	0.09
164	13.67	0.77	0.248	0.297	0.154	0.09
165	13.75	0.77	0.248	0.295	0.154	0.09
166	13.83	0.77	0.248	0.294	0.154	0.09
167	13.92	0.77	0.248	0.292	0.154	0.09
168	14.00	0.77	0.248	0.291	0.154	0.09
169	14.08	0.90	0.292	0.289	---	0.00
170	14.17	0.90	0.292	0.288	---	0.00
171	14.25	0.90	0.292	0.286	---	0.01
172	14.33	0.87	0.281	0.285	0.174	0.11
173	14.42	0.87	0.281	0.283	0.174	0.11
174	14.50	0.87	0.281	0.282	0.174	0.11
175	14.58	0.87	0.281	0.280	---	0.00
176	14.67	0.87	0.281	0.279	---	0.00
177	14.75	0.87	0.281	0.278	---	0.00
178	14.83	0.83	0.270	0.276	0.167	0.10
179	14.92	0.83	0.270	0.275	0.167	0.10

180	15.00	0.83	0.270	0.273	0.167	0.10
181	15.08	0.80	0.259	0.272	0.161	0.10
182	15.17	0.80	0.259	0.270	0.161	0.10
183	15.25	0.80	0.259	0.269	0.161	0.10
184	15.33	0.77	0.248	0.268	0.154	0.09
185	15.42	0.77	0.248	0.266	0.154	0.09
186	15.50	0.77	0.248	0.265	0.154	0.09
187	15.58	0.63	0.205	0.264	0.127	0.08
188	15.67	0.63	0.205	0.262	0.127	0.08
189	15.75	0.63	0.205	0.261	0.127	0.08
190	15.83	0.63	0.205	0.260	0.127	0.08
191	15.92	0.63	0.205	0.258	0.127	0.08
192	16.00	0.63	0.205	0.257	0.127	0.08
193	16.08	0.13	0.043	0.256	0.027	0.02
194	16.17	0.13	0.043	0.254	0.027	0.02
195	16.25	0.13	0.043	0.253	0.027	0.02
196	16.33	0.13	0.043	0.252	0.027	0.02
197	16.42	0.13	0.043	0.250	0.027	0.02
198	16.50	0.13	0.043	0.249	0.027	0.02
199	16.58	0.10	0.032	0.248	0.020	0.01
200	16.67	0.10	0.032	0.247	0.020	0.01
201	16.75	0.10	0.032	0.245	0.020	0.01
202	16.83	0.10	0.032	0.244	0.020	0.01
203	16.92	0.10	0.032	0.243	0.020	0.01
204	17.00	0.10	0.032	0.242	0.020	0.01
205	17.08	0.17	0.054	0.240	0.033	0.02
206	17.17	0.17	0.054	0.239	0.033	0.02
207	17.25	0.17	0.054	0.238	0.033	0.02
208	17.33	0.17	0.054	0.237	0.033	0.02
209	17.42	0.17	0.054	0.236	0.033	0.02
210	17.50	0.17	0.054	0.234	0.033	0.02
211	17.58	0.17	0.054	0.233	0.033	0.02
212	17.67	0.17	0.054	0.232	0.033	0.02
213	17.75	0.17	0.054	0.231	0.033	0.02
214	17.83	0.13	0.043	0.230	0.027	0.02
215	17.92	0.13	0.043	0.229	0.027	0.02
216	18.00	0.13	0.043	0.228	0.027	0.02
217	18.08	0.13	0.043	0.226	0.027	0.02
218	18.17	0.13	0.043	0.225	0.027	0.02
219	18.25	0.13	0.043	0.224	0.027	0.02
220	18.33	0.13	0.043	0.223	0.027	0.02
221	18.42	0.13	0.043	0.222	0.027	0.02
222	18.50	0.13	0.043	0.221	0.027	0.02
223	18.58	0.10	0.032	0.220	0.020	0.01
224	18.67	0.10	0.032	0.219	0.020	0.01
225	18.75	0.10	0.032	0.218	0.020	0.01
226	18.83	0.07	0.022	0.217	0.013	0.01
227	18.92	0.07	0.022	0.216	0.013	0.01
228	19.00	0.07	0.022	0.215	0.013	0.01
229	19.08	0.10	0.032	0.214	0.020	0.01
230	19.17	0.10	0.032	0.213	0.020	0.01
231	19.25	0.10	0.032	0.212	0.020	0.01
232	19.33	0.13	0.043	0.211	0.027	0.02
233	19.42	0.13	0.043	0.210	0.027	0.02
234	19.50	0.13	0.043	0.209	0.027	0.02
235	19.58	0.10	0.032	0.208	0.020	0.01
236	19.67	0.10	0.032	0.207	0.020	0.01
237	19.75	0.10	0.032	0.206	0.020	0.01
238	19.83	0.07	0.022	0.205	0.013	0.01
239	19.92	0.07	0.022	0.204	0.013	0.01
240	20.00	0.07	0.022	0.203	0.013	0.01
241	20.08	0.10	0.032	0.202	0.020	0.01
242	20.17	0.10	0.032	0.201	0.020	0.01
243	20.25	0.10	0.032	0.201	0.020	0.01
244	20.33	0.10	0.032	0.200	0.020	0.01
245	20.42	0.10	0.032	0.199	0.020	0.01
246	20.50	0.10	0.032	0.198	0.020	0.01
247	20.58	0.10	0.032	0.197	0.020	0.01
248	20.67	0.10	0.032	0.196	0.020	0.01
249	20.75	0.10	0.032	0.195	0.020	0.01

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250  20.83     0.07      0.022         0.195     0.013         0.01
251  20.92     0.07      0.022         0.194     0.013         0.01
252  21.00     0.07      0.022         0.193     0.013         0.01
253  21.08     0.10      0.032         0.192     0.020         0.01
254  21.17     0.10      0.032         0.192     0.020         0.01
255  21.25     0.10      0.032         0.191     0.020         0.01
256  21.33     0.07      0.022         0.190     0.013         0.01
257  21.42     0.07      0.022         0.189     0.013         0.01
258  21.50     0.07      0.022         0.189     0.013         0.01
259  21.58     0.10      0.032         0.188     0.020         0.01
260  21.67     0.10      0.032         0.187     0.020         0.01
261  21.75     0.10      0.032         0.187     0.020         0.01
262  21.83     0.07      0.022         0.186     0.013         0.01
263  21.92     0.07      0.022         0.185     0.013         0.01
264  22.00     0.07      0.022         0.185     0.013         0.01
265  22.08     0.10      0.032         0.184     0.020         0.01
266  22.17     0.10      0.032         0.184     0.020         0.01
267  22.25     0.10      0.032         0.183     0.020         0.01
268  22.33     0.07      0.022         0.182     0.013         0.01
269  22.42     0.07      0.022         0.182     0.013         0.01
270  22.50     0.07      0.022         0.181     0.013         0.01
271  22.58     0.07      0.022         0.181     0.013         0.01
272  22.67     0.07      0.022         0.180     0.013         0.01
273  22.75     0.07      0.022         0.180     0.013         0.01
274  22.83     0.07      0.022         0.179     0.013         0.01
275  22.92     0.07      0.022         0.179     0.013         0.01
276  23.00     0.07      0.022         0.178     0.013         0.01
277  23.08     0.07      0.022         0.178     0.013         0.01
278  23.17     0.07      0.022         0.178     0.013         0.01
279  23.25     0.07      0.022         0.177     0.013         0.01
280  23.33     0.07      0.022         0.177     0.013         0.01
281  23.42     0.07      0.022         0.177     0.013         0.01
282  23.50     0.07      0.022         0.176     0.013         0.01
283  23.58     0.07      0.022         0.176     0.013         0.01
284  23.67     0.07      0.022         0.176     0.013         0.01
285  23.75     0.07      0.022         0.175     0.013         0.01
286  23.83     0.07      0.022         0.175     0.013         0.01
287  23.92     0.07      0.022         0.175     0.013         0.01
288  24.00     0.07      0.022         0.175     0.013         0.01
    Sum =     100.0                                   Sum =    10.9
      Flood volume = Effective rainfall      0.91(In)
       times area       3.1(Ac.)/[(In)/(Ft.)] =       0.2(Ac.Ft)
      Total soil loss =      1.79(In)
      Total soil loss =     0.463(Ac.Ft)
      Total rainfall =      2.70(In)
      Flood volume =       10195.4 Cubic Feet
      Total soil loss =       20187.5 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      0.359(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        2.5       5.0       7.5      10.0
 ----------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0003      0.02  Q         |         |         |         |
   0+15       0.0004      0.03  Q         |         |         |         |
   0+20       0.0007      0.03  Q         |         |         |         |
   0+25       0.0009      0.04  Q         |         |         |         |
   0+30       0.0012      0.04  Q         |         |         |         |
   0+35       0.0014      0.04  Q         |         |         |         |
   0+40       0.0017      0.04  Q         |         |         |         |
   0+45       0.0020      0.04  Q         |         |         |         |
   0+50       0.0023      0.05  Q         |         |         |         |
   0+55       0.0026      0.05  Q         |         |         |         |
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1+ 0       0.0030      0.05  Q         |         |         |         |
1+ 5       0.0033      0.04  Q         |         |         |         |
1+10       0.0036      0.04  Q         |         |         |         |
1+15       0.0038      0.04  Q         |         |         |         |
1+20       0.0041      0.04  Q         |         |         |         |
1+25       0.0044      0.04  Q         |         |         |         |
1+30       0.0046      0.04  Q         |         |         |         |
1+35       0.0049      0.04  Q         |         |         |         |
1+40       0.0052      0.04  Q         |         |         |         |
1+45       0.0054      0.04  Q         |         |         |         |
1+50       0.0057      0.05  Q         |         |         |         |
1+55       0.0061      0.05  QV        |         |         |         |
2+ 0       0.0064      0.05  QV        |         |         |         |
2+ 5       0.0068      0.05  QV        |         |         |         |
2+10       0.0071      0.05  QV        |         |         |         |
2+15       0.0075      0.05  QV        |         |         |         |
2+20       0.0078      0.05  QV        |         |         |         |
2+25       0.0082      0.05  QV        |         |         |         |
2+30       0.0085      0.05  QV        |         |         |         |
2+35       0.0089      0.06  QV        |         |         |         |
2+40       0.0094      0.06  QV        |         |         |         |
2+45       0.0098      0.06  QV        |         |         |         |
2+50       0.0103      0.06  QV        |         |         |         |
2+55       0.0107      0.06  QV        |         |         |         |
3+ 0       0.0111      0.06  QV        |         |         |         |
3+ 5       0.0116      0.06  QV        |         |         |         |
3+10       0.0120      0.06  Q V       |         |         |         |
3+15       0.0125      0.06  Q V       |         |         |         |
3+20       0.0129      0.06  Q V       |         |         |         |
3+25       0.0134      0.06  Q V       |         |         |         |
3+30       0.0138      0.06  Q V       |         |         |         |
3+35       0.0142      0.06  Q V       |         |         |         |
3+40       0.0147      0.06  Q V       |         |         |         |
3+45       0.0151      0.06  Q V       |         |         |         |
3+50       0.0156      0.07  Q V       |         |         |         |
3+55       0.0161      0.08  Q V       |         |         |         |
4+ 0       0.0167      0.08  Q V       |         |         |         |
4+ 5       0.0172      0.08  Q V       |         |         |         |
4+10       0.0177      0.08  Q  V      |         |         |         |
4+15       0.0183      0.08  Q  V      |         |         |         |
4+20       0.0188      0.08  Q  V      |         |         |         |
4+25       0.0194      0.09  Q  V      |         |         |         |
4+30       0.0201      0.09  Q  V      |         |         |         |
4+35       0.0207      0.09  Q  V      |         |         |         |
4+40       0.0213      0.09  Q  V      |         |         |         |
4+45       0.0219      0.09  Q  V      |         |         |         |
4+50       0.0226      0.10  Q  V      |         |         |         |
4+55       0.0233      0.10  Q  V      |         |         |         |
5+ 0       0.0240      0.10  Q   V     |         |         |         |
5+ 5       0.0246      0.09  Q   V     |         |         |         |
5+10       0.0251      0.08  Q   V     |         |         |         |
5+15       0.0257      0.08  Q   V     |         |         |         |
5+20       0.0263      0.08  Q   V     |         |         |         |
5+25       0.0269      0.09  Q   V     |         |         |         |
5+30       0.0275      0.09  Q   V     |         |         |         |
5+35       0.0281      0.10  Q   V     |         |         |         |
5+40       0.0288      0.10  Q   V     |         |         |         |
5+45       0.0295      0.10  Q    V    |         |         |         |
5+50       0.0303      0.10  Q    V    |         |         |         |
5+55       0.0310      0.10  Q    V    |         |         |         |
6+ 0       0.0317      0.10  Q    V    |         |         |         |
6+ 5       0.0324      0.11  Q    V    |         |         |         |
6+10       0.0332      0.11  Q    V    |         |         |         |
6+15       0.0340      0.12  Q    V    |         |         |         |
6+20       0.0348      0.12  Q    V    |         |         |         |
6+25       0.0356      0.12  Q     V   |         |         |         |
6+30       0.0364      0.12  Q     V   |         |         |         |
6+35       0.0372      0.12  Q     V   |         |         |         |
6+40       0.0381      0.13  Q     V   |         |         |         |
6+45       0.0390      0.13  Q     V   |         |         |         |
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 6+50       0.0399      0.13  Q     V   |         |         |         |
 6+55       0.0408      0.13  Q     V   |         |         |         |
 7+ 0       0.0416      0.13  Q      V  |         |         |         |
 7+ 5       0.0425      0.13  Q      V  |         |         |         |
 7+10       0.0434      0.13  Q      V  |         |         |         |
 7+15       0.0443      0.13  Q      V  |         |         |         |
 7+20       0.0452      0.14  Q      V  |         |         |         |
 7+25       0.0462      0.14  Q      V  |         |         |         |
 7+30       0.0472      0.14  Q       V |         |         |         |
 7+35       0.0482      0.15  Q       V |         |         |         |
 7+40       0.0492      0.15  Q       V |         |         |         |
 7+45       0.0503      0.15  Q       V |         |         |         |
 7+50       0.0514      0.16  Q       V |         |         |         |
 7+55       0.0525      0.17  Q       V |         |         |         |
 8+ 0       0.0537      0.17  Q        V|         |         |         |
 8+ 5       0.0549      0.18  Q        V|         |         |         |
 8+10       0.0562      0.19  Q        V|         |         |         |
 8+15       0.0576      0.19  Q        V|         |         |         |
 8+20       0.0589      0.19  Q         V         |         |         |
 8+25       0.0602      0.19  Q         V         |         |         |
 8+30       0.0615      0.19  Q         V         |         |         |
 8+35       0.0629      0.20  Q         V         |         |         |
 8+40       0.0643      0.20  Q         V         |         |         |
 8+45       0.0657      0.21  Q         |V        |         |         |
 8+50       0.0672      0.21  Q         |V        |         |         |
 8+55       0.0687      0.22  Q         |V        |         |         |
 9+ 0       0.0702      0.22  Q         |V        |         |         |
 9+ 5       0.0718      0.23  Q         | V       |         |         |
 9+10       0.0734      0.24  Q         | V       |         |         |
 9+15       0.0751      0.24  Q         | V       |         |         |
 9+20       0.0768      0.25  |Q        |  V      |         |         |
 9+25       0.0786      0.26  |Q        |  V      |         |         |
 9+30       0.0804      0.26  |Q        |  V      |         |         |
 9+35       0.0822      0.26  |Q        |   V     |         |         |
 9+40       0.0840      0.27  |Q        |   V     |         |         |
 9+45       0.0859      0.27  |Q        |   V     |         |         |
 9+50       0.0878      0.28  |Q        |    V    |         |         |
 9+55       0.0897      0.28  |Q        |    V    |         |         |
10+ 0       0.0917      0.28  |Q        |    V    |         |         |
10+ 5       0.0933      0.23  Q         |    V    |         |         |
10+10       0.0947      0.20  Q         |     V   |         |         |
10+15       0.0960      0.19  Q         |     V   |         |         |
10+20       0.0973      0.19  Q         |     V   |         |         |
10+25       0.0986      0.19  Q         |     V   |         |         |
10+30       0.1000      0.19  Q         |      V  |         |         |
10+35       0.1015      0.23  Q         |      V  |         |         |
10+40       0.1033      0.25  |Q        |      V  |         |         |
10+45       0.1050      0.26  |Q        |      V  |         |         |
10+50       0.1068      0.26  |Q        |       V |         |         |
10+55       0.1085      0.26  |Q        |       V |         |         |
11+ 0       0.1103      0.26  |Q        |       V |         |         |
11+ 5       0.1120      0.25  Q         |        V|         |         |
11+10       0.1137      0.24  Q         |        V|         |         |
11+15       0.1154      0.24  Q         |        V|         |         |
11+20       0.1171      0.24  Q         |         V         |         |
11+25       0.1188      0.24  Q         |         V         |         |
11+30       0.1204      0.24  Q         |         V         |         |
11+35       0.1220      0.23  Q         |         V         |         |
11+40       0.1235      0.22  Q         |         |V        |         |
11+45       0.1250      0.22  Q         |         |V        |         |
11+50       0.1266      0.22  Q         |         |V        |         |
11+55       0.1282      0.23  Q         |         |V        |         |
12+ 0       0.1298      0.23  Q         |         | V       |         |
12+ 5       0.1317      0.28  |Q        |         | V       |         |
12+10       0.1338      0.31  |Q        |         | V       |         |
12+15       0.1360      0.32  |Q        |         |  V      |         |
12+20       0.1383      0.33  |Q        |         |  V      |         |
12+25       0.1406      0.33  |Q        |         |   V     |         |
12+30       0.1429      0.33  |Q        |         |   V     |         |
12+35       0.1453      0.35  |Q        |         |   V     |         |
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12+40       0.1477      0.36  |Q        |         |    V    |         |
12+45       0.1502      0.36  |Q        |         |    V    |         |
12+50       0.1514      0.17  Q         |         |    V    |         |
12+55       0.1516      0.03  Q         |         |    V    |         |
13+ 0       0.1517      0.02  Q         |         |    V    |         |
13+ 5       0.1524      0.10  Q         |         |     V   |         |
13+10       0.1537      0.18  Q         |         |     V   |         |
13+15       0.1550      0.19  Q         |         |     V   |         |
13+20       0.1563      0.20  Q         |         |     V   |         |
13+25       0.1577      0.20  Q         |         |     V   |         |
13+30       0.1592      0.21  Q         |         |      V  |         |
13+35       0.1609      0.25  |Q        |         |      V  |         |
13+40       0.1629      0.29  |Q        |         |      V  |         |
13+45       0.1649      0.29  |Q        |         |       V |         |
13+50       0.1670      0.30  |Q        |         |       V |         |
13+55       0.1690      0.30  |Q        |         |       V |         |
14+ 0       0.1710      0.30  |Q        |         |        V|         |
14+ 5       0.1720      0.14  Q         |         |        V|         |
14+10       0.1723      0.03  Q         |         |        V|         |
14+15       0.1724      0.02  Q         |         |        V|         |
14+20       0.1736      0.18  Q         |         |        V|         |
14+25       0.1758      0.31  |Q        |         |         V         |
14+30       0.1780      0.33  |Q        |         |         V         |
14+35       0.1791      0.16  Q         |         |         V         |
14+40       0.1793      0.03  Q         |         |         V         |
14+45       0.1794      0.01  Q         |         |         V         |
14+50       0.1806      0.17  Q         |         |         V         |
14+55       0.1827      0.30  |Q        |         |         |V        |
15+ 0       0.1848      0.32  |Q        |         |         |V        |
15+ 5       0.1870      0.31  |Q        |         |         |V        |
15+10       0.1891      0.31  |Q        |         |         | V       |
15+15       0.1912      0.31  |Q        |         |         | V       |
15+20       0.1933      0.30  |Q        |         |         |  V      |
15+25       0.1954      0.30  |Q        |         |         |  V      |
15+30       0.1974      0.30  |Q        |         |         |  V      |
15+35       0.1992      0.27  |Q        |         |         |   V     |
15+40       0.2009      0.25  Q         |         |         |   V     |
15+45       0.2026      0.24  Q         |         |         |   V     |
15+50       0.2043      0.24  Q         |         |         |   V     |
15+55       0.2060      0.24  Q         |         |         |    V    |
16+ 0       0.2077      0.24  Q         |         |         |    V    |
16+ 5       0.2086      0.14  Q         |         |         |    V    |
16+10       0.2091      0.07  Q         |         |         |    V    |
16+15       0.2095      0.05  Q         |         |         |    V    |
16+20       0.2098      0.05  Q         |         |         |    V    |
16+25       0.2102      0.05  Q         |         |         |    V    |
16+30       0.2105      0.05  Q         |         |         |    V    |
16+35       0.2108      0.04  Q         |         |         |     V   |
16+40       0.2111      0.04  Q         |         |         |     V   |
16+45       0.2114      0.04  Q         |         |         |     V   |
16+50       0.2116      0.04  Q         |         |         |     V   |
16+55       0.2119      0.04  Q         |         |         |     V   |
17+ 0       0.2122      0.04  Q         |         |         |     V   |
17+ 5       0.2125      0.05  Q         |         |         |     V   |
17+10       0.2130      0.06  Q         |         |         |     V   |
17+15       0.2134      0.06  Q         |         |         |     V   |
17+20       0.2138      0.06  Q         |         |         |     V   |
17+25       0.2143      0.06  Q         |         |         |     V   |
17+30       0.2147      0.06  Q         |         |         |     V   |
17+35       0.2152      0.06  Q         |         |         |     V   |
17+40       0.2156      0.06  Q         |         |         |     V   |
17+45       0.2160      0.06  Q         |         |         |     V   |
17+50       0.2164      0.06  Q         |         |         |     V   |
17+55       0.2168      0.05  Q         |         |         |      V  |
18+ 0       0.2172      0.05  Q         |         |         |      V  |
18+ 5       0.2175      0.05  Q         |         |         |      V  |
18+10       0.2179      0.05  Q         |         |         |      V  |
18+15       0.2182      0.05  Q         |         |         |      V  |
18+20       0.2186      0.05  Q         |         |         |      V  |
18+25       0.2189      0.05  Q         |         |         |      V  |
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18+30       0.2193      0.05  Q         |         |         |      V  |
18+35       0.2196      0.04  Q         |         |         |      V  |
18+40       0.2199      0.04  Q         |         |         |      V  |
18+45       0.2201      0.04  Q         |         |         |      V  |
18+50       0.2203      0.03  Q         |         |         |      V  |
18+55       0.2205      0.03  Q         |         |         |      V  |
19+ 0       0.2207      0.03  Q         |         |         |      V  |
19+ 5       0.2209      0.03  Q         |         |         |      V  |
19+10       0.2212      0.04  Q         |         |         |      V  |
19+15       0.2214      0.04  Q         |         |         |      V  |
19+20       0.2218      0.05  Q         |         |         |      V  |
19+25       0.2221      0.05  Q         |         |         |      V  |
19+30       0.2225      0.05  Q         |         |         |       V |
19+35       0.2228      0.04  Q         |         |         |       V |
19+40       0.2230      0.04  Q         |         |         |       V |
19+45       0.2233      0.04  Q         |         |         |       V |
19+50       0.2235      0.03  Q         |         |         |       V |
19+55       0.2237      0.03  Q         |         |         |       V |
20+ 0       0.2239      0.03  Q         |         |         |       V |
20+ 5       0.2241      0.03  Q         |         |         |       V |
20+10       0.2244      0.04  Q         |         |         |       V |
20+15       0.2246      0.04  Q         |         |         |       V |
20+20       0.2249      0.04  Q         |         |         |       V |
20+25       0.2252      0.04  Q         |         |         |       V |
20+30       0.2254      0.04  Q         |         |         |       V |
20+35       0.2257      0.04  Q         |         |         |       V |
20+40       0.2260      0.04  Q         |         |         |       V |
20+45       0.2262      0.04  Q         |         |         |       V |
20+50       0.2264      0.03  Q         |         |         |       V |
20+55       0.2266      0.03  Q         |         |         |       V |
21+ 0       0.2268      0.03  Q         |         |         |       V |
21+ 5       0.2270      0.03  Q         |         |         |       V |
21+10       0.2273      0.04  Q         |         |         |       V |
21+15       0.2275      0.04  Q         |         |         |       V |
21+20       0.2278      0.03  Q         |         |         |       V |
21+25       0.2279      0.03  Q         |         |         |       V |
21+30       0.2281      0.03  Q         |         |         |       V |
21+35       0.2283      0.03  Q         |         |         |        V|
21+40       0.2286      0.04  Q         |         |         |        V|
21+45       0.2289      0.04  Q         |         |         |        V|
21+50       0.2291      0.03  Q         |         |         |        V|
21+55       0.2293      0.03  Q         |         |         |        V|
22+ 0       0.2294      0.03  Q         |         |         |        V|
22+ 5       0.2297      0.03  Q         |         |         |        V|
22+10       0.2299      0.04  Q         |         |         |        V|
22+15       0.2302      0.04  Q         |         |         |        V|
22+20       0.2304      0.03  Q         |         |         |        V|
22+25       0.2306      0.03  Q         |         |         |        V|
22+30       0.2308      0.03  Q         |         |         |        V|
22+35       0.2310      0.03  Q         |         |         |        V|
22+40       0.2311      0.03  Q         |         |         |        V|
22+45       0.2313      0.03  Q         |         |         |        V|
22+50       0.2315      0.03  Q         |         |         |        V|
22+55       0.2317      0.03  Q         |         |         |        V|
23+ 0       0.2318      0.03  Q         |         |         |        V|
23+ 5       0.2320      0.03  Q         |         |         |        V|
23+10       0.2322      0.03  Q         |         |         |        V|
23+15       0.2324      0.03  Q         |         |         |        V|
23+20       0.2325      0.03  Q         |         |         |        V|
23+25       0.2327      0.03  Q         |         |         |        V|
23+30       0.2329      0.03  Q         |         |         |        V|
23+35       0.2331      0.03  Q         |         |         |        V|
23+40       0.2332      0.03  Q         |         |         |        V|
23+45       0.2334      0.03  Q         |         |         |        V|
23+50       0.2336      0.03  Q         |         |         |        V|
23+55       0.2338      0.03  Q         |         |         |        V|
24+ 0       0.2340      0.03  Q         |         |         |        V|
24+ 5       0.2340      0.01  Q         |         |         |        V|
24+10       0.2341      0.00  Q         |         |         |        V|
24+15       0.2341      0.00  Q         |         |         |         V
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       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  02/10/13 File: TR36519bD242.out


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--------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

-------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



-------------------------------------------------------------------
TRACT 36519
AREA B - Developed Condition
24 HOUR, 2 YEAR STORM

------------------------------------------------------------------
Drainage Area =       1.90(Ac.)  =      0.003 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       1.90(Ac.)  =      0.003 Sq. Mi.
Length along longest watercourse =     575.00(Ft.)
Length along longest watercourse measured to centroid =     231.00(Ft.)
Length along longest watercourse =      0.109 Mi.
Length along longest watercourse measured to centroid =      0.044 Mi.
Difference in elevation =      16.80(Ft.)
Slope along watercourse =    154.2678 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.030 Hr.
Lag time =     1.81 Min.
25% of lag time =     0.45 Min.
40% of lag time =     0.72 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]
        1.90           2.70                  5.13

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        1.90           8.00                 15.20

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.700(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    2.700(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.700(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     1.900           56.00         0.350
```

Total Area Entered = 1.90(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.350	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.620

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	275.928	54.067	1.035
2	0.167	551.855	38.495	0.737
3	0.250	827.783	7.438	0.142
		Sum = 100.000	Sum=	1.915

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.022	0.620	0.013	0.01
2	0.17	0.07	0.022	0.618	0.013	0.01
3	0.25	0.07	0.022	0.615	0.013	0.01
4	0.33	0.10	0.032	0.613	0.020	0.01
5	0.42	0.10	0.032	0.611	0.020	0.01
6	0.50	0.10	0.032	0.608	0.020	0.01
7	0.58	0.10	0.032	0.606	0.020	0.01
8	0.67	0.10	0.032	0.604	0.020	0.01
9	0.75	0.10	0.032	0.601	0.020	0.01
10	0.83	0.13	0.043	0.599	0.027	0.02
11	0.92	0.13	0.043	0.596	0.027	0.02
12	1.00	0.13	0.043	0.594	0.027	0.02
13	1.08	0.10	0.032	0.592	0.020	0.01
14	1.17	0.10	0.032	0.589	0.020	0.01
15	1.25	0.10	0.032	0.587	0.020	0.01
16	1.33	0.10	0.032	0.585	0.020	0.01
17	1.42	0.10	0.032	0.582	0.020	0.01
18	1.50	0.10	0.032	0.580	0.020	0.01
19	1.58	0.10	0.032	0.578	0.020	0.01
20	1.67	0.10	0.032	0.575	0.020	0.01
21	1.75	0.10	0.032	0.573	0.020	0.01
22	1.83	0.13	0.043	0.571	0.027	0.02
23	1.92	0.13	0.043	0.569	0.027	0.02
24	2.00	0.13	0.043	0.566	0.027	0.02
25	2.08	0.13	0.043	0.564	0.027	0.02
26	2.17	0.13	0.043	0.562	0.027	0.02
27	2.25	0.13	0.043	0.559	0.027	0.02
28	2.33	0.13	0.043	0.557	0.027	0.02
29	2.42	0.13	0.043	0.555	0.027	0.02
30	2.50	0.13	0.043	0.553	0.027	0.02
31	2.58	0.17	0.054	0.550	0.033	0.02
32	2.67	0.17	0.054	0.548	0.033	0.02
33	2.75	0.17	0.054	0.546	0.033	0.02
34	2.83	0.17	0.054	0.544	0.033	0.02
35	2.92	0.17	0.054	0.541	0.033	0.02
36	3.00	0.17	0.054	0.539	0.033	0.02
37	3.08	0.17	0.054	0.537	0.033	0.02
38	3.17	0.17	0.054	0.535	0.033	0.02
39	3.25	0.17	0.054	0.532	0.033	0.02
40	3.33	0.17	0.054	0.530	0.033	0.02

41	3.42	0.17	0.054	0.528	0.033	0.02
42	3.50	0.17	0.054	0.526	0.033	0.02
43	3.58	0.17	0.054	0.524	0.033	0.02
44	3.67	0.17	0.054	0.521	0.033	0.02
45	3.75	0.17	0.054	0.519	0.033	0.02
46	3.83	0.20	0.065	0.517	0.040	0.02
47	3.92	0.20	0.065	0.515	0.040	0.02
48	4.00	0.20	0.065	0.513	0.040	0.02
49	4.08	0.20	0.065	0.510	0.040	0.02
50	4.17	0.20	0.065	0.508	0.040	0.02
51	4.25	0.20	0.065	0.506	0.040	0.02
52	4.33	0.23	0.076	0.504	0.047	0.03
53	4.42	0.23	0.076	0.502	0.047	0.03
54	4.50	0.23	0.076	0.500	0.047	0.03
55	4.58	0.23	0.076	0.498	0.047	0.03
56	4.67	0.23	0.076	0.495	0.047	0.03
57	4.75	0.23	0.076	0.493	0.047	0.03
58	4.83	0.27	0.086	0.491	0.054	0.03
59	4.92	0.27	0.086	0.489	0.054	0.03
60	5.00	0.27	0.086	0.487	0.054	0.03
61	5.08	0.20	0.065	0.485	0.040	0.02
62	5.17	0.20	0.065	0.483	0.040	0.02
63	5.25	0.20	0.065	0.481	0.040	0.02
64	5.33	0.23	0.076	0.478	0.047	0.03
65	5.42	0.23	0.076	0.476	0.047	0.03
66	5.50	0.23	0.076	0.474	0.047	0.03
67	5.58	0.27	0.086	0.472	0.054	0.03
68	5.67	0.27	0.086	0.470	0.054	0.03
69	5.75	0.27	0.086	0.468	0.054	0.03
70	5.83	0.27	0.086	0.466	0.054	0.03
71	5.92	0.27	0.086	0.464	0.054	0.03
72	6.00	0.27	0.086	0.462	0.054	0.03
73	6.08	0.30	0.097	0.460	0.060	0.04
74	6.17	0.30	0.097	0.458	0.060	0.04
75	6.25	0.30	0.097	0.456	0.060	0.04
76	6.33	0.30	0.097	0.454	0.060	0.04
77	6.42	0.30	0.097	0.452	0.060	0.04
78	6.50	0.30	0.097	0.450	0.060	0.04
79	6.58	0.33	0.108	0.448	0.067	0.04
80	6.67	0.33	0.108	0.446	0.067	0.04
81	6.75	0.33	0.108	0.444	0.067	0.04
82	6.83	0.33	0.108	0.442	0.067	0.04
83	6.92	0.33	0.108	0.440	0.067	0.04
84	7.00	0.33	0.108	0.438	0.067	0.04
85	7.08	0.33	0.108	0.436	0.067	0.04
86	7.17	0.33	0.108	0.434	0.067	0.04
87	7.25	0.33	0.108	0.432	0.067	0.04
88	7.33	0.37	0.119	0.430	0.074	0.05
89	7.42	0.37	0.119	0.428	0.074	0.05
90	7.50	0.37	0.119	0.426	0.074	0.05
91	7.58	0.40	0.130	0.424	0.080	0.05
92	7.67	0.40	0.130	0.422	0.080	0.05
93	7.75	0.40	0.130	0.420	0.080	0.05
94	7.83	0.43	0.140	0.418	0.087	0.05
95	7.92	0.43	0.140	0.416	0.087	0.05
96	8.00	0.43	0.140	0.414	0.087	0.05
97	8.08	0.50	0.162	0.412	0.100	0.06
98	8.17	0.50	0.162	0.410	0.100	0.06
99	8.25	0.50	0.162	0.408	0.100	0.06
100	8.33	0.50	0.162	0.406	0.100	0.06
101	8.42	0.50	0.162	0.405	0.100	0.06
102	8.50	0.50	0.162	0.403	0.100	0.06
103	8.58	0.53	0.173	0.401	0.107	0.07
104	8.67	0.53	0.173	0.399	0.107	0.07
105	8.75	0.53	0.173	0.397	0.107	0.07
106	8.83	0.57	0.184	0.395	0.114	0.07
107	8.92	0.57	0.184	0.393	0.114	0.07
108	9.00	0.57	0.184	0.391	0.114	0.07
109	9.08	0.63	0.205	0.390	0.127	0.08
110	9.17	0.63	0.205	0.388	0.127	0.08

111	9.25	0.63	0.205	0.386	0.127	0.08
112	9.33	0.67	0.216	0.384	0.134	0.08
113	9.42	0.67	0.216	0.382	0.134	0.08
114	9.50	0.67	0.216	0.380	0.134	0.08
115	9.58	0.70	0.227	0.379	0.141	0.09
116	9.67	0.70	0.227	0.377	0.141	0.09
117	9.75	0.70	0.227	0.375	0.141	0.09
118	9.83	0.73	0.238	0.373	0.147	0.09
119	9.92	0.73	0.238	0.371	0.147	0.09
120	10.00	0.73	0.238	0.369	0.147	0.09
121	10.08	0.50	0.162	0.368	0.100	0.06
122	10.17	0.50	0.162	0.366	0.100	0.06
123	10.25	0.50	0.162	0.364	0.100	0.06
124	10.33	0.50	0.162	0.362	0.100	0.06
125	10.42	0.50	0.162	0.361	0.100	0.06
126	10.50	0.50	0.162	0.359	0.100	0.06
127	10.58	0.67	0.216	0.357	0.134	0.08
128	10.67	0.67	0.216	0.355	0.134	0.08
129	10.75	0.67	0.216	0.354	0.134	0.08
130	10.83	0.67	0.216	0.352	0.134	0.08
131	10.92	0.67	0.216	0.350	0.134	0.08
132	11.00	0.67	0.216	0.348	0.134	0.08
133	11.08	0.63	0.205	0.347	0.127	0.08
134	11.17	0.63	0.205	0.345	0.127	0.08
135	11.25	0.63	0.205	0.343	0.127	0.08
136	11.33	0.63	0.205	0.342	0.127	0.08
137	11.42	0.63	0.205	0.340	0.127	0.08
138	11.50	0.63	0.205	0.338	0.127	0.08
139	11.58	0.57	0.184	0.337	0.114	0.07
140	11.67	0.57	0.184	0.335	0.114	0.07
141	11.75	0.57	0.184	0.333	0.114	0.07
142	11.83	0.60	0.194	0.332	0.121	0.07
143	11.92	0.60	0.194	0.330	0.121	0.07
144	12.00	0.60	0.194	0.328	0.121	0.07
145	12.08	0.83	0.270	0.327	0.167	0.10
146	12.17	0.83	0.270	0.325	0.167	0.10
147	12.25	0.83	0.270	0.323	0.167	0.10
148	12.33	0.87	0.281	0.322	0.174	0.11
149	12.42	0.87	0.281	0.320	0.174	0.11
150	12.50	0.87	0.281	0.319	0.174	0.11
151	12.58	0.93	0.302	0.317	0.187	0.11
152	12.67	0.93	0.302	0.315	0.187	0.11
153	12.75	0.93	0.302	0.314	0.187	0.11
154	12.83	0.97	0.313	0.312	---	0.00
155	12.92	0.97	0.313	0.311	---	0.00
156	13.00	0.97	0.313	0.309	---	0.00
157	13.08	1.13	0.367	0.307	---	0.06
158	13.17	1.13	0.367	0.306	---	0.06
159	13.25	1.13	0.367	0.304	---	0.06
160	13.33	1.13	0.367	0.303	---	0.06
161	13.42	1.13	0.367	0.301	---	0.07
162	13.50	1.13	0.367	0.300	---	0.07
163	13.58	0.77	0.248	0.298	0.154	0.09
164	13.67	0.77	0.248	0.297	0.154	0.09
165	13.75	0.77	0.248	0.295	0.154	0.09
166	13.83	0.77	0.248	0.294	0.154	0.09
167	13.92	0.77	0.248	0.292	0.154	0.09
168	14.00	0.77	0.248	0.291	0.154	0.09
169	14.08	0.90	0.292	0.289	---	0.00
170	14.17	0.90	0.292	0.288	---	0.00
171	14.25	0.90	0.292	0.286	---	0.01
172	14.33	0.87	0.281	0.285	0.174	0.11
173	14.42	0.87	0.281	0.283	0.174	0.11
174	14.50	0.87	0.281	0.282	0.174	0.11
175	14.58	0.87	0.281	0.280	---	0.00
176	14.67	0.87	0.281	0.279	---	0.00
177	14.75	0.87	0.281	0.278	---	0.00
178	14.83	0.83	0.270	0.276	0.167	0.10
179	14.92	0.83	0.270	0.275	0.167	0.10
180	15.00	0.83	0.270	0.273	0.167	0.10

181	15.08	0.80	0.259	0.272	0.161	0.10
182	15.17	0.80	0.259	0.270	0.161	0.10
183	15.25	0.80	0.259	0.269	0.161	0.10
184	15.33	0.77	0.248	0.268	0.154	0.09
185	15.42	0.77	0.248	0.266	0.154	0.09
186	15.50	0.77	0.248	0.265	0.154	0.09
187	15.58	0.63	0.205	0.264	0.127	0.08
188	15.67	0.63	0.205	0.262	0.127	0.08
189	15.75	0.63	0.205	0.261	0.127	0.08
190	15.83	0.63	0.205	0.260	0.127	0.08
191	15.92	0.63	0.205	0.258	0.127	0.08
192	16.00	0.63	0.205	0.257	0.127	0.08
193	16.08	0.13	0.043	0.256	0.027	0.02
194	16.17	0.13	0.043	0.254	0.027	0.02
195	16.25	0.13	0.043	0.253	0.027	0.02
196	16.33	0.13	0.043	0.252	0.027	0.02
197	16.42	0.13	0.043	0.250	0.027	0.02
198	16.50	0.13	0.043	0.249	0.027	0.02
199	16.58	0.10	0.032	0.248	0.020	0.01
200	16.67	0.10	0.032	0.247	0.020	0.01
201	16.75	0.10	0.032	0.245	0.020	0.01
202	16.83	0.10	0.032	0.244	0.020	0.01
203	16.92	0.10	0.032	0.243	0.020	0.01
204	17.00	0.10	0.032	0.242	0.020	0.01
205	17.08	0.17	0.054	0.240	0.033	0.02
206	17.17	0.17	0.054	0.239	0.033	0.02
207	17.25	0.17	0.054	0.238	0.033	0.02
208	17.33	0.17	0.054	0.237	0.033	0.02
209	17.42	0.17	0.054	0.236	0.033	0.02
210	17.50	0.17	0.054	0.234	0.033	0.02
211	17.58	0.17	0.054	0.233	0.033	0.02
212	17.67	0.17	0.054	0.232	0.033	0.02
213	17.75	0.17	0.054	0.231	0.033	0.02
214	17.83	0.13	0.043	0.230	0.027	0.02
215	17.92	0.13	0.043	0.229	0.027	0.02
216	18.00	0.13	0.043	0.228	0.027	0.02
217	18.08	0.13	0.043	0.226	0.027	0.02
218	18.17	0.13	0.043	0.225	0.027	0.02
219	18.25	0.13	0.043	0.224	0.027	0.02
220	18.33	0.13	0.043	0.223	0.027	0.02
221	18.42	0.13	0.043	0.222	0.027	0.02
222	18.50	0.13	0.043	0.221	0.027	0.02
223	18.58	0.10	0.032	0.220	0.020	0.01
224	18.67	0.10	0.032	0.219	0.020	0.01
225	18.75	0.10	0.032	0.218	0.020	0.01
226	18.83	0.07	0.022	0.217	0.013	0.01
227	18.92	0.07	0.022	0.216	0.013	0.01
228	19.00	0.07	0.022	0.215	0.013	0.01
229	19.08	0.10	0.032	0.214	0.020	0.01
230	19.17	0.10	0.032	0.213	0.020	0.01
231	19.25	0.10	0.032	0.212	0.020	0.01
232	19.33	0.13	0.043	0.211	0.027	0.02
233	19.42	0.13	0.043	0.210	0.027	0.02
234	19.50	0.13	0.043	0.209	0.027	0.02
235	19.58	0.10	0.032	0.208	0.020	0.01
236	19.67	0.10	0.032	0.207	0.020	0.01
237	19.75	0.10	0.032	0.206	0.020	0.01
238	19.83	0.07	0.022	0.205	0.013	0.01
239	19.92	0.07	0.022	0.204	0.013	0.01
240	20.00	0.07	0.022	0.203	0.013	0.01
241	20.08	0.10	0.032	0.202	0.020	0.01
242	20.17	0.10	0.032	0.201	0.020	0.01
243	20.25	0.10	0.032	0.201	0.020	0.01
244	20.33	0.10	0.032	0.200	0.020	0.01
245	20.42	0.10	0.032	0.199	0.020	0.01
246	20.50	0.10	0.032	0.198	0.020	0.01
247	20.58	0.10	0.032	0.197	0.020	0.01
248	20.67	0.10	0.032	0.196	0.020	0.01
249	20.75	0.10	0.032	0.195	0.020	0.01
250	20.83	0.07	0.022	0.195	0.013	0.01

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251  20.92     0.07      0.022         0.194     0.013         0.01
252  21.00     0.07      0.022         0.193     0.013         0.01
253  21.08     0.10      0.032         0.192     0.020         0.01
254  21.17     0.10      0.032         0.192     0.020         0.01
255  21.25     0.10      0.032         0.191     0.020         0.01
256  21.33     0.07      0.022         0.190     0.013         0.01
257  21.42     0.07      0.022         0.189     0.013         0.01
258  21.50     0.07      0.022         0.189     0.013         0.01
259  21.58     0.10      0.032         0.188     0.020         0.01
260  21.67     0.10      0.032         0.187     0.020         0.01
261  21.75     0.10      0.032         0.187     0.020         0.01
262  21.83     0.07      0.022         0.186     0.013         0.01
263  21.92     0.07      0.022         0.185     0.013         0.01
264  22.00     0.07      0.022         0.185     0.013         0.01
265  22.08     0.10      0.032         0.184     0.020         0.01
266  22.17     0.10      0.032         0.184     0.020         0.01
267  22.25     0.10      0.032         0.183     0.020         0.01
268  22.33     0.07      0.022         0.182     0.013         0.01
269  22.42     0.07      0.022         0.182     0.013         0.01
270  22.50     0.07      0.022         0.181     0.013         0.01
271  22.58     0.07      0.022         0.181     0.013         0.01
272  22.67     0.07      0.022         0.180     0.013         0.01
273  22.75     0.07      0.022         0.180     0.013         0.01
274  22.83     0.07      0.022         0.179     0.013         0.01
275  22.92     0.07      0.022         0.179     0.013         0.01
276  23.00     0.07      0.022         0.178     0.013         0.01
277  23.08     0.07      0.022         0.178     0.013         0.01
278  23.17     0.07      0.022         0.178     0.013         0.01
279  23.25     0.07      0.022         0.177     0.013         0.01
280  23.33     0.07      0.022         0.177     0.013         0.01
281  23.42     0.07      0.022         0.177     0.013         0.01
282  23.50     0.07      0.022         0.176     0.013         0.01
283  23.58     0.07      0.022         0.176     0.013         0.01
284  23.67     0.07      0.022         0.176     0.013         0.01
285  23.75     0.07      0.022         0.175     0.013         0.01
286  23.83     0.07      0.022         0.175     0.013         0.01
287  23.92     0.07      0.022         0.175     0.013         0.01
288  24.00     0.07      0.022         0.175     0.013         0.01
    Sum =     100.0                                     Sum =    10.9
      Flood volume = Effective rainfall      0.91(In)
       times area       1.9(Ac.)/[(In)/(Ft.)] =       0.1(Ac.Ft)
      Total soil loss =      1.79(In)
      Total soil loss =     0.284(Ac.Ft)
      Total rainfall =      2.70(In)
      Flood volume =        6248.8 Cubic Feet
      Total soil loss =       12373.0 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      0.220(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        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0002      0.01  Q         |         |         |         |
   0+15       0.0003      0.02  Q         |         |         |         |
   0+20       0.0004      0.02  Q         |         |         |         |
   0+25       0.0006      0.02  Q         |         |         |         |
   0+30       0.0007      0.02  Q         |         |         |         |
   0+35       0.0009      0.02  Q         |         |         |         |
   0+40       0.0011      0.02  Q         |         |         |         |
   0+45       0.0012      0.02  Q         |         |         |         |
   0+50       0.0014      0.03  Q         |         |         |         |
   0+55       0.0016      0.03  Q         |         |         |         |
   1+ 0       0.0018      0.03  Q         |         |         |         |
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1+ 5       0.0020      0.03  Q         |         |         |         |
1+10       0.0022      0.02  Q         |         |         |         |
1+15       0.0024      0.02  Q         |         |         |         |
1+20       0.0025      0.02  Q         |         |         |         |
1+25       0.0027      0.02  Q         |         |         |         |
1+30       0.0028      0.02  Q         |         |         |         |
1+35       0.0030      0.02  Q         |         |         |         |
1+40       0.0032      0.02  Q         |         |         |         |
1+45       0.0033      0.02  Q         |         |         |         |
1+50       0.0035      0.03  Q         |         |         |         |
1+55       0.0037      0.03  QV        |         |         |         |
2+ 0       0.0039      0.03  QV        |         |         |         |
2+ 5       0.0042      0.03  QV        |         |         |         |
2+10       0.0044      0.03  QV        |         |         |         |
2+15       0.0046      0.03  QV        |         |         |         |
2+20       0.0048      0.03  QV        |         |         |         |
2+25       0.0050      0.03  QV        |         |         |         |
2+30       0.0052      0.03  QV        |         |         |         |
2+35       0.0055      0.04  QV        |         |         |         |
2+40       0.0058      0.04  QV        |         |         |         |
2+45       0.0060      0.04  QV        |         |         |         |
2+50       0.0063      0.04  QV        |         |         |         |
2+55       0.0066      0.04  QV        |         |         |         |
3+ 0       0.0068      0.04  QV        |         |         |         |
3+ 5       0.0071      0.04  QV        |         |         |         |
3+10       0.0074      0.04  Q V       |         |         |         |
3+15       0.0077      0.04  Q V       |         |         |         |
3+20       0.0079      0.04  Q V       |         |         |         |
3+25       0.0082      0.04  Q V       |         |         |         |
3+30       0.0085      0.04  Q V       |         |         |         |
3+35       0.0087      0.04  Q V       |         |         |         |
3+40       0.0090      0.04  Q V       |         |         |         |
3+45       0.0093      0.04  Q V       |         |         |         |
3+50       0.0096      0.04  Q V       |         |         |         |
3+55       0.0099      0.05  Q V       |         |         |         |
4+ 0       0.0102      0.05  Q V       |         |         |         |
4+ 5       0.0105      0.05  Q V       |         |         |         |
4+10       0.0109      0.05  Q  V      |         |         |         |
4+15       0.0112      0.05  Q  V      |         |         |         |
4+20       0.0116      0.05  Q  V      |         |         |         |
4+25       0.0119      0.05  Q  V      |         |         |         |
4+30       0.0123      0.06  Q  V      |         |         |         |
4+35       0.0127      0.06  Q  V      |         |         |         |
4+40       0.0131      0.06  Q  V      |         |         |         |
4+45       0.0134      0.06  Q  V      |         |         |         |
4+50       0.0139      0.06  Q  V      |         |         |         |
4+55       0.0143      0.06  Q  V      |         |         |         |
5+ 0       0.0147      0.06  Q   V     |         |         |         |
5+ 5       0.0151      0.05  Q   V     |         |         |         |
5+10       0.0154      0.05  Q   V     |         |         |         |
5+15       0.0157      0.05  Q   V     |         |         |         |
5+20       0.0161      0.05  Q   V     |         |         |         |
5+25       0.0165      0.05  Q   V     |         |         |         |
5+30       0.0169      0.06  Q   V     |         |         |         |
5+35       0.0173      0.06  Q   V     |         |         |         |
5+40       0.0177      0.06  Q   V     |         |         |         |
5+45       0.0181      0.06  Q    V    |         |         |         |
5+50       0.0186      0.06  Q    V    |         |         |         |
5+55       0.0190      0.06  Q    V    |         |         |         |
6+ 0       0.0194      0.06  Q    V    |         |         |         |
6+ 5       0.0199      0.07  Q    V    |         |         |         |
6+10       0.0204      0.07  Q    V    |         |         |         |
6+15       0.0209      0.07  Q    V    |         |         |         |
6+20       0.0213      0.07  Q    V    |         |         |         |
6+25       0.0218      0.07  Q     V   |         |         |         |
6+30       0.0223      0.07  Q     V   |         |         |         |
6+35       0.0228      0.08  Q     V   |         |         |         |
6+40       0.0234      0.08  Q     V   |         |         |         |
6+45       0.0239      0.08  Q     V   |         |         |         |
6+50       0.0245      0.08  Q     V   |         |         |         |
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 6+55       0.0250      0.08  Q     V   |         |         |         |
 7+ 0       0.0255      0.08  Q      V  |         |         |         |
 7+ 5       0.0261      0.08  Q      V  |         |         |         |
 7+10       0.0266      0.08  Q      V  |         |         |         |
 7+15       0.0272      0.08  Q      V  |         |         |         |
 7+20       0.0277      0.08  Q      V  |         |         |         |
 7+25       0.0283      0.09  Q      V  |         |         |         |
 7+30       0.0289      0.09  Q       V |         |         |         |
 7+35       0.0295      0.09  Q       V |         |         |         |
 7+40       0.0302      0.09  Q       V |         |         |         |
 7+45       0.0308      0.09  Q       V |         |         |         |
 7+50       0.0315      0.10  Q       V |         |         |         |
 7+55       0.0322      0.10  Q       V |         |         |         |
 8+ 0       0.0329      0.10  Q        V|         |         |         |
 8+ 5       0.0337      0.11  Q        V|         |         |         |
 8+10       0.0345      0.12  Q        V|         |         |         |
 8+15       0.0353      0.12  Q        V|         |         |         |
 8+20       0.0361      0.12  Q         V         |         |         |
 8+25       0.0369      0.12  Q         V         |         |         |
 8+30       0.0377      0.12  Q         V         |         |         |
 8+35       0.0386      0.12  Q         V         |         |         |
 8+40       0.0394      0.13  Q         V         |         |         |
 8+45       0.0403      0.13  Q         |V        |         |         |
 8+50       0.0412      0.13  Q         |V        |         |         |
 8+55       0.0421      0.13  Q         |V        |         |         |
 9+ 0       0.0430      0.13  Q         | V       |         |         |
 9+ 5       0.0440      0.14  Q         | V       |         |         |
 9+10       0.0450      0.15  Q         | V       |         |         |
 9+15       0.0461      0.15  Q         | V       |         |         |
 9+20       0.0471      0.15  Q         |  V      |         |         |
 9+25       0.0482      0.16  Q         |  V      |         |         |
 9+30       0.0493      0.16  Q         |  V      |         |         |
 9+35       0.0504      0.16  Q         |   V     |         |         |
 9+40       0.0515      0.16  Q         |   V     |         |         |
 9+45       0.0527      0.17  Q         |   V     |         |         |
 9+50       0.0538      0.17  Q         |    V    |         |         |
 9+55       0.0550      0.17  Q         |    V    |         |         |
10+ 0       0.0562      0.17  Q         |    V    |         |         |
10+ 5       0.0572      0.14  Q         |    V    |         |         |
10+10       0.0580      0.12  Q         |     V   |         |         |
10+15       0.0589      0.12  Q         |     V   |         |         |
10+20       0.0597      0.12  Q         |     V   |         |         |
10+25       0.0605      0.12  Q         |     V   |         |         |
10+30       0.0613      0.12  Q         |      V  |         |         |
10+35       0.0623      0.14  Q         |      V  |         |         |
10+40       0.0633      0.15  Q         |      V  |         |         |
10+45       0.0644      0.16  Q         |      V  |         |         |
10+50       0.0655      0.16  Q         |       V |         |         |
10+55       0.0666      0.16  Q         |       V |         |         |
11+ 0       0.0677      0.16  Q         |       V |         |         |
11+ 5       0.0687      0.15  Q         |        V|         |         |
11+10       0.0697      0.15  Q         |        V|         |         |
11+15       0.0708      0.15  Q         |        V|         |         |
11+20       0.0718      0.15  Q         |         V         |         |
11+25       0.0728      0.15  Q         |         V         |         |
11+30       0.0739      0.15  Q         |         V         |         |
11+35       0.0748      0.14  Q         |         V         |         |
11+40       0.0758      0.13  Q         |         |V        |         |
11+45       0.0767      0.13  Q         |         |V        |         |
11+50       0.0776      0.14  Q         |         |V        |         |
11+55       0.0786      0.14  Q         |         |V        |         |
12+ 0       0.0796      0.14  Q         |         | V       |         |
12+ 5       0.0807      0.17  Q         |         | V       |         |
12+10       0.0821      0.19  Q         |         | V       |         |
12+15       0.0834      0.20  Q         |         |  V      |         |
12+20       0.0848      0.20  Q         |         |  V      |         |
12+25       0.0862      0.20  Q         |         |   V     |         |
12+30       0.0876      0.20  Q         |         |   V     |         |
12+35       0.0891      0.21  Q         |         |   V     |         |
12+40       0.0906      0.22  Q         |         |    V    |         |
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12+45       0.0921      0.22  Q         |         |    V    |         |
12+50       0.0928      0.10  Q         |         |    V    |         |
12+55       0.0930      0.02  Q         |         |    V    |         |
13+ 0       0.0930      0.01  Q         |         |    V    |         |
13+ 5       0.0934      0.07  Q         |         |     V   |         |
13+10       0.0942      0.11  Q         |         |     V   |         |
13+15       0.0950      0.12  Q         |         |     V   |         |
13+20       0.0959      0.12  Q         |         |     V   |         |
13+25       0.0967      0.12  Q         |         |     V   |         |
13+30       0.0976      0.13  Q         |         |      V  |         |
13+35       0.0987      0.16  Q         |         |      V  |         |
13+40       0.0999      0.18  Q         |         |      V  |         |
13+45       0.1011      0.18  Q         |         |       V |         |
13+50       0.1024      0.18  Q         |         |       V |         |
13+55       0.1036      0.18  Q         |         |       V |         |
14+ 0       0.1049      0.18  Q         |         |        V|         |
14+ 5       0.1055      0.09  Q         |         |        V|         |
14+10       0.1056      0.02  Q         |         |        V|         |
14+15       0.1057      0.01  Q         |         |        V|         |
14+20       0.1064      0.12  Q         |         |        V|         |
14+25       0.1078      0.19  Q         |         |         V         |
14+30       0.1092      0.20  Q         |         |         V         |
14+35       0.1098      0.09  Q         |         |         V         |
14+40       0.1099      0.02  Q         |         |         V         |
14+45       0.1100      0.00  Q         |         |         V         |
14+50       0.1107      0.11  Q         |         |         V         |
14+55       0.1120      0.18  Q         |         |         |V        |
15+ 0       0.1133      0.20  Q         |         |         |V        |
15+ 5       0.1147      0.19  Q         |         |         |V        |
15+10       0.1160      0.19  Q         |         |         | V       |
15+15       0.1173      0.19  Q         |         |         | V       |
15+20       0.1185      0.18  Q         |         |         |  V      |
15+25       0.1198      0.18  Q         |         |         |  V      |
15+30       0.1210      0.18  Q         |         |         |  V      |
15+35       0.1221      0.16  Q         |         |         |   V     |
15+40       0.1232      0.15  Q         |         |         |   V     |
15+45       0.1242      0.15  Q         |         |         |   V     |
15+50       0.1253      0.15  Q         |         |         |   V     |
15+55       0.1263      0.15  Q         |         |         |    V    |
16+ 0       0.1273      0.15  Q         |         |         |    V    |
16+ 5       0.1279      0.09  Q         |         |         |    V    |
16+10       0.1282      0.04  Q         |         |         |    V    |
16+15       0.1284      0.03  Q         |         |         |    V    |
16+20       0.1286      0.03  Q         |         |         |    V    |
16+25       0.1288      0.03  Q         |         |         |    V    |
16+30       0.1290      0.03  Q         |         |         |    V    |
16+35       0.1292      0.03  Q         |         |         |     V   |
16+40       0.1294      0.02  Q         |         |         |     V   |
16+45       0.1296      0.02  Q         |         |         |     V   |
16+50       0.1297      0.02  Q         |         |         |     V   |
16+55       0.1299      0.02  Q         |         |         |     V   |
17+ 0       0.1300      0.02  Q         |         |         |     V   |
17+ 5       0.1303      0.03  Q         |         |         |     V   |
17+10       0.1305      0.04  Q         |         |         |     V   |
17+15       0.1308      0.04  Q         |         |         |     V   |
17+20       0.1311      0.04  Q         |         |         |     V   |
17+25       0.1313      0.04  Q         |         |         |     V   |
17+30       0.1316      0.04  Q         |         |         |     V   |
17+35       0.1319      0.04  Q         |         |         |     V   |
17+40       0.1322      0.04  Q         |         |         |     V   |
17+45       0.1324      0.04  Q         |         |         |     V   |
17+50       0.1327      0.04  Q         |         |         |     V   |
17+55       0.1329      0.03  Q         |         |         |      V  |
18+ 0       0.1331      0.03  Q         |         |         |      V  |
18+ 5       0.1333      0.03  Q         |         |         |      V  |
18+10       0.1335      0.03  Q         |         |         |      V  |
18+15       0.1338      0.03  Q         |         |         |      V  |
18+20       0.1340      0.03  Q         |         |         |      V  |
18+25       0.1342      0.03  Q         |         |         |      V  |
18+30       0.1344      0.03  Q         |         |         |      V  |
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  18+35       0.1346      0.03  Q         |         |         |      V  |
  18+40       0.1348      0.02  Q         |         |         |      V  |
  18+45       0.1349      0.02  Q         |         |         |      V  |
  18+50       0.1351      0.02  Q         |         |         |      V  |
  18+55       0.1352      0.02  Q         |         |         |      V  |
  19+ 0       0.1353      0.02  Q         |         |         |      V  |
  19+ 5       0.1354      0.02  Q         |         |         |      V  |
  19+10       0.1356      0.02  Q         |         |         |      V  |
  19+15       0.1357      0.02  Q         |         |         |      V  |
  19+20       0.1359      0.03  Q         |         |         |      V  |
  19+25       0.1361      0.03  Q         |         |         |      V  |
  19+30       0.1364      0.03  Q         |         |         |       V |
  19+35       0.1365      0.03  Q         |         |         |       V |
  19+40       0.1367      0.02  Q         |         |         |       V |
  19+45       0.1369      0.02  Q         |         |         |       V |
  19+50       0.1370      0.02  Q         |         |         |       V |
  19+55       0.1371      0.02  Q         |         |         |       V |
  20+ 0       0.1372      0.02  Q         |         |         |       V |
  20+ 5       0.1374      0.02  Q         |         |         |       V |
  20+10       0.1375      0.02  Q         |         |         |       V |
  20+15       0.1377      0.02  Q         |         |         |       V |
  20+20       0.1378      0.02  Q         |         |         |       V |
  20+25       0.1380      0.02  Q         |         |         |       V |
  20+30       0.1382      0.02  Q         |         |         |       V |
  20+35       0.1383      0.02  Q         |         |         |       V |
  20+40       0.1385      0.02  Q         |         |         |       V |
  20+45       0.1387      0.02  Q         |         |         |       V |
  20+50       0.1388      0.02  Q         |         |         |       V |
  20+55       0.1389      0.02  Q         |         |         |       V |
  21+ 0       0.1390      0.02  Q         |         |         |       V |
  21+ 5       0.1391      0.02  Q         |         |         |       V |
  21+10       0.1393      0.02  Q         |         |         |       V |
  21+15       0.1395      0.02  Q         |         |         |       V |
  21+20       0.1396      0.02  Q         |         |         |       V |
  21+25       0.1397      0.02  Q         |         |         |       V |
  21+30       0.1398      0.02  Q         |         |         |       V |
  21+35       0.1400      0.02  Q         |         |         |        V|
  21+40       0.1401      0.02  Q         |         |         |        V|
  21+45       0.1403      0.02  Q         |         |         |        V|
  21+50       0.1404      0.02  Q         |         |         |        V|
  21+55       0.1405      0.02  Q         |         |         |        V|
  22+ 0       0.1406      0.02  Q         |         |         |        V|
  22+ 5       0.1408      0.02  Q         |         |         |        V|
  22+10       0.1409      0.02  Q         |         |         |        V|
  22+15       0.1411      0.02  Q         |         |         |        V|
  22+20       0.1412      0.02  Q         |         |         |        V|
  22+25       0.1413      0.02  Q         |         |         |        V|
  22+30       0.1414      0.02  Q         |         |         |        V|
  22+35       0.1416      0.02  Q         |         |         |        V|
  22+40       0.1417      0.02  Q         |         |         |        V|
  22+45       0.1418      0.02  Q         |         |         |        V|
  22+50       0.1419      0.02  Q         |         |         |        V|
  22+55       0.1420      0.02  Q         |         |         |        V|
  23+ 0       0.1421      0.02  Q         |         |         |        V|
  23+ 5       0.1422      0.02  Q         |         |         |        V|
  23+10       0.1423      0.02  Q         |         |         |        V|
  23+15       0.1424      0.02  Q         |         |         |        V|
  23+20       0.1425      0.02  Q         |         |         |        V|
  23+25       0.1426      0.02  Q         |         |         |        V|
  23+30       0.1427      0.02  Q         |         |         |        V|
  23+35       0.1429      0.02  Q         |         |         |        V|
  23+40       0.1430      0.02  Q         |         |         |        V|
  23+45       0.1431      0.02  Q         |         |         |        V|
  23+50       0.1432      0.02  Q         |         |         |        V|
  23+55       0.1433      0.02  Q         |         |         |        V|
  24+ 0       0.1434      0.02  Q         |         |         |        V|
  24+ 5       0.1434      0.01  Q         |         |         |        V|
  24+10       0.1435      0.00  Q         |         |         |         V
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       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  02/10/13 File: tr36519da2410.out


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------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

-------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



-------------------------------------------------------------------------
TRACT 36519
Area A - Developed Condition
24 HOUR, 10 YEAR STORM

-----------------------------------------------------------------------
Drainage Area =       3.10(Ac.)  =      0.005 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       3.10(Ac.)  =      0.005 Sq. Mi.
Length along longest watercourse =     625.00(Ft.)
Length along longest watercourse measured to centroid =     263.00(Ft.)
Length along longest watercourse =      0.118 Mi.
Length along longest watercourse measured to centroid =      0.050 Mi.
Difference in elevation =       7.00(Ft.)
Slope along watercourse =     59.1360 Ft./Mi.
Average Manning's 'N' = 0.020
Lag time =    0.031 Hr.
Lag time =     1.89 Min.
25% of lag time =     0.47 Min.
40% of lag time =     0.75 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]
        3.10           2.70                  8.37

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        3.10           8.00                 24.80

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    2.700(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    4.880(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    4.880(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     3.100           56.00         0.350
```

Total Area Entered = 3.10(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.350	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.620

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	265.102	52.791	1.649
2	0.167	530.205	39.136	1.223
3	0.250	795.307	6.553	0.205
4	0.333	1060.409	1.520	0.048
		Sum = 100.000	Sum=	3.124

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.039	0.620	0.024	0.01
2	0.17	0.07	0.039	0.618	0.024	0.01
3	0.25	0.07	0.039	0.615	0.024	0.01
4	0.33	0.10	0.059	0.613	0.036	0.02
5	0.42	0.10	0.059	0.611	0.036	0.02
6	0.50	0.10	0.059	0.608	0.036	0.02
7	0.58	0.10	0.059	0.606	0.036	0.02
8	0.67	0.10	0.059	0.604	0.036	0.02
9	0.75	0.10	0.059	0.601	0.036	0.02
10	0.83	0.13	0.078	0.599	0.048	0.03
11	0.92	0.13	0.078	0.596	0.048	0.03
12	1.00	0.13	0.078	0.594	0.048	0.03
13	1.08	0.10	0.059	0.592	0.036	0.02
14	1.17	0.10	0.059	0.589	0.036	0.02
15	1.25	0.10	0.059	0.587	0.036	0.02
16	1.33	0.10	0.059	0.585	0.036	0.02
17	1.42	0.10	0.059	0.582	0.036	0.02
18	1.50	0.10	0.059	0.580	0.036	0.02
19	1.58	0.10	0.059	0.578	0.036	0.02
20	1.67	0.10	0.059	0.575	0.036	0.02
21	1.75	0.10	0.059	0.573	0.036	0.02
22	1.83	0.13	0.078	0.571	0.048	0.03
23	1.92	0.13	0.078	0.569	0.048	0.03
24	2.00	0.13	0.078	0.566	0.048	0.03
25	2.08	0.13	0.078	0.564	0.048	0.03
26	2.17	0.13	0.078	0.562	0.048	0.03
27	2.25	0.13	0.078	0.559	0.048	0.03
28	2.33	0.13	0.078	0.557	0.048	0.03
29	2.42	0.13	0.078	0.555	0.048	0.03
30	2.50	0.13	0.078	0.553	0.048	0.03
31	2.58	0.17	0.098	0.550	0.061	0.04
32	2.67	0.17	0.098	0.548	0.061	0.04
33	2.75	0.17	0.098	0.546	0.061	0.04
34	2.83	0.17	0.098	0.544	0.061	0.04
35	2.92	0.17	0.098	0.541	0.061	0.04
36	3.00	0.17	0.098	0.539	0.061	0.04
37	3.08	0.17	0.098	0.537	0.061	0.04
38	3.17	0.17	0.098	0.535	0.061	0.04
39	3.25	0.17	0.098	0.532	0.061	0.04

40	3.33	0.17	0.098	0.530	0.061	0.04
41	3.42	0.17	0.098	0.528	0.061	0.04
42	3.50	0.17	0.098	0.526	0.061	0.04
43	3.58	0.17	0.098	0.524	0.061	0.04
44	3.67	0.17	0.098	0.521	0.061	0.04
45	3.75	0.17	0.098	0.519	0.061	0.04
46	3.83	0.20	0.117	0.517	0.073	0.04
47	3.92	0.20	0.117	0.515	0.073	0.04
48	4.00	0.20	0.117	0.513	0.073	0.04
49	4.08	0.20	0.117	0.510	0.073	0.04
50	4.17	0.20	0.117	0.508	0.073	0.04
51	4.25	0.20	0.117	0.506	0.073	0.04
52	4.33	0.23	0.137	0.504	0.085	0.05
53	4.42	0.23	0.137	0.502	0.085	0.05
54	4.50	0.23	0.137	0.500	0.085	0.05
55	4.58	0.23	0.137	0.498	0.085	0.05
56	4.67	0.23	0.137	0.495	0.085	0.05
57	4.75	0.23	0.137	0.493	0.085	0.05
58	4.83	0.27	0.156	0.491	0.097	0.06
59	4.92	0.27	0.156	0.489	0.097	0.06
60	5.00	0.27	0.156	0.487	0.097	0.06
61	5.08	0.20	0.117	0.485	0.073	0.04
62	5.17	0.20	0.117	0.483	0.073	0.04
63	5.25	0.20	0.117	0.481	0.073	0.04
64	5.33	0.23	0.137	0.478	0.085	0.05
65	5.42	0.23	0.137	0.476	0.085	0.05
66	5.50	0.23	0.137	0.474	0.085	0.05
67	5.58	0.27	0.156	0.472	0.097	0.06
68	5.67	0.27	0.156	0.470	0.097	0.06
69	5.75	0.27	0.156	0.468	0.097	0.06
70	5.83	0.27	0.156	0.466	0.097	0.06
71	5.92	0.27	0.156	0.464	0.097	0.06
72	6.00	0.27	0.156	0.462	0.097	0.06
73	6.08	0.30	0.176	0.460	0.109	0.07
74	6.17	0.30	0.176	0.458	0.109	0.07
75	6.25	0.30	0.176	0.456	0.109	0.07
76	6.33	0.30	0.176	0.454	0.109	0.07
77	6.42	0.30	0.176	0.452	0.109	0.07
78	6.50	0.30	0.176	0.450	0.109	0.07
79	6.58	0.33	0.195	0.448	0.121	0.07
80	6.67	0.33	0.195	0.446	0.121	0.07
81	6.75	0.33	0.195	0.444	0.121	0.07
82	6.83	0.33	0.195	0.442	0.121	0.07
83	6.92	0.33	0.195	0.440	0.121	0.07
84	7.00	0.33	0.195	0.438	0.121	0.07
85	7.08	0.33	0.195	0.436	0.121	0.07
86	7.17	0.33	0.195	0.434	0.121	0.07
87	7.25	0.33	0.195	0.432	0.121	0.07
88	7.33	0.37	0.215	0.430	0.133	0.08
89	7.42	0.37	0.215	0.428	0.133	0.08
90	7.50	0.37	0.215	0.426	0.133	0.08
91	7.58	0.40	0.234	0.424	0.145	0.09
92	7.67	0.40	0.234	0.422	0.145	0.09
93	7.75	0.40	0.234	0.420	0.145	0.09
94	7.83	0.43	0.254	0.418	0.157	0.10
95	7.92	0.43	0.254	0.416	0.157	0.10
96	8.00	0.43	0.254	0.414	0.157	0.10
97	8.08	0.50	0.293	0.412	0.182	0.11
98	8.17	0.50	0.293	0.410	0.182	0.11
99	8.25	0.50	0.293	0.408	0.182	0.11
100	8.33	0.50	0.293	0.406	0.182	0.11
101	8.42	0.50	0.293	0.405	0.182	0.11
102	8.50	0.50	0.293	0.403	0.182	0.11
103	8.58	0.53	0.312	0.401	0.194	0.12
104	8.67	0.53	0.312	0.399	0.194	0.12
105	8.75	0.53	0.312	0.397	0.194	0.12
106	8.83	0.57	0.332	0.395	0.206	0.13
107	8.92	0.57	0.332	0.393	0.206	0.13
108	9.00	0.57	0.332	0.391	0.206	0.13
109	9.08	0.63	0.371	0.390	0.230	0.14

110	9.17	0.63	0.371	0.388	0.230	0.14
111	9.25	0.63	0.371	0.386	0.230	0.14
112	9.33	0.67	0.390	0.384	---	0.01
113	9.42	0.67	0.390	0.382	---	0.01
114	9.50	0.67	0.390	0.380	---	0.01
115	9.58	0.70	0.410	0.379	---	0.03
116	9.67	0.70	0.410	0.377	---	0.03
117	9.75	0.70	0.410	0.375	---	0.04
118	9.83	0.73	0.429	0.373	---	0.06
119	9.92	0.73	0.429	0.371	---	0.06
120	10.00	0.73	0.429	0.369	---	0.06
121	10.08	0.50	0.293	0.368	0.182	0.11
122	10.17	0.50	0.293	0.366	0.182	0.11
123	10.25	0.50	0.293	0.364	0.182	0.11
124	10.33	0.50	0.293	0.362	0.182	0.11
125	10.42	0.50	0.293	0.361	0.182	0.11
126	10.50	0.50	0.293	0.359	0.182	0.11
127	10.58	0.67	0.390	0.357	---	0.03
128	10.67	0.67	0.390	0.355	---	0.04
129	10.75	0.67	0.390	0.354	---	0.04
130	10.83	0.67	0.390	0.352	---	0.04
131	10.92	0.67	0.390	0.350	---	0.04
132	11.00	0.67	0.390	0.348	---	0.04
133	11.08	0.63	0.371	0.347	---	0.02
134	11.17	0.63	0.371	0.345	---	0.03
135	11.25	0.63	0.371	0.343	---	0.03
136	11.33	0.63	0.371	0.342	---	0.03
137	11.42	0.63	0.371	0.340	---	0.03
138	11.50	0.63	0.371	0.338	---	0.03
139	11.58	0.57	0.332	0.337	0.206	0.13
140	11.67	0.57	0.332	0.335	0.206	0.13
141	11.75	0.57	0.332	0.333	0.206	0.13
142	11.83	0.60	0.351	0.332	---	0.02
143	11.92	0.60	0.351	0.330	---	0.02
144	12.00	0.60	0.351	0.328	---	0.02
145	12.08	0.83	0.488	0.327	---	0.16
146	12.17	0.83	0.488	0.325	---	0.16
147	12.25	0.83	0.488	0.323	---	0.16
148	12.33	0.87	0.508	0.322	---	0.19
149	12.42	0.87	0.508	0.320	---	0.19
150	12.50	0.87	0.508	0.319	---	0.19
151	12.58	0.93	0.547	0.317	---	0.23
152	12.67	0.93	0.547	0.315	---	0.23
153	12.75	0.93	0.547	0.314	---	0.23
154	12.83	0.97	0.566	0.312	---	0.25
155	12.92	0.97	0.566	0.311	---	0.26
156	13.00	0.97	0.566	0.309	---	0.26
157	13.08	1.13	0.664	0.307	---	0.36
158	13.17	1.13	0.664	0.306	---	0.36
159	13.25	1.13	0.664	0.304	---	0.36
160	13.33	1.13	0.664	0.303	---	0.36
161	13.42	1.13	0.664	0.301	---	0.36
162	13.50	1.13	0.664	0.300	---	0.36
163	13.58	0.77	0.449	0.298	---	0.15
164	13.67	0.77	0.449	0.297	---	0.15
165	13.75	0.77	0.449	0.295	---	0.15
166	13.83	0.77	0.449	0.294	---	0.16
167	13.92	0.77	0.449	0.292	---	0.16
168	14.00	0.77	0.449	0.291	---	0.16
169	14.08	0.90	0.527	0.289	---	0.24
170	14.17	0.90	0.527	0.288	---	0.24
171	14.25	0.90	0.527	0.286	---	0.24
172	14.33	0.87	0.508	0.285	---	0.22
173	14.42	0.87	0.508	0.283	---	0.22
174	14.50	0.87	0.508	0.282	---	0.23
175	14.58	0.87	0.508	0.280	---	0.23
176	14.67	0.87	0.508	0.279	---	0.23
177	14.75	0.87	0.508	0.278	---	0.23
178	14.83	0.83	0.488	0.276	---	0.21
179	14.92	0.83	0.488	0.275	---	0.21

180	15.00	0.83	0.488	0.273	---	0.21
181	15.08	0.80	0.469	0.272	---	0.20
182	15.17	0.80	0.469	0.270	---	0.20
183	15.25	0.80	0.469	0.269	---	0.20
184	15.33	0.77	0.449	0.268	---	0.18
185	15.42	0.77	0.449	0.266	---	0.18
186	15.50	0.77	0.449	0.265	---	0.18
187	15.58	0.63	0.371	0.264	---	0.11
188	15.67	0.63	0.371	0.262	---	0.11
189	15.75	0.63	0.371	0.261	---	0.11
190	15.83	0.63	0.371	0.260	---	0.11
191	15.92	0.63	0.371	0.258	---	0.11
192	16.00	0.63	0.371	0.257	---	0.11
193	16.08	0.13	0.078	0.256	0.048	0.03
194	16.17	0.13	0.078	0.254	0.048	0.03
195	16.25	0.13	0.078	0.253	0.048	0.03
196	16.33	0.13	0.078	0.252	0.048	0.03
197	16.42	0.13	0.078	0.250	0.048	0.03
198	16.50	0.13	0.078	0.249	0.048	0.03
199	16.58	0.10	0.059	0.248	0.036	0.02
200	16.67	0.10	0.059	0.247	0.036	0.02
201	16.75	0.10	0.059	0.245	0.036	0.02
202	16.83	0.10	0.059	0.244	0.036	0.02
203	16.92	0.10	0.059	0.243	0.036	0.02
204	17.00	0.10	0.059	0.242	0.036	0.02
205	17.08	0.17	0.098	0.240	0.061	0.04
206	17.17	0.17	0.098	0.239	0.061	0.04
207	17.25	0.17	0.098	0.238	0.061	0.04
208	17.33	0.17	0.098	0.237	0.061	0.04
209	17.42	0.17	0.098	0.236	0.061	0.04
210	17.50	0.17	0.098	0.234	0.061	0.04
211	17.58	0.17	0.098	0.233	0.061	0.04
212	17.67	0.17	0.098	0.232	0.061	0.04
213	17.75	0.17	0.098	0.231	0.061	0.04
214	17.83	0.13	0.078	0.230	0.048	0.03
215	17.92	0.13	0.078	0.229	0.048	0.03
216	18.00	0.13	0.078	0.228	0.048	0.03
217	18.08	0.13	0.078	0.226	0.048	0.03
218	18.17	0.13	0.078	0.225	0.048	0.03
219	18.25	0.13	0.078	0.224	0.048	0.03
220	18.33	0.13	0.078	0.223	0.048	0.03
221	18.42	0.13	0.078	0.222	0.048	0.03
222	18.50	0.13	0.078	0.221	0.048	0.03
223	18.58	0.10	0.059	0.220	0.036	0.02
224	18.67	0.10	0.059	0.219	0.036	0.02
225	18.75	0.10	0.059	0.218	0.036	0.02
226	18.83	0.07	0.039	0.217	0.024	0.01
227	18.92	0.07	0.039	0.216	0.024	0.01
228	19.00	0.07	0.039	0.215	0.024	0.01
229	19.08	0.10	0.059	0.214	0.036	0.02
230	19.17	0.10	0.059	0.213	0.036	0.02
231	19.25	0.10	0.059	0.212	0.036	0.02
232	19.33	0.13	0.078	0.211	0.048	0.03
233	19.42	0.13	0.078	0.210	0.048	0.03
234	19.50	0.13	0.078	0.209	0.048	0.03
235	19.58	0.10	0.059	0.208	0.036	0.02
236	19.67	0.10	0.059	0.207	0.036	0.02
237	19.75	0.10	0.059	0.206	0.036	0.02
238	19.83	0.07	0.039	0.205	0.024	0.01
239	19.92	0.07	0.039	0.204	0.024	0.01
240	20.00	0.07	0.039	0.203	0.024	0.01
241	20.08	0.10	0.059	0.202	0.036	0.02
242	20.17	0.10	0.059	0.201	0.036	0.02
243	20.25	0.10	0.059	0.201	0.036	0.02
244	20.33	0.10	0.059	0.200	0.036	0.02
245	20.42	0.10	0.059	0.199	0.036	0.02
246	20.50	0.10	0.059	0.198	0.036	0.02
247	20.58	0.10	0.059	0.197	0.036	0.02
248	20.67	0.10	0.059	0.196	0.036	0.02
249	20.75	0.10	0.059	0.195	0.036	0.02

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250  20.83     0.07      0.039         0.195     0.024         0.01
251  20.92     0.07      0.039         0.194     0.024         0.01
252  21.00     0.07      0.039         0.193     0.024         0.01
253  21.08     0.10      0.059         0.192     0.036         0.02
254  21.17     0.10      0.059         0.192     0.036         0.02
255  21.25     0.10      0.059         0.191     0.036         0.02
256  21.33     0.07      0.039         0.190     0.024         0.01
257  21.42     0.07      0.039         0.189     0.024         0.01
258  21.50     0.07      0.039         0.189     0.024         0.01
259  21.58     0.10      0.059         0.188     0.036         0.02
260  21.67     0.10      0.059         0.187     0.036         0.02
261  21.75     0.10      0.059         0.187     0.036         0.02
262  21.83     0.07      0.039         0.186     0.024         0.01
263  21.92     0.07      0.039         0.185     0.024         0.01
264  22.00     0.07      0.039         0.185     0.024         0.01
265  22.08     0.10      0.059         0.184     0.036         0.02
266  22.17     0.10      0.059         0.184     0.036         0.02
267  22.25     0.10      0.059         0.183     0.036         0.02
268  22.33     0.07      0.039         0.182     0.024         0.01
269  22.42     0.07      0.039         0.182     0.024         0.01
270  22.50     0.07      0.039         0.181     0.024         0.01
271  22.58     0.07      0.039         0.181     0.024         0.01
272  22.67     0.07      0.039         0.180     0.024         0.01
273  22.75     0.07      0.039         0.180     0.024         0.01
274  22.83     0.07      0.039         0.179     0.024         0.01
275  22.92     0.07      0.039         0.179     0.024         0.01
276  23.00     0.07      0.039         0.178     0.024         0.01
277  23.08     0.07      0.039         0.178     0.024         0.01
278  23.17     0.07      0.039         0.178     0.024         0.01
279  23.25     0.07      0.039         0.177     0.024         0.01
280  23.33     0.07      0.039         0.177     0.024         0.01
281  23.42     0.07      0.039         0.177     0.024         0.01
282  23.50     0.07      0.039         0.176     0.024         0.01
283  23.58     0.07      0.039         0.176     0.024         0.01
284  23.67     0.07      0.039         0.176     0.024         0.01
285  23.75     0.07      0.039         0.175     0.024         0.01
286  23.83     0.07      0.039         0.175     0.024         0.01
287  23.92     0.07      0.039         0.175     0.024         0.01
288  24.00     0.07      0.039         0.175     0.024         0.01
    Sum =     100.0                                   Sum =    20.5
      Flood volume = Effective rainfall      1.70(In)
       times area       3.1(Ac.)/[(In)/(Ft.)] =       0.4(Ac.Ft)
      Total soil loss =      3.18(In)
      Total soil loss =     0.820(Ac.Ft)
      Total rainfall =      4.88(In)
      Flood volume =       19180.2 Cubic Feet
      Total soil loss =       35739.3 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      1.135(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        2.5       5.0       7.5      10.0
 ---------------------------------------------------------------------
   0+ 5       0.0002      0.02  Q         |         |         |         |
   0+10       0.0005      0.04  Q         |         |         |         |
   0+15       0.0008      0.05  Q         |         |         |         |
   0+20       0.0012      0.06  Q         |         |         |         |
   0+25       0.0016      0.07  Q         |         |         |         |
   0+30       0.0021      0.07  Q         |         |         |         |
   0+35       0.0026      0.07  Q         |         |         |         |
   0+40       0.0031      0.07  Q         |         |         |         |
   0+45       0.0036      0.07  Q         |         |         |         |
   0+50       0.0041      0.08  Q         |         |         |         |
   0+55       0.0047      0.09  Q         |         |         |         |
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1+ 0       0.0054      0.09  Q         |         |         |         |
1+ 5       0.0059      0.08  Q         |         |         |         |
1+10       0.0064      0.07  Q         |         |         |         |
1+15       0.0069      0.07  Q         |         |         |         |
1+20       0.0074      0.07  Q         |         |         |         |
1+25       0.0079      0.07  Q         |         |         |         |
1+30       0.0084      0.07  Q         |         |         |         |
1+35       0.0088      0.07  Q         |         |         |         |
1+40       0.0093      0.07  Q         |         |         |         |
1+45       0.0098      0.07  Q         |         |         |         |
1+50       0.0104      0.08  Q         |         |         |         |
1+55       0.0110      0.09  Q         |         |         |         |
2+ 0       0.0116      0.09  QV        |         |         |         |
2+ 5       0.0123      0.09  QV        |         |         |         |
2+10       0.0129      0.09  QV        |         |         |         |
2+15       0.0135      0.09  QV        |         |         |         |
2+20       0.0142      0.09  QV        |         |         |         |
2+25       0.0148      0.09  QV        |         |         |         |
2+30       0.0154      0.09  QV        |         |         |         |
2+35       0.0162      0.10  QV        |         |         |         |
2+40       0.0170      0.11  QV        |         |         |         |
2+45       0.0178      0.12  QV        |         |         |         |
2+50       0.0186      0.12  QV        |         |         |         |
2+55       0.0193      0.12  QV        |         |         |         |
3+ 0       0.0201      0.12  QV        |         |         |         |
3+ 5       0.0209      0.12  QV        |         |         |         |
3+10       0.0217      0.12  QV        |         |         |         |
3+15       0.0225      0.12  Q V       |         |         |         |
3+20       0.0233      0.12  Q V       |         |         |         |
3+25       0.0241      0.12  Q V       |         |         |         |
3+30       0.0249      0.12  Q V       |         |         |         |
3+35       0.0257      0.12  Q V       |         |         |         |
3+40       0.0265      0.12  Q V       |         |         |         |
3+45       0.0273      0.12  Q V       |         |         |         |
3+50       0.0282      0.13  Q V       |         |         |         |
3+55       0.0292      0.14  Q V       |         |         |         |
4+ 0       0.0301      0.14  Q V       |         |         |         |
4+ 5       0.0311      0.14  Q V       |         |         |         |
4+10       0.0320      0.14  Q V       |         |         |         |
4+15       0.0330      0.14  Q V       |         |         |         |
4+20       0.0340      0.15  Q  V      |         |         |         |
4+25       0.0351      0.16  Q  V      |         |         |         |
4+30       0.0363      0.16  Q  V      |         |         |         |
4+35       0.0374      0.16  Q  V      |         |         |         |
4+40       0.0385      0.16  Q  V      |         |         |         |
4+45       0.0396      0.16  Q  V      |         |         |         |
4+50       0.0408      0.17  Q  V      |         |         |         |
4+55       0.0421      0.18  Q  V      |         |         |         |
5+ 0       0.0434      0.19  Q  V      |         |         |         |
5+ 5       0.0445      0.16  Q   V     |         |         |         |
5+10       0.0454      0.14  Q   V     |         |         |         |
5+15       0.0464      0.14  Q   V     |         |         |         |
5+20       0.0474      0.15  Q   V     |         |         |         |
5+25       0.0486      0.16  Q   V     |         |         |         |
5+30       0.0497      0.16  Q   V     |         |         |         |
5+35       0.0509      0.17  Q   V     |         |         |         |
5+40       0.0521      0.18  Q   V     |         |         |         |
5+45       0.0534      0.19  Q   V     |         |         |         |
5+50       0.0547      0.19  Q   V     |         |         |         |
5+55       0.0560      0.19  Q    V    |         |         |         |
6+ 0       0.0572      0.19  Q    V    |         |         |         |
6+ 5       0.0586      0.20  Q    V    |         |         |         |
6+10       0.0600      0.21  Q    V    |         |         |         |
6+15       0.0615      0.21  Q    V    |         |         |         |
6+20       0.0629      0.21  Q    V    |         |         |         |
6+25       0.0643      0.21  Q    V    |         |         |         |
6+30       0.0658      0.21  Q    V    |         |         |         |
6+35       0.0673      0.22  Q     V   |         |         |         |
6+40       0.0689      0.23  Q     V   |         |         |         |
6+45       0.0705      0.23  Q     V   |         |         |         |
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 6+50       0.0721      0.23  Q     V   |         |         |         |
 6+55       0.0737      0.23  Q     V   |         |         |         |
 7+ 0       0.0753      0.23  Q     V   |         |         |         |
 7+ 5       0.0769      0.23  Q     V   |         |         |         |
 7+10       0.0785      0.23  Q      V  |         |         |         |
 7+15       0.0801      0.23  Q      V  |         |         |         |
 7+20       0.0817      0.24  Q      V  |         |         |         |
 7+25       0.0835      0.25  |Q     V  |         |         |         |
 7+30       0.0852      0.25  |Q     V  |         |         |         |
 7+35       0.0871      0.27  |Q     V  |         |         |         |
 7+40       0.0890      0.28  |Q      V |         |         |         |
 7+45       0.0909      0.28  |Q      V |         |         |         |
 7+50       0.0929      0.29  |Q      V |         |         |         |
 7+55       0.0950      0.30  |Q      V |         |         |         |
 8+ 0       0.0970      0.30  |Q      V |         |         |         |
 8+ 5       0.0993      0.33  |Q       V|         |         |         |
 8+10       0.1016      0.34  |Q       V|         |         |         |
 8+15       0.1040      0.35  |Q       V|         |         |         |
 8+20       0.1064      0.35  |Q       V|         |         |         |
 8+25       0.1088      0.35  |Q       V|         |         |         |
 8+30       0.1112      0.35  |Q        V         |         |         |
 8+35       0.1137      0.36  |Q        V         |         |         |
 8+40       0.1162      0.37  |Q        V         |         |         |
 8+45       0.1188      0.37  |Q        V         |         |         |
 8+50       0.1214      0.38  |Q        |V        |         |         |
 8+55       0.1241      0.39  |Q        |V        |         |         |
 9+ 0       0.1269      0.39  |Q        |V        |         |         |
 9+ 5       0.1297      0.42  |Q        |V        |         |         |
 9+10       0.1327      0.44  |Q        | V       |         |         |
 9+15       0.1358      0.44  |Q        | V       |         |         |
 9+20       0.1373      0.22  Q         | V       |         |         |
 9+25       0.1377      0.06  Q         | V       |         |         |
 9+30       0.1379      0.03  Q         | V       |         |         |
 9+35       0.1384      0.07  Q         | V       |         |         |
 9+40       0.1390      0.10  Q         | V       |         |         |
 9+45       0.1398      0.11  Q         | V       |         |         |
 9+50       0.1408      0.14  Q         | V       |         |         |
 9+55       0.1419      0.17  Q         | V       |         |         |
10+ 0       0.1432      0.18  Q         |  V      |         |         |
10+ 5       0.1451      0.27  |Q        |  V      |         |         |
10+10       0.1474      0.33  |Q        |  V      |         |         |
10+15       0.1498      0.35  |Q        |  V      |         |         |
10+20       0.1522      0.35  |Q        |  V      |         |         |
10+25       0.1546      0.35  |Q        |   V     |         |         |
10+30       0.1570      0.35  |Q        |   V     |         |         |
10+35       0.1585      0.22  Q         |   V     |         |         |
10+40       0.1593      0.13  Q         |   V     |         |         |
10+45       0.1601      0.12  Q         |   V     |         |         |
10+50       0.1609      0.12  Q         |   V     |         |         |
10+55       0.1618      0.12  Q         |   V     |         |         |
11+ 0       0.1627      0.13  Q         |   V     |         |         |
11+ 5       0.1634      0.10  Q         |   V     |         |         |
11+10       0.1639      0.08  Q         |   V     |         |         |
11+15       0.1645      0.08  Q         |   V     |         |         |
11+20       0.1651      0.09  Q         |    V    |         |         |
11+25       0.1658      0.09  Q         |    V    |         |         |
11+30       0.1665      0.10  Q         |    V    |         |         |
11+35       0.1682      0.26  |Q        |    V    |         |         |
11+40       0.1708      0.37  |Q        |    V    |         |         |
11+45       0.1735      0.39  |Q        |    V    |         |         |
11+50       0.1750      0.22  Q         |    V    |         |         |
11+55       0.1756      0.09  Q         |    V    |         |         |
12+ 0       0.1761      0.07  Q         |    V    |         |         |
12+ 5       0.1782      0.30  |Q        |     V   |         |         |
12+10       0.1814      0.47  |Q        |     V   |         |         |
12+15       0.1849      0.51  | Q       |     V   |         |         |
12+20       0.1887      0.55  | Q       |      V  |         |         |
12+25       0.1927      0.58  | Q       |      V  |         |         |
12+30       0.1967      0.59  | Q       |      V  |         |         |
12+35       0.2012      0.66  | Q       |       V |         |         |
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12+40       0.2061      0.71  | Q       |        V |         |         |
12+45       0.2111      0.72  | Q       |         V|         |         |
12+50       0.2164      0.76  |  Q      |         V|         |         |
12+55       0.2218      0.79  |  Q      |          V         |         |
13+ 0       0.2273      0.80  |  Q      |          V         |         |
13+ 5       0.2340      0.97  |  Q      |         |V        |         |
13+10       0.2415      1.09  |   Q     |         |V        |         |
13+15       0.2492      1.12  |   Q     |         | V       |         |
13+20       0.2569      1.13  |   Q     |         |  V      |         |
13+25       0.2647      1.13  |   Q     |         |   V     |         |
13+30       0.2725      1.14  |   Q     |         |   V     |         |
13+35       0.2780      0.79  |  Q      |         |    V    |         |
13+40       0.2816      0.53  | Q       |         |    V    |         |
13+45       0.2850      0.49  |Q        |         |    V    |         |
13+50       0.2883      0.48  |Q        |         |     V   |         |
13+55       0.2916      0.49  |Q        |         |     V   |         |
14+ 0       0.2950      0.49  |Q        |         |     V   |         |
14+ 5       0.2993      0.63  | Q       |         |      V  |         |
14+10       0.3043      0.73  | Q       |         |      V  |         |
14+15       0.3095      0.75  | Q       |         |       V |         |
14+20       0.3145      0.72  | Q       |         |       V |         |
14+25       0.3193      0.70  | Q       |         |        V|         |
14+30       0.3241      0.70  | Q       |         |        V|         |
14+35       0.3290      0.71  | Q       |         |        V|         |
14+40       0.3339      0.71  | Q       |         |         V         |
14+45       0.3389      0.72  | Q       |         |         V         |
14+50       0.3436      0.69  | Q       |         |         |V        |
14+55       0.3482      0.67  | Q       |         |         |V        |
15+ 0       0.3528      0.67  | Q       |         |         | V       |
15+ 5       0.3572      0.64  | Q       |         |         | V       |
15+10       0.3615      0.62  | Q       |         |         | V       |
15+15       0.3658      0.62  | Q       |         |         |  V      |
15+20       0.3699      0.59  | Q       |         |         |  V      |
15+25       0.3738      0.57  | Q       |         |         |  V      |
15+30       0.3778      0.57  | Q       |         |         |   V     |
15+35       0.3809      0.45  |Q        |         |         |   V     |
15+40       0.3833      0.36  |Q        |         |         |   V     |
15+45       0.3857      0.35  |Q        |         |         |    V    |
15+50       0.3881      0.35  |Q        |         |         |    V    |
15+55       0.3905      0.35  |Q        |         |         |    V    |
16+ 0       0.3929      0.35  |Q        |         |         |    V    |
16+ 5       0.3944      0.22  Q         |         |         |    V    |
16+10       0.3952      0.11  Q         |         |         |    V    |
16+15       0.3959      0.10  Q         |         |         |    V    |
16+20       0.3965      0.09  Q         |         |         |     V   |
16+25       0.3972      0.09  Q         |         |         |     V   |
16+30       0.3978      0.09  Q         |         |         |     V   |
16+35       0.3983      0.08  Q         |         |         |     V   |
16+40       0.3988      0.07  Q         |         |         |     V   |
16+45       0.3993      0.07  Q         |         |         |     V   |
16+50       0.3998      0.07  Q         |         |         |     V   |
16+55       0.4003      0.07  Q         |         |         |     V   |
17+ 0       0.4008      0.07  Q         |         |         |     V   |
17+ 5       0.4014      0.09  Q         |         |         |     V   |
17+10       0.4022      0.11  Q         |         |         |     V   |
17+15       0.4030      0.12  Q         |         |         |     V   |
17+20       0.4038      0.12  Q         |         |         |     V   |
17+25       0.4046      0.12  Q         |         |         |     V   |
17+30       0.4054      0.12  Q         |         |         |     V   |
17+35       0.4062      0.12  Q         |         |         |     V   |
17+40       0.4070      0.12  Q         |         |         |     V   |
17+45       0.4078      0.12  Q         |         |         |      V  |
17+50       0.4085      0.10  Q         |         |         |      V  |
17+55       0.4091      0.09  Q         |         |         |      V  |
18+ 0       0.4098      0.09  Q         |         |         |      V  |
18+ 5       0.4104      0.09  Q         |         |         |      V  |
18+10       0.4110      0.09  Q         |         |         |      V  |
18+15       0.4117      0.09  Q         |         |         |      V  |
18+20       0.4123      0.09  Q         |         |         |      V  |
18+25       0.4130      0.09  Q         |         |         |      V  |
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18+30       0.4136      0.09  Q         |         |         |      V  |
18+35       0.4142      0.08  Q         |         |         |      V  |
18+40       0.4147      0.07  Q         |         |         |      V  |
18+45       0.4151      0.07  Q         |         |         |      V  |
18+50       0.4155      0.06  Q         |         |         |      V  |
18+55       0.4159      0.05  Q         |         |         |      V  |
19+ 0       0.4162      0.05  Q         |         |         |      V  |
19+ 5       0.4166      0.06  Q         |         |         |      V  |
19+10       0.4171      0.07  Q         |         |         |      V  |
19+15       0.4175      0.07  Q         |         |         |      V  |
19+20       0.4181      0.08  Q         |         |         |      V  |
19+25       0.4187      0.09  Q         |         |         |       V |
19+30       0.4194      0.09  Q         |         |         |       V |
19+35       0.4199      0.08  Q         |         |         |       V |
19+40       0.4204      0.07  Q         |         |         |       V |
19+45       0.4209      0.07  Q         |         |         |       V |
19+50       0.4213      0.06  Q         |         |         |       V |
19+55       0.4216      0.05  Q         |         |         |       V |
20+ 0       0.4219      0.05  Q         |         |         |       V |
20+ 5       0.4223      0.06  Q         |         |         |       V |
20+10       0.4228      0.07  Q         |         |         |       V |
20+15       0.4233      0.07  Q         |         |         |       V |
20+20       0.4238      0.07  Q         |         |         |       V |
20+25       0.4242      0.07  Q         |         |         |       V |
20+30       0.4247      0.07  Q         |         |         |       V |
20+35       0.4252      0.07  Q         |         |         |       V |
20+40       0.4257      0.07  Q         |         |         |       V |
20+45       0.4262      0.07  Q         |         |         |       V |
20+50       0.4265      0.06  Q         |         |         |       V |
20+55       0.4269      0.05  Q         |         |         |       V |
21+ 0       0.4272      0.05  Q         |         |         |       V |
21+ 5       0.4276      0.06  Q         |         |         |       V |
21+10       0.4281      0.07  Q         |         |         |       V |
21+15       0.4285      0.07  Q         |         |         |       V |
21+20       0.4289      0.06  Q         |         |         |       V |
21+25       0.4293      0.05  Q         |         |         |       V |
21+30       0.4296      0.05  Q         |         |         |        V|
21+35       0.4300      0.06  Q         |         |         |        V|
21+40       0.4305      0.07  Q         |         |         |        V|
21+45       0.4309      0.07  Q         |         |         |        V|
21+50       0.4313      0.06  Q         |         |         |        V|
21+55       0.4317      0.05  Q         |         |         |        V|
22+ 0       0.4320      0.05  Q         |         |         |        V|
22+ 5       0.4324      0.06  Q         |         |         |        V|
22+10       0.4329      0.07  Q         |         |         |        V|
22+15       0.4333      0.07  Q         |         |         |        V|
22+20       0.4337      0.06  Q         |         |         |        V|
22+25       0.4341      0.05  Q         |         |         |        V|
22+30       0.4344      0.05  Q         |         |         |        V|
22+35       0.4347      0.05  Q         |         |         |        V|
22+40       0.4350      0.05  Q         |         |         |        V|
22+45       0.4353      0.05  Q         |         |         |        V|
22+50       0.4357      0.05  Q         |         |         |        V|
22+55       0.4360      0.05  Q         |         |         |        V|
23+ 0       0.4363      0.05  Q         |         |         |        V|
23+ 5       0.4366      0.05  Q         |         |         |        V|
23+10       0.4369      0.05  Q         |         |         |        V|
23+15       0.4373      0.05  Q         |         |         |        V|
23+20       0.4376      0.05  Q         |         |         |        V|
23+25       0.4379      0.05  Q         |         |         |        V|
23+30       0.4382      0.05  Q         |         |         |        V|
23+35       0.4385      0.05  Q         |         |         |        V|
23+40       0.4389      0.05  Q         |         |         |        V|
23+45       0.4392      0.05  Q         |         |         |        V|
23+50       0.4395      0.05  Q         |         |         |        V|
23+55       0.4398      0.05  Q         |         |         |        V|
24+ 0       0.4401      0.05  Q         |         |         |        V|
24+ 5       0.4403      0.02  Q         |         |         |        V|
24+10       0.4403      0.00  Q         |         |         |        V|
24+15       0.4403      0.00  Q         |         |         |         V
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       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  02/10/13 File: tr36519bd2410.out


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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



--------------------------------------------------------------------
TRACT 36519
AREA B - Developed Condition
24 HOUR, 10 YEAR STORM

-------------------------------------------------------------------
Drainage Area =       1.90(Ac.)  =      0.003 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       1.90(Ac.)  =      0.003 Sq. Mi.
Length along longest watercourse =     575.00(Ft.)
Length along longest watercourse measured to centroid =     231.00(Ft.)
Length along longest watercourse =      0.109 Mi.
Length along longest watercourse measured to centroid =      0.044 Mi.
Difference in elevation =      16.80(Ft.)
Slope along watercourse =    154.2678 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.030 Hr.
Lag time =     1.81 Min.
25% of lag time =     0.45 Min.
40% of lag time =     0.72 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]
        1.90           2.70                  5.13

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        1.90           8.00                 15.20

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    2.700(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    4.880(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    4.880(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     1.900           56.00         0.350
```

Total Area Entered = 1.90(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.350	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.620

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	275.928	54.067	1.035
2	0.167	551.855	38.495	0.737
3	0.250	827.783	7.438	0.142
		Sum = 100.000	Sum=	1.915

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.039	0.620	0.024	0.01
2	0.17	0.07	0.039	0.618	0.024	0.01
3	0.25	0.07	0.039	0.615	0.024	0.01
4	0.33	0.10	0.059	0.613	0.036	0.02
5	0.42	0.10	0.059	0.611	0.036	0.02
6	0.50	0.10	0.059	0.608	0.036	0.02
7	0.58	0.10	0.059	0.606	0.036	0.02
8	0.67	0.10	0.059	0.604	0.036	0.02
9	0.75	0.10	0.059	0.601	0.036	0.02
10	0.83	0.13	0.078	0.599	0.048	0.03
11	0.92	0.13	0.078	0.596	0.048	0.03
12	1.00	0.13	0.078	0.594	0.048	0.03
13	1.08	0.10	0.059	0.592	0.036	0.02
14	1.17	0.10	0.059	0.589	0.036	0.02
15	1.25	0.10	0.059	0.587	0.036	0.02
16	1.33	0.10	0.059	0.585	0.036	0.02
17	1.42	0.10	0.059	0.582	0.036	0.02
18	1.50	0.10	0.059	0.580	0.036	0.02
19	1.58	0.10	0.059	0.578	0.036	0.02
20	1.67	0.10	0.059	0.575	0.036	0.02
21	1.75	0.10	0.059	0.573	0.036	0.02
22	1.83	0.13	0.078	0.571	0.048	0.03
23	1.92	0.13	0.078	0.569	0.048	0.03
24	2.00	0.13	0.078	0.566	0.048	0.03
25	2.08	0.13	0.078	0.564	0.048	0.03
26	2.17	0.13	0.078	0.562	0.048	0.03
27	2.25	0.13	0.078	0.559	0.048	0.03
28	2.33	0.13	0.078	0.557	0.048	0.03
29	2.42	0.13	0.078	0.555	0.048	0.03
30	2.50	0.13	0.078	0.553	0.048	0.03
31	2.58	0.17	0.098	0.550	0.061	0.04
32	2.67	0.17	0.098	0.548	0.061	0.04
33	2.75	0.17	0.098	0.546	0.061	0.04
34	2.83	0.17	0.098	0.544	0.061	0.04
35	2.92	0.17	0.098	0.541	0.061	0.04
36	3.00	0.17	0.098	0.539	0.061	0.04
37	3.08	0.17	0.098	0.537	0.061	0.04
38	3.17	0.17	0.098	0.535	0.061	0.04
39	3.25	0.17	0.098	0.532	0.061	0.04
40	3.33	0.17	0.098	0.530	0.061	0.04

41	3.42	0.17	0.098	0.528	0.061	0.04
42	3.50	0.17	0.098	0.526	0.061	0.04
43	3.58	0.17	0.098	0.524	0.061	0.04
44	3.67	0.17	0.098	0.521	0.061	0.04
45	3.75	0.17	0.098	0.519	0.061	0.04
46	3.83	0.20	0.117	0.517	0.073	0.04
47	3.92	0.20	0.117	0.515	0.073	0.04
48	4.00	0.20	0.117	0.513	0.073	0.04
49	4.08	0.20	0.117	0.510	0.073	0.04
50	4.17	0.20	0.117	0.508	0.073	0.04
51	4.25	0.20	0.117	0.506	0.073	0.04
52	4.33	0.23	0.137	0.504	0.085	0.05
53	4.42	0.23	0.137	0.502	0.085	0.05
54	4.50	0.23	0.137	0.500	0.085	0.05
55	4.58	0.23	0.137	0.498	0.085	0.05
56	4.67	0.23	0.137	0.495	0.085	0.05
57	4.75	0.23	0.137	0.493	0.085	0.05
58	4.83	0.27	0.156	0.491	0.097	0.06
59	4.92	0.27	0.156	0.489	0.097	0.06
60	5.00	0.27	0.156	0.487	0.097	0.06
61	5.08	0.20	0.117	0.485	0.073	0.04
62	5.17	0.20	0.117	0.483	0.073	0.04
63	5.25	0.20	0.117	0.481	0.073	0.04
64	5.33	0.23	0.137	0.478	0.085	0.05
65	5.42	0.23	0.137	0.476	0.085	0.05
66	5.50	0.23	0.137	0.474	0.085	0.05
67	5.58	0.27	0.156	0.472	0.097	0.06
68	5.67	0.27	0.156	0.470	0.097	0.06
69	5.75	0.27	0.156	0.468	0.097	0.06
70	5.83	0.27	0.156	0.466	0.097	0.06
71	5.92	0.27	0.156	0.464	0.097	0.06
72	6.00	0.27	0.156	0.462	0.097	0.06
73	6.08	0.30	0.176	0.460	0.109	0.07
74	6.17	0.30	0.176	0.458	0.109	0.07
75	6.25	0.30	0.176	0.456	0.109	0.07
76	6.33	0.30	0.176	0.454	0.109	0.07
77	6.42	0.30	0.176	0.452	0.109	0.07
78	6.50	0.30	0.176	0.450	0.109	0.07
79	6.58	0.33	0.195	0.448	0.121	0.07
80	6.67	0.33	0.195	0.446	0.121	0.07
81	6.75	0.33	0.195	0.444	0.121	0.07
82	6.83	0.33	0.195	0.442	0.121	0.07
83	6.92	0.33	0.195	0.440	0.121	0.07
84	7.00	0.33	0.195	0.438	0.121	0.07
85	7.08	0.33	0.195	0.436	0.121	0.07
86	7.17	0.33	0.195	0.434	0.121	0.07
87	7.25	0.33	0.195	0.432	0.121	0.07
88	7.33	0.37	0.215	0.430	0.133	0.08
89	7.42	0.37	0.215	0.428	0.133	0.08
90	7.50	0.37	0.215	0.426	0.133	0.08
91	7.58	0.40	0.234	0.424	0.145	0.09
92	7.67	0.40	0.234	0.422	0.145	0.09
93	7.75	0.40	0.234	0.420	0.145	0.09
94	7.83	0.43	0.254	0.418	0.157	0.10
95	7.92	0.43	0.254	0.416	0.157	0.10
96	8.00	0.43	0.254	0.414	0.157	0.10
97	8.08	0.50	0.293	0.412	0.182	0.11
98	8.17	0.50	0.293	0.410	0.182	0.11
99	8.25	0.50	0.293	0.408	0.182	0.11
100	8.33	0.50	0.293	0.406	0.182	0.11
101	8.42	0.50	0.293	0.405	0.182	0.11
102	8.50	0.50	0.293	0.403	0.182	0.11
103	8.58	0.53	0.312	0.401	0.194	0.12
104	8.67	0.53	0.312	0.399	0.194	0.12
105	8.75	0.53	0.312	0.397	0.194	0.12
106	8.83	0.57	0.332	0.395	0.206	0.13
107	8.92	0.57	0.332	0.393	0.206	0.13
108	9.00	0.57	0.332	0.391	0.206	0.13
109	9.08	0.63	0.371	0.390	0.230	0.14
110	9.17	0.63	0.371	0.388	0.230	0.14

111	9.25	0.63	0.371	0.386	0.230	0.14
112	9.33	0.67	0.390	0.384	---	0.01
113	9.42	0.67	0.390	0.382	---	0.01
114	9.50	0.67	0.390	0.380	---	0.01
115	9.58	0.70	0.410	0.379	---	0.03
116	9.67	0.70	0.410	0.377	---	0.03
117	9.75	0.70	0.410	0.375	---	0.04
118	9.83	0.73	0.429	0.373	---	0.06
119	9.92	0.73	0.429	0.371	---	0.06
120	10.00	0.73	0.429	0.369	---	0.06
121	10.08	0.50	0.293	0.368	0.182	0.11
122	10.17	0.50	0.293	0.366	0.182	0.11
123	10.25	0.50	0.293	0.364	0.182	0.11
124	10.33	0.50	0.293	0.362	0.182	0.11
125	10.42	0.50	0.293	0.361	0.182	0.11
126	10.50	0.50	0.293	0.359	0.182	0.11
127	10.58	0.67	0.390	0.357	---	0.03
128	10.67	0.67	0.390	0.355	---	0.04
129	10.75	0.67	0.390	0.354	---	0.04
130	10.83	0.67	0.390	0.352	---	0.04
131	10.92	0.67	0.390	0.350	---	0.04
132	11.00	0.67	0.390	0.348	---	0.04
133	11.08	0.63	0.371	0.347	---	0.02
134	11.17	0.63	0.371	0.345	---	0.03
135	11.25	0.63	0.371	0.343	---	0.03
136	11.33	0.63	0.371	0.342	---	0.03
137	11.42	0.63	0.371	0.340	---	0.03
138	11.50	0.63	0.371	0.338	---	0.03
139	11.58	0.57	0.332	0.337	0.206	0.13
140	11.67	0.57	0.332	0.335	0.206	0.13
141	11.75	0.57	0.332	0.333	0.206	0.13
142	11.83	0.60	0.351	0.332	---	0.02
143	11.92	0.60	0.351	0.330	---	0.02
144	12.00	0.60	0.351	0.328	---	0.02
145	12.08	0.83	0.488	0.327	---	0.16
146	12.17	0.83	0.488	0.325	---	0.16
147	12.25	0.83	0.488	0.323	---	0.16
148	12.33	0.87	0.508	0.322	---	0.19
149	12.42	0.87	0.508	0.320	---	0.19
150	12.50	0.87	0.508	0.319	---	0.19
151	12.58	0.93	0.547	0.317	---	0.23
152	12.67	0.93	0.547	0.315	---	0.23
153	12.75	0.93	0.547	0.314	---	0.23
154	12.83	0.97	0.566	0.312	---	0.25
155	12.92	0.97	0.566	0.311	---	0.26
156	13.00	0.97	0.566	0.309	---	0.26
157	13.08	1.13	0.664	0.307	---	0.36
158	13.17	1.13	0.664	0.306	---	0.36
159	13.25	1.13	0.664	0.304	---	0.36
160	13.33	1.13	0.664	0.303	---	0.36
161	13.42	1.13	0.664	0.301	---	0.36
162	13.50	1.13	0.664	0.300	---	0.36
163	13.58	0.77	0.449	0.298	---	0.15
164	13.67	0.77	0.449	0.297	---	0.15
165	13.75	0.77	0.449	0.295	---	0.15
166	13.83	0.77	0.449	0.294	---	0.16
167	13.92	0.77	0.449	0.292	---	0.16
168	14.00	0.77	0.449	0.291	---	0.16
169	14.08	0.90	0.527	0.289	---	0.24
170	14.17	0.90	0.527	0.288	---	0.24
171	14.25	0.90	0.527	0.286	---	0.24
172	14.33	0.87	0.508	0.285	---	0.22
173	14.42	0.87	0.508	0.283	---	0.22
174	14.50	0.87	0.508	0.282	---	0.23
175	14.58	0.87	0.508	0.280	---	0.23
176	14.67	0.87	0.508	0.279	---	0.23
177	14.75	0.87	0.508	0.278	---	0.23
178	14.83	0.83	0.488	0.276	---	0.21
179	14.92	0.83	0.488	0.275	---	0.21
180	15.00	0.83	0.488	0.273	---	0.21

181	15.08	0.80	0.469	0.272	---	0.20
182	15.17	0.80	0.469	0.270	---	0.20
183	15.25	0.80	0.469	0.269	---	0.20
184	15.33	0.77	0.449	0.268	---	0.18
185	15.42	0.77	0.449	0.266	---	0.18
186	15.50	0.77	0.449	0.265	---	0.18
187	15.58	0.63	0.371	0.264	---	0.11
188	15.67	0.63	0.371	0.262	---	0.11
189	15.75	0.63	0.371	0.261	---	0.11
190	15.83	0.63	0.371	0.260	---	0.11
191	15.92	0.63	0.371	0.258	---	0.11
192	16.00	0.63	0.371	0.257	---	0.11
193	16.08	0.13	0.078	0.256	0.048	0.03
194	16.17	0.13	0.078	0.254	0.048	0.03
195	16.25	0.13	0.078	0.253	0.048	0.03
196	16.33	0.13	0.078	0.252	0.048	0.03
197	16.42	0.13	0.078	0.250	0.048	0.03
198	16.50	0.13	0.078	0.249	0.048	0.03
199	16.58	0.10	0.059	0.248	0.036	0.02
200	16.67	0.10	0.059	0.247	0.036	0.02
201	16.75	0.10	0.059	0.245	0.036	0.02
202	16.83	0.10	0.059	0.244	0.036	0.02
203	16.92	0.10	0.059	0.243	0.036	0.02
204	17.00	0.10	0.059	0.242	0.036	0.02
205	17.08	0.17	0.098	0.240	0.061	0.04
206	17.17	0.17	0.098	0.239	0.061	0.04
207	17.25	0.17	0.098	0.238	0.061	0.04
208	17.33	0.17	0.098	0.237	0.061	0.04
209	17.42	0.17	0.098	0.236	0.061	0.04
210	17.50	0.17	0.098	0.234	0.061	0.04
211	17.58	0.17	0.098	0.233	0.061	0.04
212	17.67	0.17	0.098	0.232	0.061	0.04
213	17.75	0.17	0.098	0.231	0.061	0.04
214	17.83	0.13	0.078	0.230	0.048	0.03
215	17.92	0.13	0.078	0.229	0.048	0.03
216	18.00	0.13	0.078	0.228	0.048	0.03
217	18.08	0.13	0.078	0.226	0.048	0.03
218	18.17	0.13	0.078	0.225	0.048	0.03
219	18.25	0.13	0.078	0.224	0.048	0.03
220	18.33	0.13	0.078	0.223	0.048	0.03
221	18.42	0.13	0.078	0.222	0.048	0.03
222	18.50	0.13	0.078	0.221	0.048	0.03
223	18.58	0.10	0.059	0.220	0.036	0.02
224	18.67	0.10	0.059	0.219	0.036	0.02
225	18.75	0.10	0.059	0.218	0.036	0.02
226	18.83	0.07	0.039	0.217	0.024	0.01
227	18.92	0.07	0.039	0.216	0.024	0.01
228	19.00	0.07	0.039	0.215	0.024	0.01
229	19.08	0.10	0.059	0.214	0.036	0.02
230	19.17	0.10	0.059	0.213	0.036	0.02
231	19.25	0.10	0.059	0.212	0.036	0.02
232	19.33	0.13	0.078	0.211	0.048	0.03
233	19.42	0.13	0.078	0.210	0.048	0.03
234	19.50	0.13	0.078	0.209	0.048	0.03
235	19.58	0.10	0.059	0.208	0.036	0.02
236	19.67	0.10	0.059	0.207	0.036	0.02
237	19.75	0.10	0.059	0.206	0.036	0.02
238	19.83	0.07	0.039	0.205	0.024	0.01
239	19.92	0.07	0.039	0.204	0.024	0.01
240	20.00	0.07	0.039	0.203	0.024	0.01
241	20.08	0.10	0.059	0.202	0.036	0.02
242	20.17	0.10	0.059	0.201	0.036	0.02
243	20.25	0.10	0.059	0.201	0.036	0.02
244	20.33	0.10	0.059	0.200	0.036	0.02
245	20.42	0.10	0.059	0.199	0.036	0.02
246	20.50	0.10	0.059	0.198	0.036	0.02
247	20.58	0.10	0.059	0.197	0.036	0.02
248	20.67	0.10	0.059	0.196	0.036	0.02
249	20.75	0.10	0.059	0.195	0.036	0.02
250	20.83	0.07	0.039	0.195	0.024	0.01

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251  20.92     0.07      0.039         0.194     0.024         0.01
252  21.00     0.07      0.039         0.193     0.024         0.01
253  21.08     0.10      0.059         0.192     0.036         0.02
254  21.17     0.10      0.059         0.192     0.036         0.02
255  21.25     0.10      0.059         0.191     0.036         0.02
256  21.33     0.07      0.039         0.190     0.024         0.01
257  21.42     0.07      0.039         0.189     0.024         0.01
258  21.50     0.07      0.039         0.189     0.024         0.01
259  21.58     0.10      0.059         0.188     0.036         0.02
260  21.67     0.10      0.059         0.187     0.036         0.02
261  21.75     0.10      0.059         0.187     0.036         0.02
262  21.83     0.07      0.039         0.186     0.024         0.01
263  21.92     0.07      0.039         0.185     0.024         0.01
264  22.00     0.07      0.039         0.185     0.024         0.01
265  22.08     0.10      0.059         0.184     0.036         0.02
266  22.17     0.10      0.059         0.184     0.036         0.02
267  22.25     0.10      0.059         0.183     0.036         0.02
268  22.33     0.07      0.039         0.182     0.024         0.01
269  22.42     0.07      0.039         0.182     0.024         0.01
270  22.50     0.07      0.039         0.181     0.024         0.01
271  22.58     0.07      0.039         0.181     0.024         0.01
272  22.67     0.07      0.039         0.180     0.024         0.01
273  22.75     0.07      0.039         0.180     0.024         0.01
274  22.83     0.07      0.039         0.179     0.024         0.01
275  22.92     0.07      0.039         0.179     0.024         0.01
276  23.00     0.07      0.039         0.178     0.024         0.01
277  23.08     0.07      0.039         0.178     0.024         0.01
278  23.17     0.07      0.039         0.178     0.024         0.01
279  23.25     0.07      0.039         0.177     0.024         0.01
280  23.33     0.07      0.039         0.177     0.024         0.01
281  23.42     0.07      0.039         0.177     0.024         0.01
282  23.50     0.07      0.039         0.176     0.024         0.01
283  23.58     0.07      0.039         0.176     0.024         0.01
284  23.67     0.07      0.039         0.176     0.024         0.01
285  23.75     0.07      0.039         0.175     0.024         0.01
286  23.83     0.07      0.039         0.175     0.024         0.01
287  23.92     0.07      0.039         0.175     0.024         0.01
288  24.00     0.07      0.039         0.175     0.024         0.01
    Sum =     100.0                                     Sum =    20.5
      Flood volume = Effective rainfall      1.70(In)
       times area       1.9(Ac.)/[(In)/(Ft.)] =       0.3(Ac.Ft)
      Total soil loss =      3.18(In)
      Total soil loss =     0.503(Ac.Ft)
      Total rainfall =      4.88(In)
      Flood volume =       11755.7 Cubic Feet
      Total soil loss =       21904.8 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      0.696(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        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0001      0.02  Q         |         |         |         |
   0+10       0.0003      0.03  Q         |         |         |         |
   0+15       0.0005      0.03  Q         |         |         |         |
   0+20       0.0007      0.04  Q         |         |         |         |
   0+25       0.0010      0.04  Q         |         |         |         |
   0+30       0.0013      0.04  Q         |         |         |         |
   0+35       0.0016      0.04  Q         |         |         |         |
   0+40       0.0019      0.04  Q         |         |         |         |
   0+45       0.0022      0.04  Q         |         |         |         |
   0+50       0.0025      0.05  Q         |         |         |         |
   0+55       0.0029      0.06  Q         |         |         |         |
   1+ 0       0.0033      0.06  Q         |         |         |         |
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1+ 5       0.0037      0.05  Q         |         |         |         |
1+10       0.0040      0.04  Q         |         |         |         |
1+15       0.0042      0.04  Q         |         |         |         |
1+20       0.0045      0.04  Q         |         |         |         |
1+25       0.0048      0.04  Q         |         |         |         |
1+30       0.0051      0.04  Q         |         |         |         |
1+35       0.0054      0.04  Q         |         |         |         |
1+40       0.0057      0.04  Q         |         |         |         |
1+45       0.0060      0.04  Q         |         |         |         |
1+50       0.0064      0.05  Q         |         |         |         |
1+55       0.0067      0.06  Q         |         |         |         |
2+ 0       0.0071      0.06  QV        |         |         |         |
2+ 5       0.0075      0.06  QV        |         |         |         |
2+10       0.0079      0.06  QV        |         |         |         |
2+15       0.0083      0.06  QV        |         |         |         |
2+20       0.0087      0.06  QV        |         |         |         |
2+25       0.0091      0.06  QV        |         |         |         |
2+30       0.0095      0.06  QV        |         |         |         |
2+35       0.0099      0.06  QV        |         |         |         |
2+40       0.0104      0.07  QV        |         |         |         |
2+45       0.0109      0.07  QV        |         |         |         |
2+50       0.0114      0.07  QV        |         |         |         |
2+55       0.0119      0.07  QV        |         |         |         |
3+ 0       0.0124      0.07  QV        |         |         |         |
3+ 5       0.0129      0.07  QV        |         |         |         |
3+10       0.0133      0.07  QV        |         |         |         |
3+15       0.0138      0.07  Q V       |         |         |         |
3+20       0.0143      0.07  Q V       |         |         |         |
3+25       0.0148      0.07  Q V       |         |         |         |
3+30       0.0153      0.07  Q V       |         |         |         |
3+35       0.0158      0.07  Q V       |         |         |         |
3+40       0.0163      0.07  Q V       |         |         |         |
3+45       0.0168      0.07  Q V       |         |         |         |
3+50       0.0173      0.08  Q V       |         |         |         |
3+55       0.0179      0.08  Q V       |         |         |         |
4+ 0       0.0185      0.09  Q V       |         |         |         |
4+ 5       0.0191      0.09  Q V       |         |         |         |
4+10       0.0197      0.09  Q V       |         |         |         |
4+15       0.0202      0.09  Q  V      |         |         |         |
4+20       0.0209      0.09  Q  V      |         |         |         |
4+25       0.0216      0.10  Q  V      |         |         |         |
4+30       0.0222      0.10  Q  V      |         |         |         |
4+35       0.0229      0.10  Q  V      |         |         |         |
4+40       0.0236      0.10  Q  V      |         |         |         |
4+45       0.0243      0.10  Q  V      |         |         |         |
4+50       0.0250      0.11  Q  V      |         |         |         |
4+55       0.0258      0.11  Q  V      |         |         |         |
5+ 0       0.0266      0.11  Q  V      |         |         |         |
5+ 5       0.0273      0.10  Q   V     |         |         |         |
5+10       0.0279      0.09  Q   V     |         |         |         |
5+15       0.0285      0.09  Q   V     |         |         |         |
5+20       0.0291      0.09  Q   V     |         |         |         |
5+25       0.0298      0.10  Q   V     |         |         |         |
5+30       0.0305      0.10  Q   V     |         |         |         |
5+35       0.0312      0.11  Q   V     |         |         |         |
5+40       0.0320      0.11  Q   V     |         |         |         |
5+45       0.0328      0.11  Q   V     |         |         |         |
5+50       0.0335      0.11  Q   V     |         |         |         |
5+55       0.0343      0.11  Q    V    |         |         |         |
6+ 0       0.0351      0.11  Q    V    |         |         |         |
6+ 5       0.0359      0.12  Q    V    |         |         |         |
6+10       0.0368      0.13  Q    V    |         |         |         |
6+15       0.0377      0.13  Q    V    |         |         |         |
6+20       0.0386      0.13  Q    V    |         |         |         |
6+25       0.0395      0.13  Q    V    |         |         |         |
6+30       0.0403      0.13  Q    V    |         |         |         |
6+35       0.0413      0.14  Q     V   |         |         |         |
6+40       0.0423      0.14  Q     V   |         |         |         |
6+45       0.0432      0.14  Q     V   |         |         |         |
6+50       0.0442      0.14  Q     V   |         |         |         |
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 6+55       0.0452      0.14  Q     V   |         |         |         |
 7+ 0       0.0462      0.14  Q     V   |         |         |         |
 7+ 5       0.0471      0.14  Q     V   |         |         |         |
 7+10       0.0481      0.14  Q      V  |         |         |         |
 7+15       0.0491      0.14  Q      V  |         |         |         |
 7+20       0.0501      0.15  Q      V  |         |         |         |
 7+25       0.0512      0.16  Q      V  |         |         |         |
 7+30       0.0523      0.16  Q      V  |         |         |         |
 7+35       0.0534      0.16  Q      V  |         |         |         |
 7+40       0.0546      0.17  Q       V |         |         |         |
 7+45       0.0558      0.17  Q       V |         |         |         |
 7+50       0.0570      0.18  Q       V |         |         |         |
 7+55       0.0582      0.18  Q       V |         |         |         |
 8+ 0       0.0595      0.18  Q       V |         |         |         |
 8+ 5       0.0609      0.20  Q        V|         |         |         |
 8+10       0.0623      0.21  Q        V|         |         |         |
 8+15       0.0638      0.21  Q        V|         |         |         |
 8+20       0.0653      0.21  Q        V|         |         |         |
 8+25       0.0668      0.21  Q        V|         |         |         |
 8+30       0.0682      0.21  Q         V         |         |         |
 8+35       0.0697      0.22  Q         V         |         |         |
 8+40       0.0713      0.23  Q         V         |         |         |
 8+45       0.0729      0.23  Q         V         |         |         |
 8+50       0.0745      0.24  Q         |V        |         |         |
 8+55       0.0761      0.24  Q         |V        |         |         |
 9+ 0       0.0778      0.24  Q         |V        |         |         |
 9+ 5       0.0796      0.26  |Q        |V        |         |         |
 9+10       0.0814      0.27  |Q        | V       |         |         |
 9+15       0.0833      0.27  |Q        | V       |         |         |
 9+20       0.0842      0.13  Q         | V       |         |         |
 9+25       0.0844      0.03  Q         | V       |         |         |
 9+30       0.0845      0.02  Q         | V       |         |         |
 9+35       0.0848      0.04  Q         | V       |         |         |
 9+40       0.0852      0.06  Q         | V       |         |         |
 9+45       0.0857      0.07  Q         | V       |         |         |
 9+50       0.0863      0.09  Q         | V       |         |         |
 9+55       0.0870      0.11  Q         | V       |         |         |
10+ 0       0.0878      0.11  Q         |  V      |         |         |
10+ 5       0.0890      0.17  Q         |  V      |         |         |
10+10       0.0904      0.21  Q         |  V      |         |         |
10+15       0.0918      0.21  Q         |  V      |         |         |
10+20       0.0933      0.21  Q         |  V      |         |         |
10+25       0.0948      0.21  Q         |   V     |         |         |
10+30       0.0962      0.21  Q         |   V     |         |         |
10+35       0.0972      0.13  Q         |   V     |         |         |
10+40       0.0977      0.08  Q         |   V     |         |         |
10+45       0.0982      0.07  Q         |   V     |         |         |
10+50       0.0987      0.07  Q         |   V     |         |         |
10+55       0.0992      0.08  Q         |   V     |         |         |
11+ 0       0.0997      0.08  Q         |   V     |         |         |
11+ 5       0.1001      0.06  Q         |   V     |         |         |
11+10       0.1005      0.05  Q         |   V     |         |         |
11+15       0.1008      0.05  Q         |   V     |         |         |
11+20       0.1012      0.05  Q         |    V    |         |         |
11+25       0.1016      0.06  Q         |    V    |         |         |
11+30       0.1020      0.06  Q         |    V    |         |         |
11+35       0.1031      0.16  Q         |    V    |         |         |
11+40       0.1047      0.23  Q         |    V    |         |         |
11+45       0.1064      0.24  Q         |    V    |         |         |
11+50       0.1073      0.13  Q         |    V    |         |         |
11+55       0.1077      0.05  Q         |    V    |         |         |
12+ 0       0.1079      0.04  Q         |    V    |         |         |
12+ 5       0.1092      0.19  Q         |     V   |         |         |
12+10       0.1112      0.29  |Q        |     V   |         |         |
12+15       0.1134      0.31  |Q        |     V   |         |         |
12+20       0.1157      0.34  |Q        |      V  |         |         |
12+25       0.1182      0.35  |Q        |      V  |         |         |
12+30       0.1207      0.36  |Q        |      V  |         |         |
12+35       0.1234      0.40  |Q        |       V |         |         |
12+40       0.1264      0.44  |Q        |       V |         |         |
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12+45       0.1295      0.44  |Q        |        V|         |         |
12+50       0.1327      0.47  |Q        |        V|         |         |
12+55       0.1361      0.49  |Q        |         V         |         |
13+ 0       0.1394      0.49  |Q        |         V         |         |
13+ 5       0.1435      0.60  | Q       |         |V        |         |
13+10       0.1482      0.67  | Q       |         |V        |         |
13+15       0.1529      0.69  | Q       |         | V       |         |
13+20       0.1576      0.69  | Q       |         |  V      |         |
13+25       0.1624      0.69  | Q       |         |   V     |         |
13+30       0.1672      0.70  | Q       |         |   V     |         |
13+35       0.1705      0.48  |Q        |         |    V    |         |
13+40       0.1727      0.32  |Q        |         |    V    |         |
13+45       0.1747      0.29  |Q        |         |    V    |         |
13+50       0.1768      0.30  |Q        |         |     V   |         |
13+55       0.1788      0.30  |Q        |         |     V   |         |
14+ 0       0.1809      0.30  |Q        |         |     V   |         |
14+ 5       0.1835      0.39  |Q        |         |      V  |         |
14+10       0.1866      0.45  |Q        |         |      V  |         |
14+15       0.1898      0.46  |Q        |         |       V |         |
14+20       0.1928      0.44  |Q        |         |       V |         |
14+25       0.1958      0.43  |Q        |         |        V|         |
14+30       0.1988      0.43  |Q        |         |        V|         |
14+35       0.2018      0.43  |Q        |         |        V|         |
14+40       0.2048      0.44  |Q        |         |         V         |
14+45       0.2078      0.44  |Q        |         |         V         |
14+50       0.2107      0.42  |Q        |         |         |V        |
14+55       0.2135      0.41  |Q        |         |         |V        |
15+ 0       0.2163      0.41  |Q        |         |         | V       |
15+ 5       0.2190      0.39  |Q        |         |         | V       |
15+10       0.2217      0.38  |Q        |         |         | V       |
15+15       0.2243      0.38  |Q        |         |         |  V      |
15+20       0.2268      0.36  |Q        |         |         |  V      |
15+25       0.2292      0.35  |Q        |         |         |  V      |
15+30       0.2316      0.35  |Q        |         |         |   V     |
15+35       0.2335      0.27  |Q        |         |         |   V     |
15+40       0.2350      0.22  Q         |         |         |   V     |
15+45       0.2365      0.21  Q         |         |         |    V    |
15+50       0.2379      0.21  Q         |         |         |    V    |
15+55       0.2394      0.21  Q         |         |         |    V    |
16+ 0       0.2409      0.22  Q         |         |         |    V    |
16+ 5       0.2418      0.13  Q         |         |         |    V    |
16+10       0.2423      0.07  Q         |         |         |    V    |
16+15       0.2426      0.06  Q         |         |         |    V    |
16+20       0.2430      0.06  Q         |         |         |     V   |
16+25       0.2434      0.06  Q         |         |         |     V   |
16+30       0.2438      0.06  Q         |         |         |     V   |
16+35       0.2442      0.05  Q         |         |         |     V   |
16+40       0.2445      0.04  Q         |         |         |     V   |
16+45       0.2448      0.04  Q         |         |         |     V   |
16+50       0.2451      0.04  Q         |         |         |     V   |
16+55       0.2453      0.04  Q         |         |         |     V   |
17+ 0       0.2456      0.04  Q         |         |         |     V   |
17+ 5       0.2460      0.06  Q         |         |         |     V   |
17+10       0.2465      0.07  Q         |         |         |     V   |
17+15       0.2470      0.07  Q         |         |         |     V   |
17+20       0.2475      0.07  Q         |         |         |     V   |
17+25       0.2480      0.07  Q         |         |         |     V   |
17+30       0.2485      0.07  Q         |         |         |     V   |
17+35       0.2490      0.07  Q         |         |         |     V   |
17+40       0.2494      0.07  Q         |         |         |     V   |
17+45       0.2499      0.07  Q         |         |         |      V  |
17+50       0.2504      0.06  Q         |         |         |      V  |
17+55       0.2508      0.06  Q         |         |         |      V  |
18+ 0       0.2512      0.06  Q         |         |         |      V  |
18+ 5       0.2516      0.06  Q         |         |         |      V  |
18+10       0.2519      0.06  Q         |         |         |      V  |
18+15       0.2523      0.06  Q         |         |         |      V  |
18+20       0.2527      0.06  Q         |         |         |      V  |
18+25       0.2531      0.06  Q         |         |         |      V  |
18+30       0.2535      0.06  Q         |         |         |      V  |
```

```
  18+35       0.2539      0.05  Q         |         |         |      V  |
  18+40       0.2542      0.04  Q         |         |         |      V  |
  18+45       0.2544      0.04  Q         |         |         |      V  |
  18+50       0.2547      0.03  Q         |         |         |      V  |
  18+55       0.2549      0.03  Q         |         |         |      V  |
  19+ 0       0.2551      0.03  Q         |         |         |      V  |
  19+ 5       0.2553      0.04  Q         |         |         |      V  |
  19+10       0.2556      0.04  Q         |         |         |      V  |
  19+15       0.2559      0.04  Q         |         |         |      V  |
  19+20       0.2563      0.05  Q         |         |         |      V  |
  19+25       0.2566      0.06  Q         |         |         |       V |
  19+30       0.2570      0.06  Q         |         |         |       V |
  19+35       0.2574      0.05  Q         |         |         |       V |
  19+40       0.2577      0.04  Q         |         |         |       V |
  19+45       0.2580      0.04  Q         |         |         |       V |
  19+50       0.2582      0.03  Q         |         |         |       V |
  19+55       0.2584      0.03  Q         |         |         |       V |
  20+ 0       0.2586      0.03  Q         |         |         |       V |
  20+ 5       0.2589      0.04  Q         |         |         |       V |
  20+10       0.2591      0.04  Q         |         |         |       V |
  20+15       0.2594      0.04  Q         |         |         |       V |
  20+20       0.2597      0.04  Q         |         |         |       V |
  20+25       0.2600      0.04  Q         |         |         |       V |
  20+30       0.2603      0.04  Q         |         |         |       V |
  20+35       0.2606      0.04  Q         |         |         |       V |
  20+40       0.2609      0.04  Q         |         |         |       V |
  20+45       0.2612      0.04  Q         |         |         |       V |
  20+50       0.2614      0.03  Q         |         |         |       V |
  20+55       0.2616      0.03  Q         |         |         |       V |
  21+ 0       0.2618      0.03  Q         |         |         |       V |
  21+ 5       0.2621      0.04  Q         |         |         |       V |
  21+10       0.2624      0.04  Q         |         |         |       V |
  21+15       0.2627      0.04  Q         |         |         |       V |
  21+20       0.2629      0.03  Q         |         |         |       V |
  21+25       0.2631      0.03  Q         |         |         |       V |
  21+30       0.2633      0.03  Q         |         |         |        V|
  21+35       0.2636      0.04  Q         |         |         |        V|
  21+40       0.2638      0.04  Q         |         |         |        V|
  21+45       0.2641      0.04  Q         |         |         |        V|
  21+50       0.2644      0.03  Q         |         |         |        V|
  21+55       0.2646      0.03  Q         |         |         |        V|
  22+ 0       0.2648      0.03  Q         |         |         |        V|
  22+ 5       0.2650      0.04  Q         |         |         |        V|
  22+10       0.2653      0.04  Q         |         |         |        V|
  22+15       0.2656      0.04  Q         |         |         |        V|
  22+20       0.2658      0.03  Q         |         |         |        V|
  22+25       0.2660      0.03  Q         |         |         |        V|
  22+30       0.2662      0.03  Q         |         |         |        V|
  22+35       0.2664      0.03  Q         |         |         |        V|
  22+40       0.2666      0.03  Q         |         |         |        V|
  22+45       0.2668      0.03  Q         |         |         |        V|
  22+50       0.2670      0.03  Q         |         |         |        V|
  22+55       0.2672      0.03  Q         |         |         |        V|
  23+ 0       0.2674      0.03  Q         |         |         |        V|
  23+ 5       0.2676      0.03  Q         |         |         |        V|
  23+10       0.2678      0.03  Q         |         |         |        V|
  23+15       0.2680      0.03  Q         |         |         |        V|
  23+20       0.2682      0.03  Q         |         |         |        V|
  23+25       0.2684      0.03  Q         |         |         |        V|
  23+30       0.2686      0.03  Q         |         |         |        V|
  23+35       0.2688      0.03  Q         |         |         |        V|
  23+40       0.2690      0.03  Q         |         |         |        V|
  23+45       0.2692      0.03  Q         |         |         |        V|
  23+50       0.2694      0.03  Q         |         |         |        V|
  23+55       0.2696      0.03  Q         |         |         |        V|
  24+ 0       0.2698      0.03  Q         |         |         |        V|
  24+ 5       0.2699      0.01  Q         |         |         |        V|
  24+10       0.2699      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  02/10/13 File: tr36519da3100.out


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--------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

-------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



-------------------------------------------------------------------
TRACT 36519
Area A - Developed Condition
3 HOUR, 100 YEAR STORM

------------------------------------------------------------------
Drainage Area =       3.10(Ac.)  =      0.005 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       3.10(Ac.)  =      0.005 Sq. Mi.
Length along longest watercourse =     625.00(Ft.)
Length along longest watercourse measured to centroid =     263.00(Ft.)
Length along longest watercourse =      0.118 Mi.
Length along longest watercourse measured to centroid =      0.050 Mi.
Difference in elevation =       7.00(Ft.)
Slope along watercourse =     59.1360 Ft./Mi.
Average Manning's 'N' = 0.020
Lag time =    0.031 Hr.
Lag time =     1.89 Min.
25% of lag time =     0.47 Min.
40% of lag time =     0.75 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]
        3.10           1.05                  3.26

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        3.10           2.60                  8.06

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    1.050(In)
Area Averaged 100-Year Rainfall =    2.600(In)

Point rain (area averaged) =    2.600(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.600(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     3.100           56.00         0.350
```

Total Area Entered = 3.10(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.350	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.620

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	265.102	52.791	1.649
2	0.167	530.205	39.136	1.223
3	0.250	795.307	6.553	0.205
4	0.333	1060.409	1.520	0.048
		Sum = 100.000	Sum=	3.124

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.406	0.350	---	0.06
2	0.17	1.30	0.406	0.350	---	0.06
3	0.25	1.10	0.343	0.350	0.213	0.13
4	0.33	1.50	0.468	0.350	---	0.12
5	0.42	1.50	0.468	0.350	---	0.12
6	0.50	1.80	0.562	0.350	---	0.21
7	0.58	1.50	0.468	0.350	---	0.12
8	0.67	1.80	0.562	0.350	---	0.21
9	0.75	1.80	0.562	0.350	---	0.21
10	0.83	1.50	0.468	0.350	---	0.12
11	0.92	1.60	0.499	0.350	---	0.15
12	1.00	1.80	0.562	0.350	---	0.21
13	1.08	2.20	0.686	0.350	---	0.34
14	1.17	2.20	0.686	0.350	---	0.34
15	1.25	2.20	0.686	0.350	---	0.34
16	1.33	2.00	0.624	0.350	---	0.27
17	1.42	2.60	0.811	0.350	---	0.46
18	1.50	2.70	0.842	0.350	---	0.49
19	1.58	2.40	0.749	0.350	---	0.40
20	1.67	2.70	0.842	0.350	---	0.49
21	1.75	3.30	1.030	0.350	---	0.68
22	1.83	3.10	0.967	0.350	---	0.62
23	1.92	2.90	0.905	0.350	---	0.55
24	2.00	3.00	0.936	0.350	---	0.59
25	2.08	3.10	0.967	0.350	---	0.62
26	2.17	4.20	1.310	0.350	---	0.96
27	2.25	5.00	1.560	0.350	---	1.21
28	2.33	3.50	1.092	0.350	---	0.74
29	2.42	6.80	2.122	0.350	---	1.77
30	2.50	7.30	2.278	0.350	---	1.93
31	2.58	8.20	2.558	0.350	---	2.21
32	2.67	5.90	1.841	0.350	---	1.49
33	2.75	2.00	0.624	0.350	---	0.27
34	2.83	1.80	0.562	0.350	---	0.21
35	2.92	1.80	0.562	0.350	---	0.21
36	3.00	0.60	0.187	0.350	0.116	0.07
Sum =		100.0			Sum =	19.0

Flood volume = Effective rainfall 1.58(In)
times area 3.1(Ac.)/[(In)/(Ft.)] = 0.4(Ac.Ft)

```
Total soil loss =      1.02(In)
Total soil loss =     0.263(Ac.Ft)
Total rainfall =      2.60(In)
Flood volume =       17793.1 Cubic Feet
Total soil loss =       11464.3 Cubic Feet
---------------------------------------------------------------------
 Peak flow rate of this hydrograph =      6.401(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        2.5       5.0       7.5      10.0
-----------------------------------------------------------------------
  0+ 5       0.0006      0.09  Q         |         |         |         |
  0+10       0.0017      0.16  Q         |         |         |         |
  0+15       0.0038      0.29  VQ        |         |         |         |
  0+20       0.0063      0.37  VQ        |         |         |         |
  0+25       0.0088      0.37  VQ        |         |         |         |
  0+30       0.0125      0.52  |VQ       |         |         |         |
  0+35       0.0158      0.48  |Q        |         |         |         |
  0+40       0.0195      0.54  |VQ       |         |         |         |
  0+45       0.0239      0.64  | Q       |         |         |         |
  0+50       0.0274      0.50  | Q       |         |         |         |
  0+55       0.0305      0.44  |QV       |         |         |         |
  1+ 0       0.0344      0.57  | QV      |         |         |         |
  1+ 5       0.0402      0.85  |  Q      |         |         |         |
  1+10       0.0472      1.02  |   Q     |         |         |         |
  1+15       0.0544      1.05  |   QV    |         |         |         |
  1+20       0.0610      0.95  |  Q V    |         |         |         |
  1+25       0.0691      1.18  |   Q V   |         |         |         |
  1+30       0.0791      1.45  |    Q V  |         |         |         |
  1+35       0.0885      1.37  |    Q  V |         |         |         |
  1+40       0.0983      1.42  |    Q   V|         |         |         |
  1+45       0.1109      1.83  |      Q  V         |         |         |
  1+50       0.1245      1.97  |      Q  | V       |         |         |
  1+55       0.1371      1.83  |      Q  |  V      |         |         |
  2+ 0       0.1495      1.80  |      Q  |   V     |         |         |
  2+ 5       0.1625      1.88  |      Q  |    V    |         |         |
  2+10       0.1796      2.49  |        Q|      V  |         |         |
  2+15       0.2025      3.33  |         |  Q     V|         |         |
  2+20       0.2227      2.93  |         |Q        |V        |         |
  2+25       0.2511      4.12  |         |     Q   |   V     |         |
  2+30       0.2894      5.56  |         |         | Q     V |         |
  2+35       0.3335      6.40  |         |         |    Q    | V       |
  2+40       0.3723      5.64  |         |         | Q       |     V   |
  2+45       0.3917      2.82  |         |Q        |         |       V |
  2+50       0.3993      1.09  |   Q     |         |         |        V|
  2+55       0.4043      0.74  | Q       |         |         |        V|
  3+ 0       0.4073      0.43  |Q        |         |         |        V|
  3+ 5       0.4083      0.14  Q         |         |         |        V|
  3+10       0.4084      0.02  Q         |         |         |        V|
  3+15       0.4085      0.00  Q         |         |         |        V|
-----------------------------------------------------------------------
```

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       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  02/10/13 File: TR36519bd3100.out


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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



--------------------------------------------------------------------
TRACT 36519
AREA B - Developed Condition
3 HOUR, 100 YEAR STORM

-------------------------------------------------------------------
Drainage Area =       1.90(Ac.)  =      0.003 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       1.90(Ac.)  =      0.003 Sq. Mi.
Length along longest watercourse =     575.00(Ft.)
Length along longest watercourse measured to centroid =     231.00(Ft.)
Length along longest watercourse =      0.109 Mi.
Length along longest watercourse measured to centroid =      0.044 Mi.
Difference in elevation =      16.80(Ft.)
Slope along watercourse =    154.2678 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.030 Hr.
Lag time =     1.81 Min.
25% of lag time =     0.45 Min.
40% of lag time =     0.72 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]
        1.90           1.05                  1.99

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        1.90           2.60                  4.94

STORM EVENT (YEAR) =  100.00
Area Averaged 2-Year Rainfall =    1.050(In)
Area Averaged 100-Year Rainfall =    2.600(In)

Point rain (area averaged) =    2.600(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.600(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     1.900           56.00         0.350
```

Total Area Entered = 1.90(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.350	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.620

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	275.928	54.067	1.035
2	0.167	551.855	38.495	0.737
3	0.250	827.783	7.438	0.142
		Sum = 100.000	Sum=	1.915

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	1.30	0.406	0.350	---	0.06
2	0.17	1.30	0.406	0.350	---	0.06
3	0.25	1.10	0.343	0.350	0.213	0.13
4	0.33	1.50	0.468	0.350	---	0.12
5	0.42	1.50	0.468	0.350	---	0.12
6	0.50	1.80	0.562	0.350	---	0.21
7	0.58	1.50	0.468	0.350	---	0.12
8	0.67	1.80	0.562	0.350	---	0.21
9	0.75	1.80	0.562	0.350	---	0.21
10	0.83	1.50	0.468	0.350	---	0.12
11	0.92	1.60	0.499	0.350	---	0.15
12	1.00	1.80	0.562	0.350	---	0.21
13	1.08	2.20	0.686	0.350	---	0.34
14	1.17	2.20	0.686	0.350	---	0.34
15	1.25	2.20	0.686	0.350	---	0.34
16	1.33	2.00	0.624	0.350	---	0.27
17	1.42	2.60	0.811	0.350	---	0.46
18	1.50	2.70	0.842	0.350	---	0.49
19	1.58	2.40	0.749	0.350	---	0.40
20	1.67	2.70	0.842	0.350	---	0.49
21	1.75	3.30	1.030	0.350	---	0.68
22	1.83	3.10	0.967	0.350	---	0.62
23	1.92	2.90	0.905	0.350	---	0.55
24	2.00	3.00	0.936	0.350	---	0.59
25	2.08	3.10	0.967	0.350	---	0.62
26	2.17	4.20	1.310	0.350	---	0.96
27	2.25	5.00	1.560	0.350	---	1.21
28	2.33	3.50	1.092	0.350	---	0.74
29	2.42	6.80	2.122	0.350	---	1.77
30	2.50	7.30	2.278	0.350	---	1.93
31	2.58	8.20	2.558	0.350	---	2.21
32	2.67	5.90	1.841	0.350	---	1.49
33	2.75	2.00	0.624	0.350	---	0.27
34	2.83	1.80	0.562	0.350	---	0.21
35	2.92	1.80	0.562	0.350	---	0.21
36	3.00	0.60	0.187	0.350	0.116	0.07
Sum =		100.0			Sum =	19.0

Flood volume = Effective rainfall 1.58(In)
times area 1.9(Ac.)/[(In)/(Ft.)] = 0.3(Ac.Ft)
Total soil loss = 1.02(In)

```
Total soil loss =     0.161(Ac.Ft)
Total rainfall =      2.60(In)
Flood volume =       10905.5 Cubic Feet
Total soil loss =        7026.5 Cubic Feet
---------------------------------------------------------------------
 Peak flow rate of this hydrograph =      3.962(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        2.5       5.0       7.5      10.0
-----------------------------------------------------------------------
  0+ 5       0.0004      0.06  Q         |         |         |         |
  0+10       0.0011      0.10  Q         |         |         |         |
  0+15       0.0023      0.18  Q         |         |         |         |
  0+20       0.0039      0.23  Q         |         |         |         |
  0+25       0.0055      0.23  Q         |         |         |         |
  0+30       0.0077      0.32  |Q        |         |         |         |
  0+35       0.0097      0.30  |Q        |         |         |         |
  0+40       0.0121      0.34  |Q        |         |         |         |
  0+45       0.0148      0.39  |QV       |         |         |         |
  0+50       0.0169      0.31  |QV       |         |         |         |
  0+55       0.0188      0.27  |QV       |         |         |         |
  1+ 0       0.0211      0.35  |Q V      |         |         |         |
  1+ 5       0.0248      0.53  | QV      |         |         |         |
  1+10       0.0291      0.63  | Q V     |         |         |         |
  1+15       0.0335      0.64  | Q  V    |         |         |         |
  1+20       0.0375      0.58  | Q  V    |         |         |         |
  1+25       0.0425      0.73  | Q   V   |         |         |         |
  1+30       0.0486      0.89  |  Q   V  |         |         |         |
  1+35       0.0544      0.84  |  Q    V |         |         |         |
  1+40       0.0605      0.87  |  Q     V|         |         |         |
  1+45       0.0682      1.12  |   Q     V         |         |         |
  1+50       0.0766      1.21  |   Q     | V       |         |         |
  1+55       0.0843      1.13  |   Q     |  V      |         |         |
  2+ 0       0.0919      1.10  |   Q     |   V     |         |         |
  2+ 5       0.0998      1.15  |   Q     |    V    |         |         |
  2+10       0.1104      1.53  |     Q   |      V  |         |         |
  2+15       0.1245      2.05  |       Q |        V|         |         |
  2+20       0.1369      1.80  |      Q  |         |V        |         |
  2+25       0.1545      2.55  |         Q         |   V     |         |
  2+30       0.1780      3.41  |         |  Q      |       V |         |
  2+35       0.2053      3.96  |         |    Q    |         | V       |
  2+40       0.2290      3.45  |         |  Q      |         |     V   |
  2+45       0.2407      1.70  |     Q   |         |         |       V |
  2+50       0.2451      0.63  | Q       |         |         |        V|
  2+55       0.2479      0.41  |Q        |         |         |        V|
  3+ 0       0.2497      0.26  |Q        |         |         |        V|
  3+ 5       0.2503      0.08  Q         |         |         |        V|
  3+10       0.2504      0.01  Q         |         |         |        V|
-----------------------------------------------------------------------
```

Section 4 – Hydraulics

V-Ditch

4" PVC

HYDRAULIC CALCULATIONS

$Q=(1.486\ AR^{2/3}\ S_f^{1/2})\ /n$

A = Area
R = hydraulic radius
S_f = slope
n = roughness coefficient

V-Ditch

A = 2'x0.5' = 1.0 SF
R = Wa/Wp = 1/2.53 = 0.40
S_f = 1% min
n = 0.015

$Q_{max} = (1.486 \times 1 \times 0.40^{2/3} \times .01^{1/2})/.015$

Q_{max} = 5.4 CFS (Max Capacity)

Q_{100} = 0.50 CFS (Actual Runoff)

Q = 5.4 CFS (Max Capacity) > 0.50 CFS (Maximum Actual Runoff)

***V-Ditch has adequate capacity**

4" PVC

$A = \pi r^2 = \pi(2/12)^2 = 0.09$ SF
R = d/4 = (4/12)/4 = 0.08
S_f = 1% min
n = 0.013

$Q_{max} = (1.486 \times 0.09 \times 0.08^{2/3} \times .01^{1/2})/.013$

Q_{max} = 0.5 CFS (Max Capacity)

Q_{100} = 0.2 CFS (Actual Runoff)

Q = 0.5 CFS (Max Capacity) > 0.2 CFS (Actual Runoff)

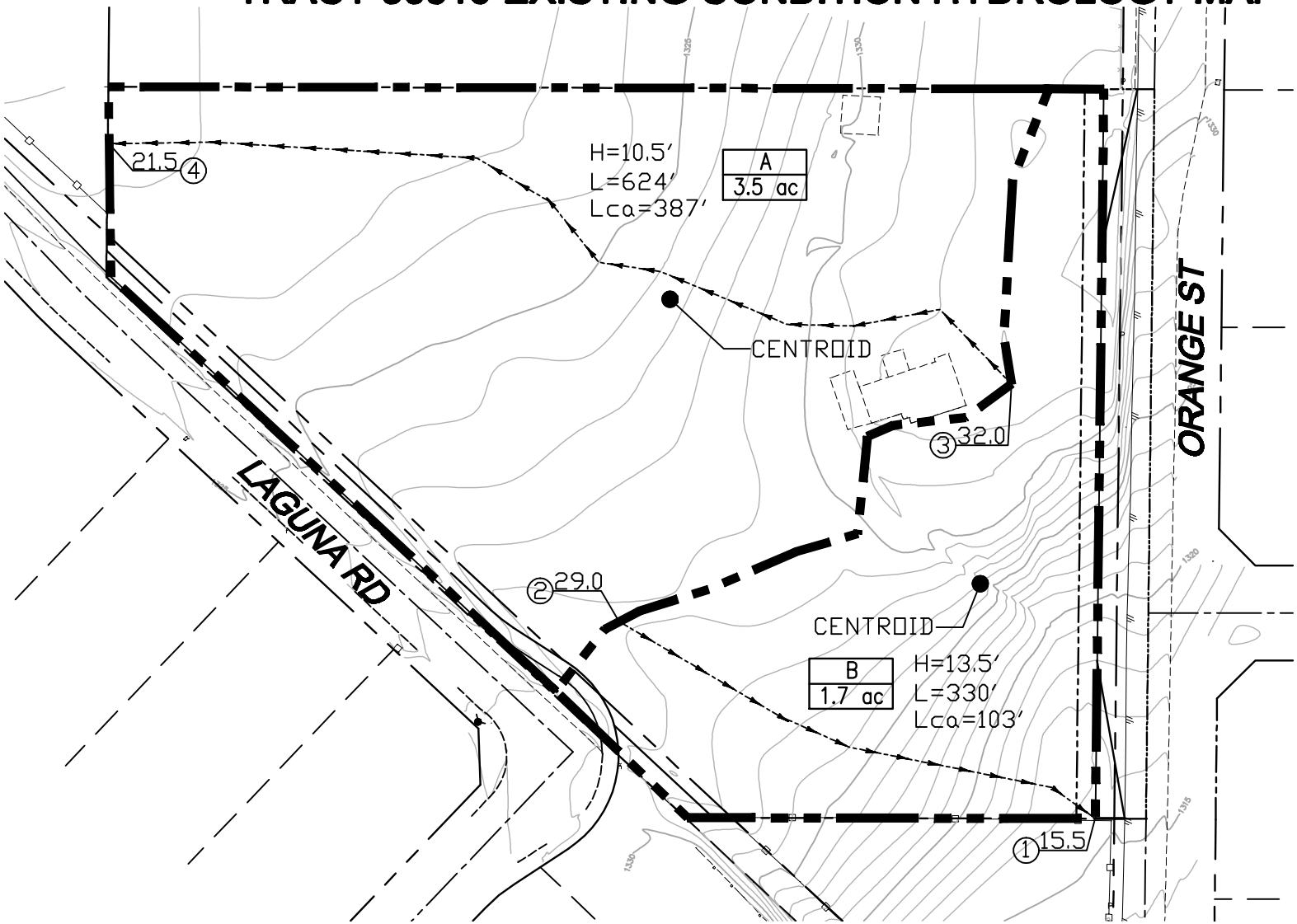
***4" PVC has adequate capacity**

Section 5 – Maps

Hydrology Map – Undeveloped Condition

Hydrology Map – Developed Condition

TRACT 36519 EXISTING CONDITION HYDROLOGY MAP



REGISTERED PROFESSIONAL ENGINEER
THOMAS S LOVE
No. C 50993
Exp. 9-30-13
CIVIL
STATE OF CALIFORNIA

100 50 0 100 200 300

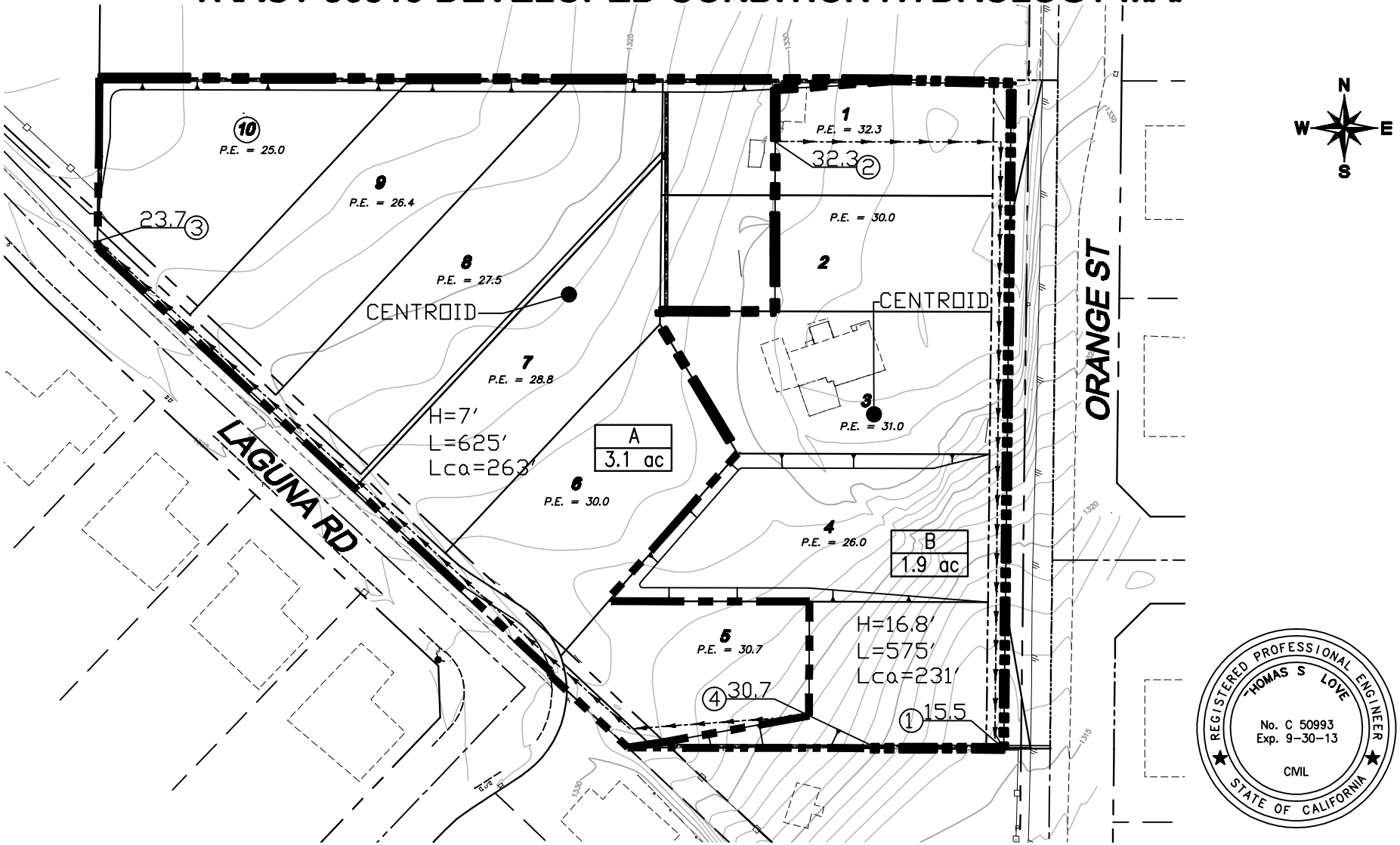
SCALE 1"= 100'

THOMAS S. LOVE
RCE 50993, EXP 09-30-13

DATE

LOVE ENGINEERING
31915 RANCHO CALIFORNIA RD
SUITE 200-166
TEMECULA, CA 92591
(951) 440-8149

TRACT 36519 DEVELOPED CONDITION HYDROLOGY MAP



100 50 0 100 200 300

SCALE 1"= 100'

THOMAS S. LOVE
RCE 50993, EXP 09-30-13

DATE

LOVE ENGINEERING
31915 RANCHO CALIFORNIA RD
SUITE 200-166
TEMECULA, CA 92591
(951) 440-8149

APPENDIX 8 – PRELIMINARY WATER QUALITY MANAGEMENT PLAN

Project Specific
Water Quality Management Plan

For: **Tract 36519**

34915 Orange St, Wildomar, 92595

DEVELOPMENT NO. **TRACT 36519**
DESIGN REVIEW NO. **2**

Prepared for:

Mike Lesle
21595 Marble Ct
Wildomar, CA 92595
Telephone: (951) 522-2405

Prepared by:
Thomas S. Love/Principal
Love Engineering
31915 Rancho California Road, Suite 200-166
Temecula, CA 92591
Telephone: (951) 440-8149

WQMP Preparation/Revision Date: 02/11/13

OWNER'S CERTIFICATION

This project-specific Water Quality Management Plan (WQMP) has been prepared for:

Mike Lesle

by Love Engineering for the project known as **Tract 36519** at the **34915 Orange St, Wildomar, 92595**.

This WQMP is intended to comply with the requirements of the City of Wildomar for **TRACT 36519**, 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 offices of the Home Owner Association Management Company.

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 Wildomar Water Quality Ordinance.

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
Mike Lesle	Owner
Owner's Printed Name	Owner's Title/Position

21595 Marble Ct
Wildomar, CA 92595
(951) 522-2405

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III	POLLUTANTS OF CONCERN	A-5
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APPENDICES

A. CONDITIONS OF APPROVAL

B. VICINITY MAP, WQMP SITE PLAN, AND RECEIVING WATERS MAP

C. SUPPORTING DETAIL RELATED TO HYDRAULIC CONDITIONS OF CONCERN (IF APPLICABLE)

D. EDUCATIONAL MATERIALS

E. SOILS REPORT (IF APPLICABLE)

F. TREATMENT CONTROL BMP SIZING CALCULATIONS AND DESIGN DETAILS

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

H. PHASE 1 ENVIRONMENTAL SITE ASSESSMENT – SUMMARY OF SITE REMEDIATION CONDUCTED AND USE RESTRICTIONS

I. Project Description

Project Owner: Mike Lesle
21595 Marble Ct
Wildomar, CA 92595
Telephone: (951) 522-2405

WQMP Preparer: Thomas S. Love/Principal
31915 Rancho California Road, Suite 200-166
Temecula, CA 92591
Telephone: (951) 440-8149

Project Site Address:	34915 Orange St Wildomar, CA 92595
Planning Area/ Community Name/ Development Name:	Southwest Area Plan/City of Wildomar
APN Number(s):	367-170-029
Thomas Bros. Map:	Page: 897 Grids: B5-B6
Project Watershed:	Santa Margarita
Sub-watershed:	Santa Margarita River (Upper)
Project Site Size:	5.1 acres

Standard Industrial Classification (SIC) Code: 1521

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)*	

Property owner wishes to subdivide 5.1 acre proeprty into 10-1/2 acre minimum lots just south of the intersection of Orange St and Grove St.

Appendix A of the final project-specific WQMP will include a complete copy of the final Conditions of Approval. Appendix B of this project-specific WQMP includes:

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 the final 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: LDR (Low Density Residential)

Current Property Use: Single Family Residential

Proposed Property Use: Single Family Residential

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
Murrieta Creek	Iron, Manganese, Nitrogen, Phosphorus, Chlorpyrifos, Toxicity	MUN, AGR, IND, PROC, REC2, WARM, WILD	N/A
Santa Margarita River	Phosphorus	MUN, AGR, IND, PROC, REC1, REC2, WARM, COLD, WILD, RARE	9.5 miles
Santa Margarita Lagoon	Eutrophic	REC1, REC2, EST, WILD, RARE, MAR, MIGR, SPWN	32.5 miles

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: Sediment/Turbidity, Nutrients, Trash & Debris, Oxygen Demanding Substances, Bacteria & Viruses, and Pesticides

The above list of pollutants is taken from the Potential Pollutants Generated by Land Use Type listed in Appendix B. The most likely pollutants are listed below:

Sediment/Turbidity - Treated by the proposed infiltration trenches

Nutrients - Expected to be minimal and treated by the proposed infiltration trenches

Trash & Debris - Trash and debris is expected to be minimal

Oxygen Demanding Substances - Expected to be minimal and treated by the proposed infiltration trenches

Bacterial & Viruses - Expected to be minimal and treated by the proposed infiltration trenches

Pesticides (non-soil bound) - Treated by the proposed infiltration trenches

Comparing the pollutants of concern to the receiving water impairments yields a concern for nutrients. The minimal quantity of nutrients will be treated by the infiltration trenches and therefore will not impair the receiving waters.

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 must address the issue of Hydrologic Conditions of Concern unless 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:

	2 year – 24 hour		10 year – 24 hour	
	Precondition	**Post-condition**	**Precondition**	**Post-condition**
Discharge (cfs)	0.90	0.60	2.4	1.8
Velocity (fps)				
Volume (cubic feet)	8,681	16,443	32500	30,936
Duration (minutes)	810	765	810	810

The post condition discharges are less than the precondition discharges for both the 24 hour, 2 year storm and 24 hour, 10 year storm.

• 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.

The following is a list of site design concepts incorporated into the project plans for minimizing urban runoff:

1. Maximize permeable area
2. Maximize canopy and interception of water conservation
3. Use natural drainage systems

Implementation procedures are documented after the summary table on the following page.

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).	☒	☐	☐
		Incorporate landscaped buffer areas between sidewalks and streets.	☒	☐	☐
		Maximize canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs.	☒	☐	☐
		Use natural drainage systems.	☐	☐	☒
		Where soils conditions are suitable, use perforated pipe or gravel filtration pits for low flow infiltration.	☒	☐	☐
		Construct onsite ponding areas or retention facilities to increase opportunities for infiltration consistent with vector control objectives.	☒	☐	☐
		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).	☐	☒	☐

The following detail how each BMP for minimizing urban runoff will be implemented:

MAXIMIZE THE PERMEABLE AREA - The site was designed to contain as much permeable area as possible. Hardscape will be limited to only necessary items such as driveways and sidewalks to connect the driveway to the entry door.

INCORPORATE LANDSCAPE BUFFERS - Landscaping will be provided on each lot. Also, the driveways will be directed to drain to landscape areas.

MAXIMIZE CANOPY INTERSECTION AND WATER CONSERVATION will be accomplished by specifying drought tolerant trees and large shrubs in the proposed landscaped areas. Existing native trees and shrubs will be preserved when possible.

NOT APPLICABLE SITE DESIGN BMPS

USE NATURAL DRAINAGE SYSTEMS is not applicable because the existing project site does not contain any natural drainage systems.

Table 1. Site Design BMPs (Cont.)

Design Concept	Technique	Specific BMP	Included		
			Yes	No	N/A
Site Design Concept 2	*Minimize Impervious Footprint*	Maximize the permeable area (See Section 4.5.1 of the WQMP).	☒	☐	☐
		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.	☐	☒	☐
		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.	☒	☐	☐
		Reduce widths of street where off-street parking is available.	☐	☐	☒
		Minimize the use of impervious surfaces, such as decorative concrete, in the landscape design.	☒	☐	☐
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).	☒	☐	☐
		Maximize canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs.	☒	☐	☐
		Use natural drainage systems.	☐	☐	☒
		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).	☐	☒	☐

NOT APPLICABLE SITE DESIGN BMPS

REDUCE WIDTHS OF STREET WHERE OFF-SITE STREET PARKING IS AVAILABLE is not applicable because the project does not propose off-street parking.

USE NATURAL DRAINAGE SYSTEMS is not applicable because the existing project site does not contain any natural drainage systems.

Table 1. Site Design BMPs (Cont.)

Design Concept	Technique	Specific BMP	Included: Yes	Included: No	Included: 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.	☒	☐	☐
		Where landscaping is proposed, drain impervious sidewalks, walkways, trails, and patios into adjacent landscaping.	☒	☐	☐
		Increase the use of vegetated drainage swales in lieu of underground piping or imperviously lined swales.	☒	☐	☐
		Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings.	☐	☒	☐
		Urban curb/swale system: street slopes to curb; periodic swale inlets drain to vegetated swale/biofilter.	☐	☒	☐
		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.	☐	☒	☐
		Design driveways to drain into landscaping prior to discharging to the MS4.	☒	☐	☐
		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.	☐	☐	☒
		Where landscaping is proposed in parking areas, incorporate landscape areas into the drainage design.	☐	☒	☐
		Overflow parking (parking stalls provided in excess of the Co-Permittee's minimum parking requirements) may be constructed with permeable paving.	☐	☐	☒
		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).	☐	☒	☐

NON-APPLICABLE SITE DESIGN BMPS:

UNCOVERED OR GUEST PARKING ON PRIVATE RESIDENTIAL LOTS is not proposed for this project.

OVERFLOW PARKING is not proposed for this project.

PROJECT SITE DESIGN BMPS:

The following detail how each BMP will be implemented:

Minimize Impervious Footprint

The site plan incorporates permeable surfaces when possible

Onsite hardscape will be limited to driveways and sidewalks connecting the driveways to the house entry

Landscape Architect will minimize impervious surfaces by using trees, grass, shrubs, rock, etc. in design

Conserve Natural Areas

Canopy interception and water conservation will be accomplished by specifying drought tolerant trees and large shrubs in the proposed landscaped areas.

Existing native trees and shrubs will be preserved when possible.

Minimize Directly Connected Impervious Areas

Roof runoff will be directed to landscape areas and then to the infiltration trenches

Hardscape will drain into adjacent landscaping

Drainage swales will be vegetated or pervious

Driveways will drain into adjacent 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	☐	☒	Not adding a catch basin
Landscape and Irrigation System Design	☒	☐	
Protect Slopes and Channels	☒	☐	
Provide Community Car Wash Racks	☐	☒	Existing community, car wash racks do not exist
Properly Design:	☐	☐	
Fueling Areas	☐	☒	N/A to single family development
Air/Water Supply Area Drainage	☐	☐	
Trash Storage Areas	☒	☐	
Loading Docks	☐	☒	N/A to single family development
Maintenance Bays	☐	☒	N/A to single family development
Vehicle and Equipment Wash Areas	☐	☒	N/A to single family development
Outdoor Material Storage Areas	☐	☒	N/A to singly family development
Outdoor Work Areas or Processing Areas	☐	☒	N/A to single family development
Provide Wash Water Controls for Food Preparation Areas	☐	☒	N/A to single family development

Following are how each non-structural and structural source control BMP will be implemented and maintained:

Education for Property Owner

The prospective owner will be given the educational materials included in Appendix D and the restricted activities contained in this WQMP prior to the closing of escrow on the unit. The County of Riverside/City of Wildomar educates property owners with public programs discussing the use of pesticides, herbicides, fertilizers, proper disposal of wastes, and other storm water prevention programs.

Entity Responsible for Implementation: Owner/County of Riverside/City of Wildomar
BMP Start Date: Construction completion
Schedule of Frequency: As necessary/public education programs vary

Appendix D includes copies of the educational materials that will be used in implementing this project-specific WQMP.

Activity Restrictions

Elsinore Valley Municipal Water District and the County of Riverside/City of Wildomar will implement activity restrictions which include but are not limited to blowing, sweeping, car washing, and driveway hosing into streets, storm drains, or other conveyances.

Entity Responsible for Implementation: Elsinore Valley Municipal Water District /County of Riverside/City of Wildomar
BMP Start Date: Construction completion
Schedule of Frequency: Continually

Irrigation and Landscape Maintenance

Home Owner will visually inspect irrigation systems to detect overspray, leaks, and other system failures and follow proper procedures for removing and disposing of dead vegetation and debris.

Entity Responsible for Implementation: Home Owner
BMP Start Date: Construction completion
Schedule of Frequency: Bi-Monthly

Drainage Facility Inspection and Maintenance

Ongoing maintenance is required for the existing and proposed drainage systems. The Home Owner will be required to inspect it and after each major precipitation event for the accumulation of debris, trash, and sediment. When necessary, appropriate clearing action will be taken.

Entity Responsible for Implementation: Home Owner
BMP Start Date: Construction completion
Schedule of Frequency: Monthly

Landscape and Irrigation Design

Drought tolerant trees and shrubs will be specified on the landscaping plan. Rain shutoff devices will be included to prevent irrigation during and after precipitation events. Landscape plans will be consistent with the conservation ordinances of Elsinore Valley Municipal Water District. Plants with similar water requirements will be grouped to reduce excess irrigation runoff. Mulches will be used in planter areas without ground cover to minimize sediment runoff.

Entity Responsible for Implementation: Home Owner
BMP Start Date: Construction completion
Schedule of Frequency: Monthly

Protect Slopes and Channels

Project plans will convey runoff safely from the top of slopes, install permanent stabilization BMPs on disturbed slopes, plant slopes with drought tolerant vegetation, and control/treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.

Entity Responsible for Implementation: Home Owner
BMP Start Date: Construction completion
Schedule of Frequency: Monthly

V.3 TREATMENT CONTROL BMPS

Following are the proposed treatment control BMPs:

INFILTRATION TRENCH

An infiltration trench will be located in each lot (see Site Plan in Appendix B). The infiltration trench will treat nutrients which are identified as an impairment in the Santa Margarita water shed. The infiltration trench was calculated by using the Urban Runoff quality design volume (VBMP). According to the calculations there will need to be a minimum 270 SF infiltration trench that is 3.75' in depth. The home owner will need to inspect the infiltration trench monthly and after each precipitation event for the accumulation of any debris or sediment.

See Infiltration Trench Section below for additional details.

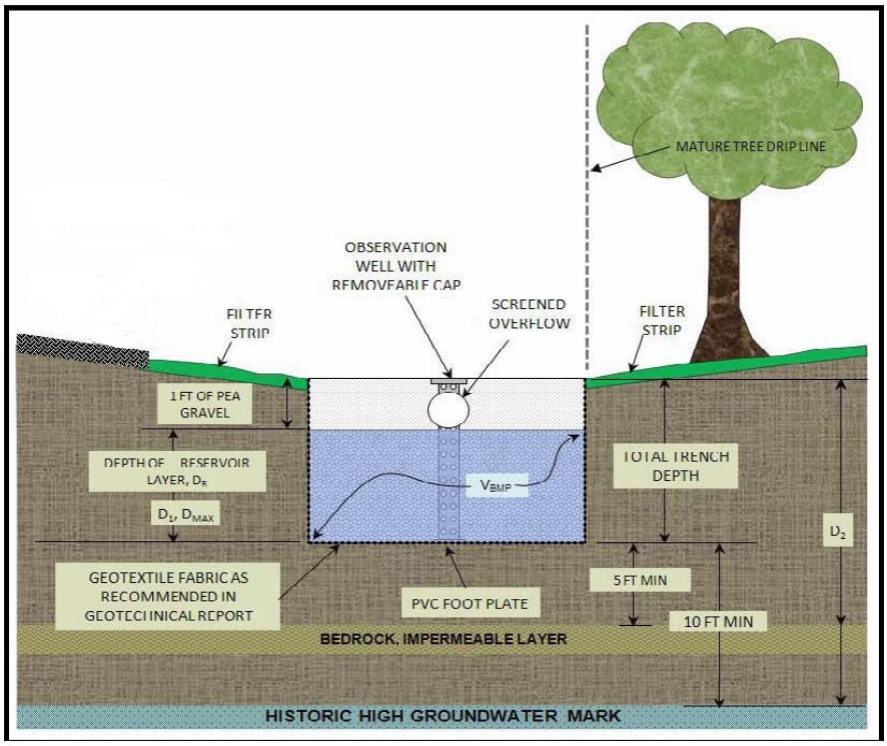


Figure 1 Section View of an Infiltration Trench

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	H/M	M	H/M	H/M	H/M	L	H/M (L for turbidity)	U
Y ☒ N ☐	☐	☐	☒	☐	☐	☐	☐	☐
Nutrients	L	M	H/M	H/M	L/M	L	L	U
Y ☒ N ☐	☐	☐	☒	☐	☐	☐	☐	☐
Organic Compounds	U	U	U	U	H/M	L	L	U
Y ☐ N ☒	☐	☐	☐	☐	☐	☐	☐	☐
Trash & Debris	L	M	U	U	H/M	M	H/M	U
Y ☒ N ☐	☐	☐	☒	☐	☐	☐	☐	☐
Oxygen Demanding Substances	L	M	H/M	H/M	H/M	L	L	U
Y ☒ N ☐	☐	☐	☒	☐	☐	☐	☐	☐
Bacteria & Viruses	U	U	H/M	U	H/M	L	L	U
Y ☒ N ☐	☐	☐	☒	☐	☐	☐	☐	☐
Oils & Grease	H/M	M	U	U	H/M	M	L/M	U
Y ☐ N ☒	☐	☐	☐	☐	☐	☐	☐	☐
Pesticides (non-soil bound)	U	U	U	U	U	L	L	U
Y ☒ N ☐	☐	☐	☒	☐	☐	☐	☐	☐
Metals	H/M	M	H	H	H	L	L	U
Y ☐ N ☒	☐	☐	☐	☐	☐	☐	☐	☐

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

• Operation and Maintenance Responsibility for Treatment Control BMPs

Operation and maintenance (O&M) requirements for all structural Source Control and Treatment Control BMPs are listed below:

Landscape and Irrigation Design

Drought tolerant trees and shrubs will be specified on the landscaping plan. Rain shutoff devices will be included to prevent irrigation during and after precipitation events. Landscape plans will be consistent with the conservation ordinances of Elsinore Valley Municipal Water District. Plants with similar water requirements will be grouped to reduce excess irrigation runoff. Mulches will be used in planter areas without ground cover to minimize sediment runoff.

Entity Responsible for Implementation: Home Owner
BMP Start Date: Construction completion
Schedule of Frequency: Bi-Monthly

Protect Slopes and Channels

Project plans will convey runoff safely from the top of slopes, install permanent stabilization BMPs on disturbed slopes, plant slopes with drought tolerant vegetation, and control/treat flows in landscaping and/or other controls prior to reaching existing drainage systems.

Entity Responsible for Implementation: Home Owner
BMP Start Date: Construction completion
Schedule of Frequency: Bi-Monthly

Infiltration Trench

The home owner will need to inspect the infiltration trench area monthly and after each precipitation event for the accumulation of any debris or sediment.

Entity Responsible for Implementation: Owner
BMP Start Date: Construction completion
Schedule of Frequency: Monthly/After precipitation event

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.

Funding source for the operation and maintenance of each Treatment Control BMP are the property owner and future property owners

Mike Lesle
21595 Marble Ct
Wildomar, CA 92595
(951) 522-2405

Appendix A

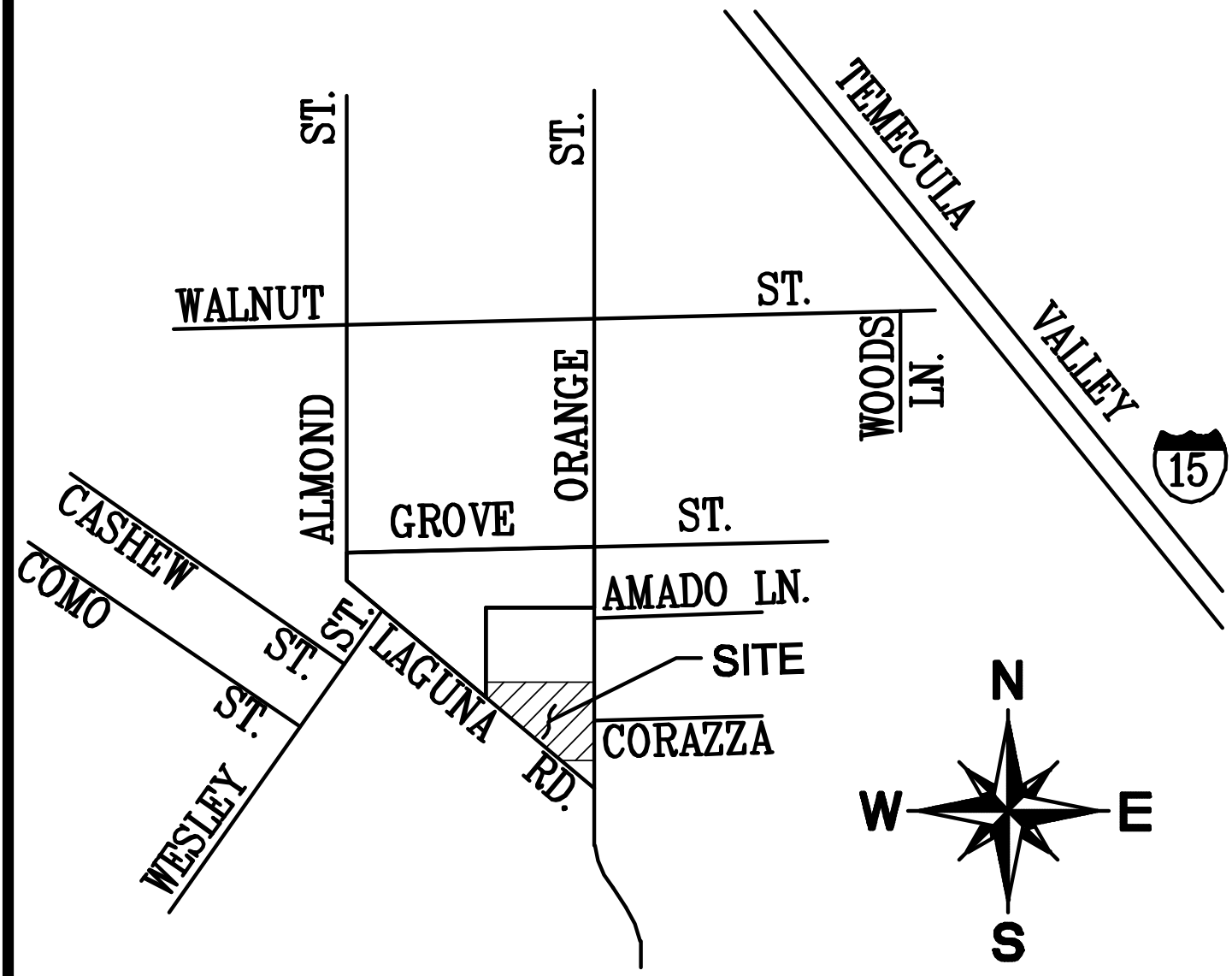
Conditions of Approval (Not Available - to be included with Final WQMP)

Planning Commission Resolution _____

Dated _____

Appendix B

Vicinity Map, WQMP Site Plan, and Receiving Waters Map

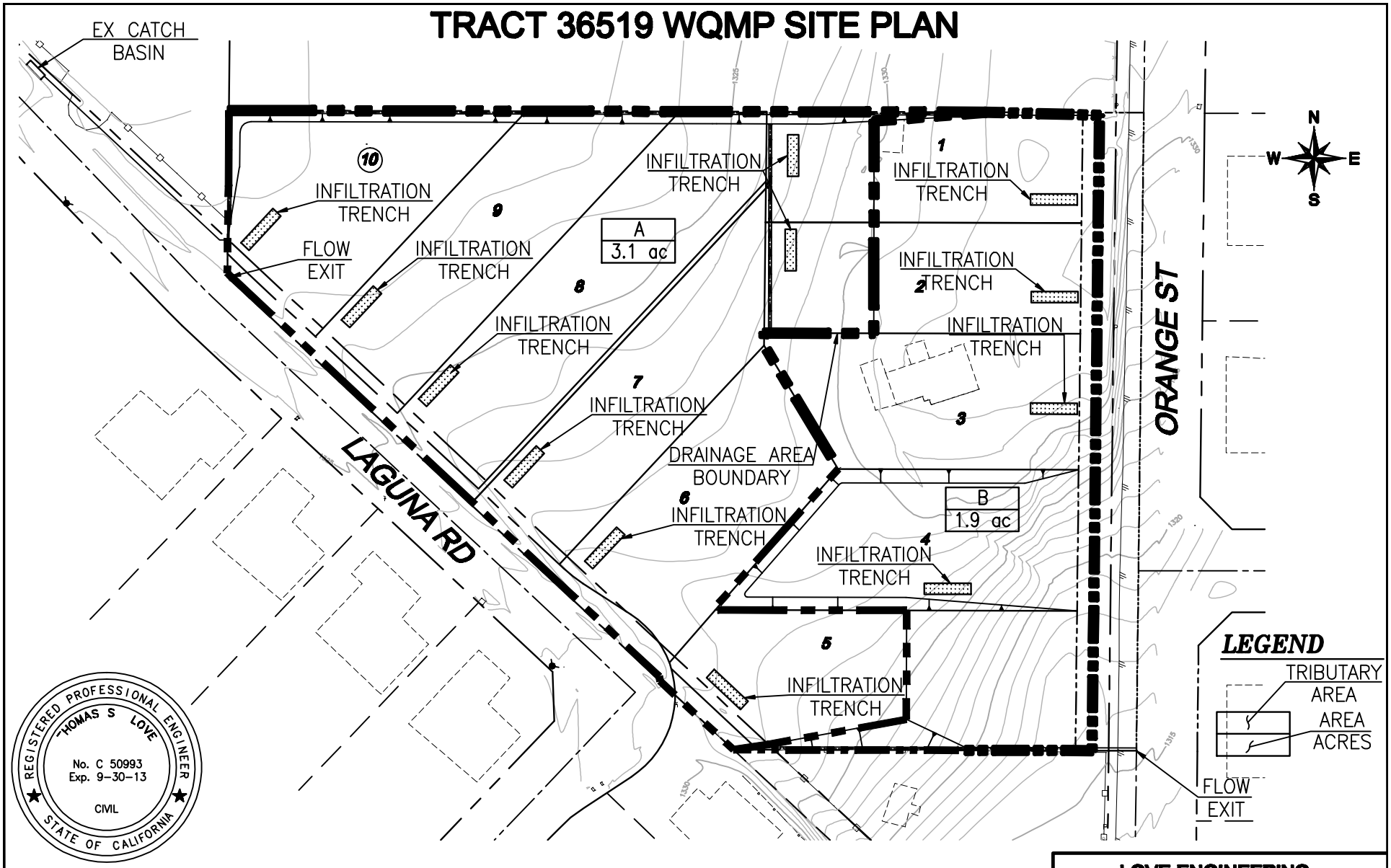


VICINITY MAP

NTS

(SECTION 27, T.6S., R.4W.)

TRACT 36519 WQMP SITE PLAN



REGISTERED PROFESSIONAL ENGINEER
THOMAS S LOVE
No. C 50993
Exp. 9-30-13
CIVIL
STATE OF CALIFORNIA

100 50 0 100 200 300

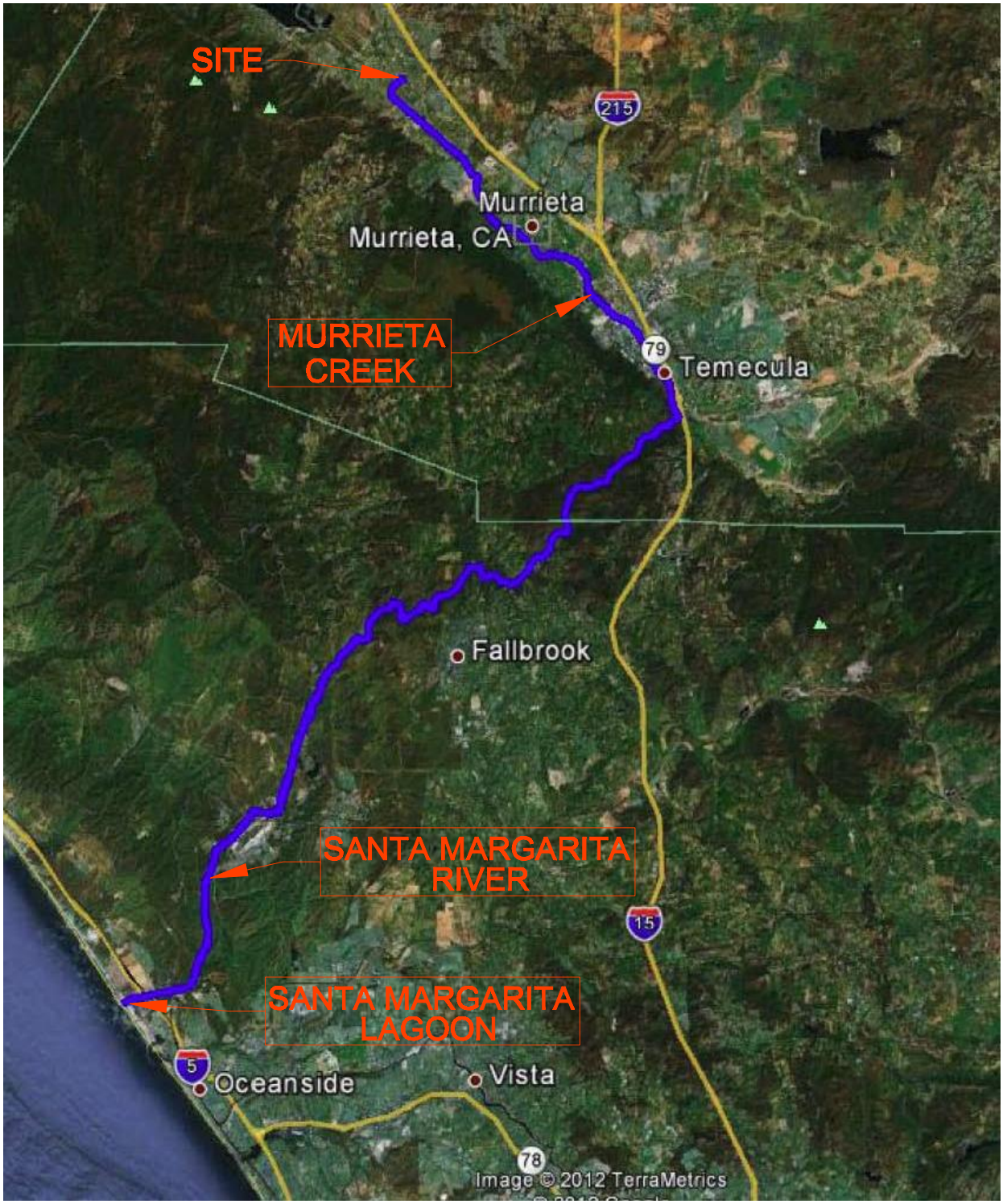
SCALE 1"= 100'

THOMAS S. LOVE
RCE 50993, EXP 09-30-13

DATE

LOVE ENGINEERING
31915 RANCHO CALIFORNIA RD
SUITE 200-166
TEMECULA, CA 92591
(951) 440-8149

RECEIVING WATERS MAP



N
W E
S

LEGEND

Watercourse

LOVE ENGINEERING
31915 RANCHO CALIFORNIA RD
SUITE 200-166
TEMECULA, CA 92591
(951) 440-8149

Appendix C

Supporting Detail Related to Hydraulic Conditions of Concern

```
       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  02/10/13 File: tr36519ae242.out


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
----------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



--------------------------------------------------------------------
TRACT 36519
AREA A - EXISTING CONDITION
24 HOUR, 2 Year Storm

-------------------------------------------------------------------
Drainage Area =       3.50(Ac.)  =      0.005 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       3.50(Ac.)  =      0.005 Sq. Mi.
Length along longest watercourse =     624.00(Ft.)
Length along longest watercourse measured to centroid =     387.00(Ft.)
Length along longest watercourse =      0.118 Mi.
Length along longest watercourse measured to centroid =      0.073 Mi.
Difference in elevation =      10.50(Ft.)
Slope along watercourse =     88.8462 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.042 Hr.
Lag time =     2.53 Min.
25% of lag time =     0.63 Min.
40% of lag time =     1.01 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]
        3.50           2.70                  9.45

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        3.50           8.00                 28.00

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.700(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    2.700(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.700(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     3.500           78.00         0.100
```

Total Area Entered = 3.50(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
78.0	78.0	0.268	0.100	0.244	1.000	0.244
					Sum (F) =	0.244

Area averaged mean soil loss (F) (In/Hr) = 0.244
Minimum soil loss rate ((In/Hr)) = 0.122
(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
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	197.975	43.049	1.518
2	0.167	395.950	43.509	1.535
3	0.250	593.925	8.877	0.313
4	0.333	791.900	3.462	0.122
5	0.417	989.875	1.103	0.039
			Sum = 100.000	Sum= 3.527

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.022	0.432	0.019	0.00
2	0.17	0.07	0.022	0.430	0.019	0.00
3	0.25	0.07	0.022	0.428	0.019	0.00
4	0.33	0.10	0.032	0.427	0.029	0.00
5	0.42	0.10	0.032	0.425	0.029	0.00
6	0.50	0.10	0.032	0.423	0.029	0.00
7	0.58	0.10	0.032	0.422	0.029	0.00
8	0.67	0.10	0.032	0.420	0.029	0.00
9	0.75	0.10	0.032	0.418	0.029	0.00
10	0.83	0.13	0.043	0.417	0.039	0.00
11	0.92	0.13	0.043	0.415	0.039	0.00
12	1.00	0.13	0.043	0.414	0.039	0.00
13	1.08	0.10	0.032	0.412	0.029	0.00
14	1.17	0.10	0.032	0.410	0.029	0.00
15	1.25	0.10	0.032	0.409	0.029	0.00
16	1.33	0.10	0.032	0.407	0.029	0.00
17	1.42	0.10	0.032	0.405	0.029	0.00
18	1.50	0.10	0.032	0.404	0.029	0.00
19	1.58	0.10	0.032	0.402	0.029	0.00
20	1.67	0.10	0.032	0.401	0.029	0.00
21	1.75	0.10	0.032	0.399	0.029	0.00
22	1.83	0.13	0.043	0.397	0.039	0.00
23	1.92	0.13	0.043	0.396	0.039	0.00
24	2.00	0.13	0.043	0.394	0.039	0.00
25	2.08	0.13	0.043	0.393	0.039	0.00
26	2.17	0.13	0.043	0.391	0.039	0.00
27	2.25	0.13	0.043	0.389	0.039	0.00
28	2.33	0.13	0.043	0.388	0.039	0.00
29	2.42	0.13	0.043	0.386	0.039	0.00
30	2.50	0.13	0.043	0.385	0.039	0.00
31	2.58	0.17	0.054	0.383	0.049	0.01
32	2.67	0.17	0.054	0.381	0.049	0.01
33	2.75	0.17	0.054	0.380	0.049	0.01
34	2.83	0.17	0.054	0.378	0.049	0.01
35	2.92	0.17	0.054	0.377	0.049	0.01
36	3.00	0.17	0.054	0.375	0.049	0.01
37	3.08	0.17	0.054	0.374	0.049	0.01
38	3.17	0.17	0.054	0.372	0.049	0.01

39	3.25	0.17	0.054	0.371	0.049	0.01
40	3.33	0.17	0.054	0.369	0.049	0.01
41	3.42	0.17	0.054	0.367	0.049	0.01
42	3.50	0.17	0.054	0.366	0.049	0.01
43	3.58	0.17	0.054	0.364	0.049	0.01
44	3.67	0.17	0.054	0.363	0.049	0.01
45	3.75	0.17	0.054	0.361	0.049	0.01
46	3.83	0.20	0.065	0.360	0.058	0.01
47	3.92	0.20	0.065	0.358	0.058	0.01
48	4.00	0.20	0.065	0.357	0.058	0.01
49	4.08	0.20	0.065	0.355	0.058	0.01
50	4.17	0.20	0.065	0.354	0.058	0.01
51	4.25	0.20	0.065	0.352	0.058	0.01
52	4.33	0.23	0.076	0.351	0.068	0.01
53	4.42	0.23	0.076	0.349	0.068	0.01
54	4.50	0.23	0.076	0.348	0.068	0.01
55	4.58	0.23	0.076	0.346	0.068	0.01
56	4.67	0.23	0.076	0.345	0.068	0.01
57	4.75	0.23	0.076	0.343	0.068	0.01
58	4.83	0.27	0.086	0.342	0.078	0.01
59	4.92	0.27	0.086	0.340	0.078	0.01
60	5.00	0.27	0.086	0.339	0.078	0.01
61	5.08	0.20	0.065	0.337	0.058	0.01
62	5.17	0.20	0.065	0.336	0.058	0.01
63	5.25	0.20	0.065	0.334	0.058	0.01
64	5.33	0.23	0.076	0.333	0.068	0.01
65	5.42	0.23	0.076	0.332	0.068	0.01
66	5.50	0.23	0.076	0.330	0.068	0.01
67	5.58	0.27	0.086	0.329	0.078	0.01
68	5.67	0.27	0.086	0.327	0.078	0.01
69	5.75	0.27	0.086	0.326	0.078	0.01
70	5.83	0.27	0.086	0.324	0.078	0.01
71	5.92	0.27	0.086	0.323	0.078	0.01
72	6.00	0.27	0.086	0.321	0.078	0.01
73	6.08	0.30	0.097	0.320	0.087	0.01
74	6.17	0.30	0.097	0.319	0.087	0.01
75	6.25	0.30	0.097	0.317	0.087	0.01
76	6.33	0.30	0.097	0.316	0.087	0.01
77	6.42	0.30	0.097	0.314	0.087	0.01
78	6.50	0.30	0.097	0.313	0.087	0.01
79	6.58	0.33	0.108	0.312	0.097	0.01
80	6.67	0.33	0.108	0.310	0.097	0.01
81	6.75	0.33	0.108	0.309	0.097	0.01
82	6.83	0.33	0.108	0.307	0.097	0.01
83	6.92	0.33	0.108	0.306	0.097	0.01
84	7.00	0.33	0.108	0.305	0.097	0.01
85	7.08	0.33	0.108	0.303	0.097	0.01
86	7.17	0.33	0.108	0.302	0.097	0.01
87	7.25	0.33	0.108	0.300	0.097	0.01
88	7.33	0.37	0.119	0.299	0.107	0.01
89	7.42	0.37	0.119	0.298	0.107	0.01
90	7.50	0.37	0.119	0.296	0.107	0.01
91	7.58	0.40	0.130	0.295	0.117	0.01
92	7.67	0.40	0.130	0.294	0.117	0.01
93	7.75	0.40	0.130	0.292	0.117	0.01
94	7.83	0.43	0.140	0.291	0.126	0.01
95	7.92	0.43	0.140	0.290	0.126	0.01
96	8.00	0.43	0.140	0.288	0.126	0.01
97	8.08	0.50	0.162	0.287	0.146	0.02
98	8.17	0.50	0.162	0.286	0.146	0.02
99	8.25	0.50	0.162	0.284	0.146	0.02
100	8.33	0.50	0.162	0.283	0.146	0.02
101	8.42	0.50	0.162	0.282	0.146	0.02
102	8.50	0.50	0.162	0.280	0.146	0.02
103	8.58	0.53	0.173	0.279	0.156	0.02
104	8.67	0.53	0.173	0.278	0.156	0.02
105	8.75	0.53	0.173	0.276	0.156	0.02
106	8.83	0.57	0.184	0.275	0.165	0.02
107	8.92	0.57	0.184	0.274	0.165	0.02
108	9.00	0.57	0.184	0.272	0.165	0.02

109	9.08	0.63	0.205	0.271	0.185	0.02
110	9.17	0.63	0.205	0.270	0.185	0.02
111	9.25	0.63	0.205	0.269	0.185	0.02
112	9.33	0.67	0.216	0.267	0.194	0.02
113	9.42	0.67	0.216	0.266	0.194	0.02
114	9.50	0.67	0.216	0.265	0.194	0.02
115	9.58	0.70	0.227	0.263	0.204	0.02
116	9.67	0.70	0.227	0.262	0.204	0.02
117	9.75	0.70	0.227	0.261	0.204	0.02
118	9.83	0.73	0.238	0.260	0.214	0.02
119	9.92	0.73	0.238	0.258	0.214	0.02
120	10.00	0.73	0.238	0.257	0.214	0.02
121	10.08	0.50	0.162	0.256	0.146	0.02
122	10.17	0.50	0.162	0.255	0.146	0.02
123	10.25	0.50	0.162	0.253	0.146	0.02
124	10.33	0.50	0.162	0.252	0.146	0.02
125	10.42	0.50	0.162	0.251	0.146	0.02
126	10.50	0.50	0.162	0.250	0.146	0.02
127	10.58	0.67	0.216	0.249	0.194	0.02
128	10.67	0.67	0.216	0.247	0.194	0.02
129	10.75	0.67	0.216	0.246	0.194	0.02
130	10.83	0.67	0.216	0.245	0.194	0.02
131	10.92	0.67	0.216	0.244	0.194	0.02
132	11.00	0.67	0.216	0.243	0.194	0.02
133	11.08	0.63	0.205	0.241	0.185	0.02
134	11.17	0.63	0.205	0.240	0.185	0.02
135	11.25	0.63	0.205	0.239	0.185	0.02
136	11.33	0.63	0.205	0.238	0.185	0.02
137	11.42	0.63	0.205	0.237	0.185	0.02
138	11.50	0.63	0.205	0.235	0.185	0.02
139	11.58	0.57	0.184	0.234	0.165	0.02
140	11.67	0.57	0.184	0.233	0.165	0.02
141	11.75	0.57	0.184	0.232	0.165	0.02
142	11.83	0.60	0.194	0.231	0.175	0.02
143	11.92	0.60	0.194	0.230	0.175	0.02
144	12.00	0.60	0.194	0.228	0.175	0.02
145	12.08	0.83	0.270	0.227	---	0.04
146	12.17	0.83	0.270	0.226	---	0.04
147	12.25	0.83	0.270	0.225	---	0.04
148	12.33	0.87	0.281	0.224	---	0.06
149	12.42	0.87	0.281	0.223	---	0.06
150	12.50	0.87	0.281	0.222	---	0.06
151	12.58	0.93	0.302	0.221	---	0.08
152	12.67	0.93	0.302	0.219	---	0.08
153	12.75	0.93	0.302	0.218	---	0.08
154	12.83	0.97	0.313	0.217	---	0.10
155	12.92	0.97	0.313	0.216	---	0.10
156	13.00	0.97	0.313	0.215	---	0.10
157	13.08	1.13	0.367	0.214	---	0.15
158	13.17	1.13	0.367	0.213	---	0.15
159	13.25	1.13	0.367	0.212	---	0.16
160	13.33	1.13	0.367	0.211	---	0.16
161	13.42	1.13	0.367	0.210	---	0.16
162	13.50	1.13	0.367	0.209	---	0.16
163	13.58	0.77	0.248	0.208	---	0.04
164	13.67	0.77	0.248	0.206	---	0.04
165	13.75	0.77	0.248	0.205	---	0.04
166	13.83	0.77	0.248	0.204	---	0.04
167	13.92	0.77	0.248	0.203	---	0.05
168	14.00	0.77	0.248	0.202	---	0.05
169	14.08	0.90	0.292	0.201	---	0.09
170	14.17	0.90	0.292	0.200	---	0.09
171	14.25	0.90	0.292	0.199	---	0.09
172	14.33	0.87	0.281	0.198	---	0.08
173	14.42	0.87	0.281	0.197	---	0.08
174	14.50	0.87	0.281	0.196	---	0.08
175	14.58	0.87	0.281	0.195	---	0.09
176	14.67	0.87	0.281	0.194	---	0.09
177	14.75	0.87	0.281	0.193	---	0.09
178	14.83	0.83	0.270	0.192	---	0.08

179	14.92	0.83	0.270	0.191	---	0.08
180	15.00	0.83	0.270	0.190	---	0.08
181	15.08	0.80	0.259	0.189	---	0.07
182	15.17	0.80	0.259	0.188	---	0.07
183	15.25	0.80	0.259	0.187	---	0.07
184	15.33	0.77	0.248	0.186	---	0.06
185	15.42	0.77	0.248	0.185	---	0.06
186	15.50	0.77	0.248	0.184	---	0.06
187	15.58	0.63	0.205	0.183	---	0.02
188	15.67	0.63	0.205	0.183	---	0.02
189	15.75	0.63	0.205	0.182	---	0.02
190	15.83	0.63	0.205	0.181	---	0.02
191	15.92	0.63	0.205	0.180	---	0.03
192	16.00	0.63	0.205	0.179	---	0.03
193	16.08	0.13	0.043	0.178	0.039	0.00
194	16.17	0.13	0.043	0.177	0.039	0.00
195	16.25	0.13	0.043	0.176	0.039	0.00
196	16.33	0.13	0.043	0.175	0.039	0.00
197	16.42	0.13	0.043	0.174	0.039	0.00
198	16.50	0.13	0.043	0.173	0.039	0.00
199	16.58	0.10	0.032	0.173	0.029	0.00
200	16.67	0.10	0.032	0.172	0.029	0.00
201	16.75	0.10	0.032	0.171	0.029	0.00
202	16.83	0.10	0.032	0.170	0.029	0.00
203	16.92	0.10	0.032	0.169	0.029	0.00
204	17.00	0.10	0.032	0.168	0.029	0.00
205	17.08	0.17	0.054	0.167	0.049	0.01
206	17.17	0.17	0.054	0.167	0.049	0.01
207	17.25	0.17	0.054	0.166	0.049	0.01
208	17.33	0.17	0.054	0.165	0.049	0.01
209	17.42	0.17	0.054	0.164	0.049	0.01
210	17.50	0.17	0.054	0.163	0.049	0.01
211	17.58	0.17	0.054	0.162	0.049	0.01
212	17.67	0.17	0.054	0.162	0.049	0.01
213	17.75	0.17	0.054	0.161	0.049	0.01
214	17.83	0.13	0.043	0.160	0.039	0.00
215	17.92	0.13	0.043	0.159	0.039	0.00
216	18.00	0.13	0.043	0.158	0.039	0.00
217	18.08	0.13	0.043	0.158	0.039	0.00
218	18.17	0.13	0.043	0.157	0.039	0.00
219	18.25	0.13	0.043	0.156	0.039	0.00
220	18.33	0.13	0.043	0.155	0.039	0.00
221	18.42	0.13	0.043	0.155	0.039	0.00
222	18.50	0.13	0.043	0.154	0.039	0.00
223	18.58	0.10	0.032	0.153	0.029	0.00
224	18.67	0.10	0.032	0.152	0.029	0.00
225	18.75	0.10	0.032	0.152	0.029	0.00
226	18.83	0.07	0.022	0.151	0.019	0.00
227	18.92	0.07	0.022	0.150	0.019	0.00
228	19.00	0.07	0.022	0.149	0.019	0.00
229	19.08	0.10	0.032	0.149	0.029	0.00
230	19.17	0.10	0.032	0.148	0.029	0.00
231	19.25	0.10	0.032	0.147	0.029	0.00
232	19.33	0.13	0.043	0.147	0.039	0.00
233	19.42	0.13	0.043	0.146	0.039	0.00
234	19.50	0.13	0.043	0.145	0.039	0.00
235	19.58	0.10	0.032	0.145	0.029	0.00
236	19.67	0.10	0.032	0.144	0.029	0.00
237	19.75	0.10	0.032	0.143	0.029	0.00
238	19.83	0.07	0.022	0.143	0.019	0.00
239	19.92	0.07	0.022	0.142	0.019	0.00
240	20.00	0.07	0.022	0.141	0.019	0.00
241	20.08	0.10	0.032	0.141	0.029	0.00
242	20.17	0.10	0.032	0.140	0.029	0.00
243	20.25	0.10	0.032	0.140	0.029	0.00
244	20.33	0.10	0.032	0.139	0.029	0.00
245	20.42	0.10	0.032	0.138	0.029	0.00
246	20.50	0.10	0.032	0.138	0.029	0.00
247	20.58	0.10	0.032	0.137	0.029	0.00
248	20.67	0.10	0.032	0.137	0.029	0.00

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249  20.75     0.10      0.032         0.136     0.029         0.00
250  20.83     0.07      0.022         0.135     0.019         0.00
251  20.92     0.07      0.022         0.135     0.019         0.00
252  21.00     0.07      0.022         0.134     0.019         0.00
253  21.08     0.10      0.032         0.134     0.029         0.00
254  21.17     0.10      0.032         0.133     0.029         0.00
255  21.25     0.10      0.032         0.133     0.029         0.00
256  21.33     0.07      0.022         0.132     0.019         0.00
257  21.42     0.07      0.022         0.132     0.019         0.00
258  21.50     0.07      0.022         0.131     0.019         0.00
259  21.58     0.10      0.032         0.131     0.029         0.00
260  21.67     0.10      0.032         0.130     0.029         0.00
261  21.75     0.10      0.032         0.130     0.029         0.00
262  21.83     0.07      0.022         0.129     0.019         0.00
263  21.92     0.07      0.022         0.129     0.019         0.00
264  22.00     0.07      0.022         0.129     0.019         0.00
265  22.08     0.10      0.032         0.128     0.029         0.00
266  22.17     0.10      0.032         0.128     0.029         0.00
267  22.25     0.10      0.032         0.127     0.029         0.00
268  22.33     0.07      0.022         0.127     0.019         0.00
269  22.42     0.07      0.022         0.127     0.019         0.00
270  22.50     0.07      0.022         0.126     0.019         0.00
271  22.58     0.07      0.022         0.126     0.019         0.00
272  22.67     0.07      0.022         0.125     0.019         0.00
273  22.75     0.07      0.022         0.125     0.019         0.00
274  22.83     0.07      0.022         0.125     0.019         0.00
275  22.92     0.07      0.022         0.124     0.019         0.00
276  23.00     0.07      0.022         0.124     0.019         0.00
277  23.08     0.07      0.022         0.124     0.019         0.00
278  23.17     0.07      0.022         0.124     0.019         0.00
279  23.25     0.07      0.022         0.123     0.019         0.00
280  23.33     0.07      0.022         0.123     0.019         0.00
281  23.42     0.07      0.022         0.123     0.019         0.00
282  23.50     0.07      0.022         0.123     0.019         0.00
283  23.58     0.07      0.022         0.122     0.019         0.00
284  23.67     0.07      0.022         0.122     0.019         0.00
285  23.75     0.07      0.022         0.122     0.019         0.00
286  23.83     0.07      0.022         0.122     0.019         0.00
287  23.92     0.07      0.022         0.122     0.019         0.00
288  24.00     0.07      0.022         0.122     0.019         0.00
    Sum =     100.0                                   Sum =     5.5
      Flood volume = Effective rainfall      0.46(In)
       times area       3.5(Ac.)/[(In)/(Ft.)] =       0.1(Ac.Ft)
      Total soil loss =      2.24(In)
      Total soil loss =     0.653(Ac.Ft)
      Total rainfall =      2.70(In)
      Flood volume =        5842.5 Cubic Feet
      Total soil loss =       28460.8 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      0.557(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        2.5       5.0       7.5      10.0
 ----------------------------------------------------------------------
   0+ 5       0.0000      0.00  Q         |         |         |         |
   0+10       0.0001      0.01  Q         |         |         |         |
   0+15       0.0001      0.01  Q         |         |         |         |
   0+20       0.0002      0.01  Q         |         |         |         |
   0+25       0.0003      0.01  Q         |         |         |         |
   0+30       0.0003      0.01  Q         |         |         |         |
   0+35       0.0004      0.01  Q         |         |         |         |
   0+40       0.0005      0.01  Q         |         |         |         |
   0+45       0.0006      0.01  Q         |         |         |         |
   0+50       0.0007      0.01  Q         |         |         |         |
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0+55	0.0008	0.01	Q	|	|	|	|
1+ 0	0.0009	0.02	Q	|	|	|	|
1+ 5	0.0010	0.01	Q	|	|	|	|
1+10	0.0010	0.01	Q	|	|	|	|
1+15	0.0011	0.01	Q	|	|	|	|
1+20	0.0012	0.01	Q	|	|	|	|
1+25	0.0013	0.01	Q	|	|	|	|
1+30	0.0014	0.01	Q	|	|	|	|
1+35	0.0014	0.01	Q	|	|	|	|
1+40	0.0015	0.01	Q	|	|	|	|
1+45	0.0016	0.01	Q	|	|	|	|
1+50	0.0017	0.01	Q	|	|	|	|
1+55	0.0018	0.01	Q	|	|	|	|
2+ 0	0.0019	0.02	Q	|	|	|	|
2+ 5	0.0020	0.02	Q	|	|	|	|
2+10	0.0021	0.02	Q	|	|	|	|
2+15	0.0022	0.02	Q	|	|	|	|
2+20	0.0023	0.02	Q	|	|	|	|
2+25	0.0024	0.02	Q	|	|	|	|
2+30	0.0025	0.02	Q	|	|	|	|
2+35	0.0026	0.02	Q	|	|	|	|
2+40	0.0028	0.02	Q	|	|	|	|
2+45	0.0029	0.02	Q	|	|	|	|
2+50	0.0030	0.02	Q	|	|	|	|
2+55	0.0032	0.02	Q	|	|	|	|
3+ 0	0.0033	0.02	Q	|	|	|	|
3+ 5	0.0034	0.02	QV	|	|	|	|
3+10	0.0035	0.02	QV	|	|	|	|
3+15	0.0037	0.02	QV	|	|	|	|
3+20	0.0038	0.02	QV	|	|	|	|
3+25	0.0039	0.02	QV	|	|	|	|
3+30	0.0041	0.02	QV	|	|	|	|
3+35	0.0042	0.02	QV	|	|	|	|
3+40	0.0043	0.02	QV	|	|	|	|
3+45	0.0045	0.02	QV	|	|	|	|
3+50	0.0046	0.02	QV	|	|	|	|
3+55	0.0048	0.02	QV	|	|	|	|
4+ 0	0.0049	0.02	QV	|	|	|	|
4+ 5	0.0051	0.02	QV	|	|	|	|
4+10	0.0052	0.02	QV	|	|	|	|
4+15	0.0054	0.02	QV	|	|	|	|
4+20	0.0056	0.02	QV	|	|	|	|
4+25	0.0057	0.03	QV	|	|	|	|
4+30	0.0059	0.03	QV	|	|	|	|
4+35	0.0061	0.03	QV	|	|	|	|
4+40	0.0063	0.03	QV	|	|	|	|
4+45	0.0065	0.03	QV	|	|	|	|
4+50	0.0067	0.03	QV	|	|	|	|
4+55	0.0069	0.03	Q V	|	|	|	|
5+ 0	0.0071	0.03	Q V	|	|	|	|
5+ 5	0.0073	0.03	Q V	|	|	|	|
5+10	0.0074	0.02	Q V	|	|	|	|
5+15	0.0076	0.02	Q V	|	|	|	|
5+20	0.0078	0.02	Q V	|	|	|	|
5+25	0.0079	0.03	Q V	|	|	|	|
5+30	0.0081	0.03	Q V	|	|	|	|
5+35	0.0083	0.03	Q V	|	|	|	|
5+40	0.0085	0.03	Q V	|	|	|	|
5+45	0.0087	0.03	Q V	|	|	|	|
5+50	0.0089	0.03	Q V	|	|	|	|
5+55	0.0092	0.03	Q V	|	|	|	|
6+ 0	0.0094	0.03	Q V	|	|	|	|
6+ 5	0.0096	0.03	Q V	|	|	|	|
6+10	0.0098	0.03	Q V	|	|	|	|
6+15	0.0101	0.03	Q V	|	|	|	|
6+20	0.0103	0.03	Q V	|	|	|	|
6+25	0.0105	0.03	Q V	|	|	|	|
6+30	0.0108	0.03	Q V	|	|	|	|
6+35	0.0110	0.04	Q V	|	|	|	|
6+40	0.0113	0.04	Q V	|	|	|	|

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 6+45       0.0115      0.04  Q  V      |         |         |         |
 6+50       0.0118      0.04  Q  V      |         |         |         |
 6+55       0.0121      0.04  Q  V      |         |         |         |
 7+ 0       0.0123      0.04  Q  V      |         |         |         |
 7+ 5       0.0126      0.04  Q  V      |         |         |         |
 7+10       0.0128      0.04  Q  V      |         |         |         |
 7+15       0.0131      0.04  Q  V      |         |         |         |
 7+20       0.0134      0.04  Q  V      |         |         |         |
 7+25       0.0137      0.04  Q   V     |         |         |         |
 7+30       0.0140      0.04  Q   V     |         |         |         |
 7+35       0.0143      0.04  Q   V     |         |         |         |
 7+40       0.0146      0.05  Q   V     |         |         |         |
 7+45       0.0149      0.05  Q   V     |         |         |         |
 7+50       0.0152      0.05  Q   V     |         |         |         |
 7+55       0.0155      0.05  Q   V     |         |         |         |
 8+ 0       0.0159      0.05  Q   V     |         |         |         |
 8+ 5       0.0162      0.05  Q   V     |         |         |         |
 8+10       0.0166      0.06  Q   V     |         |         |         |
 8+15       0.0170      0.06  Q    V    |         |         |         |
 8+20       0.0174      0.06  Q    V    |         |         |         |
 8+25       0.0178      0.06  Q    V    |         |         |         |
 8+30       0.0182      0.06  Q    V    |         |         |         |
 8+35       0.0186      0.06  Q    V    |         |         |         |
 8+40       0.0190      0.06  Q    V    |         |         |         |
 8+45       0.0194      0.06  Q    V    |         |         |         |
 8+50       0.0199      0.06  Q    V    |         |         |         |
 8+55       0.0203      0.06  Q     V   |         |         |         |
 9+ 0       0.0208      0.06  Q     V   |         |         |         |
 9+ 5       0.0212      0.07  Q     V   |         |         |         |
 9+10       0.0217      0.07  Q     V   |         |         |         |
 9+15       0.0222      0.07  Q     V   |         |         |         |
 9+20       0.0227      0.07  Q     V   |         |         |         |
 9+25       0.0233      0.08  Q     V   |         |         |         |
 9+30       0.0238      0.08  Q      V  |         |         |         |
 9+35       0.0243      0.08  Q      V  |         |         |         |
 9+40       0.0249      0.08  Q      V  |         |         |         |
 9+45       0.0254      0.08  Q      V  |         |         |         |
 9+50       0.0260      0.08  Q      V  |         |         |         |
 9+55       0.0265      0.08  Q      V  |         |         |         |
10+ 0       0.0271      0.08  Q       V |         |         |         |
10+ 5       0.0276      0.07  Q       V |         |         |         |
10+10       0.0280      0.06  Q       V |         |         |         |
10+15       0.0284      0.06  Q       V |         |         |         |
10+20       0.0288      0.06  Q       V |         |         |         |
10+25       0.0292      0.06  Q       V |         |         |         |
10+30       0.0296      0.06  Q       V |         |         |         |
10+35       0.0301      0.07  Q       V |         |         |         |
10+40       0.0306      0.07  Q        V|         |         |         |
10+45       0.0311      0.08  Q        V|         |         |         |
10+50       0.0316      0.08  Q        V|         |         |         |
10+55       0.0322      0.08  Q        V|         |         |         |
11+ 0       0.0327      0.08  Q        V|         |         |         |
11+ 5       0.0332      0.07  Q        V|         |         |         |
11+10       0.0337      0.07  Q         V         |         |         |
11+15       0.0342      0.07  Q         V         |         |         |
11+20       0.0347      0.07  Q         V         |         |         |
11+25       0.0352      0.07  Q         V         |         |         |
11+30       0.0357      0.07  Q         V         |         |         |
11+35       0.0362      0.07  Q         V         |         |         |
11+40       0.0366      0.07  Q         V         |         |         |
11+45       0.0371      0.07  Q         |V        |         |         |
11+50       0.0375      0.07  Q         |V        |         |         |
11+55       0.0380      0.07  Q         |V        |         |         |
12+ 0       0.0385      0.07  Q         |V        |         |         |
12+ 5       0.0392      0.10  Q         |V        |         |         |
12+10       0.0402      0.14  Q         |V        |         |         |
12+15       0.0412      0.15  Q         | V       |         |         |
12+20       0.0424      0.18  Q         | V       |         |         |
12+25       0.0438      0.20  Q         |  V      |         |         |
12+30       0.0452      0.20  Q         |  V      |         |         |
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12+35       0.0468      0.24  Q         |  V      |         |         |
12+40       0.0488      0.28  |Q        |   V     |         |         |
12+45       0.0508      0.29  |Q        |    V    |         |         |
12+50       0.0529      0.31  |Q        |    V    |         |         |
12+55       0.0552      0.33  |Q        |     V   |         |         |
13+ 0       0.0576      0.34  |Q        |      V  |         |         |
13+ 5       0.0605      0.43  |Q        |       V |         |         |
13+10       0.0641      0.52  | Q       |        V|         |         |
13+15       0.0678      0.54  | Q       |         V         |         |
13+20       0.0715      0.55  | Q       |         |V        |         |
13+25       0.0754      0.55  | Q       |         | V       |         |
13+30       0.0792      0.56  | Q       |         |  V      |         |
13+35       0.0818      0.38  |Q        |         |   V     |         |
13+40       0.0832      0.20  Q         |         |   V     |         |
13+45       0.0844      0.17  Q         |         |    V    |         |
13+50       0.0854      0.16  Q         |         |    V    |         |
13+55       0.0865      0.16  Q         |         |    V    |         |
14+ 0       0.0876      0.16  Q         |         |     V   |         |
14+ 5       0.0892      0.23  Q         |         |     V   |         |
14+10       0.0913      0.30  |Q        |         |      V  |         |
14+15       0.0934      0.32  |Q        |         |      V  |         |
14+20       0.0956      0.31  |Q        |         |       V |         |
14+25       0.0976      0.30  |Q        |         |        V|         |
14+30       0.0997      0.30  |Q        |         |        V|         |
14+35       0.1017      0.30  |Q        |         |         V         |
14+40       0.1038      0.30  |Q        |         |         V         |
14+45       0.1059      0.31  |Q        |         |         |V        |
14+50       0.1079      0.29  |Q        |         |         | V       |
14+55       0.1099      0.28  |Q        |         |         | V       |
15+ 0       0.1118      0.28  |Q        |         |         |  V      |
15+ 5       0.1137      0.27  |Q        |         |         |  V      |
15+10       0.1154      0.25  |Q        |         |         |   V     |
15+15       0.1171      0.25  |Q        |         |         |   V     |
15+20       0.1188      0.24  Q         |         |         |    V    |
15+25       0.1203      0.22  Q         |         |         |    V    |
15+30       0.1219      0.22  Q         |         |         |     V   |
15+35       0.1230      0.16  Q         |         |         |     V   |
15+40       0.1237      0.10  Q         |         |         |     V   |
15+45       0.1243      0.09  Q         |         |         |      V  |
15+50       0.1249      0.09  Q         |         |         |      V  |
15+55       0.1255      0.09  Q         |         |         |      V  |
16+ 0       0.1261      0.09  Q         |         |         |      V  |
16+ 5       0.1265      0.06  Q         |         |         |      V  |
16+10       0.1267      0.03  Q         |         |         |      V  |
16+15       0.1268      0.02  Q         |         |         |      V  |
16+20       0.1269      0.02  Q         |         |         |      V  |
16+25       0.1270      0.02  Q         |         |         |      V  |
16+30       0.1271      0.02  Q         |         |         |      V  |
16+35       0.1272      0.01  Q         |         |         |      V  |
16+40       0.1273      0.01  Q         |         |         |      V  |
16+45       0.1274      0.01  Q         |         |         |      V  |
16+50       0.1275      0.01  Q         |         |         |       V |
16+55       0.1275      0.01  Q         |         |         |       V |
17+ 0       0.1276      0.01  Q         |         |         |       V |
17+ 5       0.1277      0.01  Q         |         |         |       V |
17+10       0.1278      0.02  Q         |         |         |       V |
17+15       0.1280      0.02  Q         |         |         |       V |
17+20       0.1281      0.02  Q         |         |         |       V |
17+25       0.1282      0.02  Q         |         |         |       V |
17+30       0.1284      0.02  Q         |         |         |       V |
17+35       0.1285      0.02  Q         |         |         |       V |
17+40       0.1286      0.02  Q         |         |         |       V |
17+45       0.1287      0.02  Q         |         |         |       V |
17+50       0.1289      0.02  Q         |         |         |       V |
17+55       0.1290      0.02  Q         |         |         |       V |
18+ 0       0.1291      0.02  Q         |         |         |       V |
18+ 5       0.1292      0.02  Q         |         |         |       V |
18+10       0.1293      0.02  Q         |         |         |       V |
18+15       0.1294      0.02  Q         |         |         |       V |
18+20       0.1295      0.02  Q         |         |         |       V |
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18+25       0.1296      0.02  Q         |         |         |       V |
18+30       0.1297      0.02  Q         |         |         |       V |
18+35       0.1298      0.01  Q         |         |         |       V |
18+40       0.1299      0.01  Q         |         |         |       V |
18+45       0.1300      0.01  Q         |         |         |       V |
18+50       0.1300      0.01  Q         |         |         |       V |
18+55       0.1301      0.01  Q         |         |         |       V |
19+ 0       0.1301      0.01  Q         |         |         |       V |
19+ 5       0.1302      0.01  Q         |         |         |       V |
19+10       0.1303      0.01  Q         |         |         |       V |
19+15       0.1304      0.01  Q         |         |         |       V |
19+20       0.1305      0.01  Q         |         |         |       V |
19+25       0.1306      0.01  Q         |         |         |       V |
19+30       0.1307      0.02  Q         |         |         |       V |
19+35       0.1308      0.01  Q         |         |         |       V |
19+40       0.1308      0.01  Q         |         |         |        V|
19+45       0.1309      0.01  Q         |         |         |        V|
19+50       0.1310      0.01  Q         |         |         |        V|
19+55       0.1310      0.01  Q         |         |         |        V|
20+ 0       0.1311      0.01  Q         |         |         |        V|
20+ 5       0.1312      0.01  Q         |         |         |        V|
20+10       0.1312      0.01  Q         |         |         |        V|
20+15       0.1313      0.01  Q         |         |         |        V|
20+20       0.1314      0.01  Q         |         |         |        V|
20+25       0.1315      0.01  Q         |         |         |        V|
20+30       0.1315      0.01  Q         |         |         |        V|
20+35       0.1316      0.01  Q         |         |         |        V|
20+40       0.1317      0.01  Q         |         |         |        V|
20+45       0.1318      0.01  Q         |         |         |        V|
20+50       0.1318      0.01  Q         |         |         |        V|
20+55       0.1319      0.01  Q         |         |         |        V|
21+ 0       0.1320      0.01  Q         |         |         |        V|
21+ 5       0.1320      0.01  Q         |         |         |        V|
21+10       0.1321      0.01  Q         |         |         |        V|
21+15       0.1322      0.01  Q         |         |         |        V|
21+20       0.1322      0.01  Q         |         |         |        V|
21+25       0.1323      0.01  Q         |         |         |        V|
21+30       0.1324      0.01  Q         |         |         |        V|
21+35       0.1324      0.01  Q         |         |         |        V|
21+40       0.1325      0.01  Q         |         |         |        V|
21+45       0.1326      0.01  Q         |         |         |        V|
21+50       0.1326      0.01  Q         |         |         |        V|
21+55       0.1327      0.01  Q         |         |         |        V|
22+ 0       0.1327      0.01  Q         |         |         |        V|
22+ 5       0.1328      0.01  Q         |         |         |        V|
22+10       0.1329      0.01  Q         |         |         |        V|
22+15       0.1330      0.01  Q         |         |         |        V|
22+20       0.1330      0.01  Q         |         |         |        V|
22+25       0.1331      0.01  Q         |         |         |        V|
22+30       0.1331      0.01  Q         |         |         |        V|
22+35       0.1332      0.01  Q         |         |         |        V|
22+40       0.1332      0.01  Q         |         |         |        V|
22+45       0.1333      0.01  Q         |         |         |        V|
22+50       0.1334      0.01  Q         |         |         |        V|
22+55       0.1334      0.01  Q         |         |         |        V|
23+ 0       0.1335      0.01  Q         |         |         |        V|
23+ 5       0.1335      0.01  Q         |         |         |        V|
23+10       0.1336      0.01  Q         |         |         |        V|
23+15       0.1336      0.01  Q         |         |         |        V|
23+20       0.1337      0.01  Q         |         |         |        V|
23+25       0.1337      0.01  Q         |         |         |        V|
23+30       0.1338      0.01  Q         |         |         |        V|
23+35       0.1338      0.01  Q         |         |         |        V|
23+40       0.1339      0.01  Q         |         |         |        V|
23+45       0.1339      0.01  Q         |         |         |        V|
23+50       0.1340      0.01  Q         |         |         |        V|
23+55       0.1340      0.01  Q         |         |         |        V|
24+ 0       0.1341      0.01  Q         |         |         |        V|
24+ 5       0.1341      0.00  Q         |         |         |        V|
24+10       0.1341      0.00  Q         |         |         |        V|
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   24+15       0.1341      0.00  Q         |         |         |        V|
   24+20       0.1341      0.00  Q         |         |         |         V
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       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  02/10/13 File: TR36519eb242.out


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--------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

-------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



-------------------------------------------------------------------
TR 36519
AREA B - EXISTINC CONDITION
24 HOUR, 10 YEAR STORM

------------------------------------------------------------------
Drainage Area =       1.70(Ac.)  =      0.003 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       1.70(Ac.)  =      0.003 Sq. Mi.
Length along longest watercourse =     330.00(Ft.)
Length along longest watercourse measured to centroid =     103.00(Ft.)
Length along longest watercourse =      0.063 Mi.
Length along longest watercourse measured to centroid =      0.020 Mi.
Difference in elevation =      13.50(Ft.)
Slope along watercourse =    216.0000 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.017 Hr.
Lag time =     1.01 Min.
25% of lag time =     0.25 Min.
40% of lag time =     0.41 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]
        1.70           2.70                  4.59

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        1.70           8.00                 13.60

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.700(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    2.700(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.700(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     1.700           78.00         0.100
```

Total Area Entered = 1.70(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
78.0	78.0	0.268	0.100	0.244	1.000	0.244
					Sum (F) =	0.244

Area averaged mean soil loss (F) (In/Hr) = 0.244
Minimum soil loss rate ((In/Hr)) = 0.122
(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
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	493.744	70.609	1.210
2	0.167	987.489	29.391	0.504
		Sum = 100.000	Sum=	1.713

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.022	0.432	0.019	0.00
2	0.17	0.07	0.022	0.430	0.019	0.00
3	0.25	0.07	0.022	0.428	0.019	0.00
4	0.33	0.10	0.032	0.427	0.029	0.00
5	0.42	0.10	0.032	0.425	0.029	0.00
6	0.50	0.10	0.032	0.423	0.029	0.00
7	0.58	0.10	0.032	0.422	0.029	0.00
8	0.67	0.10	0.032	0.420	0.029	0.00
9	0.75	0.10	0.032	0.418	0.029	0.00
10	0.83	0.13	0.043	0.417	0.039	0.00
11	0.92	0.13	0.043	0.415	0.039	0.00
12	1.00	0.13	0.043	0.414	0.039	0.00
13	1.08	0.10	0.032	0.412	0.029	0.00
14	1.17	0.10	0.032	0.410	0.029	0.00
15	1.25	0.10	0.032	0.409	0.029	0.00
16	1.33	0.10	0.032	0.407	0.029	0.00
17	1.42	0.10	0.032	0.405	0.029	0.00
18	1.50	0.10	0.032	0.404	0.029	0.00
19	1.58	0.10	0.032	0.402	0.029	0.00
20	1.67	0.10	0.032	0.401	0.029	0.00
21	1.75	0.10	0.032	0.399	0.029	0.00
22	1.83	0.13	0.043	0.397	0.039	0.00
23	1.92	0.13	0.043	0.396	0.039	0.00
24	2.00	0.13	0.043	0.394	0.039	0.00
25	2.08	0.13	0.043	0.393	0.039	0.00
26	2.17	0.13	0.043	0.391	0.039	0.00
27	2.25	0.13	0.043	0.389	0.039	0.00
28	2.33	0.13	0.043	0.388	0.039	0.00
29	2.42	0.13	0.043	0.386	0.039	0.00
30	2.50	0.13	0.043	0.385	0.039	0.00
31	2.58	0.17	0.054	0.383	0.049	0.01
32	2.67	0.17	0.054	0.381	0.049	0.01
33	2.75	0.17	0.054	0.380	0.049	0.01
34	2.83	0.17	0.054	0.378	0.049	0.01
35	2.92	0.17	0.054	0.377	0.049	0.01
36	3.00	0.17	0.054	0.375	0.049	0.01
37	3.08	0.17	0.054	0.374	0.049	0.01
38	3.17	0.17	0.054	0.372	0.049	0.01
39	3.25	0.17	0.054	0.371	0.049	0.01
40	3.33	0.17	0.054	0.369	0.049	0.01
41	3.42	0.17	0.054	0.367	0.049	0.01

42	3.50	0.17	0.054	0.366	0.049	0.01
43	3.58	0.17	0.054	0.364	0.049	0.01
44	3.67	0.17	0.054	0.363	0.049	0.01
45	3.75	0.17	0.054	0.361	0.049	0.01
46	3.83	0.20	0.065	0.360	0.058	0.01
47	3.92	0.20	0.065	0.358	0.058	0.01
48	4.00	0.20	0.065	0.357	0.058	0.01
49	4.08	0.20	0.065	0.355	0.058	0.01
50	4.17	0.20	0.065	0.354	0.058	0.01
51	4.25	0.20	0.065	0.352	0.058	0.01
52	4.33	0.23	0.076	0.351	0.068	0.01
53	4.42	0.23	0.076	0.349	0.068	0.01
54	4.50	0.23	0.076	0.348	0.068	0.01
55	4.58	0.23	0.076	0.346	0.068	0.01
56	4.67	0.23	0.076	0.345	0.068	0.01
57	4.75	0.23	0.076	0.343	0.068	0.01
58	4.83	0.27	0.086	0.342	0.078	0.01
59	4.92	0.27	0.086	0.340	0.078	0.01
60	5.00	0.27	0.086	0.339	0.078	0.01
61	5.08	0.20	0.065	0.337	0.058	0.01
62	5.17	0.20	0.065	0.336	0.058	0.01
63	5.25	0.20	0.065	0.334	0.058	0.01
64	5.33	0.23	0.076	0.333	0.068	0.01
65	5.42	0.23	0.076	0.332	0.068	0.01
66	5.50	0.23	0.076	0.330	0.068	0.01
67	5.58	0.27	0.086	0.329	0.078	0.01
68	5.67	0.27	0.086	0.327	0.078	0.01
69	5.75	0.27	0.086	0.326	0.078	0.01
70	5.83	0.27	0.086	0.324	0.078	0.01
71	5.92	0.27	0.086	0.323	0.078	0.01
72	6.00	0.27	0.086	0.321	0.078	0.01
73	6.08	0.30	0.097	0.320	0.087	0.01
74	6.17	0.30	0.097	0.319	0.087	0.01
75	6.25	0.30	0.097	0.317	0.087	0.01
76	6.33	0.30	0.097	0.316	0.087	0.01
77	6.42	0.30	0.097	0.314	0.087	0.01
78	6.50	0.30	0.097	0.313	0.087	0.01
79	6.58	0.33	0.108	0.312	0.097	0.01
80	6.67	0.33	0.108	0.310	0.097	0.01
81	6.75	0.33	0.108	0.309	0.097	0.01
82	6.83	0.33	0.108	0.307	0.097	0.01
83	6.92	0.33	0.108	0.306	0.097	0.01
84	7.00	0.33	0.108	0.305	0.097	0.01
85	7.08	0.33	0.108	0.303	0.097	0.01
86	7.17	0.33	0.108	0.302	0.097	0.01
87	7.25	0.33	0.108	0.300	0.097	0.01
88	7.33	0.37	0.119	0.299	0.107	0.01
89	7.42	0.37	0.119	0.298	0.107	0.01
90	7.50	0.37	0.119	0.296	0.107	0.01
91	7.58	0.40	0.130	0.295	0.117	0.01
92	7.67	0.40	0.130	0.294	0.117	0.01
93	7.75	0.40	0.130	0.292	0.117	0.01
94	7.83	0.43	0.140	0.291	0.126	0.01
95	7.92	0.43	0.140	0.290	0.126	0.01
96	8.00	0.43	0.140	0.288	0.126	0.01
97	8.08	0.50	0.162	0.287	0.146	0.02
98	8.17	0.50	0.162	0.286	0.146	0.02
99	8.25	0.50	0.162	0.284	0.146	0.02
100	8.33	0.50	0.162	0.283	0.146	0.02
101	8.42	0.50	0.162	0.282	0.146	0.02
102	8.50	0.50	0.162	0.280	0.146	0.02
103	8.58	0.53	0.173	0.279	0.156	0.02
104	8.67	0.53	0.173	0.278	0.156	0.02
105	8.75	0.53	0.173	0.276	0.156	0.02
106	8.83	0.57	0.184	0.275	0.165	0.02
107	8.92	0.57	0.184	0.274	0.165	0.02
108	9.00	0.57	0.184	0.272	0.165	0.02
109	9.08	0.63	0.205	0.271	0.185	0.02
110	9.17	0.63	0.205	0.270	0.185	0.02
111	9.25	0.63	0.205	0.269	0.185	0.02

112	9.33	0.67	0.216	0.267	0.194	0.02
113	9.42	0.67	0.216	0.266	0.194	0.02
114	9.50	0.67	0.216	0.265	0.194	0.02
115	9.58	0.70	0.227	0.263	0.204	0.02
116	9.67	0.70	0.227	0.262	0.204	0.02
117	9.75	0.70	0.227	0.261	0.204	0.02
118	9.83	0.73	0.238	0.260	0.214	0.02
119	9.92	0.73	0.238	0.258	0.214	0.02
120	10.00	0.73	0.238	0.257	0.214	0.02
121	10.08	0.50	0.162	0.256	0.146	0.02
122	10.17	0.50	0.162	0.255	0.146	0.02
123	10.25	0.50	0.162	0.253	0.146	0.02
124	10.33	0.50	0.162	0.252	0.146	0.02
125	10.42	0.50	0.162	0.251	0.146	0.02
126	10.50	0.50	0.162	0.250	0.146	0.02
127	10.58	0.67	0.216	0.249	0.194	0.02
128	10.67	0.67	0.216	0.247	0.194	0.02
129	10.75	0.67	0.216	0.246	0.194	0.02
130	10.83	0.67	0.216	0.245	0.194	0.02
131	10.92	0.67	0.216	0.244	0.194	0.02
132	11.00	0.67	0.216	0.243	0.194	0.02
133	11.08	0.63	0.205	0.241	0.185	0.02
134	11.17	0.63	0.205	0.240	0.185	0.02
135	11.25	0.63	0.205	0.239	0.185	0.02
136	11.33	0.63	0.205	0.238	0.185	0.02
137	11.42	0.63	0.205	0.237	0.185	0.02
138	11.50	0.63	0.205	0.235	0.185	0.02
139	11.58	0.57	0.184	0.234	0.165	0.02
140	11.67	0.57	0.184	0.233	0.165	0.02
141	11.75	0.57	0.184	0.232	0.165	0.02
142	11.83	0.60	0.194	0.231	0.175	0.02
143	11.92	0.60	0.194	0.230	0.175	0.02
144	12.00	0.60	0.194	0.228	0.175	0.02
145	12.08	0.83	0.270	0.227	---	0.04
146	12.17	0.83	0.270	0.226	---	0.04
147	12.25	0.83	0.270	0.225	---	0.04
148	12.33	0.87	0.281	0.224	---	0.06
149	12.42	0.87	0.281	0.223	---	0.06
150	12.50	0.87	0.281	0.222	---	0.06
151	12.58	0.93	0.302	0.221	---	0.08
152	12.67	0.93	0.302	0.219	---	0.08
153	12.75	0.93	0.302	0.218	---	0.08
154	12.83	0.97	0.313	0.217	---	0.10
155	12.92	0.97	0.313	0.216	---	0.10
156	13.00	0.97	0.313	0.215	---	0.10
157	13.08	1.13	0.367	0.214	---	0.15
158	13.17	1.13	0.367	0.213	---	0.15
159	13.25	1.13	0.367	0.212	---	0.16
160	13.33	1.13	0.367	0.211	---	0.16
161	13.42	1.13	0.367	0.210	---	0.16
162	13.50	1.13	0.367	0.209	---	0.16
163	13.58	0.77	0.248	0.208	---	0.04
164	13.67	0.77	0.248	0.206	---	0.04
165	13.75	0.77	0.248	0.205	---	0.04
166	13.83	0.77	0.248	0.204	---	0.04
167	13.92	0.77	0.248	0.203	---	0.05
168	14.00	0.77	0.248	0.202	---	0.05
169	14.08	0.90	0.292	0.201	---	0.09
170	14.17	0.90	0.292	0.200	---	0.09
171	14.25	0.90	0.292	0.199	---	0.09
172	14.33	0.87	0.281	0.198	---	0.08
173	14.42	0.87	0.281	0.197	---	0.08
174	14.50	0.87	0.281	0.196	---	0.08
175	14.58	0.87	0.281	0.195	---	0.09
176	14.67	0.87	0.281	0.194	---	0.09
177	14.75	0.87	0.281	0.193	---	0.09
178	14.83	0.83	0.270	0.192	---	0.08
179	14.92	0.83	0.270	0.191	---	0.08
180	15.00	0.83	0.270	0.190	---	0.08
181	15.08	0.80	0.259	0.189	---	0.07

182	15.17	0.80	0.259	0.188	---	0.07
183	15.25	0.80	0.259	0.187	---	0.07
184	15.33	0.77	0.248	0.186	---	0.06
185	15.42	0.77	0.248	0.185	---	0.06
186	15.50	0.77	0.248	0.184	---	0.06
187	15.58	0.63	0.205	0.183	---	0.02
188	15.67	0.63	0.205	0.183	---	0.02
189	15.75	0.63	0.205	0.182	---	0.02
190	15.83	0.63	0.205	0.181	---	0.02
191	15.92	0.63	0.205	0.180	---	0.03
192	16.00	0.63	0.205	0.179	---	0.03
193	16.08	0.13	0.043	0.178	0.039	0.00
194	16.17	0.13	0.043	0.177	0.039	0.00
195	16.25	0.13	0.043	0.176	0.039	0.00
196	16.33	0.13	0.043	0.175	0.039	0.00
197	16.42	0.13	0.043	0.174	0.039	0.00
198	16.50	0.13	0.043	0.173	0.039	0.00
199	16.58	0.10	0.032	0.173	0.029	0.00
200	16.67	0.10	0.032	0.172	0.029	0.00
201	16.75	0.10	0.032	0.171	0.029	0.00
202	16.83	0.10	0.032	0.170	0.029	0.00
203	16.92	0.10	0.032	0.169	0.029	0.00
204	17.00	0.10	0.032	0.168	0.029	0.00
205	17.08	0.17	0.054	0.167	0.049	0.01
206	17.17	0.17	0.054	0.167	0.049	0.01
207	17.25	0.17	0.054	0.166	0.049	0.01
208	17.33	0.17	0.054	0.165	0.049	0.01
209	17.42	0.17	0.054	0.164	0.049	0.01
210	17.50	0.17	0.054	0.163	0.049	0.01
211	17.58	0.17	0.054	0.162	0.049	0.01
212	17.67	0.17	0.054	0.162	0.049	0.01
213	17.75	0.17	0.054	0.161	0.049	0.01
214	17.83	0.13	0.043	0.160	0.039	0.00
215	17.92	0.13	0.043	0.159	0.039	0.00
216	18.00	0.13	0.043	0.158	0.039	0.00
217	18.08	0.13	0.043	0.158	0.039	0.00
218	18.17	0.13	0.043	0.157	0.039	0.00
219	18.25	0.13	0.043	0.156	0.039	0.00
220	18.33	0.13	0.043	0.155	0.039	0.00
221	18.42	0.13	0.043	0.155	0.039	0.00
222	18.50	0.13	0.043	0.154	0.039	0.00
223	18.58	0.10	0.032	0.153	0.029	0.00
224	18.67	0.10	0.032	0.152	0.029	0.00
225	18.75	0.10	0.032	0.152	0.029	0.00
226	18.83	0.07	0.022	0.151	0.019	0.00
227	18.92	0.07	0.022	0.150	0.019	0.00
228	19.00	0.07	0.022	0.149	0.019	0.00
229	19.08	0.10	0.032	0.149	0.029	0.00
230	19.17	0.10	0.032	0.148	0.029	0.00
231	19.25	0.10	0.032	0.147	0.029	0.00
232	19.33	0.13	0.043	0.147	0.039	0.00
233	19.42	0.13	0.043	0.146	0.039	0.00
234	19.50	0.13	0.043	0.145	0.039	0.00
235	19.58	0.10	0.032	0.145	0.029	0.00
236	19.67	0.10	0.032	0.144	0.029	0.00
237	19.75	0.10	0.032	0.143	0.029	0.00
238	19.83	0.07	0.022	0.143	0.019	0.00
239	19.92	0.07	0.022	0.142	0.019	0.00
240	20.00	0.07	0.022	0.141	0.019	0.00
241	20.08	0.10	0.032	0.141	0.029	0.00
242	20.17	0.10	0.032	0.140	0.029	0.00
243	20.25	0.10	0.032	0.140	0.029	0.00
244	20.33	0.10	0.032	0.139	0.029	0.00
245	20.42	0.10	0.032	0.138	0.029	0.00
246	20.50	0.10	0.032	0.138	0.029	0.00
247	20.58	0.10	0.032	0.137	0.029	0.00
248	20.67	0.10	0.032	0.137	0.029	0.00
249	20.75	0.10	0.032	0.136	0.029	0.00
250	20.83	0.07	0.022	0.135	0.019	0.00
251	20.92	0.07	0.022	0.135	0.019	0.00

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252  21.00     0.07      0.022         0.134     0.019         0.00
253  21.08     0.10      0.032         0.134     0.029         0.00
254  21.17     0.10      0.032         0.133     0.029         0.00
255  21.25     0.10      0.032         0.133     0.029         0.00
256  21.33     0.07      0.022         0.132     0.019         0.00
257  21.42     0.07      0.022         0.132     0.019         0.00
258  21.50     0.07      0.022         0.131     0.019         0.00
259  21.58     0.10      0.032         0.131     0.029         0.00
260  21.67     0.10      0.032         0.130     0.029         0.00
261  21.75     0.10      0.032         0.130     0.029         0.00
262  21.83     0.07      0.022         0.129     0.019         0.00
263  21.92     0.07      0.022         0.129     0.019         0.00
264  22.00     0.07      0.022         0.129     0.019         0.00
265  22.08     0.10      0.032         0.128     0.029         0.00
266  22.17     0.10      0.032         0.128     0.029         0.00
267  22.25     0.10      0.032         0.127     0.029         0.00
268  22.33     0.07      0.022         0.127     0.019         0.00
269  22.42     0.07      0.022         0.127     0.019         0.00
270  22.50     0.07      0.022         0.126     0.019         0.00
271  22.58     0.07      0.022         0.126     0.019         0.00
272  22.67     0.07      0.022         0.125     0.019         0.00
273  22.75     0.07      0.022         0.125     0.019         0.00
274  22.83     0.07      0.022         0.125     0.019         0.00
275  22.92     0.07      0.022         0.124     0.019         0.00
276  23.00     0.07      0.022         0.124     0.019         0.00
277  23.08     0.07      0.022         0.124     0.019         0.00
278  23.17     0.07      0.022         0.124     0.019         0.00
279  23.25     0.07      0.022         0.123     0.019         0.00
280  23.33     0.07      0.022         0.123     0.019         0.00
281  23.42     0.07      0.022         0.123     0.019         0.00
282  23.50     0.07      0.022         0.123     0.019         0.00
283  23.58     0.07      0.022         0.122     0.019         0.00
284  23.67     0.07      0.022         0.122     0.019         0.00
285  23.75     0.07      0.022         0.122     0.019         0.00
286  23.83     0.07      0.022         0.122     0.019         0.00
287  23.92     0.07      0.022         0.122     0.019         0.00
288  24.00     0.07      0.022         0.122     0.019         0.00
    Sum =     100.0                                       Sum =     5.5
      Flood volume = Effective rainfall      0.46(In)
       times area       1.7(Ac.)/[(In)/(Ft.)] =       0.1(Ac.Ft)
      Total soil loss =      2.24(In)
      Total soil loss =     0.317(Ac.Ft)
      Total rainfall =      2.70(In)
      Flood volume =        2837.8 Cubic Feet
      Total soil loss =       13823.8 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      0.271(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        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0000      0.00  Q         |         |         |         |
   0+10       0.0000      0.00  Q         |         |         |         |
   0+15       0.0001      0.00  Q         |         |         |         |
   0+20       0.0001      0.01  Q         |         |         |         |
   0+25       0.0001      0.01  Q         |         |         |         |
   0+30       0.0002      0.01  Q         |         |         |         |
   0+35       0.0002      0.01  Q         |         |         |         |
   0+40       0.0003      0.01  Q         |         |         |         |
   0+45       0.0003      0.01  Q         |         |         |         |
   0+50       0.0003      0.01  Q         |         |         |         |
   0+55       0.0004      0.01  Q         |         |         |         |
   1+ 0       0.0004      0.01  Q         |         |         |         |
   1+ 5       0.0005      0.01  Q         |         |         |         |
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1+10	0.0005	0.01	Q	|	|	|	|
1+15	0.0006	0.01	Q	|	|	|	|
1+20	0.0006	0.01	Q	|	|	|	|
1+25	0.0006	0.01	Q	|	|	|	|
1+30	0.0007	0.01	Q	|	|	|	|
1+35	0.0007	0.01	Q	|	|	|	|
1+40	0.0008	0.01	Q	|	|	|	|
1+45	0.0008	0.01	Q	|	|	|	|
1+50	0.0008	0.01	Q	|	|	|	|
1+55	0.0009	0.01	Q	|	|	|	|
2+ 0	0.0009	0.01	Q	|	|	|	|
2+ 5	0.0010	0.01	Q	|	|	|	|
2+10	0.0010	0.01	Q	|	|	|	|
2+15	0.0011	0.01	Q	|	|	|	|
2+20	0.0011	0.01	Q	|	|	|	|
2+25	0.0012	0.01	Q	|	|	|	|
2+30	0.0012	0.01	Q	|	|	|	|
2+35	0.0013	0.01	Q	|	|	|	|
2+40	0.0014	0.01	Q	|	|	|	|
2+45	0.0014	0.01	Q	|	|	|	|
2+50	0.0015	0.01	Q	|	|	|	|
2+55	0.0016	0.01	Q	|	|	|	|
3+ 0	0.0016	0.01	Q	|	|	|	|
3+ 5	0.0017	0.01	QV	|	|	|	|
3+10	0.0018	0.01	QV	|	|	|	|
3+15	0.0018	0.01	QV	|	|	|	|
3+20	0.0019	0.01	QV	|	|	|	|
3+25	0.0019	0.01	QV	|	|	|	|
3+30	0.0020	0.01	QV	|	|	|	|
3+35	0.0021	0.01	QV	|	|	|	|
3+40	0.0021	0.01	QV	|	|	|	|
3+45	0.0022	0.01	QV	|	|	|	|
3+50	0.0023	0.01	QV	|	|	|	|
3+55	0.0023	0.01	QV	|	|	|	|
4+ 0	0.0024	0.01	QV	|	|	|	|
4+ 5	0.0025	0.01	QV	|	|	|	|
4+10	0.0026	0.01	QV	|	|	|	|
4+15	0.0027	0.01	QV	|	|	|	|
4+20	0.0027	0.01	QV	|	|	|	|
4+25	0.0028	0.01	QV	|	|	|	|
4+30	0.0029	0.01	QV	|	|	|	|
4+35	0.0030	0.01	QV	|	|	|	|
4+40	0.0031	0.01	QV	|	|	|	|
4+45	0.0032	0.01	QV	|	|	|	|
4+50	0.0033	0.01	Q V	|	|	|	|
4+55	0.0034	0.01	Q V	|	|	|	|
5+ 0	0.0035	0.01	Q V	|	|	|	|
5+ 5	0.0036	0.01	Q V	|	|	|	|
5+10	0.0036	0.01	Q V	|	|	|	|
5+15	0.0037	0.01	Q V	|	|	|	|
5+20	0.0038	0.01	Q V	|	|	|	|
5+25	0.0039	0.01	Q V	|	|	|	|
5+30	0.0040	0.01	Q V	|	|	|	|
5+35	0.0041	0.01	Q V	|	|	|	|
5+40	0.0042	0.01	Q V	|	|	|	|
5+45	0.0043	0.01	Q V	|	|	|	|
5+50	0.0044	0.01	Q V	|	|	|	|
5+55	0.0045	0.01	Q V	|	|	|	|
6+ 0	0.0046	0.01	Q V	|	|	|	|
6+ 5	0.0047	0.02	Q V	|	|	|	|
6+10	0.0048	0.02	Q V	|	|	|	|
6+15	0.0049	0.02	Q V	|	|	|	|
6+20	0.0051	0.02	Q V	|	|	|	|
6+25	0.0052	0.02	Q V	|	|	|	|
6+30	0.0053	0.02	Q V	|	|	|	|
6+35	0.0054	0.02	Q V	|	|	|	|
6+40	0.0055	0.02	Q V	|	|	|	|
6+45	0.0057	0.02	Q V	|	|	|	|
6+50	0.0058	0.02	Q V	|	|	|	|
6+55	0.0059	0.02	Q V	|	|	|	|

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 7+ 0       0.0060      0.02  Q  V      |         |         |         |
 7+ 5       0.0062      0.02  Q  V      |         |         |         |
 7+10       0.0063      0.02  Q  V      |         |         |         |
 7+15       0.0064      0.02  Q  V      |         |         |         |
 7+20       0.0066      0.02  Q   V     |         |         |         |
 7+25       0.0067      0.02  Q   V     |         |         |         |
 7+30       0.0068      0.02  Q   V     |         |         |         |
 7+35       0.0070      0.02  Q   V     |         |         |         |
 7+40       0.0071      0.02  Q   V     |         |         |         |
 7+45       0.0073      0.02  Q   V     |         |         |         |
 7+50       0.0075      0.02  Q   V     |         |         |         |
 7+55       0.0076      0.02  Q   V     |         |         |         |
 8+ 0       0.0078      0.02  Q   V     |         |         |         |
 8+ 5       0.0080      0.03  Q   V     |         |         |         |
 8+10       0.0082      0.03  Q    V    |         |         |         |
 8+15       0.0084      0.03  Q    V    |         |         |         |
 8+20       0.0086      0.03  Q    V    |         |         |         |
 8+25       0.0087      0.03  Q    V    |         |         |         |
 8+30       0.0089      0.03  Q    V    |         |         |         |
 8+35       0.0091      0.03  Q    V    |         |         |         |
 8+40       0.0093      0.03  Q    V    |         |         |         |
 8+45       0.0095      0.03  Q    V    |         |         |         |
 8+50       0.0098      0.03  Q    V    |         |         |         |
 8+55       0.0100      0.03  Q     V   |         |         |         |
 9+ 0       0.0102      0.03  Q     V   |         |         |         |
 9+ 5       0.0104      0.03  Q     V   |         |         |         |
 9+10       0.0107      0.04  Q     V   |         |         |         |
 9+15       0.0109      0.04  Q     V   |         |         |         |
 9+20       0.0112      0.04  Q     V   |         |         |         |
 9+25       0.0114      0.04  Q      V  |         |         |         |
 9+30       0.0117      0.04  Q      V  |         |         |         |
 9+35       0.0119      0.04  Q      V  |         |         |         |
 9+40       0.0122      0.04  Q      V  |         |         |         |
 9+45       0.0125      0.04  Q      V  |         |         |         |
 9+50       0.0127      0.04  Q      V  |         |         |         |
 9+55       0.0130      0.04  Q      V  |         |         |         |
10+ 0       0.0133      0.04  Q       V |         |         |         |
10+ 5       0.0135      0.03  Q       V |         |         |         |
10+10       0.0137      0.03  Q       V |         |         |         |
10+15       0.0139      0.03  Q       V |         |         |         |
10+20       0.0141      0.03  Q       V |         |         |         |
10+25       0.0143      0.03  Q       V |         |         |         |
10+30       0.0145      0.03  Q       V |         |         |         |
10+35       0.0147      0.03  Q        V|         |         |         |
10+40       0.0150      0.04  Q        V|         |         |         |
10+45       0.0152      0.04  Q        V|         |         |         |
10+50       0.0155      0.04  Q        V|         |         |         |
10+55       0.0157      0.04  Q        V|         |         |         |
11+ 0       0.0160      0.04  Q        V|         |         |         |
11+ 5       0.0162      0.04  Q        V|         |         |         |
11+10       0.0165      0.04  Q         V         |         |         |
11+15       0.0167      0.04  Q         V         |         |         |
11+20       0.0170      0.04  Q         V         |         |         |
11+25       0.0172      0.04  Q         V         |         |         |
11+30       0.0174      0.04  Q         V         |         |         |
11+35       0.0177      0.03  Q         V         |         |         |
11+40       0.0179      0.03  Q         V         |         |         |
11+45       0.0181      0.03  Q         |V        |         |         |
11+50       0.0183      0.03  Q         |V        |         |         |
11+55       0.0186      0.03  Q         |V        |         |         |
12+ 0       0.0188      0.03  Q         |V        |         |         |
12+ 5       0.0192      0.06  Q         |V        |         |         |
12+10       0.0197      0.07  Q         | V       |         |         |
12+15       0.0203      0.08  Q         | V       |         |         |
12+20       0.0209      0.09  Q         | V       |         |         |
12+25       0.0216      0.10  Q         |  V      |         |         |
12+30       0.0223      0.10  Q         |  V      |         |         |
12+35       0.0231      0.13  Q         |   V     |         |         |
12+40       0.0241      0.14  Q         |   V     |         |         |
12+45       0.0251      0.14  Q         |    V    |         |         |
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12+50       0.0262      0.16  Q         |     V   |         |         |
12+55       0.0273      0.17  Q         |     V   |         |         |
13+ 0       0.0285      0.17  Q         |      V  |         |         |
13+ 5       0.0301      0.23  Q         |       V |         |         |
13+10       0.0319      0.26  |Q        |        V|         |         |
13+15       0.0338      0.27  |Q        |         V         |         |
13+20       0.0356      0.27  |Q        |         |V        |         |
13+25       0.0375      0.27  |Q        |         |  V      |         |
13+30       0.0393      0.27  |Q        |         |   V     |         |
13+35       0.0402      0.13  Q         |         |   V     |         |
13+40       0.0407      0.07  Q         |         |    V    |         |
13+45       0.0412      0.07  Q         |         |    V    |         |
13+50       0.0417      0.07  Q         |         |    V    |         |
13+55       0.0423      0.08  Q         |         |    V    |         |
14+ 0       0.0428      0.08  Q         |         |     V   |         |
14+ 5       0.0437      0.13  Q         |         |     V   |         |
14+10       0.0448      0.16  Q         |         |      V  |         |
14+15       0.0459      0.16  Q         |         |       V |         |
14+20       0.0469      0.15  Q         |         |       V |         |
14+25       0.0479      0.14  Q         |         |        V|         |
14+30       0.0489      0.14  Q         |         |         V         |
14+35       0.0499      0.15  Q         |         |         V         |
14+40       0.0509      0.15  Q         |         |         |V        |
14+45       0.0519      0.15  Q         |         |         |V        |
14+50       0.0529      0.14  Q         |         |         | V       |
14+55       0.0538      0.13  Q         |         |         |  V      |
15+ 0       0.0547      0.14  Q         |         |         |  V      |
15+ 5       0.0556      0.12  Q         |         |         |   V     |
15+10       0.0564      0.12  Q         |         |         |   V     |
15+15       0.0573      0.12  Q         |         |         |    V    |
15+20       0.0581      0.11  Q         |         |         |    V    |
15+25       0.0588      0.11  Q         |         |         |     V   |
15+30       0.0595      0.11  Q         |         |         |     V   |
15+35       0.0600      0.06  Q         |         |         |     V   |
15+40       0.0602      0.04  Q         |         |         |     V   |
15+45       0.0605      0.04  Q         |         |         |      V  |
15+50       0.0608      0.04  Q         |         |         |      V  |
15+55       0.0611      0.04  Q         |         |         |      V  |
16+ 0       0.0614      0.04  Q         |         |         |      V  |
16+ 5       0.0615      0.02  Q         |         |         |      V  |
16+10       0.0616      0.01  Q         |         |         |      V  |
16+15       0.0616      0.01  Q         |         |         |      V  |
16+20       0.0617      0.01  Q         |         |         |      V  |
16+25       0.0617      0.01  Q         |         |         |      V  |
16+30       0.0618      0.01  Q         |         |         |      V  |
16+35       0.0618      0.01  Q         |         |         |      V  |
16+40       0.0618      0.01  Q         |         |         |      V  |
16+45       0.0619      0.01  Q         |         |         |      V  |
16+50       0.0619      0.01  Q         |         |         |       V |
16+55       0.0620      0.01  Q         |         |         |       V |
17+ 0       0.0620      0.01  Q         |         |         |       V |
17+ 5       0.0621      0.01  Q         |         |         |       V |
17+10       0.0621      0.01  Q         |         |         |       V |
17+15       0.0622      0.01  Q         |         |         |       V |
17+20       0.0622      0.01  Q         |         |         |       V |
17+25       0.0623      0.01  Q         |         |         |       V |
17+30       0.0624      0.01  Q         |         |         |       V |
17+35       0.0624      0.01  Q         |         |         |       V |
17+40       0.0625      0.01  Q         |         |         |       V |
17+45       0.0626      0.01  Q         |         |         |       V |
17+50       0.0626      0.01  Q         |         |         |       V |
17+55       0.0627      0.01  Q         |         |         |       V |
18+ 0       0.0627      0.01  Q         |         |         |       V |
18+ 5       0.0628      0.01  Q         |         |         |       V |
18+10       0.0628      0.01  Q         |         |         |       V |
18+15       0.0629      0.01  Q         |         |         |       V |
18+20       0.0629      0.01  Q         |         |         |       V |
18+25       0.0630      0.01  Q         |         |         |       V |
18+30       0.0630      0.01  Q         |         |         |       V |
18+35       0.0631      0.01  Q         |         |         |       V |
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  18+40       0.0631      0.01  Q         |         |         |       V |
  18+45       0.0631      0.01  Q         |         |         |       V |
  18+50       0.0632      0.00  Q         |         |         |       V |
  18+55       0.0632      0.00  Q         |         |         |       V |
  19+ 0       0.0632      0.00  Q         |         |         |       V |
  19+ 5       0.0633      0.01  Q         |         |         |       V |
  19+10       0.0633      0.01  Q         |         |         |       V |
  19+15       0.0633      0.01  Q         |         |         |       V |
  19+20       0.0634      0.01  Q         |         |         |       V |
  19+25       0.0634      0.01  Q         |         |         |       V |
  19+30       0.0635      0.01  Q         |         |         |       V |
  19+35       0.0635      0.01  Q         |         |         |        V|
  19+40       0.0636      0.01  Q         |         |         |        V|
  19+45       0.0636      0.01  Q         |         |         |        V|
  19+50       0.0636      0.00  Q         |         |         |        V|
  19+55       0.0637      0.00  Q         |         |         |        V|
  20+ 0       0.0637      0.00  Q         |         |         |        V|
  20+ 5       0.0637      0.01  Q         |         |         |        V|
  20+10       0.0638      0.01  Q         |         |         |        V|
  20+15       0.0638      0.01  Q         |         |         |        V|
  20+20       0.0638      0.01  Q         |         |         |        V|
  20+25       0.0639      0.01  Q         |         |         |        V|
  20+30       0.0639      0.01  Q         |         |         |        V|
  20+35       0.0640      0.01  Q         |         |         |        V|
  20+40       0.0640      0.01  Q         |         |         |        V|
  20+45       0.0640      0.01  Q         |         |         |        V|
  20+50       0.0641      0.00  Q         |         |         |        V|
  20+55       0.0641      0.00  Q         |         |         |        V|
  21+ 0       0.0641      0.00  Q         |         |         |        V|
  21+ 5       0.0641      0.01  Q         |         |         |        V|
  21+10       0.0642      0.01  Q         |         |         |        V|
  21+15       0.0642      0.01  Q         |         |         |        V|
  21+20       0.0642      0.00  Q         |         |         |        V|
  21+25       0.0643      0.00  Q         |         |         |        V|
  21+30       0.0643      0.00  Q         |         |         |        V|
  21+35       0.0643      0.01  Q         |         |         |        V|
  21+40       0.0644      0.01  Q         |         |         |        V|
  21+45       0.0644      0.01  Q         |         |         |        V|
  21+50       0.0644      0.00  Q         |         |         |        V|
  21+55       0.0645      0.00  Q         |         |         |        V|
  22+ 0       0.0645      0.00  Q         |         |         |        V|
  22+ 5       0.0645      0.01  Q         |         |         |        V|
  22+10       0.0646      0.01  Q         |         |         |        V|
  22+15       0.0646      0.01  Q         |         |         |        V|
  22+20       0.0646      0.00  Q         |         |         |        V|
  22+25       0.0647      0.00  Q         |         |         |        V|
  22+30       0.0647      0.00  Q         |         |         |        V|
  22+35       0.0647      0.00  Q         |         |         |        V|
  22+40       0.0647      0.00  Q         |         |         |        V|
  22+45       0.0648      0.00  Q         |         |         |        V|
  22+50       0.0648      0.00  Q         |         |         |        V|
  22+55       0.0648      0.00  Q         |         |         |        V|
  23+ 0       0.0648      0.00  Q         |         |         |        V|
  23+ 5       0.0649      0.00  Q         |         |         |        V|
  23+10       0.0649      0.00  Q         |         |         |        V|
  23+15       0.0649      0.00  Q         |         |         |        V|
  23+20       0.0649      0.00  Q         |         |         |        V|
  23+25       0.0650      0.00  Q         |         |         |        V|
  23+30       0.0650      0.00  Q         |         |         |        V|
  23+35       0.0650      0.00  Q         |         |         |        V|
  23+40       0.0650      0.00  Q         |         |         |        V|
  23+45       0.0651      0.00  Q         |         |         |        V|
  23+50       0.0651      0.00  Q         |         |         |        V|
  23+55       0.0651      0.00  Q         |         |         |        V|
  24+ 0       0.0651      0.00  Q         |         |         |        V|
  24+ 5       0.0651      0.00  Q         |         |         |        V|
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       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  02/10/13 File: TR36519ae2410.out


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----------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



--------------------------------------------------------------------
TRACT 36519
AREA A - EXISTING CONDITION
24 HOUR, 10 YEAR STORM

-------------------------------------------------------------------
Drainage Area =       3.50(Ac.)  =      0.005 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       3.50(Ac.)  =      0.005 Sq. Mi.
Length along longest watercourse =     624.00(Ft.)
Length along longest watercourse measured to centroid =     387.00(Ft.)
Length along longest watercourse =      0.118 Mi.
Length along longest watercourse measured to centroid =      0.073 Mi.
Difference in elevation =      10.50(Ft.)
Slope along watercourse =     88.8462 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.042 Hr.
Lag time =     2.53 Min.
25% of lag time =     0.63 Min.
40% of lag time =     1.01 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]
        3.50           2.70                  9.45

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        3.50           8.00                 28.00

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    2.700(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    4.880(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    4.880(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     3.500           78.00         0.100
```

Total Area Entered = 3.50(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
78.0	78.0	0.268	0.100	0.244	1.000	0.244
					Sum (F) =	0.244

Area averaged mean soil loss (F) (In/Hr) = 0.244
Minimum soil loss rate ((In/Hr)) = 0.122
(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
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	197.975	43.049	1.518
2	0.167	395.950	43.509	1.535
3	0.250	593.925	8.877	0.313
4	0.333	791.900	3.462	0.122
5	0.417	989.875	1.103	0.039
			Sum = 100.000	Sum= 3.527

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.039	0.432	0.035	0.00
2	0.17	0.07	0.039	0.430	0.035	0.00
3	0.25	0.07	0.039	0.428	0.035	0.00
4	0.33	0.10	0.059	0.427	0.053	0.01
5	0.42	0.10	0.059	0.425	0.053	0.01
6	0.50	0.10	0.059	0.423	0.053	0.01
7	0.58	0.10	0.059	0.422	0.053	0.01
8	0.67	0.10	0.059	0.420	0.053	0.01
9	0.75	0.10	0.059	0.418	0.053	0.01
10	0.83	0.13	0.078	0.417	0.070	0.01
11	0.92	0.13	0.078	0.415	0.070	0.01
12	1.00	0.13	0.078	0.414	0.070	0.01
13	1.08	0.10	0.059	0.412	0.053	0.01
14	1.17	0.10	0.059	0.410	0.053	0.01
15	1.25	0.10	0.059	0.409	0.053	0.01
16	1.33	0.10	0.059	0.407	0.053	0.01
17	1.42	0.10	0.059	0.405	0.053	0.01
18	1.50	0.10	0.059	0.404	0.053	0.01
19	1.58	0.10	0.059	0.402	0.053	0.01
20	1.67	0.10	0.059	0.401	0.053	0.01
21	1.75	0.10	0.059	0.399	0.053	0.01
22	1.83	0.13	0.078	0.397	0.070	0.01
23	1.92	0.13	0.078	0.396	0.070	0.01
24	2.00	0.13	0.078	0.394	0.070	0.01
25	2.08	0.13	0.078	0.393	0.070	0.01
26	2.17	0.13	0.078	0.391	0.070	0.01
27	2.25	0.13	0.078	0.389	0.070	0.01
28	2.33	0.13	0.078	0.388	0.070	0.01
29	2.42	0.13	0.078	0.386	0.070	0.01
30	2.50	0.13	0.078	0.385	0.070	0.01
31	2.58	0.17	0.098	0.383	0.088	0.01
32	2.67	0.17	0.098	0.381	0.088	0.01
33	2.75	0.17	0.098	0.380	0.088	0.01
34	2.83	0.17	0.098	0.378	0.088	0.01
35	2.92	0.17	0.098	0.377	0.088	0.01
36	3.00	0.17	0.098	0.375	0.088	0.01
37	3.08	0.17	0.098	0.374	0.088	0.01
38	3.17	0.17	0.098	0.372	0.088	0.01

39	3.25	0.17	0.098	0.371	0.088	0.01
40	3.33	0.17	0.098	0.369	0.088	0.01
41	3.42	0.17	0.098	0.367	0.088	0.01
42	3.50	0.17	0.098	0.366	0.088	0.01
43	3.58	0.17	0.098	0.364	0.088	0.01
44	3.67	0.17	0.098	0.363	0.088	0.01
45	3.75	0.17	0.098	0.361	0.088	0.01
46	3.83	0.20	0.117	0.360	0.105	0.01
47	3.92	0.20	0.117	0.358	0.105	0.01
48	4.00	0.20	0.117	0.357	0.105	0.01
49	4.08	0.20	0.117	0.355	0.105	0.01
50	4.17	0.20	0.117	0.354	0.105	0.01
51	4.25	0.20	0.117	0.352	0.105	0.01
52	4.33	0.23	0.137	0.351	0.123	0.01
53	4.42	0.23	0.137	0.349	0.123	0.01
54	4.50	0.23	0.137	0.348	0.123	0.01
55	4.58	0.23	0.137	0.346	0.123	0.01
56	4.67	0.23	0.137	0.345	0.123	0.01
57	4.75	0.23	0.137	0.343	0.123	0.01
58	4.83	0.27	0.156	0.342	0.141	0.02
59	4.92	0.27	0.156	0.340	0.141	0.02
60	5.00	0.27	0.156	0.339	0.141	0.02
61	5.08	0.20	0.117	0.337	0.105	0.01
62	5.17	0.20	0.117	0.336	0.105	0.01
63	5.25	0.20	0.117	0.334	0.105	0.01
64	5.33	0.23	0.137	0.333	0.123	0.01
65	5.42	0.23	0.137	0.332	0.123	0.01
66	5.50	0.23	0.137	0.330	0.123	0.01
67	5.58	0.27	0.156	0.329	0.141	0.02
68	5.67	0.27	0.156	0.327	0.141	0.02
69	5.75	0.27	0.156	0.326	0.141	0.02
70	5.83	0.27	0.156	0.324	0.141	0.02
71	5.92	0.27	0.156	0.323	0.141	0.02
72	6.00	0.27	0.156	0.321	0.141	0.02
73	6.08	0.30	0.176	0.320	0.158	0.02
74	6.17	0.30	0.176	0.319	0.158	0.02
75	6.25	0.30	0.176	0.317	0.158	0.02
76	6.33	0.30	0.176	0.316	0.158	0.02
77	6.42	0.30	0.176	0.314	0.158	0.02
78	6.50	0.30	0.176	0.313	0.158	0.02
79	6.58	0.33	0.195	0.312	0.176	0.02
80	6.67	0.33	0.195	0.310	0.176	0.02
81	6.75	0.33	0.195	0.309	0.176	0.02
82	6.83	0.33	0.195	0.307	0.176	0.02
83	6.92	0.33	0.195	0.306	0.176	0.02
84	7.00	0.33	0.195	0.305	0.176	0.02
85	7.08	0.33	0.195	0.303	0.176	0.02
86	7.17	0.33	0.195	0.302	0.176	0.02
87	7.25	0.33	0.195	0.300	0.176	0.02
88	7.33	0.37	0.215	0.299	0.193	0.02
89	7.42	0.37	0.215	0.298	0.193	0.02
90	7.50	0.37	0.215	0.296	0.193	0.02
91	7.58	0.40	0.234	0.295	0.211	0.02
92	7.67	0.40	0.234	0.294	0.211	0.02
93	7.75	0.40	0.234	0.292	0.211	0.02
94	7.83	0.43	0.254	0.291	0.228	0.03
95	7.92	0.43	0.254	0.290	0.228	0.03
96	8.00	0.43	0.254	0.288	0.228	0.03
97	8.08	0.50	0.293	0.287	---	0.01
98	8.17	0.50	0.293	0.286	---	0.01
99	8.25	0.50	0.293	0.284	---	0.01
100	8.33	0.50	0.293	0.283	---	0.01
101	8.42	0.50	0.293	0.282	---	0.01
102	8.50	0.50	0.293	0.280	---	0.01
103	8.58	0.53	0.312	0.279	---	0.03
104	8.67	0.53	0.312	0.278	---	0.03
105	8.75	0.53	0.312	0.276	---	0.04
106	8.83	0.57	0.332	0.275	---	0.06
107	8.92	0.57	0.332	0.274	---	0.06
108	9.00	0.57	0.332	0.272	---	0.06

109	9.08	0.63	0.371	0.271	---	0.10
110	9.17	0.63	0.371	0.270	---	0.10
111	9.25	0.63	0.371	0.269	---	0.10
112	9.33	0.67	0.390	0.267	---	0.12
113	9.42	0.67	0.390	0.266	---	0.12
114	9.50	0.67	0.390	0.265	---	0.13
115	9.58	0.70	0.410	0.263	---	0.15
116	9.67	0.70	0.410	0.262	---	0.15
117	9.75	0.70	0.410	0.261	---	0.15
118	9.83	0.73	0.429	0.260	---	0.17
119	9.92	0.73	0.429	0.258	---	0.17
120	10.00	0.73	0.429	0.257	---	0.17
121	10.08	0.50	0.293	0.256	---	0.04
122	10.17	0.50	0.293	0.255	---	0.04
123	10.25	0.50	0.293	0.253	---	0.04
124	10.33	0.50	0.293	0.252	---	0.04
125	10.42	0.50	0.293	0.251	---	0.04
126	10.50	0.50	0.293	0.250	---	0.04
127	10.58	0.67	0.390	0.249	---	0.14
128	10.67	0.67	0.390	0.247	---	0.14
129	10.75	0.67	0.390	0.246	---	0.14
130	10.83	0.67	0.390	0.245	---	0.15
131	10.92	0.67	0.390	0.244	---	0.15
132	11.00	0.67	0.390	0.243	---	0.15
133	11.08	0.63	0.371	0.241	---	0.13
134	11.17	0.63	0.371	0.240	---	0.13
135	11.25	0.63	0.371	0.239	---	0.13
136	11.33	0.63	0.371	0.238	---	0.13
137	11.42	0.63	0.371	0.237	---	0.13
138	11.50	0.63	0.371	0.235	---	0.14
139	11.58	0.57	0.332	0.234	---	0.10
140	11.67	0.57	0.332	0.233	---	0.10
141	11.75	0.57	0.332	0.232	---	0.10
142	11.83	0.60	0.351	0.231	---	0.12
143	11.92	0.60	0.351	0.230	---	0.12
144	12.00	0.60	0.351	0.228	---	0.12
145	12.08	0.83	0.488	0.227	---	0.26
146	12.17	0.83	0.488	0.226	---	0.26
147	12.25	0.83	0.488	0.225	---	0.26
148	12.33	0.87	0.508	0.224	---	0.28
149	12.42	0.87	0.508	0.223	---	0.28
150	12.50	0.87	0.508	0.222	---	0.29
151	12.58	0.93	0.547	0.221	---	0.33
152	12.67	0.93	0.547	0.219	---	0.33
153	12.75	0.93	0.547	0.218	---	0.33
154	12.83	0.97	0.566	0.217	---	0.35
155	12.92	0.97	0.566	0.216	---	0.35
156	13.00	0.97	0.566	0.215	---	0.35
157	13.08	1.13	0.664	0.214	---	0.45
158	13.17	1.13	0.664	0.213	---	0.45
159	13.25	1.13	0.664	0.212	---	0.45
160	13.33	1.13	0.664	0.211	---	0.45
161	13.42	1.13	0.664	0.210	---	0.45
162	13.50	1.13	0.664	0.209	---	0.46
163	13.58	0.77	0.449	0.208	---	0.24
164	13.67	0.77	0.449	0.206	---	0.24
165	13.75	0.77	0.449	0.205	---	0.24
166	13.83	0.77	0.449	0.204	---	0.24
167	13.92	0.77	0.449	0.203	---	0.25
168	14.00	0.77	0.449	0.202	---	0.25
169	14.08	0.90	0.527	0.201	---	0.33
170	14.17	0.90	0.527	0.200	---	0.33
171	14.25	0.90	0.527	0.199	---	0.33
172	14.33	0.87	0.508	0.198	---	0.31
173	14.42	0.87	0.508	0.197	---	0.31
174	14.50	0.87	0.508	0.196	---	0.31
175	14.58	0.87	0.508	0.195	---	0.31
176	14.67	0.87	0.508	0.194	---	0.31
177	14.75	0.87	0.508	0.193	---	0.31
178	14.83	0.83	0.488	0.192	---	0.30

179	14.92	0.83	0.488	0.191	---	0.30
180	15.00	0.83	0.488	0.190	---	0.30
181	15.08	0.80	0.469	0.189	---	0.28
182	15.17	0.80	0.469	0.188	---	0.28
183	15.25	0.80	0.469	0.187	---	0.28
184	15.33	0.77	0.449	0.186	---	0.26
185	15.42	0.77	0.449	0.185	---	0.26
186	15.50	0.77	0.449	0.184	---	0.26
187	15.58	0.63	0.371	0.183	---	0.19
188	15.67	0.63	0.371	0.183	---	0.19
189	15.75	0.63	0.371	0.182	---	0.19
190	15.83	0.63	0.371	0.181	---	0.19
191	15.92	0.63	0.371	0.180	---	0.19
192	16.00	0.63	0.371	0.179	---	0.19
193	16.08	0.13	0.078	0.178	0.070	0.01
194	16.17	0.13	0.078	0.177	0.070	0.01
195	16.25	0.13	0.078	0.176	0.070	0.01
196	16.33	0.13	0.078	0.175	0.070	0.01
197	16.42	0.13	0.078	0.174	0.070	0.01
198	16.50	0.13	0.078	0.173	0.070	0.01
199	16.58	0.10	0.059	0.173	0.053	0.01
200	16.67	0.10	0.059	0.172	0.053	0.01
201	16.75	0.10	0.059	0.171	0.053	0.01
202	16.83	0.10	0.059	0.170	0.053	0.01
203	16.92	0.10	0.059	0.169	0.053	0.01
204	17.00	0.10	0.059	0.168	0.053	0.01
205	17.08	0.17	0.098	0.167	0.088	0.01
206	17.17	0.17	0.098	0.167	0.088	0.01
207	17.25	0.17	0.098	0.166	0.088	0.01
208	17.33	0.17	0.098	0.165	0.088	0.01
209	17.42	0.17	0.098	0.164	0.088	0.01
210	17.50	0.17	0.098	0.163	0.088	0.01
211	17.58	0.17	0.098	0.162	0.088	0.01
212	17.67	0.17	0.098	0.162	0.088	0.01
213	17.75	0.17	0.098	0.161	0.088	0.01
214	17.83	0.13	0.078	0.160	0.070	0.01
215	17.92	0.13	0.078	0.159	0.070	0.01
216	18.00	0.13	0.078	0.158	0.070	0.01
217	18.08	0.13	0.078	0.158	0.070	0.01
218	18.17	0.13	0.078	0.157	0.070	0.01
219	18.25	0.13	0.078	0.156	0.070	0.01
220	18.33	0.13	0.078	0.155	0.070	0.01
221	18.42	0.13	0.078	0.155	0.070	0.01
222	18.50	0.13	0.078	0.154	0.070	0.01
223	18.58	0.10	0.059	0.153	0.053	0.01
224	18.67	0.10	0.059	0.152	0.053	0.01
225	18.75	0.10	0.059	0.152	0.053	0.01
226	18.83	0.07	0.039	0.151	0.035	0.00
227	18.92	0.07	0.039	0.150	0.035	0.00
228	19.00	0.07	0.039	0.149	0.035	0.00
229	19.08	0.10	0.059	0.149	0.053	0.01
230	19.17	0.10	0.059	0.148	0.053	0.01
231	19.25	0.10	0.059	0.147	0.053	0.01
232	19.33	0.13	0.078	0.147	0.070	0.01
233	19.42	0.13	0.078	0.146	0.070	0.01
234	19.50	0.13	0.078	0.145	0.070	0.01
235	19.58	0.10	0.059	0.145	0.053	0.01
236	19.67	0.10	0.059	0.144	0.053	0.01
237	19.75	0.10	0.059	0.143	0.053	0.01
238	19.83	0.07	0.039	0.143	0.035	0.00
239	19.92	0.07	0.039	0.142	0.035	0.00
240	20.00	0.07	0.039	0.141	0.035	0.00
241	20.08	0.10	0.059	0.141	0.053	0.01
242	20.17	0.10	0.059	0.140	0.053	0.01
243	20.25	0.10	0.059	0.140	0.053	0.01
244	20.33	0.10	0.059	0.139	0.053	0.01
245	20.42	0.10	0.059	0.138	0.053	0.01
246	20.50	0.10	0.059	0.138	0.053	0.01
247	20.58	0.10	0.059	0.137	0.053	0.01
248	20.67	0.10	0.059	0.137	0.053	0.01

249	20.75	0.10	0.059	0.136	0.053	0.01
250	20.83	0.07	0.039	0.135	0.035	0.00
251	20.92	0.07	0.039	0.135	0.035	0.00
252	21.00	0.07	0.039	0.134	0.035	0.00
253	21.08	0.10	0.059	0.134	0.053	0.01
254	21.17	0.10	0.059	0.133	0.053	0.01
255	21.25	0.10	0.059	0.133	0.053	0.01
256	21.33	0.07	0.039	0.132	0.035	0.00
257	21.42	0.07	0.039	0.132	0.035	0.00
258	21.50	0.07	0.039	0.131	0.035	0.00
259	21.58	0.10	0.059	0.131	0.053	0.01
260	21.67	0.10	0.059	0.130	0.053	0.01
261	21.75	0.10	0.059	0.130	0.053	0.01
262	21.83	0.07	0.039	0.129	0.035	0.00
263	21.92	0.07	0.039	0.129	0.035	0.00
264	22.00	0.07	0.039	0.129	0.035	0.00
265	22.08	0.10	0.059	0.128	0.053	0.01
266	22.17	0.10	0.059	0.128	0.053	0.01
267	22.25	0.10	0.059	0.127	0.053	0.01
268	22.33	0.07	0.039	0.127	0.035	0.00
269	22.42	0.07	0.039	0.127	0.035	0.00
270	22.50	0.07	0.039	0.126	0.035	0.00
271	22.58	0.07	0.039	0.126	0.035	0.00
272	22.67	0.07	0.039	0.125	0.035	0.00
273	22.75	0.07	0.039	0.125	0.035	0.00
274	22.83	0.07	0.039	0.125	0.035	0.00
275	22.92	0.07	0.039	0.124	0.035	0.00
276	23.00	0.07	0.039	0.124	0.035	0.00
277	23.08	0.07	0.039	0.124	0.035	0.00
278	23.17	0.07	0.039	0.124	0.035	0.00
279	23.25	0.07	0.039	0.123	0.035	0.00
280	23.33	0.07	0.039	0.123	0.035	0.00
281	23.42	0.07	0.039	0.123	0.035	0.00
282	23.50	0.07	0.039	0.123	0.035	0.00
283	23.58	0.07	0.039	0.122	0.035	0.00
284	23.67	0.07	0.039	0.122	0.035	0.00
285	23.75	0.07	0.039	0.122	0.035	0.00
286	23.83	0.07	0.039	0.122	0.035	0.00
287	23.92	0.07	0.039	0.122	0.035	0.00
288	24.00	0.07	0.039	0.122	0.035	0.00
Sum =		100.0			Sum =	20.7

```
    Flood volume = Effective rainfall      1.72(In)
     times area       3.5(Ac.)/[(In)/(Ft.)] =       0.5(Ac.Ft)
    Total soil loss =      3.16(In)
    Total soil loss =     0.921(Ac.Ft)
    Total rainfall =      4.88(In)
    Flood volume =       21875.1 Cubic Feet
    Total soil loss =       40130.7 Cubic Feet
    ---------------------------------------------------------------------
     Peak flow rate of this hydrograph =      1.603(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        2.5       5.0       7.5      10.0
 ---------------------------------------------------------------------
   0+ 5       0.0000      0.01  Q         |         |         |         |
   0+10       0.0001      0.01  Q         |         |         |         |
   0+15       0.0002      0.01  Q         |         |         |         |
   0+20       0.0003      0.02  Q         |         |         |         |
   0+25       0.0005      0.02  Q         |         |         |         |
   0+30       0.0006      0.02  Q         |         |         |         |
   0+35       0.0007      0.02  Q         |         |         |         |
   0+40       0.0009      0.02  Q         |         |         |         |
   0+45       0.0010      0.02  Q         |         |         |         |
   0+50       0.0012      0.02  Q         |         |         |         |
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0+55	0.0014	0.03	Q	|	|	|	|
1+ 0	0.0016	0.03	Q	|	|	|	|
1+ 5	0.0017	0.02	Q	|	|	|	|
1+10	0.0019	0.02	Q	|	|	|	|
1+15	0.0020	0.02	Q	|	|	|	|
1+20	0.0022	0.02	Q	|	|	|	|
1+25	0.0023	0.02	Q	|	|	|	|
1+30	0.0025	0.02	Q	|	|	|	|
1+35	0.0026	0.02	Q	|	|	|	|
1+40	0.0027	0.02	Q	|	|	|	|
1+45	0.0029	0.02	Q	|	|	|	|
1+50	0.0030	0.02	Q	|	|	|	|
1+55	0.0032	0.03	Q	|	|	|	|
2+ 0	0.0034	0.03	Q	|	|	|	|
2+ 5	0.0036	0.03	Q	|	|	|	|
2+10	0.0038	0.03	Q	|	|	|	|
2+15	0.0040	0.03	Q	|	|	|	|
2+20	0.0042	0.03	Q	|	|	|	|
2+25	0.0044	0.03	Q	|	|	|	|
2+30	0.0046	0.03	Q	|	|	|	|
2+35	0.0048	0.03	Q	|	|	|	|
2+40	0.0050	0.03	Q	|	|	|	|
2+45	0.0052	0.03	Q	|	|	|	|
2+50	0.0055	0.03	Q	|	|	|	|
2+55	0.0057	0.03	Q	|	|	|	|
3+ 0	0.0059	0.03	Q	|	|	|	|
3+ 5	0.0062	0.03	Q	|	|	|	|
3+10	0.0064	0.03	Q	|	|	|	|
3+15	0.0067	0.03	Q	|	|	|	|
3+20	0.0069	0.03	Q	|	|	|	|
3+25	0.0071	0.03	Q	|	|	|	|
3+30	0.0074	0.03	Q	|	|	|	|
3+35	0.0076	0.03	Q	|	|	|	|
3+40	0.0078	0.03	Q	|	|	|	|
3+45	0.0081	0.03	Q	|	|	|	|
3+50	0.0083	0.04	Q	|	|	|	|
3+55	0.0086	0.04	Q	|	|	|	|
4+ 0	0.0089	0.04	Q	|	|	|	|
4+ 5	0.0092	0.04	Q	|	|	|	|
4+10	0.0095	0.04	Q	|	|	|	|
4+15	0.0097	0.04	Q	|	|	|	|
4+20	0.0101	0.04	Q	|	|	|	|
4+25	0.0104	0.05	Q	|	|	|	|
4+30	0.0107	0.05	Q	|	|	|	|
4+35	0.0110	0.05	Q	|	|	|	|
4+40	0.0114	0.05	Q	|	|	|	|
4+45	0.0117	0.05	Q	|	|	|	|
4+50	0.0121	0.05	Q	|	|	|	|
4+55	0.0124	0.05	Q	|	|	|	|
5+ 0	0.0128	0.05	QV	|	|	|	|
5+ 5	0.0131	0.05	QV	|	|	|	|
5+10	0.0134	0.04	QV	|	|	|	|
5+15	0.0137	0.04	QV	|	|	|	|
5+20	0.0140	0.04	QV	|	|	|	|
5+25	0.0144	0.05	QV	|	|	|	|
5+30	0.0147	0.05	QV	|	|	|	|
5+35	0.0150	0.05	QV	|	|	|	|
5+40	0.0154	0.05	QV	|	|	|	|
5+45	0.0158	0.05	QV	|	|	|	|
5+50	0.0162	0.06	QV	|	|	|	|
5+55	0.0166	0.06	QV	|	|	|	|
6+ 0	0.0169	0.06	QV	|	|	|	|
6+ 5	0.0173	0.06	QV	|	|	|	|
6+10	0.0178	0.06	QV	|	|	|	|
6+15	0.0182	0.06	QV	|	|	|	|
6+20	0.0186	0.06	QV	|	|	|	|
6+25	0.0190	0.06	QV	|	|	|	|
6+30	0.0195	0.06	QV	|	|	|	|
6+35	0.0199	0.06	QV	|	|	|	|
6+40	0.0204	0.07	QV	|	|	|	|

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 6+45       0.0208      0.07  QV        |         |         |         |
 6+50       0.0213      0.07  QV        |         |         |         |
 6+55       0.0218      0.07  QV        |         |         |         |
 7+ 0       0.0223      0.07  QV        |         |         |         |
 7+ 5       0.0227      0.07  QV        |         |         |         |
 7+10       0.0232      0.07  QV        |         |         |         |
 7+15       0.0237      0.07  QV        |         |         |         |
 7+20       0.0242      0.07  QV        |         |         |         |
 7+25       0.0247      0.07  QV        |         |         |         |
 7+30       0.0252      0.08  Q V       |         |         |         |
 7+35       0.0258      0.08  Q V       |         |         |         |
 7+40       0.0263      0.08  Q V       |         |         |         |
 7+45       0.0269      0.08  Q V       |         |         |         |
 7+50       0.0275      0.09  Q V       |         |         |         |
 7+55       0.0281      0.09  Q V       |         |         |         |
 8+ 0       0.0287      0.09  Q V       |         |         |         |
 8+ 5       0.0291      0.06  Q V       |         |         |         |
 8+10       0.0293      0.03  Q V       |         |         |         |
 8+15       0.0296      0.03  Q V       |         |         |         |
 8+20       0.0298      0.03  Q V       |         |         |         |
 8+25       0.0300      0.04  Q V       |         |         |         |
 8+30       0.0303      0.04  Q V       |         |         |         |
 8+35       0.0308      0.08  Q V       |         |         |         |
 8+40       0.0316      0.11  Q V       |         |         |         |
 8+45       0.0324      0.12  Q V       |         |         |         |
 8+50       0.0335      0.16  Q V       |         |         |         |
 8+55       0.0348      0.19  Q V       |         |         |         |
 9+ 0       0.0362      0.20  Q V       |         |         |         |
 9+ 5       0.0381      0.27  |Q V      |         |         |         |
 9+10       0.0404      0.33  |Q V      |         |         |         |
 9+15       0.0428      0.35  |Q V      |         |         |         |
 9+20       0.0455      0.39  |Q V      |         |         |         |
 9+25       0.0484      0.43  |Q V      |         |         |         |
 9+30       0.0514      0.44  |Q  V     |         |         |         |
 9+35       0.0547      0.47  |Q  V     |         |         |         |
 9+40       0.0582      0.51  | Q V     |         |         |         |
 9+45       0.0618      0.52  | Q V     |         |         |         |
 9+50       0.0656      0.56  | Q  V    |         |         |         |
 9+55       0.0697      0.59  | Q  V    |         |         |         |
10+ 0       0.0738      0.60  | Q  V    |         |         |         |
10+ 5       0.0766      0.40  |Q    V   |         |         |         |
10+10       0.0779      0.20  Q     V   |         |         |         |
10+15       0.0790      0.16  Q     V   |         |         |         |
10+20       0.0800      0.15  Q     V   |         |         |         |
10+25       0.0810      0.14  Q     V   |         |         |         |
10+30       0.0821      0.15  Q     V   |         |         |         |
10+35       0.0841      0.30  |Q    V   |         |         |         |
10+40       0.0873      0.46  |Q    V   |         |         |         |
10+45       0.0906      0.49  |Q     V  |         |         |         |
10+50       0.0941      0.51  | Q    V  |         |         |         |
10+55       0.0977      0.51  | Q    V  |         |         |         |
11+ 0       0.1013      0.52  | Q     V |         |         |         |
11+ 5       0.1046      0.49  |Q      V |         |         |         |
11+10       0.1079      0.47  |Q      V |         |         |         |
11+15       0.1111      0.47  |Q      V |         |         |         |
11+20       0.1143      0.47  |Q       V|         |         |         |
11+25       0.1175      0.47  |Q       V|         |         |         |
11+30       0.1208      0.48  |Q       V|         |         |         |
11+35       0.1237      0.42  |Q       V|         |         |         |
11+40       0.1262      0.36  |Q        V         |         |         |
11+45       0.1287      0.36  |Q        V         |         |         |
11+50       0.1313      0.38  |Q        V         |         |         |
11+55       0.1342      0.42  |Q        V         |         |         |
12+ 0       0.1371      0.43  |Q        V         |         |         |
12+ 5       0.1416      0.64  | Q       |V        |         |         |
12+10       0.1475      0.86  |  Q      |V        |         |         |
12+15       0.1537      0.90  |  Q      | V       |         |         |
12+20       0.1602      0.95  |  Q      | V       |         |         |
12+25       0.1671      0.99  |  Q      |  V      |         |         |
12+30       0.1740      1.00  |   Q     |  V      |         |         |
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12+35       0.1813      1.07  |   Q     |   V     |         |         |
12+40       0.1891      1.13  |   Q     |    V    |         |         |
12+45       0.1971      1.15  |   Q     |    V    |         |         |
12+50       0.2052      1.19  |   Q     |     V   |         |         |
12+55       0.2137      1.22  |   Q     |      V  |         |         |
13+ 0       0.2222      1.23  |   Q     |      V  |         |         |
13+ 5       0.2317      1.39  |    Q    |       V |         |         |
13+10       0.2423      1.54  |     Q   |        V|         |         |
13+15       0.2532      1.58  |     Q   |         V         |         |
13+20       0.2641      1.59  |     Q   |         |V        |         |
13+25       0.2752      1.60  |     Q   |         |V        |         |
13+30       0.2862      1.60  |     Q   |         | V       |         |
13+35       0.2950      1.28  |    Q    |         |  V      |         |
13+40       0.3016      0.95  |  Q      |         |   V     |         |
13+45       0.3077      0.89  |  Q      |         |   V     |         |
13+50       0.3137      0.87  |  Q      |         |   V     |         |
13+55       0.3197      0.86  |  Q      |         |    V    |         |
14+ 0       0.3257      0.87  |  Q      |         |    V    |         |
14+ 5       0.3325      0.99  |  Q      |         |     V   |         |
14+10       0.3402      1.11  |   Q     |         |      V  |         |
14+15       0.3480      1.14  |   Q     |         |      V  |         |
14+20       0.3558      1.13  |   Q     |         |       V |         |
14+25       0.3634      1.10  |   Q     |         |       V |         |
14+30       0.3709      1.10  |   Q     |         |        V|         |
14+35       0.3785      1.10  |   Q     |         |         V         |
14+40       0.3861      1.10  |   Q     |         |         V         |
14+45       0.3937      1.11  |   Q     |         |         |V        |
14+50       0.4012      1.08  |   Q     |         |         |V        |
14+55       0.4084      1.05  |   Q     |         |         | V       |
15+ 0       0.4157      1.05  |   Q     |         |         |  V      |
15+ 5       0.4227      1.02  |   Q     |         |         |  V      |
15+10       0.4296      1.00  |  Q      |         |         |   V     |
15+15       0.4364      0.99  |  Q      |         |         |   V     |
15+20       0.4431      0.96  |  Q      |         |         |    V    |
15+25       0.4495      0.94  |  Q      |         |         |    V    |
15+30       0.4560      0.93  |  Q      |         |         |     V   |
15+35       0.4616      0.82  |  Q      |         |         |     V   |
15+40       0.4664      0.70  | Q       |         |         |      V  |
15+45       0.4711      0.68  | Q       |         |         |      V  |
15+50       0.4757      0.67  | Q       |         |         |      V  |
15+55       0.4803      0.67  | Q       |         |         |       V |
16+ 0       0.4850      0.68  | Q       |         |         |       V |
16+ 5       0.4877      0.40  |Q        |         |         |       V |
16+10       0.4885      0.11  Q         |         |         |       V |
16+15       0.4889      0.06  Q         |         |         |       V |
16+20       0.4891      0.03  Q         |         |         |       V |
16+25       0.4893      0.03  Q         |         |         |       V |
16+30       0.4895      0.03  Q         |         |         |       V |
16+35       0.4897      0.02  Q         |         |         |        V|
16+40       0.4898      0.02  Q         |         |         |        V|
16+45       0.4900      0.02  Q         |         |         |        V|
16+50       0.4901      0.02  Q         |         |         |        V|
16+55       0.4903      0.02  Q         |         |         |        V|
17+ 0       0.4904      0.02  Q         |         |         |        V|
17+ 5       0.4906      0.03  Q         |         |         |        V|
17+10       0.4908      0.03  Q         |         |         |        V|
17+15       0.4910      0.03  Q         |         |         |        V|
17+20       0.4913      0.03  Q         |         |         |        V|
17+25       0.4915      0.03  Q         |         |         |        V|
17+30       0.4918      0.03  Q         |         |         |        V|
17+35       0.4920      0.03  Q         |         |         |        V|
17+40       0.4922      0.03  Q         |         |         |        V|
17+45       0.4925      0.03  Q         |         |         |        V|
17+50       0.4927      0.03  Q         |         |         |        V|
17+55       0.4929      0.03  Q         |         |         |        V|
18+ 0       0.4931      0.03  Q         |         |         |        V|
18+ 5       0.4933      0.03  Q         |         |         |        V|
18+10       0.4935      0.03  Q         |         |         |        V|
18+15       0.4936      0.03  Q         |         |         |        V|
18+20       0.4938      0.03  Q         |         |         |        V|
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18+25       0.4940      0.03  Q         |         |         |        V|
18+30       0.4942      0.03  Q         |         |         |        V|
18+35       0.4944      0.02  Q         |         |         |        V|
18+40       0.4945      0.02  Q         |         |         |        V|
18+45       0.4947      0.02  Q         |         |         |        V|
18+50       0.4948      0.02  Q         |         |         |        V|
18+55       0.4949      0.01  Q         |         |         |        V|
19+ 0       0.4950      0.01  Q         |         |         |        V|
19+ 5       0.4951      0.02  Q         |         |         |        V|
19+10       0.4952      0.02  Q         |         |         |        V|
19+15       0.4954      0.02  Q         |         |         |        V|
19+20       0.4955      0.02  Q         |         |         |        V|
19+25       0.4957      0.03  Q         |         |         |        V|
19+30       0.4959      0.03  Q         |         |         |        V|
19+35       0.4961      0.02  Q         |         |         |        V|
19+40       0.4962      0.02  Q         |         |         |        V|
19+45       0.4964      0.02  Q         |         |         |        V|
19+50       0.4965      0.02  Q         |         |         |        V|
19+55       0.4966      0.01  Q         |         |         |        V|
20+ 0       0.4967      0.01  Q         |         |         |        V|
20+ 5       0.4968      0.02  Q         |         |         |        V|
20+10       0.4970      0.02  Q         |         |         |        V|
20+15       0.4971      0.02  Q         |         |         |        V|
20+20       0.4972      0.02  Q         |         |         |        V|
20+25       0.4974      0.02  Q         |         |         |        V|
20+30       0.4975      0.02  Q         |         |         |        V|
20+35       0.4977      0.02  Q         |         |         |        V|
20+40       0.4978      0.02  Q         |         |         |        V|
20+45       0.4979      0.02  Q         |         |         |        V|
20+50       0.4981      0.02  Q         |         |         |        V|
20+55       0.4982      0.01  Q         |         |         |        V|
21+ 0       0.4983      0.01  Q         |         |         |        V|
21+ 5       0.4984      0.02  Q         |         |         |        V|
21+10       0.4985      0.02  Q         |         |         |        V|
21+15       0.4987      0.02  Q         |         |         |        V|
21+20       0.4988      0.02  Q         |         |         |        V|
21+25       0.4989      0.01  Q         |         |         |        V|
21+30       0.4990      0.01  Q         |         |         |        V|
21+35       0.4991      0.02  Q         |         |         |        V|
21+40       0.4992      0.02  Q         |         |         |        V|
21+45       0.4994      0.02  Q         |         |         |        V|
21+50       0.4995      0.02  Q         |         |         |        V|
21+55       0.4996      0.01  Q         |         |         |        V|
22+ 0       0.4997      0.01  Q         |         |         |        V|
22+ 5       0.4998      0.02  Q         |         |         |        V|
22+10       0.4999      0.02  Q         |         |         |        V|
22+15       0.5001      0.02  Q         |         |         |        V|
22+20       0.5002      0.02  Q         |         |         |        V|
22+25       0.5003      0.01  Q         |         |         |        V|
22+30       0.5004      0.01  Q         |         |         |        V|
22+35       0.5005      0.01  Q         |         |         |        V|
22+40       0.5006      0.01  Q         |         |         |        V|
22+45       0.5007      0.01  Q         |         |         |        V|
22+50       0.5008      0.01  Q         |         |         |        V|
22+55       0.5009      0.01  Q         |         |         |        V|
23+ 0       0.5010      0.01  Q         |         |         |        V|
23+ 5       0.5011      0.01  Q         |         |         |        V|
23+10       0.5012      0.01  Q         |         |         |        V|
23+15       0.5013      0.01  Q         |         |         |        V|
23+20       0.5014      0.01  Q         |         |         |        V|
23+25       0.5014      0.01  Q         |         |         |        V|
23+30       0.5015      0.01  Q         |         |         |        V|
23+35       0.5016      0.01  Q         |         |         |        V|
23+40       0.5017      0.01  Q         |         |         |        V|
23+45       0.5018      0.01  Q         |         |         |        V|
23+50       0.5019      0.01  Q         |         |         |        V|
23+55       0.5020      0.01  Q         |         |         |        V|
24+ 0       0.5021      0.01  Q         |         |         |        V|
24+ 5       0.5022      0.01  Q         |         |         |        V|
24+10       0.5022      0.00  Q         |         |         |        V|
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   24+15       0.5022      0.00  Q         |         |         |        V|
   24+20       0.5022      0.00  Q         |         |         |        V|
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       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  02/10/13 File: tr36519eb2410.out


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----------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



--------------------------------------------------------------------
TR 36519
AREA B - EXISTINC CONDITION
24 HOUR, 10 YEAR STORM

-------------------------------------------------------------------
Drainage Area =       1.70(Ac.)  =      0.003 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       1.70(Ac.)  =      0.003 Sq. Mi.
Length along longest watercourse =     330.00(Ft.)
Length along longest watercourse measured to centroid =     103.00(Ft.)
Length along longest watercourse =      0.063 Mi.
Length along longest watercourse measured to centroid =      0.020 Mi.
Difference in elevation =      13.50(Ft.)
Slope along watercourse =    216.0000 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.017 Hr.
Lag time =     1.01 Min.
25% of lag time =     0.25 Min.
40% of lag time =     0.41 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]
        1.70           2.70                  4.59

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        1.70           8.00                 13.60

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    2.700(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    4.880(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    4.880(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     1.700           78.00         0.100
```

Total Area Entered = 1.70(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
78.0	78.0	0.268	0.100	0.244	1.000	0.244
					Sum (F) =	0.244

Area averaged mean soil loss (F) (In/Hr) = 0.244
Minimum soil loss rate ((In/Hr)) = 0.122
(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
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	493.744	70.609	1.210
2	0.167	987.489	29.391	0.504
		Sum = 100.000	Sum=	1.713

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.039	0.432	0.035	0.00
2	0.17	0.07	0.039	0.430	0.035	0.00
3	0.25	0.07	0.039	0.428	0.035	0.00
4	0.33	0.10	0.059	0.427	0.053	0.01
5	0.42	0.10	0.059	0.425	0.053	0.01
6	0.50	0.10	0.059	0.423	0.053	0.01
7	0.58	0.10	0.059	0.422	0.053	0.01
8	0.67	0.10	0.059	0.420	0.053	0.01
9	0.75	0.10	0.059	0.418	0.053	0.01
10	0.83	0.13	0.078	0.417	0.070	0.01
11	0.92	0.13	0.078	0.415	0.070	0.01
12	1.00	0.13	0.078	0.414	0.070	0.01
13	1.08	0.10	0.059	0.412	0.053	0.01
14	1.17	0.10	0.059	0.410	0.053	0.01
15	1.25	0.10	0.059	0.409	0.053	0.01
16	1.33	0.10	0.059	0.407	0.053	0.01
17	1.42	0.10	0.059	0.405	0.053	0.01
18	1.50	0.10	0.059	0.404	0.053	0.01
19	1.58	0.10	0.059	0.402	0.053	0.01
20	1.67	0.10	0.059	0.401	0.053	0.01
21	1.75	0.10	0.059	0.399	0.053	0.01
22	1.83	0.13	0.078	0.397	0.070	0.01
23	1.92	0.13	0.078	0.396	0.070	0.01
24	2.00	0.13	0.078	0.394	0.070	0.01
25	2.08	0.13	0.078	0.393	0.070	0.01
26	2.17	0.13	0.078	0.391	0.070	0.01
27	2.25	0.13	0.078	0.389	0.070	0.01
28	2.33	0.13	0.078	0.388	0.070	0.01
29	2.42	0.13	0.078	0.386	0.070	0.01
30	2.50	0.13	0.078	0.385	0.070	0.01
31	2.58	0.17	0.098	0.383	0.088	0.01
32	2.67	0.17	0.098	0.381	0.088	0.01
33	2.75	0.17	0.098	0.380	0.088	0.01
34	2.83	0.17	0.098	0.378	0.088	0.01
35	2.92	0.17	0.098	0.377	0.088	0.01
36	3.00	0.17	0.098	0.375	0.088	0.01
37	3.08	0.17	0.098	0.374	0.088	0.01
38	3.17	0.17	0.098	0.372	0.088	0.01
39	3.25	0.17	0.098	0.371	0.088	0.01
40	3.33	0.17	0.098	0.369	0.088	0.01
41	3.42	0.17	0.098	0.367	0.088	0.01

42	3.50	0.17	0.098	0.366	0.088	0.01
43	3.58	0.17	0.098	0.364	0.088	0.01
44	3.67	0.17	0.098	0.363	0.088	0.01
45	3.75	0.17	0.098	0.361	0.088	0.01
46	3.83	0.20	0.117	0.360	0.105	0.01
47	3.92	0.20	0.117	0.358	0.105	0.01
48	4.00	0.20	0.117	0.357	0.105	0.01
49	4.08	0.20	0.117	0.355	0.105	0.01
50	4.17	0.20	0.117	0.354	0.105	0.01
51	4.25	0.20	0.117	0.352	0.105	0.01
52	4.33	0.23	0.137	0.351	0.123	0.01
53	4.42	0.23	0.137	0.349	0.123	0.01
54	4.50	0.23	0.137	0.348	0.123	0.01
55	4.58	0.23	0.137	0.346	0.123	0.01
56	4.67	0.23	0.137	0.345	0.123	0.01
57	4.75	0.23	0.137	0.343	0.123	0.01
58	4.83	0.27	0.156	0.342	0.141	0.02
59	4.92	0.27	0.156	0.340	0.141	0.02
60	5.00	0.27	0.156	0.339	0.141	0.02
61	5.08	0.20	0.117	0.337	0.105	0.01
62	5.17	0.20	0.117	0.336	0.105	0.01
63	5.25	0.20	0.117	0.334	0.105	0.01
64	5.33	0.23	0.137	0.333	0.123	0.01
65	5.42	0.23	0.137	0.332	0.123	0.01
66	5.50	0.23	0.137	0.330	0.123	0.01
67	5.58	0.27	0.156	0.329	0.141	0.02
68	5.67	0.27	0.156	0.327	0.141	0.02
69	5.75	0.27	0.156	0.326	0.141	0.02
70	5.83	0.27	0.156	0.324	0.141	0.02
71	5.92	0.27	0.156	0.323	0.141	0.02
72	6.00	0.27	0.156	0.321	0.141	0.02
73	6.08	0.30	0.176	0.320	0.158	0.02
74	6.17	0.30	0.176	0.319	0.158	0.02
75	6.25	0.30	0.176	0.317	0.158	0.02
76	6.33	0.30	0.176	0.316	0.158	0.02
77	6.42	0.30	0.176	0.314	0.158	0.02
78	6.50	0.30	0.176	0.313	0.158	0.02
79	6.58	0.33	0.195	0.312	0.176	0.02
80	6.67	0.33	0.195	0.310	0.176	0.02
81	6.75	0.33	0.195	0.309	0.176	0.02
82	6.83	0.33	0.195	0.307	0.176	0.02
83	6.92	0.33	0.195	0.306	0.176	0.02
84	7.00	0.33	0.195	0.305	0.176	0.02
85	7.08	0.33	0.195	0.303	0.176	0.02
86	7.17	0.33	0.195	0.302	0.176	0.02
87	7.25	0.33	0.195	0.300	0.176	0.02
88	7.33	0.37	0.215	0.299	0.193	0.02
89	7.42	0.37	0.215	0.298	0.193	0.02
90	7.50	0.37	0.215	0.296	0.193	0.02
91	7.58	0.40	0.234	0.295	0.211	0.02
92	7.67	0.40	0.234	0.294	0.211	0.02
93	7.75	0.40	0.234	0.292	0.211	0.02
94	7.83	0.43	0.254	0.291	0.228	0.03
95	7.92	0.43	0.254	0.290	0.228	0.03
96	8.00	0.43	0.254	0.288	0.228	0.03
97	8.08	0.50	0.293	0.287	---	0.01
98	8.17	0.50	0.293	0.286	---	0.01
99	8.25	0.50	0.293	0.284	---	0.01
100	8.33	0.50	0.293	0.283	---	0.01
101	8.42	0.50	0.293	0.282	---	0.01
102	8.50	0.50	0.293	0.280	---	0.01
103	8.58	0.53	0.312	0.279	---	0.03
104	8.67	0.53	0.312	0.278	---	0.03
105	8.75	0.53	0.312	0.276	---	0.04
106	8.83	0.57	0.332	0.275	---	0.06
107	8.92	0.57	0.332	0.274	---	0.06
108	9.00	0.57	0.332	0.272	---	0.06
109	9.08	0.63	0.371	0.271	---	0.10
110	9.17	0.63	0.371	0.270	---	0.10
111	9.25	0.63	0.371	0.269	---	0.10

112	9.33	0.67	0.390	0.267	---	0.12
113	9.42	0.67	0.390	0.266	---	0.12
114	9.50	0.67	0.390	0.265	---	0.13
115	9.58	0.70	0.410	0.263	---	0.15
116	9.67	0.70	0.410	0.262	---	0.15
117	9.75	0.70	0.410	0.261	---	0.15
118	9.83	0.73	0.429	0.260	---	0.17
119	9.92	0.73	0.429	0.258	---	0.17
120	10.00	0.73	0.429	0.257	---	0.17
121	10.08	0.50	0.293	0.256	---	0.04
122	10.17	0.50	0.293	0.255	---	0.04
123	10.25	0.50	0.293	0.253	---	0.04
124	10.33	0.50	0.293	0.252	---	0.04
125	10.42	0.50	0.293	0.251	---	0.04
126	10.50	0.50	0.293	0.250	---	0.04
127	10.58	0.67	0.390	0.249	---	0.14
128	10.67	0.67	0.390	0.247	---	0.14
129	10.75	0.67	0.390	0.246	---	0.14
130	10.83	0.67	0.390	0.245	---	0.15
131	10.92	0.67	0.390	0.244	---	0.15
132	11.00	0.67	0.390	0.243	---	0.15
133	11.08	0.63	0.371	0.241	---	0.13
134	11.17	0.63	0.371	0.240	---	0.13
135	11.25	0.63	0.371	0.239	---	0.13
136	11.33	0.63	0.371	0.238	---	0.13
137	11.42	0.63	0.371	0.237	---	0.13
138	11.50	0.63	0.371	0.235	---	0.14
139	11.58	0.57	0.332	0.234	---	0.10
140	11.67	0.57	0.332	0.233	---	0.10
141	11.75	0.57	0.332	0.232	---	0.10
142	11.83	0.60	0.351	0.231	---	0.12
143	11.92	0.60	0.351	0.230	---	0.12
144	12.00	0.60	0.351	0.228	---	0.12
145	12.08	0.83	0.488	0.227	---	0.26
146	12.17	0.83	0.488	0.226	---	0.26
147	12.25	0.83	0.488	0.225	---	0.26
148	12.33	0.87	0.508	0.224	---	0.28
149	12.42	0.87	0.508	0.223	---	0.28
150	12.50	0.87	0.508	0.222	---	0.29
151	12.58	0.93	0.547	0.221	---	0.33
152	12.67	0.93	0.547	0.219	---	0.33
153	12.75	0.93	0.547	0.218	---	0.33
154	12.83	0.97	0.566	0.217	---	0.35
155	12.92	0.97	0.566	0.216	---	0.35
156	13.00	0.97	0.566	0.215	---	0.35
157	13.08	1.13	0.664	0.214	---	0.45
158	13.17	1.13	0.664	0.213	---	0.45
159	13.25	1.13	0.664	0.212	---	0.45
160	13.33	1.13	0.664	0.211	---	0.45
161	13.42	1.13	0.664	0.210	---	0.45
162	13.50	1.13	0.664	0.209	---	0.46
163	13.58	0.77	0.449	0.208	---	0.24
164	13.67	0.77	0.449	0.206	---	0.24
165	13.75	0.77	0.449	0.205	---	0.24
166	13.83	0.77	0.449	0.204	---	0.24
167	13.92	0.77	0.449	0.203	---	0.25
168	14.00	0.77	0.449	0.202	---	0.25
169	14.08	0.90	0.527	0.201	---	0.33
170	14.17	0.90	0.527	0.200	---	0.33
171	14.25	0.90	0.527	0.199	---	0.33
172	14.33	0.87	0.508	0.198	---	0.31
173	14.42	0.87	0.508	0.197	---	0.31
174	14.50	0.87	0.508	0.196	---	0.31
175	14.58	0.87	0.508	0.195	---	0.31
176	14.67	0.87	0.508	0.194	---	0.31
177	14.75	0.87	0.508	0.193	---	0.31
178	14.83	0.83	0.488	0.192	---	0.30
179	14.92	0.83	0.488	0.191	---	0.30
180	15.00	0.83	0.488	0.190	---	0.30
181	15.08	0.80	0.469	0.189	---	0.28

182	15.17	0.80	0.469	0.188	---	0.28
183	15.25	0.80	0.469	0.187	---	0.28
184	15.33	0.77	0.449	0.186	---	0.26
185	15.42	0.77	0.449	0.185	---	0.26
186	15.50	0.77	0.449	0.184	---	0.26
187	15.58	0.63	0.371	0.183	---	0.19
188	15.67	0.63	0.371	0.183	---	0.19
189	15.75	0.63	0.371	0.182	---	0.19
190	15.83	0.63	0.371	0.181	---	0.19
191	15.92	0.63	0.371	0.180	---	0.19
192	16.00	0.63	0.371	0.179	---	0.19
193	16.08	0.13	0.078	0.178	0.070	0.01
194	16.17	0.13	0.078	0.177	0.070	0.01
195	16.25	0.13	0.078	0.176	0.070	0.01
196	16.33	0.13	0.078	0.175	0.070	0.01
197	16.42	0.13	0.078	0.174	0.070	0.01
198	16.50	0.13	0.078	0.173	0.070	0.01
199	16.58	0.10	0.059	0.173	0.053	0.01
200	16.67	0.10	0.059	0.172	0.053	0.01
201	16.75	0.10	0.059	0.171	0.053	0.01
202	16.83	0.10	0.059	0.170	0.053	0.01
203	16.92	0.10	0.059	0.169	0.053	0.01
204	17.00	0.10	0.059	0.168	0.053	0.01
205	17.08	0.17	0.098	0.167	0.088	0.01
206	17.17	0.17	0.098	0.167	0.088	0.01
207	17.25	0.17	0.098	0.166	0.088	0.01
208	17.33	0.17	0.098	0.165	0.088	0.01
209	17.42	0.17	0.098	0.164	0.088	0.01
210	17.50	0.17	0.098	0.163	0.088	0.01
211	17.58	0.17	0.098	0.162	0.088	0.01
212	17.67	0.17	0.098	0.162	0.088	0.01
213	17.75	0.17	0.098	0.161	0.088	0.01
214	17.83	0.13	0.078	0.160	0.070	0.01
215	17.92	0.13	0.078	0.159	0.070	0.01
216	18.00	0.13	0.078	0.158	0.070	0.01
217	18.08	0.13	0.078	0.158	0.070	0.01
218	18.17	0.13	0.078	0.157	0.070	0.01
219	18.25	0.13	0.078	0.156	0.070	0.01
220	18.33	0.13	0.078	0.155	0.070	0.01
221	18.42	0.13	0.078	0.155	0.070	0.01
222	18.50	0.13	0.078	0.154	0.070	0.01
223	18.58	0.10	0.059	0.153	0.053	0.01
224	18.67	0.10	0.059	0.152	0.053	0.01
225	18.75	0.10	0.059	0.152	0.053	0.01
226	18.83	0.07	0.039	0.151	0.035	0.00
227	18.92	0.07	0.039	0.150	0.035	0.00
228	19.00	0.07	0.039	0.149	0.035	0.00
229	19.08	0.10	0.059	0.149	0.053	0.01
230	19.17	0.10	0.059	0.148	0.053	0.01
231	19.25	0.10	0.059	0.147	0.053	0.01
232	19.33	0.13	0.078	0.147	0.070	0.01
233	19.42	0.13	0.078	0.146	0.070	0.01
234	19.50	0.13	0.078	0.145	0.070	0.01
235	19.58	0.10	0.059	0.145	0.053	0.01
236	19.67	0.10	0.059	0.144	0.053	0.01
237	19.75	0.10	0.059	0.143	0.053	0.01
238	19.83	0.07	0.039	0.143	0.035	0.00
239	19.92	0.07	0.039	0.142	0.035	0.00
240	20.00	0.07	0.039	0.141	0.035	0.00
241	20.08	0.10	0.059	0.141	0.053	0.01
242	20.17	0.10	0.059	0.140	0.053	0.01
243	20.25	0.10	0.059	0.140	0.053	0.01
244	20.33	0.10	0.059	0.139	0.053	0.01
245	20.42	0.10	0.059	0.138	0.053	0.01
246	20.50	0.10	0.059	0.138	0.053	0.01
247	20.58	0.10	0.059	0.137	0.053	0.01
248	20.67	0.10	0.059	0.137	0.053	0.01
249	20.75	0.10	0.059	0.136	0.053	0.01
250	20.83	0.07	0.039	0.135	0.035	0.00
251	20.92	0.07	0.039	0.135	0.035	0.00

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252  21.00     0.07      0.039         0.134     0.035         0.00
253  21.08     0.10      0.059         0.134     0.053         0.01
254  21.17     0.10      0.059         0.133     0.053         0.01
255  21.25     0.10      0.059         0.133     0.053         0.01
256  21.33     0.07      0.039         0.132     0.035         0.00
257  21.42     0.07      0.039         0.132     0.035         0.00
258  21.50     0.07      0.039         0.131     0.035         0.00
259  21.58     0.10      0.059         0.131     0.053         0.01
260  21.67     0.10      0.059         0.130     0.053         0.01
261  21.75     0.10      0.059         0.130     0.053         0.01
262  21.83     0.07      0.039         0.129     0.035         0.00
263  21.92     0.07      0.039         0.129     0.035         0.00
264  22.00     0.07      0.039         0.129     0.035         0.00
265  22.08     0.10      0.059         0.128     0.053         0.01
266  22.17     0.10      0.059         0.128     0.053         0.01
267  22.25     0.10      0.059         0.127     0.053         0.01
268  22.33     0.07      0.039         0.127     0.035         0.00
269  22.42     0.07      0.039         0.127     0.035         0.00
270  22.50     0.07      0.039         0.126     0.035         0.00
271  22.58     0.07      0.039         0.126     0.035         0.00
272  22.67     0.07      0.039         0.125     0.035         0.00
273  22.75     0.07      0.039         0.125     0.035         0.00
274  22.83     0.07      0.039         0.125     0.035         0.00
275  22.92     0.07      0.039         0.124     0.035         0.00
276  23.00     0.07      0.039         0.124     0.035         0.00
277  23.08     0.07      0.039         0.124     0.035         0.00
278  23.17     0.07      0.039         0.124     0.035         0.00
279  23.25     0.07      0.039         0.123     0.035         0.00
280  23.33     0.07      0.039         0.123     0.035         0.00
281  23.42     0.07      0.039         0.123     0.035         0.00
282  23.50     0.07      0.039         0.123     0.035         0.00
283  23.58     0.07      0.039         0.122     0.035         0.00
284  23.67     0.07      0.039         0.122     0.035         0.00
285  23.75     0.07      0.039         0.122     0.035         0.00
286  23.83     0.07      0.039         0.122     0.035         0.00
287  23.92     0.07      0.039         0.122     0.035         0.00
288  24.00     0.07      0.039         0.122     0.035         0.00
    Sum =     100.0                                       Sum =    20.7
      Flood volume = Effective rainfall      1.72(In)
       times area       1.7(Ac.)/[(In)/(Ft.)] =       0.2(Ac.Ft)
      Total soil loss =      3.16(In)
      Total soil loss =     0.447(Ac.Ft)
      Total rainfall =      4.88(In)
      Flood volume =       10625.1 Cubic Feet
      Total soil loss =       19492.1 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      0.780(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        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0000      0.00  Q         |         |         |         |
   0+10       0.0001      0.01  Q         |         |         |         |
   0+15       0.0001      0.01  Q         |         |         |         |
   0+20       0.0002      0.01  Q         |         |         |         |
   0+25       0.0003      0.01  Q         |         |         |         |
   0+30       0.0003      0.01  Q         |         |         |         |
   0+35       0.0004      0.01  Q         |         |         |         |
   0+40       0.0005      0.01  Q         |         |         |         |
   0+45       0.0005      0.01  Q         |         |         |         |
   0+50       0.0006      0.01  Q         |         |         |         |
   0+55       0.0007      0.01  Q         |         |         |         |
   1+ 0       0.0008      0.01  Q         |         |         |         |
   1+ 5       0.0009      0.01  Q         |         |         |         |
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1+10	0.0009	0.01	Q	|	|	|	|
1+15	0.0010	0.01	Q	|	|	|	|
1+20	0.0011	0.01	Q	|	|	|	|
1+25	0.0012	0.01	Q	|	|	|	|
1+30	0.0012	0.01	Q	|	|	|	|
1+35	0.0013	0.01	Q	|	|	|	|
1+40	0.0014	0.01	Q	|	|	|	|
1+45	0.0014	0.01	Q	|	|	|	|
1+50	0.0015	0.01	Q	|	|	|	|
1+55	0.0016	0.01	Q	|	|	|	|
2+ 0	0.0017	0.01	Q	|	|	|	|
2+ 5	0.0018	0.01	Q	|	|	|	|
2+10	0.0019	0.01	Q	|	|	|	|
2+15	0.0020	0.01	Q	|	|	|	|
2+20	0.0021	0.01	Q	|	|	|	|
2+25	0.0022	0.01	Q	|	|	|	|
2+30	0.0023	0.01	Q	|	|	|	|
2+35	0.0024	0.02	Q	|	|	|	|
2+40	0.0025	0.02	Q	|	|	|	|
2+45	0.0026	0.02	Q	|	|	|	|
2+50	0.0027	0.02	Q	|	|	|	|
2+55	0.0028	0.02	Q	|	|	|	|
3+ 0	0.0029	0.02	Q	|	|	|	|
3+ 5	0.0031	0.02	Q	|	|	|	|
3+10	0.0032	0.02	Q	|	|	|	|
3+15	0.0033	0.02	Q	|	|	|	|
3+20	0.0034	0.02	Q	|	|	|	|
3+25	0.0035	0.02	Q	|	|	|	|
3+30	0.0036	0.02	Q	|	|	|	|
3+35	0.0037	0.02	Q	|	|	|	|
3+40	0.0039	0.02	Q	|	|	|	|
3+45	0.0040	0.02	Q	|	|	|	|
3+50	0.0041	0.02	Q	|	|	|	|
3+55	0.0042	0.02	Q	|	|	|	|
4+ 0	0.0044	0.02	Q	|	|	|	|
4+ 5	0.0045	0.02	Q	|	|	|	|
4+10	0.0047	0.02	Q	|	|	|	|
4+15	0.0048	0.02	Q	|	|	|	|
4+20	0.0050	0.02	Q	|	|	|	|
4+25	0.0051	0.02	Q	|	|	|	|
4+30	0.0053	0.02	Q	|	|	|	|
4+35	0.0054	0.02	Q	|	|	|	|
4+40	0.0056	0.02	Q	|	|	|	|
4+45	0.0058	0.02	Q	|	|	|	|
4+50	0.0059	0.03	Q	|	|	|	|
4+55	0.0061	0.03	QV	|	|	|	|
5+ 0	0.0063	0.03	QV	|	|	|	|
5+ 5	0.0065	0.02	QV	|	|	|	|
5+10	0.0066	0.02	QV	|	|	|	|
5+15	0.0067	0.02	QV	|	|	|	|
5+20	0.0069	0.02	QV	|	|	|	|
5+25	0.0071	0.02	QV	|	|	|	|
5+30	0.0072	0.02	QV	|	|	|	|
5+35	0.0074	0.03	QV	|	|	|	|
5+40	0.0076	0.03	QV	|	|	|	|
5+45	0.0078	0.03	QV	|	|	|	|
5+50	0.0079	0.03	QV	|	|	|	|
5+55	0.0081	0.03	QV	|	|	|	|
6+ 0	0.0083	0.03	QV	|	|	|	|
6+ 5	0.0085	0.03	QV	|	|	|	|
6+10	0.0087	0.03	QV	|	|	|	|
6+15	0.0089	0.03	QV	|	|	|	|
6+20	0.0091	0.03	QV	|	|	|	|
6+25	0.0093	0.03	QV	|	|	|	|
6+30	0.0095	0.03	QV	|	|	|	|
6+35	0.0098	0.03	QV	|	|	|	|
6+40	0.0100	0.03	QV	|	|	|	|
6+45	0.0102	0.03	QV	|	|	|	|
6+50	0.0105	0.03	QV	|	|	|	|
6+55	0.0107	0.03	QV	|	|	|	|

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 7+ 0       0.0109      0.03  QV        |         |         |         |
 7+ 5       0.0112      0.03  QV        |         |         |         |
 7+10       0.0114      0.03  QV        |         |         |         |
 7+15       0.0116      0.03  QV        |         |         |         |
 7+20       0.0119      0.04  QV        |         |         |         |
 7+25       0.0121      0.04  QV        |         |         |         |
 7+30       0.0124      0.04  Q V       |         |         |         |
 7+35       0.0126      0.04  Q V       |         |         |         |
 7+40       0.0129      0.04  Q V       |         |         |         |
 7+45       0.0132      0.04  Q V       |         |         |         |
 7+50       0.0135      0.04  Q V       |         |         |         |
 7+55       0.0138      0.04  Q V       |         |         |         |
 8+ 0       0.0141      0.04  Q V       |         |         |         |
 8+ 5       0.0142      0.02  Q V       |         |         |         |
 8+10       0.0143      0.01  Q V       |         |         |         |
 8+15       0.0144      0.01  Q V       |         |         |         |
 8+20       0.0145      0.02  Q V       |         |         |         |
 8+25       0.0146      0.02  Q V       |         |         |         |
 8+30       0.0148      0.02  Q V       |         |         |         |
 8+35       0.0151      0.05  Q V       |         |         |         |
 8+40       0.0155      0.06  Q V       |         |         |         |
 8+45       0.0159      0.06  Q V       |         |         |         |
 8+50       0.0165      0.09  Q V       |         |         |         |
 8+55       0.0172      0.10  Q V       |         |         |         |
 9+ 0       0.0179      0.10  Q V       |         |         |         |
 9+ 5       0.0190      0.15  Q  V      |         |         |         |
 9+10       0.0201      0.17  Q  V      |         |         |         |
 9+15       0.0213      0.17  Q  V      |         |         |         |
 9+20       0.0227      0.20  Q  V      |         |         |         |
 9+25       0.0242      0.21  Q  V      |         |         |         |
 9+30       0.0257      0.21  Q   V     |         |         |         |
 9+35       0.0273      0.24  Q   V     |         |         |         |
 9+40       0.0291      0.25  |Q  V     |         |         |         |
 9+45       0.0308      0.25  |Q   V    |         |         |         |
 9+50       0.0328      0.28  |Q   V    |         |         |         |
 9+55       0.0348      0.29  |Q   V    |         |         |         |
10+ 0       0.0368      0.29  |Q    V   |         |         |         |
10+ 5       0.0377      0.13  Q     V   |         |         |         |
10+10       0.0382      0.06  Q     V   |         |         |         |
10+15       0.0386      0.07  Q     V   |         |         |         |
10+20       0.0391      0.07  Q     V   |         |         |         |
10+25       0.0396      0.07  Q     V   |         |         |         |
10+30       0.0401      0.07  Q     V   |         |         |         |
10+35       0.0414      0.19  Q     V   |         |         |         |
10+40       0.0431      0.24  Q      V  |         |         |         |
10+45       0.0448      0.25  Q      V  |         |         |         |
10+50       0.0465      0.25  Q      V  |         |         |         |
10+55       0.0482      0.25  |Q     V  |         |         |         |
11+ 0       0.0500      0.25  |Q      V |         |         |         |
11+ 5       0.0516      0.23  Q       V |         |         |         |
11+10       0.0531      0.22  Q       V |         |         |         |
11+15       0.0547      0.23  Q       V |         |         |         |
11+20       0.0562      0.23  Q        V|         |         |         |
11+25       0.0578      0.23  Q        V|         |         |         |
11+30       0.0594      0.23  Q        V|         |         |         |
11+35       0.0607      0.19  Q        V|         |         |         |
11+40       0.0619      0.17  Q         V         |         |         |
11+45       0.0630      0.17  Q         V         |         |         |
11+50       0.0644      0.20  Q         V         |         |         |
11+55       0.0658      0.21  Q         V         |         |         |
12+ 0       0.0673      0.21  Q         |V        |         |         |
12+ 5       0.0699      0.38  |Q        |V        |         |         |
12+10       0.0730      0.45  |Q        |V        |         |         |
12+15       0.0761      0.45  |Q        | V       |         |         |
12+20       0.0793      0.48  |Q        |  V      |         |         |
12+25       0.0827      0.49  |Q        |  V      |         |         |
12+30       0.0861      0.49  |Q        |   V     |         |         |
12+35       0.0898      0.54  | Q       |   V     |         |         |
12+40       0.0936      0.56  | Q       |    V    |         |         |
12+45       0.0975      0.56  | Q       |    V    |         |         |
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12+50       0.1016      0.59  | Q       |     V   |         |         |
12+55       0.1057      0.60  | Q       |      V  |         |         |
13+ 0       0.1098      0.60  | Q       |       V |         |         |
13+ 5       0.1148      0.72  | Q       |       V |         |         |
13+10       0.1201      0.77  |  Q      |        V|         |         |
13+15       0.1254      0.77  |  Q      |         V         |         |
13+20       0.1308      0.78  |  Q      |         |V        |         |
13+25       0.1362      0.78  |  Q      |         | V       |         |
13+30       0.1415      0.78  |  Q      |         |  V      |         |
13+35       0.1451      0.52  | Q       |         |  V      |         |
13+40       0.1480      0.42  |Q        |         |   V     |         |
13+45       0.1508      0.42  |Q        |         |   V     |         |
13+50       0.1537      0.42  |Q        |         |    V    |         |
13+55       0.1566      0.42  |Q        |         |    V    |         |
14+ 0       0.1595      0.42  |Q        |         |     V   |         |
14+ 5       0.1631      0.52  | Q       |         |     V   |         |
14+10       0.1670      0.56  | Q       |         |      V  |         |
14+15       0.1708      0.56  | Q       |         |       V |         |
14+20       0.1745      0.54  | Q       |         |       V |         |
14+25       0.1782      0.53  | Q       |         |        V|         |
14+30       0.1819      0.53  | Q       |         |        V|         |
14+35       0.1856      0.54  | Q       |         |         V         |
14+40       0.1893      0.54  | Q       |         |         |V        |
14+45       0.1930      0.54  | Q       |         |         |V        |
14+50       0.1965      0.52  | Q       |         |         | V       |
14+55       0.2000      0.51  | Q       |         |         | V       |
15+ 0       0.2035      0.51  | Q       |         |         |  V      |
15+ 5       0.2069      0.49  |Q        |         |         |  V      |
15+10       0.2102      0.48  |Q        |         |         |   V     |
15+15       0.2135      0.48  |Q        |         |         |    V    |
15+20       0.2167      0.46  |Q        |         |         |    V    |
15+25       0.2198      0.45  |Q        |         |         |     V   |
15+30       0.2229      0.45  |Q        |         |         |     V   |
15+35       0.2254      0.36  |Q        |         |         |     V   |
15+40       0.2276      0.32  |Q        |         |         |      V  |
15+45       0.2299      0.32  |Q        |         |         |      V  |
15+50       0.2321      0.33  |Q        |         |         |       V |
15+55       0.2344      0.33  |Q        |         |         |       V |
16+ 0       0.2366      0.33  |Q        |         |         |       V |
16+ 5       0.2373      0.11  Q         |         |         |       V |
16+10       0.2374      0.01  Q         |         |         |       V |
16+15       0.2375      0.01  Q         |         |         |       V |
16+20       0.2376      0.01  Q         |         |         |       V |
16+25       0.2377      0.01  Q         |         |         |       V |
16+30       0.2378      0.01  Q         |         |         |       V |
16+35       0.2379      0.01  Q         |         |         |        V|
16+40       0.2380      0.01  Q         |         |         |        V|
16+45       0.2380      0.01  Q         |         |         |        V|
16+50       0.2381      0.01  Q         |         |         |        V|
16+55       0.2382      0.01  Q         |         |         |        V|
17+ 0       0.2382      0.01  Q         |         |         |        V|
17+ 5       0.2383      0.01  Q         |         |         |        V|
17+10       0.2384      0.02  Q         |         |         |        V|
17+15       0.2386      0.02  Q         |         |         |        V|
17+20       0.2387      0.02  Q         |         |         |        V|
17+25       0.2388      0.02  Q         |         |         |        V|
17+30       0.2389      0.02  Q         |         |         |        V|
17+35       0.2390      0.02  Q         |         |         |        V|
17+40       0.2391      0.02  Q         |         |         |        V|
17+45       0.2393      0.02  Q         |         |         |        V|
17+50       0.2394      0.01  Q         |         |         |        V|
17+55       0.2394      0.01  Q         |         |         |        V|
18+ 0       0.2395      0.01  Q         |         |         |        V|
18+ 5       0.2396      0.01  Q         |         |         |        V|
18+10       0.2397      0.01  Q         |         |         |        V|
18+15       0.2398      0.01  Q         |         |         |        V|
18+20       0.2399      0.01  Q         |         |         |        V|
18+25       0.2400      0.01  Q         |         |         |        V|
18+30       0.2401      0.01  Q         |         |         |        V|
18+35       0.2402      0.01  Q         |         |         |        V|
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  18+40       0.2402      0.01  Q         |         |         |        V|
  18+45       0.2403      0.01  Q         |         |         |        V|
  18+50       0.2404      0.01  Q         |         |         |        V|
  18+55       0.2404      0.01  Q         |         |         |        V|
  19+ 0       0.2404      0.01  Q         |         |         |        V|
  19+ 5       0.2405      0.01  Q         |         |         |        V|
  19+10       0.2406      0.01  Q         |         |         |        V|
  19+15       0.2406      0.01  Q         |         |         |        V|
  19+20       0.2407      0.01  Q         |         |         |        V|
  19+25       0.2408      0.01  Q         |         |         |        V|
  19+30       0.2409      0.01  Q         |         |         |        V|
  19+35       0.2410      0.01  Q         |         |         |        V|
  19+40       0.2411      0.01  Q         |         |         |        V|
  19+45       0.2411      0.01  Q         |         |         |        V|
  19+50       0.2412      0.01  Q         |         |         |        V|
  19+55       0.2412      0.01  Q         |         |         |        V|
  20+ 0       0.2413      0.01  Q         |         |         |        V|
  20+ 5       0.2413      0.01  Q         |         |         |        V|
  20+10       0.2414      0.01  Q         |         |         |        V|
  20+15       0.2415      0.01  Q         |         |         |        V|
  20+20       0.2415      0.01  Q         |         |         |        V|
  20+25       0.2416      0.01  Q         |         |         |        V|
  20+30       0.2417      0.01  Q         |         |         |        V|
  20+35       0.2418      0.01  Q         |         |         |        V|
  20+40       0.2418      0.01  Q         |         |         |        V|
  20+45       0.2419      0.01  Q         |         |         |        V|
  20+50       0.2419      0.01  Q         |         |         |        V|
  20+55       0.2420      0.01  Q         |         |         |        V|
  21+ 0       0.2420      0.01  Q         |         |         |        V|
  21+ 5       0.2421      0.01  Q         |         |         |        V|
  21+10       0.2422      0.01  Q         |         |         |        V|
  21+15       0.2422      0.01  Q         |         |         |        V|
  21+20       0.2423      0.01  Q         |         |         |        V|
  21+25       0.2423      0.01  Q         |         |         |        V|
  21+30       0.2424      0.01  Q         |         |         |        V|
  21+35       0.2424      0.01  Q         |         |         |        V|
  21+40       0.2425      0.01  Q         |         |         |        V|
  21+45       0.2426      0.01  Q         |         |         |        V|
  21+50       0.2426      0.01  Q         |         |         |        V|
  21+55       0.2427      0.01  Q         |         |         |        V|
  22+ 0       0.2427      0.01  Q         |         |         |        V|
  22+ 5       0.2428      0.01  Q         |         |         |        V|
  22+10       0.2429      0.01  Q         |         |         |        V|
  22+15       0.2429      0.01  Q         |         |         |        V|
  22+20       0.2430      0.01  Q         |         |         |        V|
  22+25       0.2430      0.01  Q         |         |         |        V|
  22+30       0.2431      0.01  Q         |         |         |        V|
  22+35       0.2431      0.01  Q         |         |         |        V|
  22+40       0.2432      0.01  Q         |         |         |        V|
  22+45       0.2432      0.01  Q         |         |         |        V|
  22+50       0.2433      0.01  Q         |         |         |        V|
  22+55       0.2433      0.01  Q         |         |         |        V|
  23+ 0       0.2434      0.01  Q         |         |         |        V|
  23+ 5       0.2434      0.01  Q         |         |         |        V|
  23+10       0.2434      0.01  Q         |         |         |        V|
  23+15       0.2435      0.01  Q         |         |         |        V|
  23+20       0.2435      0.01  Q         |         |         |        V|
  23+25       0.2436      0.01  Q         |         |         |        V|
  23+30       0.2436      0.01  Q         |         |         |        V|
  23+35       0.2437      0.01  Q         |         |         |        V|
  23+40       0.2437      0.01  Q         |         |         |        V|
  23+45       0.2438      0.01  Q         |         |         |        V|
  23+50       0.2438      0.01  Q         |         |         |        V|
  23+55       0.2439      0.01  Q         |         |         |        V|
  24+ 0       0.2439      0.01  Q         |         |         |        V|
  24+ 5       0.2439      0.00  Q         |         |         |         V
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       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  02/10/13 File: TR36519da242.out


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--------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

-------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



-------------------------------------------------------------------
TRACT 36519
Area A - Developed Condition
24 HOUR, 2 YEAR STORM

------------------------------------------------------------------
Drainage Area =       3.10(Ac.)  =      0.005 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       3.10(Ac.)  =      0.005 Sq. Mi.
Length along longest watercourse =     625.00(Ft.)
Length along longest watercourse measured to centroid =     263.00(Ft.)
Length along longest watercourse =      0.118 Mi.
Length along longest watercourse measured to centroid =      0.050 Mi.
Difference in elevation =       7.00(Ft.)
Slope along watercourse =     59.1360 Ft./Mi.
Average Manning's 'N' = 0.020
Lag time =    0.031 Hr.
Lag time =     1.89 Min.
25% of lag time =     0.47 Min.
40% of lag time =     0.75 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]
        3.10           2.70                  8.37

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        3.10           8.00                 24.80

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.700(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    2.700(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.700(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     3.100           56.00         0.350
```

Total Area Entered = 3.10(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.350	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.620

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	265.102	52.791	1.649
2	0.167	530.205	39.136	1.223
3	0.250	795.307	6.553	0.205
4	0.333	1060.409	1.520	0.048
		Sum = 100.000	Sum=	3.124

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.022	0.620	0.013	0.01
2	0.17	0.07	0.022	0.618	0.013	0.01
3	0.25	0.07	0.022	0.615	0.013	0.01
4	0.33	0.10	0.032	0.613	0.020	0.01
5	0.42	0.10	0.032	0.611	0.020	0.01
6	0.50	0.10	0.032	0.608	0.020	0.01
7	0.58	0.10	0.032	0.606	0.020	0.01
8	0.67	0.10	0.032	0.604	0.020	0.01
9	0.75	0.10	0.032	0.601	0.020	0.01
10	0.83	0.13	0.043	0.599	0.027	0.02
11	0.92	0.13	0.043	0.596	0.027	0.02
12	1.00	0.13	0.043	0.594	0.027	0.02
13	1.08	0.10	0.032	0.592	0.020	0.01
14	1.17	0.10	0.032	0.589	0.020	0.01
15	1.25	0.10	0.032	0.587	0.020	0.01
16	1.33	0.10	0.032	0.585	0.020	0.01
17	1.42	0.10	0.032	0.582	0.020	0.01
18	1.50	0.10	0.032	0.580	0.020	0.01
19	1.58	0.10	0.032	0.578	0.020	0.01
20	1.67	0.10	0.032	0.575	0.020	0.01
21	1.75	0.10	0.032	0.573	0.020	0.01
22	1.83	0.13	0.043	0.571	0.027	0.02
23	1.92	0.13	0.043	0.569	0.027	0.02
24	2.00	0.13	0.043	0.566	0.027	0.02
25	2.08	0.13	0.043	0.564	0.027	0.02
26	2.17	0.13	0.043	0.562	0.027	0.02
27	2.25	0.13	0.043	0.559	0.027	0.02
28	2.33	0.13	0.043	0.557	0.027	0.02
29	2.42	0.13	0.043	0.555	0.027	0.02
30	2.50	0.13	0.043	0.553	0.027	0.02
31	2.58	0.17	0.054	0.550	0.033	0.02
32	2.67	0.17	0.054	0.548	0.033	0.02
33	2.75	0.17	0.054	0.546	0.033	0.02
34	2.83	0.17	0.054	0.544	0.033	0.02
35	2.92	0.17	0.054	0.541	0.033	0.02
36	3.00	0.17	0.054	0.539	0.033	0.02
37	3.08	0.17	0.054	0.537	0.033	0.02
38	3.17	0.17	0.054	0.535	0.033	0.02
39	3.25	0.17	0.054	0.532	0.033	0.02

40	3.33	0.17	0.054	0.530	0.033	0.02
41	3.42	0.17	0.054	0.528	0.033	0.02
42	3.50	0.17	0.054	0.526	0.033	0.02
43	3.58	0.17	0.054	0.524	0.033	0.02
44	3.67	0.17	0.054	0.521	0.033	0.02
45	3.75	0.17	0.054	0.519	0.033	0.02
46	3.83	0.20	0.065	0.517	0.040	0.02
47	3.92	0.20	0.065	0.515	0.040	0.02
48	4.00	0.20	0.065	0.513	0.040	0.02
49	4.08	0.20	0.065	0.510	0.040	0.02
50	4.17	0.20	0.065	0.508	0.040	0.02
51	4.25	0.20	0.065	0.506	0.040	0.02
52	4.33	0.23	0.076	0.504	0.047	0.03
53	4.42	0.23	0.076	0.502	0.047	0.03
54	4.50	0.23	0.076	0.500	0.047	0.03
55	4.58	0.23	0.076	0.498	0.047	0.03
56	4.67	0.23	0.076	0.495	0.047	0.03
57	4.75	0.23	0.076	0.493	0.047	0.03
58	4.83	0.27	0.086	0.491	0.054	0.03
59	4.92	0.27	0.086	0.489	0.054	0.03
60	5.00	0.27	0.086	0.487	0.054	0.03
61	5.08	0.20	0.065	0.485	0.040	0.02
62	5.17	0.20	0.065	0.483	0.040	0.02
63	5.25	0.20	0.065	0.481	0.040	0.02
64	5.33	0.23	0.076	0.478	0.047	0.03
65	5.42	0.23	0.076	0.476	0.047	0.03
66	5.50	0.23	0.076	0.474	0.047	0.03
67	5.58	0.27	0.086	0.472	0.054	0.03
68	5.67	0.27	0.086	0.470	0.054	0.03
69	5.75	0.27	0.086	0.468	0.054	0.03
70	5.83	0.27	0.086	0.466	0.054	0.03
71	5.92	0.27	0.086	0.464	0.054	0.03
72	6.00	0.27	0.086	0.462	0.054	0.03
73	6.08	0.30	0.097	0.460	0.060	0.04
74	6.17	0.30	0.097	0.458	0.060	0.04
75	6.25	0.30	0.097	0.456	0.060	0.04
76	6.33	0.30	0.097	0.454	0.060	0.04
77	6.42	0.30	0.097	0.452	0.060	0.04
78	6.50	0.30	0.097	0.450	0.060	0.04
79	6.58	0.33	0.108	0.448	0.067	0.04
80	6.67	0.33	0.108	0.446	0.067	0.04
81	6.75	0.33	0.108	0.444	0.067	0.04
82	6.83	0.33	0.108	0.442	0.067	0.04
83	6.92	0.33	0.108	0.440	0.067	0.04
84	7.00	0.33	0.108	0.438	0.067	0.04
85	7.08	0.33	0.108	0.436	0.067	0.04
86	7.17	0.33	0.108	0.434	0.067	0.04
87	7.25	0.33	0.108	0.432	0.067	0.04
88	7.33	0.37	0.119	0.430	0.074	0.05
89	7.42	0.37	0.119	0.428	0.074	0.05
90	7.50	0.37	0.119	0.426	0.074	0.05
91	7.58	0.40	0.130	0.424	0.080	0.05
92	7.67	0.40	0.130	0.422	0.080	0.05
93	7.75	0.40	0.130	0.420	0.080	0.05
94	7.83	0.43	0.140	0.418	0.087	0.05
95	7.92	0.43	0.140	0.416	0.087	0.05
96	8.00	0.43	0.140	0.414	0.087	0.05
97	8.08	0.50	0.162	0.412	0.100	0.06
98	8.17	0.50	0.162	0.410	0.100	0.06
99	8.25	0.50	0.162	0.408	0.100	0.06
100	8.33	0.50	0.162	0.406	0.100	0.06
101	8.42	0.50	0.162	0.405	0.100	0.06
102	8.50	0.50	0.162	0.403	0.100	0.06
103	8.58	0.53	0.173	0.401	0.107	0.07
104	8.67	0.53	0.173	0.399	0.107	0.07
105	8.75	0.53	0.173	0.397	0.107	0.07
106	8.83	0.57	0.184	0.395	0.114	0.07
107	8.92	0.57	0.184	0.393	0.114	0.07
108	9.00	0.57	0.184	0.391	0.114	0.07
109	9.08	0.63	0.205	0.390	0.127	0.08

110	9.17	0.63	0.205	0.388	0.127	0.08
111	9.25	0.63	0.205	0.386	0.127	0.08
112	9.33	0.67	0.216	0.384	0.134	0.08
113	9.42	0.67	0.216	0.382	0.134	0.08
114	9.50	0.67	0.216	0.380	0.134	0.08
115	9.58	0.70	0.227	0.379	0.141	0.09
116	9.67	0.70	0.227	0.377	0.141	0.09
117	9.75	0.70	0.227	0.375	0.141	0.09
118	9.83	0.73	0.238	0.373	0.147	0.09
119	9.92	0.73	0.238	0.371	0.147	0.09
120	10.00	0.73	0.238	0.369	0.147	0.09
121	10.08	0.50	0.162	0.368	0.100	0.06
122	10.17	0.50	0.162	0.366	0.100	0.06
123	10.25	0.50	0.162	0.364	0.100	0.06
124	10.33	0.50	0.162	0.362	0.100	0.06
125	10.42	0.50	0.162	0.361	0.100	0.06
126	10.50	0.50	0.162	0.359	0.100	0.06
127	10.58	0.67	0.216	0.357	0.134	0.08
128	10.67	0.67	0.216	0.355	0.134	0.08
129	10.75	0.67	0.216	0.354	0.134	0.08
130	10.83	0.67	0.216	0.352	0.134	0.08
131	10.92	0.67	0.216	0.350	0.134	0.08
132	11.00	0.67	0.216	0.348	0.134	0.08
133	11.08	0.63	0.205	0.347	0.127	0.08
134	11.17	0.63	0.205	0.345	0.127	0.08
135	11.25	0.63	0.205	0.343	0.127	0.08
136	11.33	0.63	0.205	0.342	0.127	0.08
137	11.42	0.63	0.205	0.340	0.127	0.08
138	11.50	0.63	0.205	0.338	0.127	0.08
139	11.58	0.57	0.184	0.337	0.114	0.07
140	11.67	0.57	0.184	0.335	0.114	0.07
141	11.75	0.57	0.184	0.333	0.114	0.07
142	11.83	0.60	0.194	0.332	0.121	0.07
143	11.92	0.60	0.194	0.330	0.121	0.07
144	12.00	0.60	0.194	0.328	0.121	0.07
145	12.08	0.83	0.270	0.327	0.167	0.10
146	12.17	0.83	0.270	0.325	0.167	0.10
147	12.25	0.83	0.270	0.323	0.167	0.10
148	12.33	0.87	0.281	0.322	0.174	0.11
149	12.42	0.87	0.281	0.320	0.174	0.11
150	12.50	0.87	0.281	0.319	0.174	0.11
151	12.58	0.93	0.302	0.317	0.187	0.11
152	12.67	0.93	0.302	0.315	0.187	0.11
153	12.75	0.93	0.302	0.314	0.187	0.11
154	12.83	0.97	0.313	0.312	---	0.00
155	12.92	0.97	0.313	0.311	---	0.00
156	13.00	0.97	0.313	0.309	---	0.00
157	13.08	1.13	0.367	0.307	---	0.06
158	13.17	1.13	0.367	0.306	---	0.06
159	13.25	1.13	0.367	0.304	---	0.06
160	13.33	1.13	0.367	0.303	---	0.06
161	13.42	1.13	0.367	0.301	---	0.07
162	13.50	1.13	0.367	0.300	---	0.07
163	13.58	0.77	0.248	0.298	0.154	0.09
164	13.67	0.77	0.248	0.297	0.154	0.09
165	13.75	0.77	0.248	0.295	0.154	0.09
166	13.83	0.77	0.248	0.294	0.154	0.09
167	13.92	0.77	0.248	0.292	0.154	0.09
168	14.00	0.77	0.248	0.291	0.154	0.09
169	14.08	0.90	0.292	0.289	---	0.00
170	14.17	0.90	0.292	0.288	---	0.00
171	14.25	0.90	0.292	0.286	---	0.01
172	14.33	0.87	0.281	0.285	0.174	0.11
173	14.42	0.87	0.281	0.283	0.174	0.11
174	14.50	0.87	0.281	0.282	0.174	0.11
175	14.58	0.87	0.281	0.280	---	0.00
176	14.67	0.87	0.281	0.279	---	0.00
177	14.75	0.87	0.281	0.278	---	0.00
178	14.83	0.83	0.270	0.276	0.167	0.10
179	14.92	0.83	0.270	0.275	0.167	0.10

180	15.00	0.83	0.270	0.273	0.167	0.10
181	15.08	0.80	0.259	0.272	0.161	0.10
182	15.17	0.80	0.259	0.270	0.161	0.10
183	15.25	0.80	0.259	0.269	0.161	0.10
184	15.33	0.77	0.248	0.268	0.154	0.09
185	15.42	0.77	0.248	0.266	0.154	0.09
186	15.50	0.77	0.248	0.265	0.154	0.09
187	15.58	0.63	0.205	0.264	0.127	0.08
188	15.67	0.63	0.205	0.262	0.127	0.08
189	15.75	0.63	0.205	0.261	0.127	0.08
190	15.83	0.63	0.205	0.260	0.127	0.08
191	15.92	0.63	0.205	0.258	0.127	0.08
192	16.00	0.63	0.205	0.257	0.127	0.08
193	16.08	0.13	0.043	0.256	0.027	0.02
194	16.17	0.13	0.043	0.254	0.027	0.02
195	16.25	0.13	0.043	0.253	0.027	0.02
196	16.33	0.13	0.043	0.252	0.027	0.02
197	16.42	0.13	0.043	0.250	0.027	0.02
198	16.50	0.13	0.043	0.249	0.027	0.02
199	16.58	0.10	0.032	0.248	0.020	0.01
200	16.67	0.10	0.032	0.247	0.020	0.01
201	16.75	0.10	0.032	0.245	0.020	0.01
202	16.83	0.10	0.032	0.244	0.020	0.01
203	16.92	0.10	0.032	0.243	0.020	0.01
204	17.00	0.10	0.032	0.242	0.020	0.01
205	17.08	0.17	0.054	0.240	0.033	0.02
206	17.17	0.17	0.054	0.239	0.033	0.02
207	17.25	0.17	0.054	0.238	0.033	0.02
208	17.33	0.17	0.054	0.237	0.033	0.02
209	17.42	0.17	0.054	0.236	0.033	0.02
210	17.50	0.17	0.054	0.234	0.033	0.02
211	17.58	0.17	0.054	0.233	0.033	0.02
212	17.67	0.17	0.054	0.232	0.033	0.02
213	17.75	0.17	0.054	0.231	0.033	0.02
214	17.83	0.13	0.043	0.230	0.027	0.02
215	17.92	0.13	0.043	0.229	0.027	0.02
216	18.00	0.13	0.043	0.228	0.027	0.02
217	18.08	0.13	0.043	0.226	0.027	0.02
218	18.17	0.13	0.043	0.225	0.027	0.02
219	18.25	0.13	0.043	0.224	0.027	0.02
220	18.33	0.13	0.043	0.223	0.027	0.02
221	18.42	0.13	0.043	0.222	0.027	0.02
222	18.50	0.13	0.043	0.221	0.027	0.02
223	18.58	0.10	0.032	0.220	0.020	0.01
224	18.67	0.10	0.032	0.219	0.020	0.01
225	18.75	0.10	0.032	0.218	0.020	0.01
226	18.83	0.07	0.022	0.217	0.013	0.01
227	18.92	0.07	0.022	0.216	0.013	0.01
228	19.00	0.07	0.022	0.215	0.013	0.01
229	19.08	0.10	0.032	0.214	0.020	0.01
230	19.17	0.10	0.032	0.213	0.020	0.01
231	19.25	0.10	0.032	0.212	0.020	0.01
232	19.33	0.13	0.043	0.211	0.027	0.02
233	19.42	0.13	0.043	0.210	0.027	0.02
234	19.50	0.13	0.043	0.209	0.027	0.02
235	19.58	0.10	0.032	0.208	0.020	0.01
236	19.67	0.10	0.032	0.207	0.020	0.01
237	19.75	0.10	0.032	0.206	0.020	0.01
238	19.83	0.07	0.022	0.205	0.013	0.01
239	19.92	0.07	0.022	0.204	0.013	0.01
240	20.00	0.07	0.022	0.203	0.013	0.01
241	20.08	0.10	0.032	0.202	0.020	0.01
242	20.17	0.10	0.032	0.201	0.020	0.01
243	20.25	0.10	0.032	0.201	0.020	0.01
244	20.33	0.10	0.032	0.200	0.020	0.01
245	20.42	0.10	0.032	0.199	0.020	0.01
246	20.50	0.10	0.032	0.198	0.020	0.01
247	20.58	0.10	0.032	0.197	0.020	0.01
248	20.67	0.10	0.032	0.196	0.020	0.01
249	20.75	0.10	0.032	0.195	0.020	0.01

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250  20.83     0.07      0.022         0.195     0.013         0.01
251  20.92     0.07      0.022         0.194     0.013         0.01
252  21.00     0.07      0.022         0.193     0.013         0.01
253  21.08     0.10      0.032         0.192     0.020         0.01
254  21.17     0.10      0.032         0.192     0.020         0.01
255  21.25     0.10      0.032         0.191     0.020         0.01
256  21.33     0.07      0.022         0.190     0.013         0.01
257  21.42     0.07      0.022         0.189     0.013         0.01
258  21.50     0.07      0.022         0.189     0.013         0.01
259  21.58     0.10      0.032         0.188     0.020         0.01
260  21.67     0.10      0.032         0.187     0.020         0.01
261  21.75     0.10      0.032         0.187     0.020         0.01
262  21.83     0.07      0.022         0.186     0.013         0.01
263  21.92     0.07      0.022         0.185     0.013         0.01
264  22.00     0.07      0.022         0.185     0.013         0.01
265  22.08     0.10      0.032         0.184     0.020         0.01
266  22.17     0.10      0.032         0.184     0.020         0.01
267  22.25     0.10      0.032         0.183     0.020         0.01
268  22.33     0.07      0.022         0.182     0.013         0.01
269  22.42     0.07      0.022         0.182     0.013         0.01
270  22.50     0.07      0.022         0.181     0.013         0.01
271  22.58     0.07      0.022         0.181     0.013         0.01
272  22.67     0.07      0.022         0.180     0.013         0.01
273  22.75     0.07      0.022         0.180     0.013         0.01
274  22.83     0.07      0.022         0.179     0.013         0.01
275  22.92     0.07      0.022         0.179     0.013         0.01
276  23.00     0.07      0.022         0.178     0.013         0.01
277  23.08     0.07      0.022         0.178     0.013         0.01
278  23.17     0.07      0.022         0.178     0.013         0.01
279  23.25     0.07      0.022         0.177     0.013         0.01
280  23.33     0.07      0.022         0.177     0.013         0.01
281  23.42     0.07      0.022         0.177     0.013         0.01
282  23.50     0.07      0.022         0.176     0.013         0.01
283  23.58     0.07      0.022         0.176     0.013         0.01
284  23.67     0.07      0.022         0.176     0.013         0.01
285  23.75     0.07      0.022         0.175     0.013         0.01
286  23.83     0.07      0.022         0.175     0.013         0.01
287  23.92     0.07      0.022         0.175     0.013         0.01
288  24.00     0.07      0.022         0.175     0.013         0.01
    Sum =     100.0                                   Sum =    10.9
      Flood volume = Effective rainfall      0.91(In)
       times area       3.1(Ac.)/[(In)/(Ft.)] =       0.2(Ac.Ft)
      Total soil loss =      1.79(In)
      Total soil loss =     0.463(Ac.Ft)
      Total rainfall =      2.70(In)
      Flood volume =       10195.4 Cubic Feet
      Total soil loss =       20187.5 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      0.359(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        2.5       5.0       7.5      10.0
 ----------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0003      0.02  Q         |         |         |         |
   0+15       0.0004      0.03  Q         |         |         |         |
   0+20       0.0007      0.03  Q         |         |         |         |
   0+25       0.0009      0.04  Q         |         |         |         |
   0+30       0.0012      0.04  Q         |         |         |         |
   0+35       0.0014      0.04  Q         |         |         |         |
   0+40       0.0017      0.04  Q         |         |         |         |
   0+45       0.0020      0.04  Q         |         |         |         |
   0+50       0.0023      0.05  Q         |         |         |         |
   0+55       0.0026      0.05  Q         |         |         |         |
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1+ 0       0.0030      0.05  Q         |         |         |         |
1+ 5       0.0033      0.04  Q         |         |         |         |
1+10       0.0036      0.04  Q         |         |         |         |
1+15       0.0038      0.04  Q         |         |         |         |
1+20       0.0041      0.04  Q         |         |         |         |
1+25       0.0044      0.04  Q         |         |         |         |
1+30       0.0046      0.04  Q         |         |         |         |
1+35       0.0049      0.04  Q         |         |         |         |
1+40       0.0052      0.04  Q         |         |         |         |
1+45       0.0054      0.04  Q         |         |         |         |
1+50       0.0057      0.05  Q         |         |         |         |
1+55       0.0061      0.05  QV        |         |         |         |
2+ 0       0.0064      0.05  QV        |         |         |         |
2+ 5       0.0068      0.05  QV        |         |         |         |
2+10       0.0071      0.05  QV        |         |         |         |
2+15       0.0075      0.05  QV        |         |         |         |
2+20       0.0078      0.05  QV        |         |         |         |
2+25       0.0082      0.05  QV        |         |         |         |
2+30       0.0085      0.05  QV        |         |         |         |
2+35       0.0089      0.06  QV        |         |         |         |
2+40       0.0094      0.06  QV        |         |         |         |
2+45       0.0098      0.06  QV        |         |         |         |
2+50       0.0103      0.06  QV        |         |         |         |
2+55       0.0107      0.06  QV        |         |         |         |
3+ 0       0.0111      0.06  QV        |         |         |         |
3+ 5       0.0116      0.06  QV        |         |         |         |
3+10       0.0120      0.06  Q V       |         |         |         |
3+15       0.0125      0.06  Q V       |         |         |         |
3+20       0.0129      0.06  Q V       |         |         |         |
3+25       0.0134      0.06  Q V       |         |         |         |
3+30       0.0138      0.06  Q V       |         |         |         |
3+35       0.0142      0.06  Q V       |         |         |         |
3+40       0.0147      0.06  Q V       |         |         |         |
3+45       0.0151      0.06  Q V       |         |         |         |
3+50       0.0156      0.07  Q V       |         |         |         |
3+55       0.0161      0.08  Q V       |         |         |         |
4+ 0       0.0167      0.08  Q V       |         |         |         |
4+ 5       0.0172      0.08  Q V       |         |         |         |
4+10       0.0177      0.08  Q  V      |         |         |         |
4+15       0.0183      0.08  Q  V      |         |         |         |
4+20       0.0188      0.08  Q  V      |         |         |         |
4+25       0.0194      0.09  Q  V      |         |         |         |
4+30       0.0201      0.09  Q  V      |         |         |         |
4+35       0.0207      0.09  Q  V      |         |         |         |
4+40       0.0213      0.09  Q  V      |         |         |         |
4+45       0.0219      0.09  Q  V      |         |         |         |
4+50       0.0226      0.10  Q  V      |         |         |         |
4+55       0.0233      0.10  Q  V      |         |         |         |
5+ 0       0.0240      0.10  Q   V     |         |         |         |
5+ 5       0.0246      0.09  Q   V     |         |         |         |
5+10       0.0251      0.08  Q   V     |         |         |         |
5+15       0.0257      0.08  Q   V     |         |         |         |
5+20       0.0263      0.08  Q   V     |         |         |         |
5+25       0.0269      0.09  Q   V     |         |         |         |
5+30       0.0275      0.09  Q   V     |         |         |         |
5+35       0.0281      0.10  Q   V     |         |         |         |
5+40       0.0288      0.10  Q   V     |         |         |         |
5+45       0.0295      0.10  Q    V    |         |         |         |
5+50       0.0303      0.10  Q    V    |         |         |         |
5+55       0.0310      0.10  Q    V    |         |         |         |
6+ 0       0.0317      0.10  Q    V    |         |         |         |
6+ 5       0.0324      0.11  Q    V    |         |         |         |
6+10       0.0332      0.11  Q    V    |         |         |         |
6+15       0.0340      0.12  Q    V    |         |         |         |
6+20       0.0348      0.12  Q    V    |         |         |         |
6+25       0.0356      0.12  Q     V   |         |         |         |
6+30       0.0364      0.12  Q     V   |         |         |         |
6+35       0.0372      0.12  Q     V   |         |         |         |
6+40       0.0381      0.13  Q     V   |         |         |         |
6+45       0.0390      0.13  Q     V   |         |         |         |
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 6+50       0.0399      0.13  Q     V   |         |         |         |
 6+55       0.0408      0.13  Q     V   |         |         |         |
 7+ 0       0.0416      0.13  Q      V  |         |         |         |
 7+ 5       0.0425      0.13  Q      V  |         |         |         |
 7+10       0.0434      0.13  Q      V  |         |         |         |
 7+15       0.0443      0.13  Q      V  |         |         |         |
 7+20       0.0452      0.14  Q      V  |         |         |         |
 7+25       0.0462      0.14  Q      V  |         |         |         |
 7+30       0.0472      0.14  Q       V |         |         |         |
 7+35       0.0482      0.15  Q       V |         |         |         |
 7+40       0.0492      0.15  Q       V |         |         |         |
 7+45       0.0503      0.15  Q       V |         |         |         |
 7+50       0.0514      0.16  Q       V |         |         |         |
 7+55       0.0525      0.17  Q       V |         |         |         |
 8+ 0       0.0537      0.17  Q        V|         |         |         |
 8+ 5       0.0549      0.18  Q        V|         |         |         |
 8+10       0.0562      0.19  Q        V|         |         |         |
 8+15       0.0576      0.19  Q        V|         |         |         |
 8+20       0.0589      0.19  Q         V         |         |         |
 8+25       0.0602      0.19  Q         V         |         |         |
 8+30       0.0615      0.19  Q         V         |         |         |
 8+35       0.0629      0.20  Q         V         |         |         |
 8+40       0.0643      0.20  Q         V         |         |         |
 8+45       0.0657      0.21  Q         |V        |         |         |
 8+50       0.0672      0.21  Q         |V        |         |         |
 8+55       0.0687      0.22  Q         |V        |         |         |
 9+ 0       0.0702      0.22  Q         |V        |         |         |
 9+ 5       0.0718      0.23  Q         | V       |         |         |
 9+10       0.0734      0.24  Q         | V       |         |         |
 9+15       0.0751      0.24  Q         | V       |         |         |
 9+20       0.0768      0.25  |Q        |  V      |         |         |
 9+25       0.0786      0.26  |Q        |  V      |         |         |
 9+30       0.0804      0.26  |Q        |  V      |         |         |
 9+35       0.0822      0.26  |Q        |   V     |         |         |
 9+40       0.0840      0.27  |Q        |   V     |         |         |
 9+45       0.0859      0.27  |Q        |   V     |         |         |
 9+50       0.0878      0.28  |Q        |    V    |         |         |
 9+55       0.0897      0.28  |Q        |    V    |         |         |
10+ 0       0.0917      0.28  |Q        |    V    |         |         |
10+ 5       0.0933      0.23  Q         |    V    |         |         |
10+10       0.0947      0.20  Q         |     V   |         |         |
10+15       0.0960      0.19  Q         |     V   |         |         |
10+20       0.0973      0.19  Q         |     V   |         |         |
10+25       0.0986      0.19  Q         |     V   |         |         |
10+30       0.1000      0.19  Q         |      V  |         |         |
10+35       0.1015      0.23  Q         |      V  |         |         |
10+40       0.1033      0.25  |Q        |      V  |         |         |
10+45       0.1050      0.26  |Q        |      V  |         |         |
10+50       0.1068      0.26  |Q        |       V |         |         |
10+55       0.1085      0.26  |Q        |       V |         |         |
11+ 0       0.1103      0.26  |Q        |       V |         |         |
11+ 5       0.1120      0.25  Q         |        V|         |         |
11+10       0.1137      0.24  Q         |        V|         |         |
11+15       0.1154      0.24  Q         |        V|         |         |
11+20       0.1171      0.24  Q         |         V         |         |
11+25       0.1188      0.24  Q         |         V         |         |
11+30       0.1204      0.24  Q         |         V         |         |
11+35       0.1220      0.23  Q         |         V         |         |
11+40       0.1235      0.22  Q         |         |V        |         |
11+45       0.1250      0.22  Q         |         |V        |         |
11+50       0.1266      0.22  Q         |         |V        |         |
11+55       0.1282      0.23  Q         |         |V        |         |
12+ 0       0.1298      0.23  Q         |         | V       |         |
12+ 5       0.1317      0.28  |Q        |         | V       |         |
12+10       0.1338      0.31  |Q        |         | V       |         |
12+15       0.1360      0.32  |Q        |         |  V      |         |
12+20       0.1383      0.33  |Q        |         |  V      |         |
12+25       0.1406      0.33  |Q        |         |   V     |         |
12+30       0.1429      0.33  |Q        |         |   V     |         |
12+35       0.1453      0.35  |Q        |         |   V     |         |
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12+40       0.1477      0.36  |Q        |         |    V    |         |
12+45       0.1502      0.36  |Q        |         |    V    |         |
12+50       0.1514      0.17  Q         |         |    V    |         |
12+55       0.1516      0.03  Q         |         |    V    |         |
13+ 0       0.1517      0.02  Q         |         |    V    |         |
13+ 5       0.1524      0.10  Q         |         |     V   |         |
13+10       0.1537      0.18  Q         |         |     V   |         |
13+15       0.1550      0.19  Q         |         |     V   |         |
13+20       0.1563      0.20  Q         |         |     V   |         |
13+25       0.1577      0.20  Q         |         |     V   |         |
13+30       0.1592      0.21  Q         |         |      V  |         |
13+35       0.1609      0.25  |Q        |         |      V  |         |
13+40       0.1629      0.29  |Q        |         |      V  |         |
13+45       0.1649      0.29  |Q        |         |       V |         |
13+50       0.1670      0.30  |Q        |         |       V |         |
13+55       0.1690      0.30  |Q        |         |       V |         |
14+ 0       0.1710      0.30  |Q        |         |        V|         |
14+ 5       0.1720      0.14  Q         |         |        V|         |
14+10       0.1723      0.03  Q         |         |        V|         |
14+15       0.1724      0.02  Q         |         |        V|         |
14+20       0.1736      0.18  Q         |         |        V|         |
14+25       0.1758      0.31  |Q        |         |         V         |
14+30       0.1780      0.33  |Q        |         |         V         |
14+35       0.1791      0.16  Q         |         |         V         |
14+40       0.1793      0.03  Q         |         |         V         |
14+45       0.1794      0.01  Q         |         |         V         |
14+50       0.1806      0.17  Q         |         |         V         |
14+55       0.1827      0.30  |Q        |         |         |V        |
15+ 0       0.1848      0.32  |Q        |         |         |V        |
15+ 5       0.1870      0.31  |Q        |         |         |V        |
15+10       0.1891      0.31  |Q        |         |         | V       |
15+15       0.1912      0.31  |Q        |         |         | V       |
15+20       0.1933      0.30  |Q        |         |         |  V      |
15+25       0.1954      0.30  |Q        |         |         |  V      |
15+30       0.1974      0.30  |Q        |         |         |  V      |
15+35       0.1992      0.27  |Q        |         |         |   V     |
15+40       0.2009      0.25  Q         |         |         |   V     |
15+45       0.2026      0.24  Q         |         |         |   V     |
15+50       0.2043      0.24  Q         |         |         |   V     |
15+55       0.2060      0.24  Q         |         |         |    V    |
16+ 0       0.2077      0.24  Q         |         |         |    V    |
16+ 5       0.2086      0.14  Q         |         |         |    V    |
16+10       0.2091      0.07  Q         |         |         |    V    |
16+15       0.2095      0.05  Q         |         |         |    V    |
16+20       0.2098      0.05  Q         |         |         |    V    |
16+25       0.2102      0.05  Q         |         |         |    V    |
16+30       0.2105      0.05  Q         |         |         |    V    |
16+35       0.2108      0.04  Q         |         |         |     V   |
16+40       0.2111      0.04  Q         |         |         |     V   |
16+45       0.2114      0.04  Q         |         |         |     V   |
16+50       0.2116      0.04  Q         |         |         |     V   |
16+55       0.2119      0.04  Q         |         |         |     V   |
17+ 0       0.2122      0.04  Q         |         |         |     V   |
17+ 5       0.2125      0.05  Q         |         |         |     V   |
17+10       0.2130      0.06  Q         |         |         |     V   |
17+15       0.2134      0.06  Q         |         |         |     V   |
17+20       0.2138      0.06  Q         |         |         |     V   |
17+25       0.2143      0.06  Q         |         |         |     V   |
17+30       0.2147      0.06  Q         |         |         |     V   |
17+35       0.2152      0.06  Q         |         |         |     V   |
17+40       0.2156      0.06  Q         |         |         |     V   |
17+45       0.2160      0.06  Q         |         |         |     V   |
17+50       0.2164      0.06  Q         |         |         |     V   |
17+55       0.2168      0.05  Q         |         |         |      V  |
18+ 0       0.2172      0.05  Q         |         |         |      V  |
18+ 5       0.2175      0.05  Q         |         |         |      V  |
18+10       0.2179      0.05  Q         |         |         |      V  |
18+15       0.2182      0.05  Q         |         |         |      V  |
18+20       0.2186      0.05  Q         |         |         |      V  |
18+25       0.2189      0.05  Q         |         |         |      V  |
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18+30       0.2193      0.05  Q         |         |         |      V  |
18+35       0.2196      0.04  Q         |         |         |      V  |
18+40       0.2199      0.04  Q         |         |         |      V  |
18+45       0.2201      0.04  Q         |         |         |      V  |
18+50       0.2203      0.03  Q         |         |         |      V  |
18+55       0.2205      0.03  Q         |         |         |      V  |
19+ 0       0.2207      0.03  Q         |         |         |      V  |
19+ 5       0.2209      0.03  Q         |         |         |      V  |
19+10       0.2212      0.04  Q         |         |         |      V  |
19+15       0.2214      0.04  Q         |         |         |      V  |
19+20       0.2218      0.05  Q         |         |         |      V  |
19+25       0.2221      0.05  Q         |         |         |      V  |
19+30       0.2225      0.05  Q         |         |         |       V |
19+35       0.2228      0.04  Q         |         |         |       V |
19+40       0.2230      0.04  Q         |         |         |       V |
19+45       0.2233      0.04  Q         |         |         |       V |
19+50       0.2235      0.03  Q         |         |         |       V |
19+55       0.2237      0.03  Q         |         |         |       V |
20+ 0       0.2239      0.03  Q         |         |         |       V |
20+ 5       0.2241      0.03  Q         |         |         |       V |
20+10       0.2244      0.04  Q         |         |         |       V |
20+15       0.2246      0.04  Q         |         |         |       V |
20+20       0.2249      0.04  Q         |         |         |       V |
20+25       0.2252      0.04  Q         |         |         |       V |
20+30       0.2254      0.04  Q         |         |         |       V |
20+35       0.2257      0.04  Q         |         |         |       V |
20+40       0.2260      0.04  Q         |         |         |       V |
20+45       0.2262      0.04  Q         |         |         |       V |
20+50       0.2264      0.03  Q         |         |         |       V |
20+55       0.2266      0.03  Q         |         |         |       V |
21+ 0       0.2268      0.03  Q         |         |         |       V |
21+ 5       0.2270      0.03  Q         |         |         |       V |
21+10       0.2273      0.04  Q         |         |         |       V |
21+15       0.2275      0.04  Q         |         |         |       V |
21+20       0.2278      0.03  Q         |         |         |       V |
21+25       0.2279      0.03  Q         |         |         |       V |
21+30       0.2281      0.03  Q         |         |         |       V |
21+35       0.2283      0.03  Q         |         |         |        V|
21+40       0.2286      0.04  Q         |         |         |        V|
21+45       0.2289      0.04  Q         |         |         |        V|
21+50       0.2291      0.03  Q         |         |         |        V|
21+55       0.2293      0.03  Q         |         |         |        V|
22+ 0       0.2294      0.03  Q         |         |         |        V|
22+ 5       0.2297      0.03  Q         |         |         |        V|
22+10       0.2299      0.04  Q         |         |         |        V|
22+15       0.2302      0.04  Q         |         |         |        V|
22+20       0.2304      0.03  Q         |         |         |        V|
22+25       0.2306      0.03  Q         |         |         |        V|
22+30       0.2308      0.03  Q         |         |         |        V|
22+35       0.2310      0.03  Q         |         |         |        V|
22+40       0.2311      0.03  Q         |         |         |        V|
22+45       0.2313      0.03  Q         |         |         |        V|
22+50       0.2315      0.03  Q         |         |         |        V|
22+55       0.2317      0.03  Q         |         |         |        V|
23+ 0       0.2318      0.03  Q         |         |         |        V|
23+ 5       0.2320      0.03  Q         |         |         |        V|
23+10       0.2322      0.03  Q         |         |         |        V|
23+15       0.2324      0.03  Q         |         |         |        V|
23+20       0.2325      0.03  Q         |         |         |        V|
23+25       0.2327      0.03  Q         |         |         |        V|
23+30       0.2329      0.03  Q         |         |         |        V|
23+35       0.2331      0.03  Q         |         |         |        V|
23+40       0.2332      0.03  Q         |         |         |        V|
23+45       0.2334      0.03  Q         |         |         |        V|
23+50       0.2336      0.03  Q         |         |         |        V|
23+55       0.2338      0.03  Q         |         |         |        V|
24+ 0       0.2340      0.03  Q         |         |         |        V|
24+ 5       0.2340      0.01  Q         |         |         |        V|
24+10       0.2341      0.00  Q         |         |         |        V|
24+15       0.2341      0.00  Q         |         |         |         V
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       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  02/10/13 File: TR36519bD242.out


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--------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

-------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



-------------------------------------------------------------------
TRACT 36519
AREA B - Developed Condition
24 HOUR, 2 YEAR STORM

------------------------------------------------------------------
Drainage Area =       1.90(Ac.)  =      0.003 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       1.90(Ac.)  =      0.003 Sq. Mi.
Length along longest watercourse =     575.00(Ft.)
Length along longest watercourse measured to centroid =     231.00(Ft.)
Length along longest watercourse =      0.109 Mi.
Length along longest watercourse measured to centroid =      0.044 Mi.
Difference in elevation =      16.80(Ft.)
Slope along watercourse =    154.2678 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.030 Hr.
Lag time =     1.81 Min.
25% of lag time =     0.45 Min.
40% of lag time =     0.72 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]
        1.90           2.70                  5.13

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        1.90           8.00                 15.20

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.700(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    2.700(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.700(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     1.900           56.00         0.350
```

Total Area Entered = 1.90(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.350	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.620

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	275.928	54.067	1.035
2	0.167	551.855	38.495	0.737
3	0.250	827.783	7.438	0.142
		Sum = 100.000	Sum=	1.915

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.022	0.620	0.013	0.01
2	0.17	0.07	0.022	0.618	0.013	0.01
3	0.25	0.07	0.022	0.615	0.013	0.01
4	0.33	0.10	0.032	0.613	0.020	0.01
5	0.42	0.10	0.032	0.611	0.020	0.01
6	0.50	0.10	0.032	0.608	0.020	0.01
7	0.58	0.10	0.032	0.606	0.020	0.01
8	0.67	0.10	0.032	0.604	0.020	0.01
9	0.75	0.10	0.032	0.601	0.020	0.01
10	0.83	0.13	0.043	0.599	0.027	0.02
11	0.92	0.13	0.043	0.596	0.027	0.02
12	1.00	0.13	0.043	0.594	0.027	0.02
13	1.08	0.10	0.032	0.592	0.020	0.01
14	1.17	0.10	0.032	0.589	0.020	0.01
15	1.25	0.10	0.032	0.587	0.020	0.01
16	1.33	0.10	0.032	0.585	0.020	0.01
17	1.42	0.10	0.032	0.582	0.020	0.01
18	1.50	0.10	0.032	0.580	0.020	0.01
19	1.58	0.10	0.032	0.578	0.020	0.01
20	1.67	0.10	0.032	0.575	0.020	0.01
21	1.75	0.10	0.032	0.573	0.020	0.01
22	1.83	0.13	0.043	0.571	0.027	0.02
23	1.92	0.13	0.043	0.569	0.027	0.02
24	2.00	0.13	0.043	0.566	0.027	0.02
25	2.08	0.13	0.043	0.564	0.027	0.02
26	2.17	0.13	0.043	0.562	0.027	0.02
27	2.25	0.13	0.043	0.559	0.027	0.02
28	2.33	0.13	0.043	0.557	0.027	0.02
29	2.42	0.13	0.043	0.555	0.027	0.02
30	2.50	0.13	0.043	0.553	0.027	0.02
31	2.58	0.17	0.054	0.550	0.033	0.02
32	2.67	0.17	0.054	0.548	0.033	0.02
33	2.75	0.17	0.054	0.546	0.033	0.02
34	2.83	0.17	0.054	0.544	0.033	0.02
35	2.92	0.17	0.054	0.541	0.033	0.02
36	3.00	0.17	0.054	0.539	0.033	0.02
37	3.08	0.17	0.054	0.537	0.033	0.02
38	3.17	0.17	0.054	0.535	0.033	0.02
39	3.25	0.17	0.054	0.532	0.033	0.02
40	3.33	0.17	0.054	0.530	0.033	0.02

41	3.42	0.17	0.054	0.528	0.033	0.02
42	3.50	0.17	0.054	0.526	0.033	0.02
43	3.58	0.17	0.054	0.524	0.033	0.02
44	3.67	0.17	0.054	0.521	0.033	0.02
45	3.75	0.17	0.054	0.519	0.033	0.02
46	3.83	0.20	0.065	0.517	0.040	0.02
47	3.92	0.20	0.065	0.515	0.040	0.02
48	4.00	0.20	0.065	0.513	0.040	0.02
49	4.08	0.20	0.065	0.510	0.040	0.02
50	4.17	0.20	0.065	0.508	0.040	0.02
51	4.25	0.20	0.065	0.506	0.040	0.02
52	4.33	0.23	0.076	0.504	0.047	0.03
53	4.42	0.23	0.076	0.502	0.047	0.03
54	4.50	0.23	0.076	0.500	0.047	0.03
55	4.58	0.23	0.076	0.498	0.047	0.03
56	4.67	0.23	0.076	0.495	0.047	0.03
57	4.75	0.23	0.076	0.493	0.047	0.03
58	4.83	0.27	0.086	0.491	0.054	0.03
59	4.92	0.27	0.086	0.489	0.054	0.03
60	5.00	0.27	0.086	0.487	0.054	0.03
61	5.08	0.20	0.065	0.485	0.040	0.02
62	5.17	0.20	0.065	0.483	0.040	0.02
63	5.25	0.20	0.065	0.481	0.040	0.02
64	5.33	0.23	0.076	0.478	0.047	0.03
65	5.42	0.23	0.076	0.476	0.047	0.03
66	5.50	0.23	0.076	0.474	0.047	0.03
67	5.58	0.27	0.086	0.472	0.054	0.03
68	5.67	0.27	0.086	0.470	0.054	0.03
69	5.75	0.27	0.086	0.468	0.054	0.03
70	5.83	0.27	0.086	0.466	0.054	0.03
71	5.92	0.27	0.086	0.464	0.054	0.03
72	6.00	0.27	0.086	0.462	0.054	0.03
73	6.08	0.30	0.097	0.460	0.060	0.04
74	6.17	0.30	0.097	0.458	0.060	0.04
75	6.25	0.30	0.097	0.456	0.060	0.04
76	6.33	0.30	0.097	0.454	0.060	0.04
77	6.42	0.30	0.097	0.452	0.060	0.04
78	6.50	0.30	0.097	0.450	0.060	0.04
79	6.58	0.33	0.108	0.448	0.067	0.04
80	6.67	0.33	0.108	0.446	0.067	0.04
81	6.75	0.33	0.108	0.444	0.067	0.04
82	6.83	0.33	0.108	0.442	0.067	0.04
83	6.92	0.33	0.108	0.440	0.067	0.04
84	7.00	0.33	0.108	0.438	0.067	0.04
85	7.08	0.33	0.108	0.436	0.067	0.04
86	7.17	0.33	0.108	0.434	0.067	0.04
87	7.25	0.33	0.108	0.432	0.067	0.04
88	7.33	0.37	0.119	0.430	0.074	0.05
89	7.42	0.37	0.119	0.428	0.074	0.05
90	7.50	0.37	0.119	0.426	0.074	0.05
91	7.58	0.40	0.130	0.424	0.080	0.05
92	7.67	0.40	0.130	0.422	0.080	0.05
93	7.75	0.40	0.130	0.420	0.080	0.05
94	7.83	0.43	0.140	0.418	0.087	0.05
95	7.92	0.43	0.140	0.416	0.087	0.05
96	8.00	0.43	0.140	0.414	0.087	0.05
97	8.08	0.50	0.162	0.412	0.100	0.06
98	8.17	0.50	0.162	0.410	0.100	0.06
99	8.25	0.50	0.162	0.408	0.100	0.06
100	8.33	0.50	0.162	0.406	0.100	0.06
101	8.42	0.50	0.162	0.405	0.100	0.06
102	8.50	0.50	0.162	0.403	0.100	0.06
103	8.58	0.53	0.173	0.401	0.107	0.07
104	8.67	0.53	0.173	0.399	0.107	0.07
105	8.75	0.53	0.173	0.397	0.107	0.07
106	8.83	0.57	0.184	0.395	0.114	0.07
107	8.92	0.57	0.184	0.393	0.114	0.07
108	9.00	0.57	0.184	0.391	0.114	0.07
109	9.08	0.63	0.205	0.390	0.127	0.08
110	9.17	0.63	0.205	0.388	0.127	0.08

111	9.25	0.63	0.205	0.386	0.127	0.08
112	9.33	0.67	0.216	0.384	0.134	0.08
113	9.42	0.67	0.216	0.382	0.134	0.08
114	9.50	0.67	0.216	0.380	0.134	0.08
115	9.58	0.70	0.227	0.379	0.141	0.09
116	9.67	0.70	0.227	0.377	0.141	0.09
117	9.75	0.70	0.227	0.375	0.141	0.09
118	9.83	0.73	0.238	0.373	0.147	0.09
119	9.92	0.73	0.238	0.371	0.147	0.09
120	10.00	0.73	0.238	0.369	0.147	0.09
121	10.08	0.50	0.162	0.368	0.100	0.06
122	10.17	0.50	0.162	0.366	0.100	0.06
123	10.25	0.50	0.162	0.364	0.100	0.06
124	10.33	0.50	0.162	0.362	0.100	0.06
125	10.42	0.50	0.162	0.361	0.100	0.06
126	10.50	0.50	0.162	0.359	0.100	0.06
127	10.58	0.67	0.216	0.357	0.134	0.08
128	10.67	0.67	0.216	0.355	0.134	0.08
129	10.75	0.67	0.216	0.354	0.134	0.08
130	10.83	0.67	0.216	0.352	0.134	0.08
131	10.92	0.67	0.216	0.350	0.134	0.08
132	11.00	0.67	0.216	0.348	0.134	0.08
133	11.08	0.63	0.205	0.347	0.127	0.08
134	11.17	0.63	0.205	0.345	0.127	0.08
135	11.25	0.63	0.205	0.343	0.127	0.08
136	11.33	0.63	0.205	0.342	0.127	0.08
137	11.42	0.63	0.205	0.340	0.127	0.08
138	11.50	0.63	0.205	0.338	0.127	0.08
139	11.58	0.57	0.184	0.337	0.114	0.07
140	11.67	0.57	0.184	0.335	0.114	0.07
141	11.75	0.57	0.184	0.333	0.114	0.07
142	11.83	0.60	0.194	0.332	0.121	0.07
143	11.92	0.60	0.194	0.330	0.121	0.07
144	12.00	0.60	0.194	0.328	0.121	0.07
145	12.08	0.83	0.270	0.327	0.167	0.10
146	12.17	0.83	0.270	0.325	0.167	0.10
147	12.25	0.83	0.270	0.323	0.167	0.10
148	12.33	0.87	0.281	0.322	0.174	0.11
149	12.42	0.87	0.281	0.320	0.174	0.11
150	12.50	0.87	0.281	0.319	0.174	0.11
151	12.58	0.93	0.302	0.317	0.187	0.11
152	12.67	0.93	0.302	0.315	0.187	0.11
153	12.75	0.93	0.302	0.314	0.187	0.11
154	12.83	0.97	0.313	0.312	---	0.00
155	12.92	0.97	0.313	0.311	---	0.00
156	13.00	0.97	0.313	0.309	---	0.00
157	13.08	1.13	0.367	0.307	---	0.06
158	13.17	1.13	0.367	0.306	---	0.06
159	13.25	1.13	0.367	0.304	---	0.06
160	13.33	1.13	0.367	0.303	---	0.06
161	13.42	1.13	0.367	0.301	---	0.07
162	13.50	1.13	0.367	0.300	---	0.07
163	13.58	0.77	0.248	0.298	0.154	0.09
164	13.67	0.77	0.248	0.297	0.154	0.09
165	13.75	0.77	0.248	0.295	0.154	0.09
166	13.83	0.77	0.248	0.294	0.154	0.09
167	13.92	0.77	0.248	0.292	0.154	0.09
168	14.00	0.77	0.248	0.291	0.154	0.09
169	14.08	0.90	0.292	0.289	---	0.00
170	14.17	0.90	0.292	0.288	---	0.00
171	14.25	0.90	0.292	0.286	---	0.01
172	14.33	0.87	0.281	0.285	0.174	0.11
173	14.42	0.87	0.281	0.283	0.174	0.11
174	14.50	0.87	0.281	0.282	0.174	0.11
175	14.58	0.87	0.281	0.280	---	0.00
176	14.67	0.87	0.281	0.279	---	0.00
177	14.75	0.87	0.281	0.278	---	0.00
178	14.83	0.83	0.270	0.276	0.167	0.10
179	14.92	0.83	0.270	0.275	0.167	0.10
180	15.00	0.83	0.270	0.273	0.167	0.10

181	15.08	0.80	0.259	0.272	0.161	0.10
182	15.17	0.80	0.259	0.270	0.161	0.10
183	15.25	0.80	0.259	0.269	0.161	0.10
184	15.33	0.77	0.248	0.268	0.154	0.09
185	15.42	0.77	0.248	0.266	0.154	0.09
186	15.50	0.77	0.248	0.265	0.154	0.09
187	15.58	0.63	0.205	0.264	0.127	0.08
188	15.67	0.63	0.205	0.262	0.127	0.08
189	15.75	0.63	0.205	0.261	0.127	0.08
190	15.83	0.63	0.205	0.260	0.127	0.08
191	15.92	0.63	0.205	0.258	0.127	0.08
192	16.00	0.63	0.205	0.257	0.127	0.08
193	16.08	0.13	0.043	0.256	0.027	0.02
194	16.17	0.13	0.043	0.254	0.027	0.02
195	16.25	0.13	0.043	0.253	0.027	0.02
196	16.33	0.13	0.043	0.252	0.027	0.02
197	16.42	0.13	0.043	0.250	0.027	0.02
198	16.50	0.13	0.043	0.249	0.027	0.02
199	16.58	0.10	0.032	0.248	0.020	0.01
200	16.67	0.10	0.032	0.247	0.020	0.01
201	16.75	0.10	0.032	0.245	0.020	0.01
202	16.83	0.10	0.032	0.244	0.020	0.01
203	16.92	0.10	0.032	0.243	0.020	0.01
204	17.00	0.10	0.032	0.242	0.020	0.01
205	17.08	0.17	0.054	0.240	0.033	0.02
206	17.17	0.17	0.054	0.239	0.033	0.02
207	17.25	0.17	0.054	0.238	0.033	0.02
208	17.33	0.17	0.054	0.237	0.033	0.02
209	17.42	0.17	0.054	0.236	0.033	0.02
210	17.50	0.17	0.054	0.234	0.033	0.02
211	17.58	0.17	0.054	0.233	0.033	0.02
212	17.67	0.17	0.054	0.232	0.033	0.02
213	17.75	0.17	0.054	0.231	0.033	0.02
214	17.83	0.13	0.043	0.230	0.027	0.02
215	17.92	0.13	0.043	0.229	0.027	0.02
216	18.00	0.13	0.043	0.228	0.027	0.02
217	18.08	0.13	0.043	0.226	0.027	0.02
218	18.17	0.13	0.043	0.225	0.027	0.02
219	18.25	0.13	0.043	0.224	0.027	0.02
220	18.33	0.13	0.043	0.223	0.027	0.02
221	18.42	0.13	0.043	0.222	0.027	0.02
222	18.50	0.13	0.043	0.221	0.027	0.02
223	18.58	0.10	0.032	0.220	0.020	0.01
224	18.67	0.10	0.032	0.219	0.020	0.01
225	18.75	0.10	0.032	0.218	0.020	0.01
226	18.83	0.07	0.022	0.217	0.013	0.01
227	18.92	0.07	0.022	0.216	0.013	0.01
228	19.00	0.07	0.022	0.215	0.013	0.01
229	19.08	0.10	0.032	0.214	0.020	0.01
230	19.17	0.10	0.032	0.213	0.020	0.01
231	19.25	0.10	0.032	0.212	0.020	0.01
232	19.33	0.13	0.043	0.211	0.027	0.02
233	19.42	0.13	0.043	0.210	0.027	0.02
234	19.50	0.13	0.043	0.209	0.027	0.02
235	19.58	0.10	0.032	0.208	0.020	0.01
236	19.67	0.10	0.032	0.207	0.020	0.01
237	19.75	0.10	0.032	0.206	0.020	0.01
238	19.83	0.07	0.022	0.205	0.013	0.01
239	19.92	0.07	0.022	0.204	0.013	0.01
240	20.00	0.07	0.022	0.203	0.013	0.01
241	20.08	0.10	0.032	0.202	0.020	0.01
242	20.17	0.10	0.032	0.201	0.020	0.01
243	20.25	0.10	0.032	0.201	0.020	0.01
244	20.33	0.10	0.032	0.200	0.020	0.01
245	20.42	0.10	0.032	0.199	0.020	0.01
246	20.50	0.10	0.032	0.198	0.020	0.01
247	20.58	0.10	0.032	0.197	0.020	0.01
248	20.67	0.10	0.032	0.196	0.020	0.01
249	20.75	0.10	0.032	0.195	0.020	0.01
250	20.83	0.07	0.022	0.195	0.013	0.01

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251  20.92     0.07      0.022         0.194     0.013         0.01
252  21.00     0.07      0.022         0.193     0.013         0.01
253  21.08     0.10      0.032         0.192     0.020         0.01
254  21.17     0.10      0.032         0.192     0.020         0.01
255  21.25     0.10      0.032         0.191     0.020         0.01
256  21.33     0.07      0.022         0.190     0.013         0.01
257  21.42     0.07      0.022         0.189     0.013         0.01
258  21.50     0.07      0.022         0.189     0.013         0.01
259  21.58     0.10      0.032         0.188     0.020         0.01
260  21.67     0.10      0.032         0.187     0.020         0.01
261  21.75     0.10      0.032         0.187     0.020         0.01
262  21.83     0.07      0.022         0.186     0.013         0.01
263  21.92     0.07      0.022         0.185     0.013         0.01
264  22.00     0.07      0.022         0.185     0.013         0.01
265  22.08     0.10      0.032         0.184     0.020         0.01
266  22.17     0.10      0.032         0.184     0.020         0.01
267  22.25     0.10      0.032         0.183     0.020         0.01
268  22.33     0.07      0.022         0.182     0.013         0.01
269  22.42     0.07      0.022         0.182     0.013         0.01
270  22.50     0.07      0.022         0.181     0.013         0.01
271  22.58     0.07      0.022         0.181     0.013         0.01
272  22.67     0.07      0.022         0.180     0.013         0.01
273  22.75     0.07      0.022         0.180     0.013         0.01
274  22.83     0.07      0.022         0.179     0.013         0.01
275  22.92     0.07      0.022         0.179     0.013         0.01
276  23.00     0.07      0.022         0.178     0.013         0.01
277  23.08     0.07      0.022         0.178     0.013         0.01
278  23.17     0.07      0.022         0.178     0.013         0.01
279  23.25     0.07      0.022         0.177     0.013         0.01
280  23.33     0.07      0.022         0.177     0.013         0.01
281  23.42     0.07      0.022         0.177     0.013         0.01
282  23.50     0.07      0.022         0.176     0.013         0.01
283  23.58     0.07      0.022         0.176     0.013         0.01
284  23.67     0.07      0.022         0.176     0.013         0.01
285  23.75     0.07      0.022         0.175     0.013         0.01
286  23.83     0.07      0.022         0.175     0.013         0.01
287  23.92     0.07      0.022         0.175     0.013         0.01
288  24.00     0.07      0.022         0.175     0.013         0.01
    Sum =     100.0                                     Sum =    10.9
      Flood volume = Effective rainfall      0.91(In)
       times area       1.9(Ac.)/[(In)/(Ft.)] =       0.1(Ac.Ft)
      Total soil loss =      1.79(In)
      Total soil loss =     0.284(Ac.Ft)
      Total rainfall =      2.70(In)
      Flood volume =        6248.8 Cubic Feet
      Total soil loss =       12373.0 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      0.220(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        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0001      0.01  Q         |         |         |         |
   0+10       0.0002      0.01  Q         |         |         |         |
   0+15       0.0003      0.02  Q         |         |         |         |
   0+20       0.0004      0.02  Q         |         |         |         |
   0+25       0.0006      0.02  Q         |         |         |         |
   0+30       0.0007      0.02  Q         |         |         |         |
   0+35       0.0009      0.02  Q         |         |         |         |
   0+40       0.0011      0.02  Q         |         |         |         |
   0+45       0.0012      0.02  Q         |         |         |         |
   0+50       0.0014      0.03  Q         |         |         |         |
   0+55       0.0016      0.03  Q         |         |         |         |
   1+ 0       0.0018      0.03  Q         |         |         |         |
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1+ 5       0.0020      0.03  Q         |         |         |         |
1+10       0.0022      0.02  Q         |         |         |         |
1+15       0.0024      0.02  Q         |         |         |         |
1+20       0.0025      0.02  Q         |         |         |         |
1+25       0.0027      0.02  Q         |         |         |         |
1+30       0.0028      0.02  Q         |         |         |         |
1+35       0.0030      0.02  Q         |         |         |         |
1+40       0.0032      0.02  Q         |         |         |         |
1+45       0.0033      0.02  Q         |         |         |         |
1+50       0.0035      0.03  Q         |         |         |         |
1+55       0.0037      0.03  QV        |         |         |         |
2+ 0       0.0039      0.03  QV        |         |         |         |
2+ 5       0.0042      0.03  QV        |         |         |         |
2+10       0.0044      0.03  QV        |         |         |         |
2+15       0.0046      0.03  QV        |         |         |         |
2+20       0.0048      0.03  QV        |         |         |         |
2+25       0.0050      0.03  QV        |         |         |         |
2+30       0.0052      0.03  QV        |         |         |         |
2+35       0.0055      0.04  QV        |         |         |         |
2+40       0.0058      0.04  QV        |         |         |         |
2+45       0.0060      0.04  QV        |         |         |         |
2+50       0.0063      0.04  QV        |         |         |         |
2+55       0.0066      0.04  QV        |         |         |         |
3+ 0       0.0068      0.04  QV        |         |         |         |
3+ 5       0.0071      0.04  QV        |         |         |         |
3+10       0.0074      0.04  Q V       |         |         |         |
3+15       0.0077      0.04  Q V       |         |         |         |
3+20       0.0079      0.04  Q V       |         |         |         |
3+25       0.0082      0.04  Q V       |         |         |         |
3+30       0.0085      0.04  Q V       |         |         |         |
3+35       0.0087      0.04  Q V       |         |         |         |
3+40       0.0090      0.04  Q V       |         |         |         |
3+45       0.0093      0.04  Q V       |         |         |         |
3+50       0.0096      0.04  Q V       |         |         |         |
3+55       0.0099      0.05  Q V       |         |         |         |
4+ 0       0.0102      0.05  Q V       |         |         |         |
4+ 5       0.0105      0.05  Q V       |         |         |         |
4+10       0.0109      0.05  Q  V      |         |         |         |
4+15       0.0112      0.05  Q  V      |         |         |         |
4+20       0.0116      0.05  Q  V      |         |         |         |
4+25       0.0119      0.05  Q  V      |         |         |         |
4+30       0.0123      0.06  Q  V      |         |         |         |
4+35       0.0127      0.06  Q  V      |         |         |         |
4+40       0.0131      0.06  Q  V      |         |         |         |
4+45       0.0134      0.06  Q  V      |         |         |         |
4+50       0.0139      0.06  Q  V      |         |         |         |
4+55       0.0143      0.06  Q  V      |         |         |         |
5+ 0       0.0147      0.06  Q   V     |         |         |         |
5+ 5       0.0151      0.05  Q   V     |         |         |         |
5+10       0.0154      0.05  Q   V     |         |         |         |
5+15       0.0157      0.05  Q   V     |         |         |         |
5+20       0.0161      0.05  Q   V     |         |         |         |
5+25       0.0165      0.05  Q   V     |         |         |         |
5+30       0.0169      0.06  Q   V     |         |         |         |
5+35       0.0173      0.06  Q   V     |         |         |         |
5+40       0.0177      0.06  Q   V     |         |         |         |
5+45       0.0181      0.06  Q    V    |         |         |         |
5+50       0.0186      0.06  Q    V    |         |         |         |
5+55       0.0190      0.06  Q    V    |         |         |         |
6+ 0       0.0194      0.06  Q    V    |         |         |         |
6+ 5       0.0199      0.07  Q    V    |         |         |         |
6+10       0.0204      0.07  Q    V    |         |         |         |
6+15       0.0209      0.07  Q    V    |         |         |         |
6+20       0.0213      0.07  Q    V    |         |         |         |
6+25       0.0218      0.07  Q     V   |         |         |         |
6+30       0.0223      0.07  Q     V   |         |         |         |
6+35       0.0228      0.08  Q     V   |         |         |         |
6+40       0.0234      0.08  Q     V   |         |         |         |
6+45       0.0239      0.08  Q     V   |         |         |         |
6+50       0.0245      0.08  Q     V   |         |         |         |
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 6+55       0.0250      0.08  Q     V   |         |         |         |
 7+ 0       0.0255      0.08  Q      V  |         |         |         |
 7+ 5       0.0261      0.08  Q      V  |         |         |         |
 7+10       0.0266      0.08  Q      V  |         |         |         |
 7+15       0.0272      0.08  Q      V  |         |         |         |
 7+20       0.0277      0.08  Q      V  |         |         |         |
 7+25       0.0283      0.09  Q      V  |         |         |         |
 7+30       0.0289      0.09  Q       V |         |         |         |
 7+35       0.0295      0.09  Q       V |         |         |         |
 7+40       0.0302      0.09  Q       V |         |         |         |
 7+45       0.0308      0.09  Q       V |         |         |         |
 7+50       0.0315      0.10  Q       V |         |         |         |
 7+55       0.0322      0.10  Q       V |         |         |         |
 8+ 0       0.0329      0.10  Q        V|         |         |         |
 8+ 5       0.0337      0.11  Q        V|         |         |         |
 8+10       0.0345      0.12  Q        V|         |         |         |
 8+15       0.0353      0.12  Q        V|         |         |         |
 8+20       0.0361      0.12  Q         V         |         |         |
 8+25       0.0369      0.12  Q         V         |         |         |
 8+30       0.0377      0.12  Q         V         |         |         |
 8+35       0.0386      0.12  Q         V         |         |         |
 8+40       0.0394      0.13  Q         V         |         |         |
 8+45       0.0403      0.13  Q         |V        |         |         |
 8+50       0.0412      0.13  Q         |V        |         |         |
 8+55       0.0421      0.13  Q         |V        |         |         |
 9+ 0       0.0430      0.13  Q         | V       |         |         |
 9+ 5       0.0440      0.14  Q         | V       |         |         |
 9+10       0.0450      0.15  Q         | V       |         |         |
 9+15       0.0461      0.15  Q         | V       |         |         |
 9+20       0.0471      0.15  Q         |  V      |         |         |
 9+25       0.0482      0.16  Q         |  V      |         |         |
 9+30       0.0493      0.16  Q         |  V      |         |         |
 9+35       0.0504      0.16  Q         |   V     |         |         |
 9+40       0.0515      0.16  Q         |   V     |         |         |
 9+45       0.0527      0.17  Q         |   V     |         |         |
 9+50       0.0538      0.17  Q         |    V    |         |         |
 9+55       0.0550      0.17  Q         |    V    |         |         |
10+ 0       0.0562      0.17  Q         |    V    |         |         |
10+ 5       0.0572      0.14  Q         |    V    |         |         |
10+10       0.0580      0.12  Q         |     V   |         |         |
10+15       0.0589      0.12  Q         |     V   |         |         |
10+20       0.0597      0.12  Q         |     V   |         |         |
10+25       0.0605      0.12  Q         |     V   |         |         |
10+30       0.0613      0.12  Q         |      V  |         |         |
10+35       0.0623      0.14  Q         |      V  |         |         |
10+40       0.0633      0.15  Q         |      V  |         |         |
10+45       0.0644      0.16  Q         |      V  |         |         |
10+50       0.0655      0.16  Q         |       V |         |         |
10+55       0.0666      0.16  Q         |       V |         |         |
11+ 0       0.0677      0.16  Q         |       V |         |         |
11+ 5       0.0687      0.15  Q         |        V|         |         |
11+10       0.0697      0.15  Q         |        V|         |         |
11+15       0.0708      0.15  Q         |        V|         |         |
11+20       0.0718      0.15  Q         |         V         |         |
11+25       0.0728      0.15  Q         |         V         |         |
11+30       0.0739      0.15  Q         |         V         |         |
11+35       0.0748      0.14  Q         |         V         |         |
11+40       0.0758      0.13  Q         |         |V        |         |
11+45       0.0767      0.13  Q         |         |V        |         |
11+50       0.0776      0.14  Q         |         |V        |         |
11+55       0.0786      0.14  Q         |         |V        |         |
12+ 0       0.0796      0.14  Q         |         | V       |         |
12+ 5       0.0807      0.17  Q         |         | V       |         |
12+10       0.0821      0.19  Q         |         | V       |         |
12+15       0.0834      0.20  Q         |         |  V      |         |
12+20       0.0848      0.20  Q         |         |  V      |         |
12+25       0.0862      0.20  Q         |         |   V     |         |
12+30       0.0876      0.20  Q         |         |   V     |         |
12+35       0.0891      0.21  Q         |         |   V     |         |
12+40       0.0906      0.22  Q         |         |    V    |         |
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12+45       0.0921      0.22  Q         |         |    V    |         |
12+50       0.0928      0.10  Q         |         |    V    |         |
12+55       0.0930      0.02  Q         |         |    V    |         |
13+ 0       0.0930      0.01  Q         |         |    V    |         |
13+ 5       0.0934      0.07  Q         |         |     V   |         |
13+10       0.0942      0.11  Q         |         |     V   |         |
13+15       0.0950      0.12  Q         |         |     V   |         |
13+20       0.0959      0.12  Q         |         |     V   |         |
13+25       0.0967      0.12  Q         |         |     V   |         |
13+30       0.0976      0.13  Q         |         |      V  |         |
13+35       0.0987      0.16  Q         |         |      V  |         |
13+40       0.0999      0.18  Q         |         |      V  |         |
13+45       0.1011      0.18  Q         |         |       V |         |
13+50       0.1024      0.18  Q         |         |       V |         |
13+55       0.1036      0.18  Q         |         |       V |         |
14+ 0       0.1049      0.18  Q         |         |        V|         |
14+ 5       0.1055      0.09  Q         |         |        V|         |
14+10       0.1056      0.02  Q         |         |        V|         |
14+15       0.1057      0.01  Q         |         |        V|         |
14+20       0.1064      0.12  Q         |         |        V|         |
14+25       0.1078      0.19  Q         |         |         V         |
14+30       0.1092      0.20  Q         |         |         V         |
14+35       0.1098      0.09  Q         |         |         V         |
14+40       0.1099      0.02  Q         |         |         V         |
14+45       0.1100      0.00  Q         |         |         V         |
14+50       0.1107      0.11  Q         |         |         V         |
14+55       0.1120      0.18  Q         |         |         |V        |
15+ 0       0.1133      0.20  Q         |         |         |V        |
15+ 5       0.1147      0.19  Q         |         |         |V        |
15+10       0.1160      0.19  Q         |         |         | V       |
15+15       0.1173      0.19  Q         |         |         | V       |
15+20       0.1185      0.18  Q         |         |         |  V      |
15+25       0.1198      0.18  Q         |         |         |  V      |
15+30       0.1210      0.18  Q         |         |         |  V      |
15+35       0.1221      0.16  Q         |         |         |   V     |
15+40       0.1232      0.15  Q         |         |         |   V     |
15+45       0.1242      0.15  Q         |         |         |   V     |
15+50       0.1253      0.15  Q         |         |         |   V     |
15+55       0.1263      0.15  Q         |         |         |    V    |
16+ 0       0.1273      0.15  Q         |         |         |    V    |
16+ 5       0.1279      0.09  Q         |         |         |    V    |
16+10       0.1282      0.04  Q         |         |         |    V    |
16+15       0.1284      0.03  Q         |         |         |    V    |
16+20       0.1286      0.03  Q         |         |         |    V    |
16+25       0.1288      0.03  Q         |         |         |    V    |
16+30       0.1290      0.03  Q         |         |         |    V    |
16+35       0.1292      0.03  Q         |         |         |     V   |
16+40       0.1294      0.02  Q         |         |         |     V   |
16+45       0.1296      0.02  Q         |         |         |     V   |
16+50       0.1297      0.02  Q         |         |         |     V   |
16+55       0.1299      0.02  Q         |         |         |     V   |
17+ 0       0.1300      0.02  Q         |         |         |     V   |
17+ 5       0.1303      0.03  Q         |         |         |     V   |
17+10       0.1305      0.04  Q         |         |         |     V   |
17+15       0.1308      0.04  Q         |         |         |     V   |
17+20       0.1311      0.04  Q         |         |         |     V   |
17+25       0.1313      0.04  Q         |         |         |     V   |
17+30       0.1316      0.04  Q         |         |         |     V   |
17+35       0.1319      0.04  Q         |         |         |     V   |
17+40       0.1322      0.04  Q         |         |         |     V   |
17+45       0.1324      0.04  Q         |         |         |     V   |
17+50       0.1327      0.04  Q         |         |         |     V   |
17+55       0.1329      0.03  Q         |         |         |      V  |
18+ 0       0.1331      0.03  Q         |         |         |      V  |
18+ 5       0.1333      0.03  Q         |         |         |      V  |
18+10       0.1335      0.03  Q         |         |         |      V  |
18+15       0.1338      0.03  Q         |         |         |      V  |
18+20       0.1340      0.03  Q         |         |         |      V  |
18+25       0.1342      0.03  Q         |         |         |      V  |
18+30       0.1344      0.03  Q         |         |         |      V  |
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  18+35       0.1346      0.03  Q         |         |         |      V  |
  18+40       0.1348      0.02  Q         |         |         |      V  |
  18+45       0.1349      0.02  Q         |         |         |      V  |
  18+50       0.1351      0.02  Q         |         |         |      V  |
  18+55       0.1352      0.02  Q         |         |         |      V  |
  19+ 0       0.1353      0.02  Q         |         |         |      V  |
  19+ 5       0.1354      0.02  Q         |         |         |      V  |
  19+10       0.1356      0.02  Q         |         |         |      V  |
  19+15       0.1357      0.02  Q         |         |         |      V  |
  19+20       0.1359      0.03  Q         |         |         |      V  |
  19+25       0.1361      0.03  Q         |         |         |      V  |
  19+30       0.1364      0.03  Q         |         |         |       V |
  19+35       0.1365      0.03  Q         |         |         |       V |
  19+40       0.1367      0.02  Q         |         |         |       V |
  19+45       0.1369      0.02  Q         |         |         |       V |
  19+50       0.1370      0.02  Q         |         |         |       V |
  19+55       0.1371      0.02  Q         |         |         |       V |
  20+ 0       0.1372      0.02  Q         |         |         |       V |
  20+ 5       0.1374      0.02  Q         |         |         |       V |
  20+10       0.1375      0.02  Q         |         |         |       V |
  20+15       0.1377      0.02  Q         |         |         |       V |
  20+20       0.1378      0.02  Q         |         |         |       V |
  20+25       0.1380      0.02  Q         |         |         |       V |
  20+30       0.1382      0.02  Q         |         |         |       V |
  20+35       0.1383      0.02  Q         |         |         |       V |
  20+40       0.1385      0.02  Q         |         |         |       V |
  20+45       0.1387      0.02  Q         |         |         |       V |
  20+50       0.1388      0.02  Q         |         |         |       V |
  20+55       0.1389      0.02  Q         |         |         |       V |
  21+ 0       0.1390      0.02  Q         |         |         |       V |
  21+ 5       0.1391      0.02  Q         |         |         |       V |
  21+10       0.1393      0.02  Q         |         |         |       V |
  21+15       0.1395      0.02  Q         |         |         |       V |
  21+20       0.1396      0.02  Q         |         |         |       V |
  21+25       0.1397      0.02  Q         |         |         |       V |
  21+30       0.1398      0.02  Q         |         |         |       V |
  21+35       0.1400      0.02  Q         |         |         |        V|
  21+40       0.1401      0.02  Q         |         |         |        V|
  21+45       0.1403      0.02  Q         |         |         |        V|
  21+50       0.1404      0.02  Q         |         |         |        V|
  21+55       0.1405      0.02  Q         |         |         |        V|
  22+ 0       0.1406      0.02  Q         |         |         |        V|
  22+ 5       0.1408      0.02  Q         |         |         |        V|
  22+10       0.1409      0.02  Q         |         |         |        V|
  22+15       0.1411      0.02  Q         |         |         |        V|
  22+20       0.1412      0.02  Q         |         |         |        V|
  22+25       0.1413      0.02  Q         |         |         |        V|
  22+30       0.1414      0.02  Q         |         |         |        V|
  22+35       0.1416      0.02  Q         |         |         |        V|
  22+40       0.1417      0.02  Q         |         |         |        V|
  22+45       0.1418      0.02  Q         |         |         |        V|
  22+50       0.1419      0.02  Q         |         |         |        V|
  22+55       0.1420      0.02  Q         |         |         |        V|
  23+ 0       0.1421      0.02  Q         |         |         |        V|
  23+ 5       0.1422      0.02  Q         |         |         |        V|
  23+10       0.1423      0.02  Q         |         |         |        V|
  23+15       0.1424      0.02  Q         |         |         |        V|
  23+20       0.1425      0.02  Q         |         |         |        V|
  23+25       0.1426      0.02  Q         |         |         |        V|
  23+30       0.1427      0.02  Q         |         |         |        V|
  23+35       0.1429      0.02  Q         |         |         |        V|
  23+40       0.1430      0.02  Q         |         |         |        V|
  23+45       0.1431      0.02  Q         |         |         |        V|
  23+50       0.1432      0.02  Q         |         |         |        V|
  23+55       0.1433      0.02  Q         |         |         |        V|
  24+ 0       0.1434      0.02  Q         |         |         |        V|
  24+ 5       0.1434      0.01  Q         |         |         |        V|
  24+10       0.1435      0.00  Q         |         |         |         V
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       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  02/10/13 File: tr36519da2410.out


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------------------------------------------------------------------------------

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

-------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



-------------------------------------------------------------------------
TRACT 36519
Area A - Developed Condition
24 HOUR, 10 YEAR STORM

-----------------------------------------------------------------------
Drainage Area =       3.10(Ac.)  =      0.005 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       3.10(Ac.)  =      0.005 Sq. Mi.
Length along longest watercourse =     625.00(Ft.)
Length along longest watercourse measured to centroid =     263.00(Ft.)
Length along longest watercourse =      0.118 Mi.
Length along longest watercourse measured to centroid =      0.050 Mi.
Difference in elevation =       7.00(Ft.)
Slope along watercourse =     59.1360 Ft./Mi.
Average Manning's 'N' = 0.020
Lag time =    0.031 Hr.
Lag time =     1.89 Min.
25% of lag time =     0.47 Min.
40% of lag time =     0.75 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]
        3.10           2.70                  8.37

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        3.10           8.00                 24.80

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    2.700(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    4.880(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    4.880(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     3.100           56.00         0.350
```

Total Area Entered = 3.10(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.350	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.620

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	265.102	52.791	1.649
2	0.167	530.205	39.136	1.223
3	0.250	795.307	6.553	0.205
4	0.333	1060.409	1.520	0.048
		Sum = 100.000	Sum=	3.124

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.039	0.620	0.024	0.01
2	0.17	0.07	0.039	0.618	0.024	0.01
3	0.25	0.07	0.039	0.615	0.024	0.01
4	0.33	0.10	0.059	0.613	0.036	0.02
5	0.42	0.10	0.059	0.611	0.036	0.02
6	0.50	0.10	0.059	0.608	0.036	0.02
7	0.58	0.10	0.059	0.606	0.036	0.02
8	0.67	0.10	0.059	0.604	0.036	0.02
9	0.75	0.10	0.059	0.601	0.036	0.02
10	0.83	0.13	0.078	0.599	0.048	0.03
11	0.92	0.13	0.078	0.596	0.048	0.03
12	1.00	0.13	0.078	0.594	0.048	0.03
13	1.08	0.10	0.059	0.592	0.036	0.02
14	1.17	0.10	0.059	0.589	0.036	0.02
15	1.25	0.10	0.059	0.587	0.036	0.02
16	1.33	0.10	0.059	0.585	0.036	0.02
17	1.42	0.10	0.059	0.582	0.036	0.02
18	1.50	0.10	0.059	0.580	0.036	0.02
19	1.58	0.10	0.059	0.578	0.036	0.02
20	1.67	0.10	0.059	0.575	0.036	0.02
21	1.75	0.10	0.059	0.573	0.036	0.02
22	1.83	0.13	0.078	0.571	0.048	0.03
23	1.92	0.13	0.078	0.569	0.048	0.03
24	2.00	0.13	0.078	0.566	0.048	0.03
25	2.08	0.13	0.078	0.564	0.048	0.03
26	2.17	0.13	0.078	0.562	0.048	0.03
27	2.25	0.13	0.078	0.559	0.048	0.03
28	2.33	0.13	0.078	0.557	0.048	0.03
29	2.42	0.13	0.078	0.555	0.048	0.03
30	2.50	0.13	0.078	0.553	0.048	0.03
31	2.58	0.17	0.098	0.550	0.061	0.04
32	2.67	0.17	0.098	0.548	0.061	0.04
33	2.75	0.17	0.098	0.546	0.061	0.04
34	2.83	0.17	0.098	0.544	0.061	0.04
35	2.92	0.17	0.098	0.541	0.061	0.04
36	3.00	0.17	0.098	0.539	0.061	0.04
37	3.08	0.17	0.098	0.537	0.061	0.04
38	3.17	0.17	0.098	0.535	0.061	0.04
39	3.25	0.17	0.098	0.532	0.061	0.04

40	3.33	0.17	0.098	0.530	0.061	0.04
41	3.42	0.17	0.098	0.528	0.061	0.04
42	3.50	0.17	0.098	0.526	0.061	0.04
43	3.58	0.17	0.098	0.524	0.061	0.04
44	3.67	0.17	0.098	0.521	0.061	0.04
45	3.75	0.17	0.098	0.519	0.061	0.04
46	3.83	0.20	0.117	0.517	0.073	0.04
47	3.92	0.20	0.117	0.515	0.073	0.04
48	4.00	0.20	0.117	0.513	0.073	0.04
49	4.08	0.20	0.117	0.510	0.073	0.04
50	4.17	0.20	0.117	0.508	0.073	0.04
51	4.25	0.20	0.117	0.506	0.073	0.04
52	4.33	0.23	0.137	0.504	0.085	0.05
53	4.42	0.23	0.137	0.502	0.085	0.05
54	4.50	0.23	0.137	0.500	0.085	0.05
55	4.58	0.23	0.137	0.498	0.085	0.05
56	4.67	0.23	0.137	0.495	0.085	0.05
57	4.75	0.23	0.137	0.493	0.085	0.05
58	4.83	0.27	0.156	0.491	0.097	0.06
59	4.92	0.27	0.156	0.489	0.097	0.06
60	5.00	0.27	0.156	0.487	0.097	0.06
61	5.08	0.20	0.117	0.485	0.073	0.04
62	5.17	0.20	0.117	0.483	0.073	0.04
63	5.25	0.20	0.117	0.481	0.073	0.04
64	5.33	0.23	0.137	0.478	0.085	0.05
65	5.42	0.23	0.137	0.476	0.085	0.05
66	5.50	0.23	0.137	0.474	0.085	0.05
67	5.58	0.27	0.156	0.472	0.097	0.06
68	5.67	0.27	0.156	0.470	0.097	0.06
69	5.75	0.27	0.156	0.468	0.097	0.06
70	5.83	0.27	0.156	0.466	0.097	0.06
71	5.92	0.27	0.156	0.464	0.097	0.06
72	6.00	0.27	0.156	0.462	0.097	0.06
73	6.08	0.30	0.176	0.460	0.109	0.07
74	6.17	0.30	0.176	0.458	0.109	0.07
75	6.25	0.30	0.176	0.456	0.109	0.07
76	6.33	0.30	0.176	0.454	0.109	0.07
77	6.42	0.30	0.176	0.452	0.109	0.07
78	6.50	0.30	0.176	0.450	0.109	0.07
79	6.58	0.33	0.195	0.448	0.121	0.07
80	6.67	0.33	0.195	0.446	0.121	0.07
81	6.75	0.33	0.195	0.444	0.121	0.07
82	6.83	0.33	0.195	0.442	0.121	0.07
83	6.92	0.33	0.195	0.440	0.121	0.07
84	7.00	0.33	0.195	0.438	0.121	0.07
85	7.08	0.33	0.195	0.436	0.121	0.07
86	7.17	0.33	0.195	0.434	0.121	0.07
87	7.25	0.33	0.195	0.432	0.121	0.07
88	7.33	0.37	0.215	0.430	0.133	0.08
89	7.42	0.37	0.215	0.428	0.133	0.08
90	7.50	0.37	0.215	0.426	0.133	0.08
91	7.58	0.40	0.234	0.424	0.145	0.09
92	7.67	0.40	0.234	0.422	0.145	0.09
93	7.75	0.40	0.234	0.420	0.145	0.09
94	7.83	0.43	0.254	0.418	0.157	0.10
95	7.92	0.43	0.254	0.416	0.157	0.10
96	8.00	0.43	0.254	0.414	0.157	0.10
97	8.08	0.50	0.293	0.412	0.182	0.11
98	8.17	0.50	0.293	0.410	0.182	0.11
99	8.25	0.50	0.293	0.408	0.182	0.11
100	8.33	0.50	0.293	0.406	0.182	0.11
101	8.42	0.50	0.293	0.405	0.182	0.11
102	8.50	0.50	0.293	0.403	0.182	0.11
103	8.58	0.53	0.312	0.401	0.194	0.12
104	8.67	0.53	0.312	0.399	0.194	0.12
105	8.75	0.53	0.312	0.397	0.194	0.12
106	8.83	0.57	0.332	0.395	0.206	0.13
107	8.92	0.57	0.332	0.393	0.206	0.13
108	9.00	0.57	0.332	0.391	0.206	0.13
109	9.08	0.63	0.371	0.390	0.230	0.14

110	9.17	0.63	0.371	0.388	0.230	0.14
111	9.25	0.63	0.371	0.386	0.230	0.14
112	9.33	0.67	0.390	0.384	---	0.01
113	9.42	0.67	0.390	0.382	---	0.01
114	9.50	0.67	0.390	0.380	---	0.01
115	9.58	0.70	0.410	0.379	---	0.03
116	9.67	0.70	0.410	0.377	---	0.03
117	9.75	0.70	0.410	0.375	---	0.04
118	9.83	0.73	0.429	0.373	---	0.06
119	9.92	0.73	0.429	0.371	---	0.06
120	10.00	0.73	0.429	0.369	---	0.06
121	10.08	0.50	0.293	0.368	0.182	0.11
122	10.17	0.50	0.293	0.366	0.182	0.11
123	10.25	0.50	0.293	0.364	0.182	0.11
124	10.33	0.50	0.293	0.362	0.182	0.11
125	10.42	0.50	0.293	0.361	0.182	0.11
126	10.50	0.50	0.293	0.359	0.182	0.11
127	10.58	0.67	0.390	0.357	---	0.03
128	10.67	0.67	0.390	0.355	---	0.04
129	10.75	0.67	0.390	0.354	---	0.04
130	10.83	0.67	0.390	0.352	---	0.04
131	10.92	0.67	0.390	0.350	---	0.04
132	11.00	0.67	0.390	0.348	---	0.04
133	11.08	0.63	0.371	0.347	---	0.02
134	11.17	0.63	0.371	0.345	---	0.03
135	11.25	0.63	0.371	0.343	---	0.03
136	11.33	0.63	0.371	0.342	---	0.03
137	11.42	0.63	0.371	0.340	---	0.03
138	11.50	0.63	0.371	0.338	---	0.03
139	11.58	0.57	0.332	0.337	0.206	0.13
140	11.67	0.57	0.332	0.335	0.206	0.13
141	11.75	0.57	0.332	0.333	0.206	0.13
142	11.83	0.60	0.351	0.332	---	0.02
143	11.92	0.60	0.351	0.330	---	0.02
144	12.00	0.60	0.351	0.328	---	0.02
145	12.08	0.83	0.488	0.327	---	0.16
146	12.17	0.83	0.488	0.325	---	0.16
147	12.25	0.83	0.488	0.323	---	0.16
148	12.33	0.87	0.508	0.322	---	0.19
149	12.42	0.87	0.508	0.320	---	0.19
150	12.50	0.87	0.508	0.319	---	0.19
151	12.58	0.93	0.547	0.317	---	0.23
152	12.67	0.93	0.547	0.315	---	0.23
153	12.75	0.93	0.547	0.314	---	0.23
154	12.83	0.97	0.566	0.312	---	0.25
155	12.92	0.97	0.566	0.311	---	0.26
156	13.00	0.97	0.566	0.309	---	0.26
157	13.08	1.13	0.664	0.307	---	0.36
158	13.17	1.13	0.664	0.306	---	0.36
159	13.25	1.13	0.664	0.304	---	0.36
160	13.33	1.13	0.664	0.303	---	0.36
161	13.42	1.13	0.664	0.301	---	0.36
162	13.50	1.13	0.664	0.300	---	0.36
163	13.58	0.77	0.449	0.298	---	0.15
164	13.67	0.77	0.449	0.297	---	0.15
165	13.75	0.77	0.449	0.295	---	0.15
166	13.83	0.77	0.449	0.294	---	0.16
167	13.92	0.77	0.449	0.292	---	0.16
168	14.00	0.77	0.449	0.291	---	0.16
169	14.08	0.90	0.527	0.289	---	0.24
170	14.17	0.90	0.527	0.288	---	0.24
171	14.25	0.90	0.527	0.286	---	0.24
172	14.33	0.87	0.508	0.285	---	0.22
173	14.42	0.87	0.508	0.283	---	0.22
174	14.50	0.87	0.508	0.282	---	0.23
175	14.58	0.87	0.508	0.280	---	0.23
176	14.67	0.87	0.508	0.279	---	0.23
177	14.75	0.87	0.508	0.278	---	0.23
178	14.83	0.83	0.488	0.276	---	0.21
179	14.92	0.83	0.488	0.275	---	0.21

180	15.00	0.83	0.488	0.273	---	0.21
181	15.08	0.80	0.469	0.272	---	0.20
182	15.17	0.80	0.469	0.270	---	0.20
183	15.25	0.80	0.469	0.269	---	0.20
184	15.33	0.77	0.449	0.268	---	0.18
185	15.42	0.77	0.449	0.266	---	0.18
186	15.50	0.77	0.449	0.265	---	0.18
187	15.58	0.63	0.371	0.264	---	0.11
188	15.67	0.63	0.371	0.262	---	0.11
189	15.75	0.63	0.371	0.261	---	0.11
190	15.83	0.63	0.371	0.260	---	0.11
191	15.92	0.63	0.371	0.258	---	0.11
192	16.00	0.63	0.371	0.257	---	0.11
193	16.08	0.13	0.078	0.256	0.048	0.03
194	16.17	0.13	0.078	0.254	0.048	0.03
195	16.25	0.13	0.078	0.253	0.048	0.03
196	16.33	0.13	0.078	0.252	0.048	0.03
197	16.42	0.13	0.078	0.250	0.048	0.03
198	16.50	0.13	0.078	0.249	0.048	0.03
199	16.58	0.10	0.059	0.248	0.036	0.02
200	16.67	0.10	0.059	0.247	0.036	0.02
201	16.75	0.10	0.059	0.245	0.036	0.02
202	16.83	0.10	0.059	0.244	0.036	0.02
203	16.92	0.10	0.059	0.243	0.036	0.02
204	17.00	0.10	0.059	0.242	0.036	0.02
205	17.08	0.17	0.098	0.240	0.061	0.04
206	17.17	0.17	0.098	0.239	0.061	0.04
207	17.25	0.17	0.098	0.238	0.061	0.04
208	17.33	0.17	0.098	0.237	0.061	0.04
209	17.42	0.17	0.098	0.236	0.061	0.04
210	17.50	0.17	0.098	0.234	0.061	0.04
211	17.58	0.17	0.098	0.233	0.061	0.04
212	17.67	0.17	0.098	0.232	0.061	0.04
213	17.75	0.17	0.098	0.231	0.061	0.04
214	17.83	0.13	0.078	0.230	0.048	0.03
215	17.92	0.13	0.078	0.229	0.048	0.03
216	18.00	0.13	0.078	0.228	0.048	0.03
217	18.08	0.13	0.078	0.226	0.048	0.03
218	18.17	0.13	0.078	0.225	0.048	0.03
219	18.25	0.13	0.078	0.224	0.048	0.03
220	18.33	0.13	0.078	0.223	0.048	0.03
221	18.42	0.13	0.078	0.222	0.048	0.03
222	18.50	0.13	0.078	0.221	0.048	0.03
223	18.58	0.10	0.059	0.220	0.036	0.02
224	18.67	0.10	0.059	0.219	0.036	0.02
225	18.75	0.10	0.059	0.218	0.036	0.02
226	18.83	0.07	0.039	0.217	0.024	0.01
227	18.92	0.07	0.039	0.216	0.024	0.01
228	19.00	0.07	0.039	0.215	0.024	0.01
229	19.08	0.10	0.059	0.214	0.036	0.02
230	19.17	0.10	0.059	0.213	0.036	0.02
231	19.25	0.10	0.059	0.212	0.036	0.02
232	19.33	0.13	0.078	0.211	0.048	0.03
233	19.42	0.13	0.078	0.210	0.048	0.03
234	19.50	0.13	0.078	0.209	0.048	0.03
235	19.58	0.10	0.059	0.208	0.036	0.02
236	19.67	0.10	0.059	0.207	0.036	0.02
237	19.75	0.10	0.059	0.206	0.036	0.02
238	19.83	0.07	0.039	0.205	0.024	0.01
239	19.92	0.07	0.039	0.204	0.024	0.01
240	20.00	0.07	0.039	0.203	0.024	0.01
241	20.08	0.10	0.059	0.202	0.036	0.02
242	20.17	0.10	0.059	0.201	0.036	0.02
243	20.25	0.10	0.059	0.201	0.036	0.02
244	20.33	0.10	0.059	0.200	0.036	0.02
245	20.42	0.10	0.059	0.199	0.036	0.02
246	20.50	0.10	0.059	0.198	0.036	0.02
247	20.58	0.10	0.059	0.197	0.036	0.02
248	20.67	0.10	0.059	0.196	0.036	0.02
249	20.75	0.10	0.059	0.195	0.036	0.02

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250  20.83     0.07      0.039         0.195     0.024         0.01
251  20.92     0.07      0.039         0.194     0.024         0.01
252  21.00     0.07      0.039         0.193     0.024         0.01
253  21.08     0.10      0.059         0.192     0.036         0.02
254  21.17     0.10      0.059         0.192     0.036         0.02
255  21.25     0.10      0.059         0.191     0.036         0.02
256  21.33     0.07      0.039         0.190     0.024         0.01
257  21.42     0.07      0.039         0.189     0.024         0.01
258  21.50     0.07      0.039         0.189     0.024         0.01
259  21.58     0.10      0.059         0.188     0.036         0.02
260  21.67     0.10      0.059         0.187     0.036         0.02
261  21.75     0.10      0.059         0.187     0.036         0.02
262  21.83     0.07      0.039         0.186     0.024         0.01
263  21.92     0.07      0.039         0.185     0.024         0.01
264  22.00     0.07      0.039         0.185     0.024         0.01
265  22.08     0.10      0.059         0.184     0.036         0.02
266  22.17     0.10      0.059         0.184     0.036         0.02
267  22.25     0.10      0.059         0.183     0.036         0.02
268  22.33     0.07      0.039         0.182     0.024         0.01
269  22.42     0.07      0.039         0.182     0.024         0.01
270  22.50     0.07      0.039         0.181     0.024         0.01
271  22.58     0.07      0.039         0.181     0.024         0.01
272  22.67     0.07      0.039         0.180     0.024         0.01
273  22.75     0.07      0.039         0.180     0.024         0.01
274  22.83     0.07      0.039         0.179     0.024         0.01
275  22.92     0.07      0.039         0.179     0.024         0.01
276  23.00     0.07      0.039         0.178     0.024         0.01
277  23.08     0.07      0.039         0.178     0.024         0.01
278  23.17     0.07      0.039         0.178     0.024         0.01
279  23.25     0.07      0.039         0.177     0.024         0.01
280  23.33     0.07      0.039         0.177     0.024         0.01
281  23.42     0.07      0.039         0.177     0.024         0.01
282  23.50     0.07      0.039         0.176     0.024         0.01
283  23.58     0.07      0.039         0.176     0.024         0.01
284  23.67     0.07      0.039         0.176     0.024         0.01
285  23.75     0.07      0.039         0.175     0.024         0.01
286  23.83     0.07      0.039         0.175     0.024         0.01
287  23.92     0.07      0.039         0.175     0.024         0.01
288  24.00     0.07      0.039         0.175     0.024         0.01
    Sum =     100.0                                   Sum =    20.5
      Flood volume = Effective rainfall      1.70(In)
       times area       3.1(Ac.)/[(In)/(Ft.)] =       0.4(Ac.Ft)
      Total soil loss =      3.18(In)
      Total soil loss =     0.820(Ac.Ft)
      Total rainfall =      4.88(In)
      Flood volume =       19180.2 Cubic Feet
      Total soil loss =       35739.3 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      1.135(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        2.5       5.0       7.5      10.0
 ---------------------------------------------------------------------
   0+ 5       0.0002      0.02  Q         |         |         |         |
   0+10       0.0005      0.04  Q         |         |         |         |
   0+15       0.0008      0.05  Q         |         |         |         |
   0+20       0.0012      0.06  Q         |         |         |         |
   0+25       0.0016      0.07  Q         |         |         |         |
   0+30       0.0021      0.07  Q         |         |         |         |
   0+35       0.0026      0.07  Q         |         |         |         |
   0+40       0.0031      0.07  Q         |         |         |         |
   0+45       0.0036      0.07  Q         |         |         |         |
   0+50       0.0041      0.08  Q         |         |         |         |
   0+55       0.0047      0.09  Q         |         |         |         |
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1+ 0       0.0054      0.09  Q         |         |         |         |
1+ 5       0.0059      0.08  Q         |         |         |         |
1+10       0.0064      0.07  Q         |         |         |         |
1+15       0.0069      0.07  Q         |         |         |         |
1+20       0.0074      0.07  Q         |         |         |         |
1+25       0.0079      0.07  Q         |         |         |         |
1+30       0.0084      0.07  Q         |         |         |         |
1+35       0.0088      0.07  Q         |         |         |         |
1+40       0.0093      0.07  Q         |         |         |         |
1+45       0.0098      0.07  Q         |         |         |         |
1+50       0.0104      0.08  Q         |         |         |         |
1+55       0.0110      0.09  Q         |         |         |         |
2+ 0       0.0116      0.09  QV        |         |         |         |
2+ 5       0.0123      0.09  QV        |         |         |         |
2+10       0.0129      0.09  QV        |         |         |         |
2+15       0.0135      0.09  QV        |         |         |         |
2+20       0.0142      0.09  QV        |         |         |         |
2+25       0.0148      0.09  QV        |         |         |         |
2+30       0.0154      0.09  QV        |         |         |         |
2+35       0.0162      0.10  QV        |         |         |         |
2+40       0.0170      0.11  QV        |         |         |         |
2+45       0.0178      0.12  QV        |         |         |         |
2+50       0.0186      0.12  QV        |         |         |         |
2+55       0.0193      0.12  QV        |         |         |         |
3+ 0       0.0201      0.12  QV        |         |         |         |
3+ 5       0.0209      0.12  QV        |         |         |         |
3+10       0.0217      0.12  QV        |         |         |         |
3+15       0.0225      0.12  Q V       |         |         |         |
3+20       0.0233      0.12  Q V       |         |         |         |
3+25       0.0241      0.12  Q V       |         |         |         |
3+30       0.0249      0.12  Q V       |         |         |         |
3+35       0.0257      0.12  Q V       |         |         |         |
3+40       0.0265      0.12  Q V       |         |         |         |
3+45       0.0273      0.12  Q V       |         |         |         |
3+50       0.0282      0.13  Q V       |         |         |         |
3+55       0.0292      0.14  Q V       |         |         |         |
4+ 0       0.0301      0.14  Q V       |         |         |         |
4+ 5       0.0311      0.14  Q V       |         |         |         |
4+10       0.0320      0.14  Q V       |         |         |         |
4+15       0.0330      0.14  Q V       |         |         |         |
4+20       0.0340      0.15  Q  V      |         |         |         |
4+25       0.0351      0.16  Q  V      |         |         |         |
4+30       0.0363      0.16  Q  V      |         |         |         |
4+35       0.0374      0.16  Q  V      |         |         |         |
4+40       0.0385      0.16  Q  V      |         |         |         |
4+45       0.0396      0.16  Q  V      |         |         |         |
4+50       0.0408      0.17  Q  V      |         |         |         |
4+55       0.0421      0.18  Q  V      |         |         |         |
5+ 0       0.0434      0.19  Q  V      |         |         |         |
5+ 5       0.0445      0.16  Q   V     |         |         |         |
5+10       0.0454      0.14  Q   V     |         |         |         |
5+15       0.0464      0.14  Q   V     |         |         |         |
5+20       0.0474      0.15  Q   V     |         |         |         |
5+25       0.0486      0.16  Q   V     |         |         |         |
5+30       0.0497      0.16  Q   V     |         |         |         |
5+35       0.0509      0.17  Q   V     |         |         |         |
5+40       0.0521      0.18  Q   V     |         |         |         |
5+45       0.0534      0.19  Q   V     |         |         |         |
5+50       0.0547      0.19  Q   V     |         |         |         |
5+55       0.0560      0.19  Q    V    |         |         |         |
6+ 0       0.0572      0.19  Q    V    |         |         |         |
6+ 5       0.0586      0.20  Q    V    |         |         |         |
6+10       0.0600      0.21  Q    V    |         |         |         |
6+15       0.0615      0.21  Q    V    |         |         |         |
6+20       0.0629      0.21  Q    V    |         |         |         |
6+25       0.0643      0.21  Q    V    |         |         |         |
6+30       0.0658      0.21  Q    V    |         |         |         |
6+35       0.0673      0.22  Q     V   |         |         |         |
6+40       0.0689      0.23  Q     V   |         |         |         |
6+45       0.0705      0.23  Q     V   |         |         |         |
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 6+50       0.0721      0.23  Q     V   |         |         |         |
 6+55       0.0737      0.23  Q     V   |         |         |         |
 7+ 0       0.0753      0.23  Q     V   |         |         |         |
 7+ 5       0.0769      0.23  Q     V   |         |         |         |
 7+10       0.0785      0.23  Q      V  |         |         |         |
 7+15       0.0801      0.23  Q      V  |         |         |         |
 7+20       0.0817      0.24  Q      V  |         |         |         |
 7+25       0.0835      0.25  |Q     V  |         |         |         |
 7+30       0.0852      0.25  |Q     V  |         |         |         |
 7+35       0.0871      0.27  |Q     V  |         |         |         |
 7+40       0.0890      0.28  |Q      V |         |         |         |
 7+45       0.0909      0.28  |Q      V |         |         |         |
 7+50       0.0929      0.29  |Q      V |         |         |         |
 7+55       0.0950      0.30  |Q      V |         |         |         |
 8+ 0       0.0970      0.30  |Q      V |         |         |         |
 8+ 5       0.0993      0.33  |Q       V|         |         |         |
 8+10       0.1016      0.34  |Q       V|         |         |         |
 8+15       0.1040      0.35  |Q       V|         |         |         |
 8+20       0.1064      0.35  |Q       V|         |         |         |
 8+25       0.1088      0.35  |Q       V|         |         |         |
 8+30       0.1112      0.35  |Q        V         |         |         |
 8+35       0.1137      0.36  |Q        V         |         |         |
 8+40       0.1162      0.37  |Q        V         |         |         |
 8+45       0.1188      0.37  |Q        V         |         |         |
 8+50       0.1214      0.38  |Q        |V        |         |         |
 8+55       0.1241      0.39  |Q        |V        |         |         |
 9+ 0       0.1269      0.39  |Q        |V        |         |         |
 9+ 5       0.1297      0.42  |Q        |V        |         |         |
 9+10       0.1327      0.44  |Q        | V       |         |         |
 9+15       0.1358      0.44  |Q        | V       |         |         |
 9+20       0.1373      0.22  Q         | V       |         |         |
 9+25       0.1377      0.06  Q         | V       |         |         |
 9+30       0.1379      0.03  Q         | V       |         |         |
 9+35       0.1384      0.07  Q         | V       |         |         |
 9+40       0.1390      0.10  Q         | V       |         |         |
 9+45       0.1398      0.11  Q         | V       |         |         |
 9+50       0.1408      0.14  Q         | V       |         |         |
 9+55       0.1419      0.17  Q         | V       |         |         |
10+ 0       0.1432      0.18  Q         |  V      |         |         |
10+ 5       0.1451      0.27  |Q        |  V      |         |         |
10+10       0.1474      0.33  |Q        |  V      |         |         |
10+15       0.1498      0.35  |Q        |  V      |         |         |
10+20       0.1522      0.35  |Q        |  V      |         |         |
10+25       0.1546      0.35  |Q        |   V     |         |         |
10+30       0.1570      0.35  |Q        |   V     |         |         |
10+35       0.1585      0.22  Q         |   V     |         |         |
10+40       0.1593      0.13  Q         |   V     |         |         |
10+45       0.1601      0.12  Q         |   V     |         |         |
10+50       0.1609      0.12  Q         |   V     |         |         |
10+55       0.1618      0.12  Q         |   V     |         |         |
11+ 0       0.1627      0.13  Q         |   V     |         |         |
11+ 5       0.1634      0.10  Q         |   V     |         |         |
11+10       0.1639      0.08  Q         |   V     |         |         |
11+15       0.1645      0.08  Q         |   V     |         |         |
11+20       0.1651      0.09  Q         |    V    |         |         |
11+25       0.1658      0.09  Q         |    V    |         |         |
11+30       0.1665      0.10  Q         |    V    |         |         |
11+35       0.1682      0.26  |Q        |    V    |         |         |
11+40       0.1708      0.37  |Q        |    V    |         |         |
11+45       0.1735      0.39  |Q        |    V    |         |         |
11+50       0.1750      0.22  Q         |    V    |         |         |
11+55       0.1756      0.09  Q         |    V    |         |         |
12+ 0       0.1761      0.07  Q         |    V    |         |         |
12+ 5       0.1782      0.30  |Q        |     V   |         |         |
12+10       0.1814      0.47  |Q        |     V   |         |         |
12+15       0.1849      0.51  | Q       |     V   |         |         |
12+20       0.1887      0.55  | Q       |      V  |         |         |
12+25       0.1927      0.58  | Q       |      V  |         |         |
12+30       0.1967      0.59  | Q       |      V  |         |         |
12+35       0.2012      0.66  | Q       |       V |         |         |
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12+40       0.2061      0.71  | Q       |        V |         |         |
12+45       0.2111      0.72  | Q       |         V|         |         |
12+50       0.2164      0.76  |  Q      |         V|         |         |
12+55       0.2218      0.79  |  Q      |          V         |         |
13+ 0       0.2273      0.80  |  Q      |          V         |         |
13+ 5       0.2340      0.97  |  Q      |         |V        |         |
13+10       0.2415      1.09  |   Q     |         |V        |         |
13+15       0.2492      1.12  |   Q     |         | V       |         |
13+20       0.2569      1.13  |   Q     |         |  V      |         |
13+25       0.2647      1.13  |   Q     |         |   V     |         |
13+30       0.2725      1.14  |   Q     |         |   V     |         |
13+35       0.2780      0.79  |  Q      |         |    V    |         |
13+40       0.2816      0.53  | Q       |         |    V    |         |
13+45       0.2850      0.49  |Q        |         |    V    |         |
13+50       0.2883      0.48  |Q        |         |     V   |         |
13+55       0.2916      0.49  |Q        |         |     V   |         |
14+ 0       0.2950      0.49  |Q        |         |     V   |         |
14+ 5       0.2993      0.63  | Q       |         |      V  |         |
14+10       0.3043      0.73  | Q       |         |      V  |         |
14+15       0.3095      0.75  | Q       |         |       V |         |
14+20       0.3145      0.72  | Q       |         |       V |         |
14+25       0.3193      0.70  | Q       |         |        V|         |
14+30       0.3241      0.70  | Q       |         |        V|         |
14+35       0.3290      0.71  | Q       |         |        V|         |
14+40       0.3339      0.71  | Q       |         |         V         |
14+45       0.3389      0.72  | Q       |         |         V         |
14+50       0.3436      0.69  | Q       |         |         |V        |
14+55       0.3482      0.67  | Q       |         |         |V        |
15+ 0       0.3528      0.67  | Q       |         |         | V       |
15+ 5       0.3572      0.64  | Q       |         |         | V       |
15+10       0.3615      0.62  | Q       |         |         | V       |
15+15       0.3658      0.62  | Q       |         |         |  V      |
15+20       0.3699      0.59  | Q       |         |         |  V      |
15+25       0.3738      0.57  | Q       |         |         |  V      |
15+30       0.3778      0.57  | Q       |         |         |   V     |
15+35       0.3809      0.45  |Q        |         |         |   V     |
15+40       0.3833      0.36  |Q        |         |         |   V     |
15+45       0.3857      0.35  |Q        |         |         |    V    |
15+50       0.3881      0.35  |Q        |         |         |    V    |
15+55       0.3905      0.35  |Q        |         |         |    V    |
16+ 0       0.3929      0.35  |Q        |         |         |    V    |
16+ 5       0.3944      0.22  Q         |         |         |    V    |
16+10       0.3952      0.11  Q         |         |         |    V    |
16+15       0.3959      0.10  Q         |         |         |    V    |
16+20       0.3965      0.09  Q         |         |         |     V   |
16+25       0.3972      0.09  Q         |         |         |     V   |
16+30       0.3978      0.09  Q         |         |         |     V   |
16+35       0.3983      0.08  Q         |         |         |     V   |
16+40       0.3988      0.07  Q         |         |         |     V   |
16+45       0.3993      0.07  Q         |         |         |     V   |
16+50       0.3998      0.07  Q         |         |         |     V   |
16+55       0.4003      0.07  Q         |         |         |     V   |
17+ 0       0.4008      0.07  Q         |         |         |     V   |
17+ 5       0.4014      0.09  Q         |         |         |     V   |
17+10       0.4022      0.11  Q         |         |         |     V   |
17+15       0.4030      0.12  Q         |         |         |     V   |
17+20       0.4038      0.12  Q         |         |         |     V   |
17+25       0.4046      0.12  Q         |         |         |     V   |
17+30       0.4054      0.12  Q         |         |         |     V   |
17+35       0.4062      0.12  Q         |         |         |     V   |
17+40       0.4070      0.12  Q         |         |         |     V   |
17+45       0.4078      0.12  Q         |         |         |      V  |
17+50       0.4085      0.10  Q         |         |         |      V  |
17+55       0.4091      0.09  Q         |         |         |      V  |
18+ 0       0.4098      0.09  Q         |         |         |      V  |
18+ 5       0.4104      0.09  Q         |         |         |      V  |
18+10       0.4110      0.09  Q         |         |         |      V  |
18+15       0.4117      0.09  Q         |         |         |      V  |
18+20       0.4123      0.09  Q         |         |         |      V  |
18+25       0.4130      0.09  Q         |         |         |      V  |
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18+30       0.4136      0.09  Q         |         |         |      V  |
18+35       0.4142      0.08  Q         |         |         |      V  |
18+40       0.4147      0.07  Q         |         |         |      V  |
18+45       0.4151      0.07  Q         |         |         |      V  |
18+50       0.4155      0.06  Q         |         |         |      V  |
18+55       0.4159      0.05  Q         |         |         |      V  |
19+ 0       0.4162      0.05  Q         |         |         |      V  |
19+ 5       0.4166      0.06  Q         |         |         |      V  |
19+10       0.4171      0.07  Q         |         |         |      V  |
19+15       0.4175      0.07  Q         |         |         |      V  |
19+20       0.4181      0.08  Q         |         |         |      V  |
19+25       0.4187      0.09  Q         |         |         |       V |
19+30       0.4194      0.09  Q         |         |         |       V |
19+35       0.4199      0.08  Q         |         |         |       V |
19+40       0.4204      0.07  Q         |         |         |       V |
19+45       0.4209      0.07  Q         |         |         |       V |
19+50       0.4213      0.06  Q         |         |         |       V |
19+55       0.4216      0.05  Q         |         |         |       V |
20+ 0       0.4219      0.05  Q         |         |         |       V |
20+ 5       0.4223      0.06  Q         |         |         |       V |
20+10       0.4228      0.07  Q         |         |         |       V |
20+15       0.4233      0.07  Q         |         |         |       V |
20+20       0.4238      0.07  Q         |         |         |       V |
20+25       0.4242      0.07  Q         |         |         |       V |
20+30       0.4247      0.07  Q         |         |         |       V |
20+35       0.4252      0.07  Q         |         |         |       V |
20+40       0.4257      0.07  Q         |         |         |       V |
20+45       0.4262      0.07  Q         |         |         |       V |
20+50       0.4265      0.06  Q         |         |         |       V |
20+55       0.4269      0.05  Q         |         |         |       V |
21+ 0       0.4272      0.05  Q         |         |         |       V |
21+ 5       0.4276      0.06  Q         |         |         |       V |
21+10       0.4281      0.07  Q         |         |         |       V |
21+15       0.4285      0.07  Q         |         |         |       V |
21+20       0.4289      0.06  Q         |         |         |       V |
21+25       0.4293      0.05  Q         |         |         |       V |
21+30       0.4296      0.05  Q         |         |         |        V|
21+35       0.4300      0.06  Q         |         |         |        V|
21+40       0.4305      0.07  Q         |         |         |        V|
21+45       0.4309      0.07  Q         |         |         |        V|
21+50       0.4313      0.06  Q         |         |         |        V|
21+55       0.4317      0.05  Q         |         |         |        V|
22+ 0       0.4320      0.05  Q         |         |         |        V|
22+ 5       0.4324      0.06  Q         |         |         |        V|
22+10       0.4329      0.07  Q         |         |         |        V|
22+15       0.4333      0.07  Q         |         |         |        V|
22+20       0.4337      0.06  Q         |         |         |        V|
22+25       0.4341      0.05  Q         |         |         |        V|
22+30       0.4344      0.05  Q         |         |         |        V|
22+35       0.4347      0.05  Q         |         |         |        V|
22+40       0.4350      0.05  Q         |         |         |        V|
22+45       0.4353      0.05  Q         |         |         |        V|
22+50       0.4357      0.05  Q         |         |         |        V|
22+55       0.4360      0.05  Q         |         |         |        V|
23+ 0       0.4363      0.05  Q         |         |         |        V|
23+ 5       0.4366      0.05  Q         |         |         |        V|
23+10       0.4369      0.05  Q         |         |         |        V|
23+15       0.4373      0.05  Q         |         |         |        V|
23+20       0.4376      0.05  Q         |         |         |        V|
23+25       0.4379      0.05  Q         |         |         |        V|
23+30       0.4382      0.05  Q         |         |         |        V|
23+35       0.4385      0.05  Q         |         |         |        V|
23+40       0.4389      0.05  Q         |         |         |        V|
23+45       0.4392      0.05  Q         |         |         |        V|
23+50       0.4395      0.05  Q         |         |         |        V|
23+55       0.4398      0.05  Q         |         |         |        V|
24+ 0       0.4401      0.05  Q         |         |         |        V|
24+ 5       0.4403      0.02  Q         |         |         |        V|
24+10       0.4403      0.00  Q         |         |         |        V|
24+15       0.4403      0.00  Q         |         |         |         V
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       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  02/10/13 File: tr36519bd2410.out


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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 4022

--------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



--------------------------------------------------------------------
TRACT 36519
AREA B - Developed Condition
24 HOUR, 10 YEAR STORM

-------------------------------------------------------------------
Drainage Area =       1.90(Ac.)  =      0.003 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       1.90(Ac.)  =      0.003 Sq. Mi.
Length along longest watercourse =     575.00(Ft.)
Length along longest watercourse measured to centroid =     231.00(Ft.)
Length along longest watercourse =      0.109 Mi.
Length along longest watercourse measured to centroid =      0.044 Mi.
Difference in elevation =      16.80(Ft.)
Slope along watercourse =    154.2678 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time =    0.030 Hr.
Lag time =     1.81 Min.
25% of lag time =     0.45 Min.
40% of lag time =     0.72 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]
        1.90           2.70                  5.13

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        1.90           8.00                 15.20

STORM EVENT (YEAR) =   10.00
Area Averaged 2-Year Rainfall =    2.700(In)
Area Averaged 100-Year Rainfall =    8.000(In)

Point rain (area averaged) =    4.880(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    4.880(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     1.900           56.00         0.350
```

Total Area Entered = 1.90(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
56.0	56.0	0.511	0.350	0.350	1.000	0.350
					Sum (F) =	0.350

Area averaged mean soil loss (F) (In/Hr) = 0.350
Minimum soil loss rate ((In/Hr)) = 0.175
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.620

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)	Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	275.928	54.067	1.035
2	0.167	551.855	38.495	0.737
3	0.250	827.783	7.438	0.142
		Sum = 100.000	Sum=	1.915

Unit Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.039	0.620	0.024	0.01
2	0.17	0.07	0.039	0.618	0.024	0.01
3	0.25	0.07	0.039	0.615	0.024	0.01
4	0.33	0.10	0.059	0.613	0.036	0.02
5	0.42	0.10	0.059	0.611	0.036	0.02
6	0.50	0.10	0.059	0.608	0.036	0.02
7	0.58	0.10	0.059	0.606	0.036	0.02
8	0.67	0.10	0.059	0.604	0.036	0.02
9	0.75	0.10	0.059	0.601	0.036	0.02
10	0.83	0.13	0.078	0.599	0.048	0.03
11	0.92	0.13	0.078	0.596	0.048	0.03
12	1.00	0.13	0.078	0.594	0.048	0.03
13	1.08	0.10	0.059	0.592	0.036	0.02
14	1.17	0.10	0.059	0.589	0.036	0.02
15	1.25	0.10	0.059	0.587	0.036	0.02
16	1.33	0.10	0.059	0.585	0.036	0.02
17	1.42	0.10	0.059	0.582	0.036	0.02
18	1.50	0.10	0.059	0.580	0.036	0.02
19	1.58	0.10	0.059	0.578	0.036	0.02
20	1.67	0.10	0.059	0.575	0.036	0.02
21	1.75	0.10	0.059	0.573	0.036	0.02
22	1.83	0.13	0.078	0.571	0.048	0.03
23	1.92	0.13	0.078	0.569	0.048	0.03
24	2.00	0.13	0.078	0.566	0.048	0.03
25	2.08	0.13	0.078	0.564	0.048	0.03
26	2.17	0.13	0.078	0.562	0.048	0.03
27	2.25	0.13	0.078	0.559	0.048	0.03
28	2.33	0.13	0.078	0.557	0.048	0.03
29	2.42	0.13	0.078	0.555	0.048	0.03
30	2.50	0.13	0.078	0.553	0.048	0.03
31	2.58	0.17	0.098	0.550	0.061	0.04
32	2.67	0.17	0.098	0.548	0.061	0.04
33	2.75	0.17	0.098	0.546	0.061	0.04
34	2.83	0.17	0.098	0.544	0.061	0.04
35	2.92	0.17	0.098	0.541	0.061	0.04
36	3.00	0.17	0.098	0.539	0.061	0.04
37	3.08	0.17	0.098	0.537	0.061	0.04
38	3.17	0.17	0.098	0.535	0.061	0.04
39	3.25	0.17	0.098	0.532	0.061	0.04
40	3.33	0.17	0.098	0.530	0.061	0.04

41	3.42	0.17	0.098	0.528	0.061	0.04
42	3.50	0.17	0.098	0.526	0.061	0.04
43	3.58	0.17	0.098	0.524	0.061	0.04
44	3.67	0.17	0.098	0.521	0.061	0.04
45	3.75	0.17	0.098	0.519	0.061	0.04
46	3.83	0.20	0.117	0.517	0.073	0.04
47	3.92	0.20	0.117	0.515	0.073	0.04
48	4.00	0.20	0.117	0.513	0.073	0.04
49	4.08	0.20	0.117	0.510	0.073	0.04
50	4.17	0.20	0.117	0.508	0.073	0.04
51	4.25	0.20	0.117	0.506	0.073	0.04
52	4.33	0.23	0.137	0.504	0.085	0.05
53	4.42	0.23	0.137	0.502	0.085	0.05
54	4.50	0.23	0.137	0.500	0.085	0.05
55	4.58	0.23	0.137	0.498	0.085	0.05
56	4.67	0.23	0.137	0.495	0.085	0.05
57	4.75	0.23	0.137	0.493	0.085	0.05
58	4.83	0.27	0.156	0.491	0.097	0.06
59	4.92	0.27	0.156	0.489	0.097	0.06
60	5.00	0.27	0.156	0.487	0.097	0.06
61	5.08	0.20	0.117	0.485	0.073	0.04
62	5.17	0.20	0.117	0.483	0.073	0.04
63	5.25	0.20	0.117	0.481	0.073	0.04
64	5.33	0.23	0.137	0.478	0.085	0.05
65	5.42	0.23	0.137	0.476	0.085	0.05
66	5.50	0.23	0.137	0.474	0.085	0.05
67	5.58	0.27	0.156	0.472	0.097	0.06
68	5.67	0.27	0.156	0.470	0.097	0.06
69	5.75	0.27	0.156	0.468	0.097	0.06
70	5.83	0.27	0.156	0.466	0.097	0.06
71	5.92	0.27	0.156	0.464	0.097	0.06
72	6.00	0.27	0.156	0.462	0.097	0.06
73	6.08	0.30	0.176	0.460	0.109	0.07
74	6.17	0.30	0.176	0.458	0.109	0.07
75	6.25	0.30	0.176	0.456	0.109	0.07
76	6.33	0.30	0.176	0.454	0.109	0.07
77	6.42	0.30	0.176	0.452	0.109	0.07
78	6.50	0.30	0.176	0.450	0.109	0.07
79	6.58	0.33	0.195	0.448	0.121	0.07
80	6.67	0.33	0.195	0.446	0.121	0.07
81	6.75	0.33	0.195	0.444	0.121	0.07
82	6.83	0.33	0.195	0.442	0.121	0.07
83	6.92	0.33	0.195	0.440	0.121	0.07
84	7.00	0.33	0.195	0.438	0.121	0.07
85	7.08	0.33	0.195	0.436	0.121	0.07
86	7.17	0.33	0.195	0.434	0.121	0.07
87	7.25	0.33	0.195	0.432	0.121	0.07
88	7.33	0.37	0.215	0.430	0.133	0.08
89	7.42	0.37	0.215	0.428	0.133	0.08
90	7.50	0.37	0.215	0.426	0.133	0.08
91	7.58	0.40	0.234	0.424	0.145	0.09
92	7.67	0.40	0.234	0.422	0.145	0.09
93	7.75	0.40	0.234	0.420	0.145	0.09
94	7.83	0.43	0.254	0.418	0.157	0.10
95	7.92	0.43	0.254	0.416	0.157	0.10
96	8.00	0.43	0.254	0.414	0.157	0.10
97	8.08	0.50	0.293	0.412	0.182	0.11
98	8.17	0.50	0.293	0.410	0.182	0.11
99	8.25	0.50	0.293	0.408	0.182	0.11
100	8.33	0.50	0.293	0.406	0.182	0.11
101	8.42	0.50	0.293	0.405	0.182	0.11
102	8.50	0.50	0.293	0.403	0.182	0.11
103	8.58	0.53	0.312	0.401	0.194	0.12
104	8.67	0.53	0.312	0.399	0.194	0.12
105	8.75	0.53	0.312	0.397	0.194	0.12
106	8.83	0.57	0.332	0.395	0.206	0.13
107	8.92	0.57	0.332	0.393	0.206	0.13
108	9.00	0.57	0.332	0.391	0.206	0.13
109	9.08	0.63	0.371	0.390	0.230	0.14
110	9.17	0.63	0.371	0.388	0.230	0.14

111	9.25	0.63	0.371	0.386	0.230	0.14
112	9.33	0.67	0.390	0.384	---	0.01
113	9.42	0.67	0.390	0.382	---	0.01
114	9.50	0.67	0.390	0.380	---	0.01
115	9.58	0.70	0.410	0.379	---	0.03
116	9.67	0.70	0.410	0.377	---	0.03
117	9.75	0.70	0.410	0.375	---	0.04
118	9.83	0.73	0.429	0.373	---	0.06
119	9.92	0.73	0.429	0.371	---	0.06
120	10.00	0.73	0.429	0.369	---	0.06
121	10.08	0.50	0.293	0.368	0.182	0.11
122	10.17	0.50	0.293	0.366	0.182	0.11
123	10.25	0.50	0.293	0.364	0.182	0.11
124	10.33	0.50	0.293	0.362	0.182	0.11
125	10.42	0.50	0.293	0.361	0.182	0.11
126	10.50	0.50	0.293	0.359	0.182	0.11
127	10.58	0.67	0.390	0.357	---	0.03
128	10.67	0.67	0.390	0.355	---	0.04
129	10.75	0.67	0.390	0.354	---	0.04
130	10.83	0.67	0.390	0.352	---	0.04
131	10.92	0.67	0.390	0.350	---	0.04
132	11.00	0.67	0.390	0.348	---	0.04
133	11.08	0.63	0.371	0.347	---	0.02
134	11.17	0.63	0.371	0.345	---	0.03
135	11.25	0.63	0.371	0.343	---	0.03
136	11.33	0.63	0.371	0.342	---	0.03
137	11.42	0.63	0.371	0.340	---	0.03
138	11.50	0.63	0.371	0.338	---	0.03
139	11.58	0.57	0.332	0.337	0.206	0.13
140	11.67	0.57	0.332	0.335	0.206	0.13
141	11.75	0.57	0.332	0.333	0.206	0.13
142	11.83	0.60	0.351	0.332	---	0.02
143	11.92	0.60	0.351	0.330	---	0.02
144	12.00	0.60	0.351	0.328	---	0.02
145	12.08	0.83	0.488	0.327	---	0.16
146	12.17	0.83	0.488	0.325	---	0.16
147	12.25	0.83	0.488	0.323	---	0.16
148	12.33	0.87	0.508	0.322	---	0.19
149	12.42	0.87	0.508	0.320	---	0.19
150	12.50	0.87	0.508	0.319	---	0.19
151	12.58	0.93	0.547	0.317	---	0.23
152	12.67	0.93	0.547	0.315	---	0.23
153	12.75	0.93	0.547	0.314	---	0.23
154	12.83	0.97	0.566	0.312	---	0.25
155	12.92	0.97	0.566	0.311	---	0.26
156	13.00	0.97	0.566	0.309	---	0.26
157	13.08	1.13	0.664	0.307	---	0.36
158	13.17	1.13	0.664	0.306	---	0.36
159	13.25	1.13	0.664	0.304	---	0.36
160	13.33	1.13	0.664	0.303	---	0.36
161	13.42	1.13	0.664	0.301	---	0.36
162	13.50	1.13	0.664	0.300	---	0.36
163	13.58	0.77	0.449	0.298	---	0.15
164	13.67	0.77	0.449	0.297	---	0.15
165	13.75	0.77	0.449	0.295	---	0.15
166	13.83	0.77	0.449	0.294	---	0.16
167	13.92	0.77	0.449	0.292	---	0.16
168	14.00	0.77	0.449	0.291	---	0.16
169	14.08	0.90	0.527	0.289	---	0.24
170	14.17	0.90	0.527	0.288	---	0.24
171	14.25	0.90	0.527	0.286	---	0.24
172	14.33	0.87	0.508	0.285	---	0.22
173	14.42	0.87	0.508	0.283	---	0.22
174	14.50	0.87	0.508	0.282	---	0.23
175	14.58	0.87	0.508	0.280	---	0.23
176	14.67	0.87	0.508	0.279	---	0.23
177	14.75	0.87	0.508	0.278	---	0.23
178	14.83	0.83	0.488	0.276	---	0.21
179	14.92	0.83	0.488	0.275	---	0.21
180	15.00	0.83	0.488	0.273	---	0.21

181	15.08	0.80	0.469	0.272	---	0.20
182	15.17	0.80	0.469	0.270	---	0.20
183	15.25	0.80	0.469	0.269	---	0.20
184	15.33	0.77	0.449	0.268	---	0.18
185	15.42	0.77	0.449	0.266	---	0.18
186	15.50	0.77	0.449	0.265	---	0.18
187	15.58	0.63	0.371	0.264	---	0.11
188	15.67	0.63	0.371	0.262	---	0.11
189	15.75	0.63	0.371	0.261	---	0.11
190	15.83	0.63	0.371	0.260	---	0.11
191	15.92	0.63	0.371	0.258	---	0.11
192	16.00	0.63	0.371	0.257	---	0.11
193	16.08	0.13	0.078	0.256	0.048	0.03
194	16.17	0.13	0.078	0.254	0.048	0.03
195	16.25	0.13	0.078	0.253	0.048	0.03
196	16.33	0.13	0.078	0.252	0.048	0.03
197	16.42	0.13	0.078	0.250	0.048	0.03
198	16.50	0.13	0.078	0.249	0.048	0.03
199	16.58	0.10	0.059	0.248	0.036	0.02
200	16.67	0.10	0.059	0.247	0.036	0.02
201	16.75	0.10	0.059	0.245	0.036	0.02
202	16.83	0.10	0.059	0.244	0.036	0.02
203	16.92	0.10	0.059	0.243	0.036	0.02
204	17.00	0.10	0.059	0.242	0.036	0.02
205	17.08	0.17	0.098	0.240	0.061	0.04
206	17.17	0.17	0.098	0.239	0.061	0.04
207	17.25	0.17	0.098	0.238	0.061	0.04
208	17.33	0.17	0.098	0.237	0.061	0.04
209	17.42	0.17	0.098	0.236	0.061	0.04
210	17.50	0.17	0.098	0.234	0.061	0.04
211	17.58	0.17	0.098	0.233	0.061	0.04
212	17.67	0.17	0.098	0.232	0.061	0.04
213	17.75	0.17	0.098	0.231	0.061	0.04
214	17.83	0.13	0.078	0.230	0.048	0.03
215	17.92	0.13	0.078	0.229	0.048	0.03
216	18.00	0.13	0.078	0.228	0.048	0.03
217	18.08	0.13	0.078	0.226	0.048	0.03
218	18.17	0.13	0.078	0.225	0.048	0.03
219	18.25	0.13	0.078	0.224	0.048	0.03
220	18.33	0.13	0.078	0.223	0.048	0.03
221	18.42	0.13	0.078	0.222	0.048	0.03
222	18.50	0.13	0.078	0.221	0.048	0.03
223	18.58	0.10	0.059	0.220	0.036	0.02
224	18.67	0.10	0.059	0.219	0.036	0.02
225	18.75	0.10	0.059	0.218	0.036	0.02
226	18.83	0.07	0.039	0.217	0.024	0.01
227	18.92	0.07	0.039	0.216	0.024	0.01
228	19.00	0.07	0.039	0.215	0.024	0.01
229	19.08	0.10	0.059	0.214	0.036	0.02
230	19.17	0.10	0.059	0.213	0.036	0.02
231	19.25	0.10	0.059	0.212	0.036	0.02
232	19.33	0.13	0.078	0.211	0.048	0.03
233	19.42	0.13	0.078	0.210	0.048	0.03
234	19.50	0.13	0.078	0.209	0.048	0.03
235	19.58	0.10	0.059	0.208	0.036	0.02
236	19.67	0.10	0.059	0.207	0.036	0.02
237	19.75	0.10	0.059	0.206	0.036	0.02
238	19.83	0.07	0.039	0.205	0.024	0.01
239	19.92	0.07	0.039	0.204	0.024	0.01
240	20.00	0.07	0.039	0.203	0.024	0.01
241	20.08	0.10	0.059	0.202	0.036	0.02
242	20.17	0.10	0.059	0.201	0.036	0.02
243	20.25	0.10	0.059	0.201	0.036	0.02
244	20.33	0.10	0.059	0.200	0.036	0.02
245	20.42	0.10	0.059	0.199	0.036	0.02
246	20.50	0.10	0.059	0.198	0.036	0.02
247	20.58	0.10	0.059	0.197	0.036	0.02
248	20.67	0.10	0.059	0.196	0.036	0.02
249	20.75	0.10	0.059	0.195	0.036	0.02
250	20.83	0.07	0.039	0.195	0.024	0.01

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251  20.92     0.07      0.039         0.194     0.024         0.01
252  21.00     0.07      0.039         0.193     0.024         0.01
253  21.08     0.10      0.059         0.192     0.036         0.02
254  21.17     0.10      0.059         0.192     0.036         0.02
255  21.25     0.10      0.059         0.191     0.036         0.02
256  21.33     0.07      0.039         0.190     0.024         0.01
257  21.42     0.07      0.039         0.189     0.024         0.01
258  21.50     0.07      0.039         0.189     0.024         0.01
259  21.58     0.10      0.059         0.188     0.036         0.02
260  21.67     0.10      0.059         0.187     0.036         0.02
261  21.75     0.10      0.059         0.187     0.036         0.02
262  21.83     0.07      0.039         0.186     0.024         0.01
263  21.92     0.07      0.039         0.185     0.024         0.01
264  22.00     0.07      0.039         0.185     0.024         0.01
265  22.08     0.10      0.059         0.184     0.036         0.02
266  22.17     0.10      0.059         0.184     0.036         0.02
267  22.25     0.10      0.059         0.183     0.036         0.02
268  22.33     0.07      0.039         0.182     0.024         0.01
269  22.42     0.07      0.039         0.182     0.024         0.01
270  22.50     0.07      0.039         0.181     0.024         0.01
271  22.58     0.07      0.039         0.181     0.024         0.01
272  22.67     0.07      0.039         0.180     0.024         0.01
273  22.75     0.07      0.039         0.180     0.024         0.01
274  22.83     0.07      0.039         0.179     0.024         0.01
275  22.92     0.07      0.039         0.179     0.024         0.01
276  23.00     0.07      0.039         0.178     0.024         0.01
277  23.08     0.07      0.039         0.178     0.024         0.01
278  23.17     0.07      0.039         0.178     0.024         0.01
279  23.25     0.07      0.039         0.177     0.024         0.01
280  23.33     0.07      0.039         0.177     0.024         0.01
281  23.42     0.07      0.039         0.177     0.024         0.01
282  23.50     0.07      0.039         0.176     0.024         0.01
283  23.58     0.07      0.039         0.176     0.024         0.01
284  23.67     0.07      0.039         0.176     0.024         0.01
285  23.75     0.07      0.039         0.175     0.024         0.01
286  23.83     0.07      0.039         0.175     0.024         0.01
287  23.92     0.07      0.039         0.175     0.024         0.01
288  24.00     0.07      0.039         0.175     0.024         0.01
    Sum =     100.0                                     Sum =    20.5
      Flood volume = Effective rainfall      1.70(In)
       times area       1.9(Ac.)/[(In)/(Ft.)] =       0.3(Ac.Ft)
      Total soil loss =      3.18(In)
      Total soil loss =     0.503(Ac.Ft)
      Total rainfall =      4.88(In)
      Flood volume =       11755.7 Cubic Feet
      Total soil loss =       21904.8 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      0.696(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        2.5       5.0       7.5      10.0
 ------------------------------------------------------------------------
   0+ 5       0.0001      0.02  Q         |         |         |         |
   0+10       0.0003      0.03  Q         |         |         |         |
   0+15       0.0005      0.03  Q         |         |         |         |
   0+20       0.0007      0.04  Q         |         |         |         |
   0+25       0.0010      0.04  Q         |         |         |         |
   0+30       0.0013      0.04  Q         |         |         |         |
   0+35       0.0016      0.04  Q         |         |         |         |
   0+40       0.0019      0.04  Q         |         |         |         |
   0+45       0.0022      0.04  Q         |         |         |         |
   0+50       0.0025      0.05  Q         |         |         |         |
   0+55       0.0029      0.06  Q         |         |         |         |
   1+ 0       0.0033      0.06  Q         |         |         |         |
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1+ 5       0.0037      0.05  Q         |         |         |         |
1+10       0.0040      0.04  Q         |         |         |         |
1+15       0.0042      0.04  Q         |         |         |         |
1+20       0.0045      0.04  Q         |         |         |         |
1+25       0.0048      0.04  Q         |         |         |         |
1+30       0.0051      0.04  Q         |         |         |         |
1+35       0.0054      0.04  Q         |         |         |         |
1+40       0.0057      0.04  Q         |         |         |         |
1+45       0.0060      0.04  Q         |         |         |         |
1+50       0.0064      0.05  Q         |         |         |         |
1+55       0.0067      0.06  Q         |         |         |         |
2+ 0       0.0071      0.06  QV        |         |         |         |
2+ 5       0.0075      0.06  QV        |         |         |         |
2+10       0.0079      0.06  QV        |         |         |         |
2+15       0.0083      0.06  QV        |         |         |         |
2+20       0.0087      0.06  QV        |         |         |         |
2+25       0.0091      0.06  QV        |         |         |         |
2+30       0.0095      0.06  QV        |         |         |         |
2+35       0.0099      0.06  QV        |         |         |         |
2+40       0.0104      0.07  QV        |         |         |         |
2+45       0.0109      0.07  QV        |         |         |         |
2+50       0.0114      0.07  QV        |         |         |         |
2+55       0.0119      0.07  QV        |         |         |         |
3+ 0       0.0124      0.07  QV        |         |         |         |
3+ 5       0.0129      0.07  QV        |         |         |         |
3+10       0.0133      0.07  QV        |         |         |         |
3+15       0.0138      0.07  Q V       |         |         |         |
3+20       0.0143      0.07  Q V       |         |         |         |
3+25       0.0148      0.07  Q V       |         |         |         |
3+30       0.0153      0.07  Q V       |         |         |         |
3+35       0.0158      0.07  Q V       |         |         |         |
3+40       0.0163      0.07  Q V       |         |         |         |
3+45       0.0168      0.07  Q V       |         |         |         |
3+50       0.0173      0.08  Q V       |         |         |         |
3+55       0.0179      0.08  Q V       |         |         |         |
4+ 0       0.0185      0.09  Q V       |         |         |         |
4+ 5       0.0191      0.09  Q V       |         |         |         |
4+10       0.0197      0.09  Q V       |         |         |         |
4+15       0.0202      0.09  Q  V      |         |         |         |
4+20       0.0209      0.09  Q  V      |         |         |         |
4+25       0.0216      0.10  Q  V      |         |         |         |
4+30       0.0222      0.10  Q  V      |         |         |         |
4+35       0.0229      0.10  Q  V      |         |         |         |
4+40       0.0236      0.10  Q  V      |         |         |         |
4+45       0.0243      0.10  Q  V      |         |         |         |
4+50       0.0250      0.11  Q  V      |         |         |         |
4+55       0.0258      0.11  Q  V      |         |         |         |
5+ 0       0.0266      0.11  Q  V      |         |         |         |
5+ 5       0.0273      0.10  Q   V     |         |         |         |
5+10       0.0279      0.09  Q   V     |         |         |         |
5+15       0.0285      0.09  Q   V     |         |         |         |
5+20       0.0291      0.09  Q   V     |         |         |         |
5+25       0.0298      0.10  Q   V     |         |         |         |
5+30       0.0305      0.10  Q   V     |         |         |         |
5+35       0.0312      0.11  Q   V     |         |         |         |
5+40       0.0320      0.11  Q   V     |         |         |         |
5+45       0.0328      0.11  Q   V     |         |         |         |
5+50       0.0335      0.11  Q   V     |         |         |         |
5+55       0.0343      0.11  Q    V    |         |         |         |
6+ 0       0.0351      0.11  Q    V    |         |         |         |
6+ 5       0.0359      0.12  Q    V    |         |         |         |
6+10       0.0368      0.13  Q    V    |         |         |         |
6+15       0.0377      0.13  Q    V    |         |         |         |
6+20       0.0386      0.13  Q    V    |         |         |         |
6+25       0.0395      0.13  Q    V    |         |         |         |
6+30       0.0403      0.13  Q    V    |         |         |         |
6+35       0.0413      0.14  Q     V   |         |         |         |
6+40       0.0423      0.14  Q     V   |         |         |         |
6+45       0.0432      0.14  Q     V   |         |         |         |
6+50       0.0442      0.14  Q     V   |         |         |         |
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 6+55       0.0452      0.14  Q     V   |         |         |         |
 7+ 0       0.0462      0.14  Q     V   |         |         |         |
 7+ 5       0.0471      0.14  Q     V   |         |         |         |
 7+10       0.0481      0.14  Q      V  |         |         |         |
 7+15       0.0491      0.14  Q      V  |         |         |         |
 7+20       0.0501      0.15  Q      V  |         |         |         |
 7+25       0.0512      0.16  Q      V  |         |         |         |
 7+30       0.0523      0.16  Q      V  |         |         |         |
 7+35       0.0534      0.16  Q      V  |         |         |         |
 7+40       0.0546      0.17  Q       V |         |         |         |
 7+45       0.0558      0.17  Q       V |         |         |         |
 7+50       0.0570      0.18  Q       V |         |         |         |
 7+55       0.0582      0.18  Q       V |         |         |         |
 8+ 0       0.0595      0.18  Q       V |         |         |         |
 8+ 5       0.0609      0.20  Q        V|         |         |         |
 8+10       0.0623      0.21  Q        V|         |         |         |
 8+15       0.0638      0.21  Q        V|         |         |         |
 8+20       0.0653      0.21  Q        V|         |         |         |
 8+25       0.0668      0.21  Q        V|         |         |         |
 8+30       0.0682      0.21  Q         V         |         |         |
 8+35       0.0697      0.22  Q         V         |         |         |
 8+40       0.0713      0.23  Q         V         |         |         |
 8+45       0.0729      0.23  Q         V         |         |         |
 8+50       0.0745      0.24  Q         |V        |         |         |
 8+55       0.0761      0.24  Q         |V        |         |         |
 9+ 0       0.0778      0.24  Q         |V        |         |         |
 9+ 5       0.0796      0.26  |Q        |V        |         |         |
 9+10       0.0814      0.27  |Q        | V       |         |         |
 9+15       0.0833      0.27  |Q        | V       |         |         |
 9+20       0.0842      0.13  Q         | V       |         |         |
 9+25       0.0844      0.03  Q         | V       |         |         |
 9+30       0.0845      0.02  Q         | V       |         |         |
 9+35       0.0848      0.04  Q         | V       |         |         |
 9+40       0.0852      0.06  Q         | V       |         |         |
 9+45       0.0857      0.07  Q         | V       |         |         |
 9+50       0.0863      0.09  Q         | V       |         |         |
 9+55       0.0870      0.11  Q         | V       |         |         |
10+ 0       0.0878      0.11  Q         |  V      |         |         |
10+ 5       0.0890      0.17  Q         |  V      |         |         |
10+10       0.0904      0.21  Q         |  V      |         |         |
10+15       0.0918      0.21  Q         |  V      |         |         |
10+20       0.0933      0.21  Q         |  V      |         |         |
10+25       0.0948      0.21  Q         |   V     |         |         |
10+30       0.0962      0.21  Q         |   V     |         |         |
10+35       0.0972      0.13  Q         |   V     |         |         |
10+40       0.0977      0.08  Q         |   V     |         |         |
10+45       0.0982      0.07  Q         |   V     |         |         |
10+50       0.0987      0.07  Q         |   V     |         |         |
10+55       0.0992      0.08  Q         |   V     |         |         |
11+ 0       0.0997      0.08  Q         |   V     |         |         |
11+ 5       0.1001      0.06  Q         |   V     |         |         |
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11+15       0.1008      0.05  Q         |   V     |         |         |
11+20       0.1012      0.05  Q         |    V    |         |         |
11+25       0.1016      0.06  Q         |    V    |         |         |
11+30       0.1020      0.06  Q         |    V    |         |         |
11+35       0.1031      0.16  Q         |    V    |         |         |
11+40       0.1047      0.23  Q         |    V    |         |         |
11+45       0.1064      0.24  Q         |    V    |         |         |
11+50       0.1073      0.13  Q         |    V    |         |         |
11+55       0.1077      0.05  Q         |    V    |         |         |
12+ 0       0.1079      0.04  Q         |    V    |         |         |
12+ 5       0.1092      0.19  Q         |     V   |         |         |
12+10       0.1112      0.29  |Q        |     V   |         |         |
12+15       0.1134      0.31  |Q        |     V   |         |         |
12+20       0.1157      0.34  |Q        |      V  |         |         |
12+25       0.1182      0.35  |Q        |      V  |         |         |
12+30       0.1207      0.36  |Q        |      V  |         |         |
12+35       0.1234      0.40  |Q        |       V |         |         |
12+40       0.1264      0.44  |Q        |       V |         |         |
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12+45       0.1295      0.44  |Q        |        V|         |         |
12+50       0.1327      0.47  |Q        |        V|         |         |
12+55       0.1361      0.49  |Q        |         V         |         |
13+ 0       0.1394      0.49  |Q        |         V         |         |
13+ 5       0.1435      0.60  | Q       |         |V        |         |
13+10       0.1482      0.67  | Q       |         |V        |         |
13+15       0.1529      0.69  | Q       |         | V       |         |
13+20       0.1576      0.69  | Q       |         |  V      |         |
13+25       0.1624      0.69  | Q       |         |   V     |         |
13+30       0.1672      0.70  | Q       |         |   V     |         |
13+35       0.1705      0.48  |Q        |         |    V    |         |
13+40       0.1727      0.32  |Q        |         |    V    |         |
13+45       0.1747      0.29  |Q        |         |    V    |         |
13+50       0.1768      0.30  |Q        |         |     V   |         |
13+55       0.1788      0.30  |Q        |         |     V   |         |
14+ 0       0.1809      0.30  |Q        |         |     V   |         |
14+ 5       0.1835      0.39  |Q        |         |      V  |         |
14+10       0.1866      0.45  |Q        |         |      V  |         |
14+15       0.1898      0.46  |Q        |         |       V |         |
14+20       0.1928      0.44  |Q        |         |       V |         |
14+25       0.1958      0.43  |Q        |         |        V|         |
14+30       0.1988      0.43  |Q        |         |        V|         |
14+35       0.2018      0.43  |Q        |         |        V|         |
14+40       0.2048      0.44  |Q        |         |         V         |
14+45       0.2078      0.44  |Q        |         |         V         |
14+50       0.2107      0.42  |Q        |         |         |V        |
14+55       0.2135      0.41  |Q        |         |         |V        |
15+ 0       0.2163      0.41  |Q        |         |         | V       |
15+ 5       0.2190      0.39  |Q        |         |         | V       |
15+10       0.2217      0.38  |Q        |         |         | V       |
15+15       0.2243      0.38  |Q        |         |         |  V      |
15+20       0.2268      0.36  |Q        |         |         |  V      |
15+25       0.2292      0.35  |Q        |         |         |  V      |
15+30       0.2316      0.35  |Q        |         |         |   V     |
15+35       0.2335      0.27  |Q        |         |         |   V     |
15+40       0.2350      0.22  Q         |         |         |   V     |
15+45       0.2365      0.21  Q         |         |         |    V    |
15+50       0.2379      0.21  Q         |         |         |    V    |
15+55       0.2394      0.21  Q         |         |         |    V    |
16+ 0       0.2409      0.22  Q         |         |         |    V    |
16+ 5       0.2418      0.13  Q         |         |         |    V    |
16+10       0.2423      0.07  Q         |         |         |    V    |
16+15       0.2426      0.06  Q         |         |         |    V    |
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16+30       0.2438      0.06  Q         |         |         |     V   |
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16+55       0.2453      0.04  Q         |         |         |     V   |
17+ 0       0.2456      0.04  Q         |         |         |     V   |
17+ 5       0.2460      0.06  Q         |         |         |     V   |
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17+30       0.2485      0.07  Q         |         |         |     V   |
17+35       0.2490      0.07  Q         |         |         |     V   |
17+40       0.2494      0.07  Q         |         |         |     V   |
17+45       0.2499      0.07  Q         |         |         |      V  |
17+50       0.2504      0.06  Q         |         |         |      V  |
17+55       0.2508      0.06  Q         |         |         |      V  |
18+ 0       0.2512      0.06  Q         |         |         |      V  |
18+ 5       0.2516      0.06  Q         |         |         |      V  |
18+10       0.2519      0.06  Q         |         |         |      V  |
18+15       0.2523      0.06  Q         |         |         |      V  |
18+20       0.2527      0.06  Q         |         |         |      V  |
18+25       0.2531      0.06  Q         |         |         |      V  |
18+30       0.2535      0.06  Q         |         |         |      V  |
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  18+40       0.2542      0.04  Q         |         |         |      V  |
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  18+50       0.2547      0.03  Q         |         |         |      V  |
  18+55       0.2549      0.03  Q         |         |         |      V  |
  19+ 0       0.2551      0.03  Q         |         |         |      V  |
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  19+20       0.2563      0.05  Q         |         |         |      V  |
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  19+45       0.2580      0.04  Q         |         |         |       V |
  19+50       0.2582      0.03  Q         |         |         |       V |
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  20+ 5       0.2589      0.04  Q         |         |         |       V |
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  20+20       0.2597      0.04  Q         |         |         |       V |
  20+25       0.2600      0.04  Q         |         |         |       V |
  20+30       0.2603      0.04  Q         |         |         |       V |
  20+35       0.2606      0.04  Q         |         |         |       V |
  20+40       0.2609      0.04  Q         |         |         |       V |
  20+45       0.2612      0.04  Q         |         |         |       V |
  20+50       0.2614      0.03  Q         |         |         |       V |
  20+55       0.2616      0.03  Q         |         |         |       V |
  21+ 0       0.2618      0.03  Q         |         |         |       V |
  21+ 5       0.2621      0.04  Q         |         |         |       V |
  21+10       0.2624      0.04  Q         |         |         |       V |
  21+15       0.2627      0.04  Q         |         |         |       V |
  21+20       0.2629      0.03  Q         |         |         |       V |
  21+25       0.2631      0.03  Q         |         |         |       V |
  21+30       0.2633      0.03  Q         |         |         |        V|
  21+35       0.2636      0.04  Q         |         |         |        V|
  21+40       0.2638      0.04  Q         |         |         |        V|
  21+45       0.2641      0.04  Q         |         |         |        V|
  21+50       0.2644      0.03  Q         |         |         |        V|
  21+55       0.2646      0.03  Q         |         |         |        V|
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  22+ 5       0.2650      0.04  Q         |         |         |        V|
  22+10       0.2653      0.04  Q         |         |         |        V|
  22+15       0.2656      0.04  Q         |         |         |        V|
  22+20       0.2658      0.03  Q         |         |         |        V|
  22+25       0.2660      0.03  Q         |         |         |        V|
  22+30       0.2662      0.03  Q         |         |         |        V|
  22+35       0.2664      0.03  Q         |         |         |        V|
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  22+45       0.2668      0.03  Q         |         |         |        V|
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  22+55       0.2672      0.03  Q         |         |         |        V|
  23+ 0       0.2674      0.03  Q         |         |         |        V|
  23+ 5       0.2676      0.03  Q         |         |         |        V|
  23+10       0.2678      0.03  Q         |         |         |        V|
  23+15       0.2680      0.03  Q         |         |         |        V|
  23+20       0.2682      0.03  Q         |         |         |        V|
  23+25       0.2684      0.03  Q         |         |         |        V|
  23+30       0.2686      0.03  Q         |         |         |        V|
  23+35       0.2688      0.03  Q         |         |         |        V|
  23+40       0.2690      0.03  Q         |         |         |        V|
  23+45       0.2692      0.03  Q         |         |         |        V|
  23+50       0.2694      0.03  Q         |         |         |        V|
  23+55       0.2696      0.03  Q         |         |         |        V|
  24+ 0       0.2698      0.03  Q         |         |         |        V|
  24+ 5       0.2699      0.01  Q         |         |         |        V|
  24+10       0.2699      0.00  Q         |         |         |        V|
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Appendix D

Educational Materials

What is stormwater runoff?

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

Why is stormwater runoff a problem?

The effects of pollution

Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.

- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.

- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.
- Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.

After the Storm

For more information contact:

or visit
www.epa.gov/npdes/stormwater
www.epa.gov/nps

A Citizen's Guide to Understanding Stormwater

EPA United States Environmental Protection Agency

EPA 833-B-03-002

January 2003

Internet Address (URL) • HTTP://www.epa.gov
Recycled/Recyclable • Printed With Vegetable Oil Based Inks on 100% Postconsumer, Process Chlorine Free Recycled Paper

Stormwater Pollution Solutions

Residential

Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

Lawn care

Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.

- Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- Cover piles of dirt or mulch being used in landscaping projects.

Auto care

Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

- Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

Septic systems

Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.

- Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- Don't dispose of household hazardous waste in sinks or toilets.

Pet waste

Pet waste can be a major source of bacteria and excess nutrients in local waters.

- When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.

Education is essential to changing people's behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.

Residential landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.

Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.

Rain Gardens and Grassy Swales—Specially designed areas planted with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.

Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.

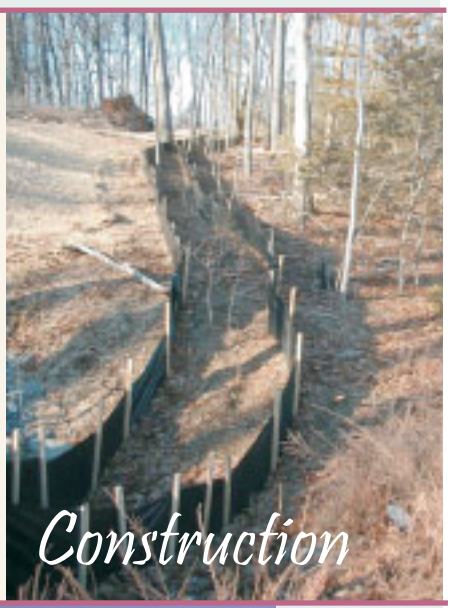
Commercial

Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- Cover grease storage and dumpsters and keep them clean to avoid leaks.
- Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

- Divert stormwater away from disturbed or exposed areas of the construction site.
- Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.



Construction

Agriculture

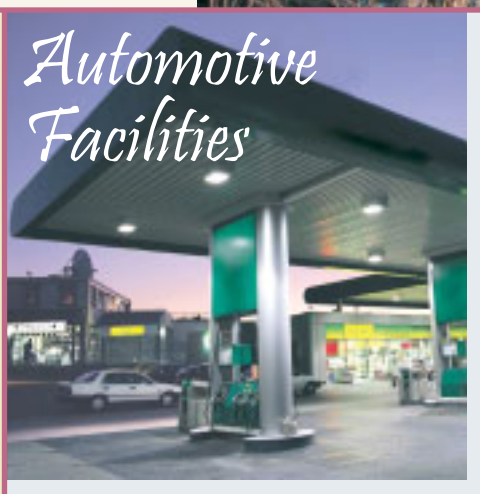
Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.

- Keep livestock away from streambanks and provide them a water source away from waterbodies.
- Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- Vegetate riparian areas along waterways.
- Rotate animal grazing to prevent soil erosion in fields.
- Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.

Forestry

Improperly managed logging operations can result in erosion and sedimentation.

- Conduct preharvest planning to prevent erosion and lower costs.
- Use logging methods and equipment that minimize soil disturbance.
- Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- Construct stream crossings so that they minimize erosion and physical changes to streams.
- Expedite revegetation of cleared areas.



Automotive Facilities

Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- Clean up spills immediately and properly dispose of cleanup materials.
- Provide cover over fueling stations and design or retrofit facilities for spill containment.
- Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- Install and maintain oil/water separators.

Adopt a pet from your local animal shelter or adoption centers at pet stores. A variety of animals, from purebred tomixe d breed are waiting for loving arms and good homes. Consider volunteering at your local animal shelters. Volunteers, donations, food, newspapers, old towels and linens are needed to help the animals.

RIVERSIDE COUNTY ANIMAL SHELTER LOCATIONS:

BLYTHE
16450 West Hobson Way
Blythe, CA 92225
760-921-7857

HEMET
800 South Sanderson
Hemet, CA 92545
909 925-8025

INDIO
45-355 Van Buren
Indio, CA 92201
760-347-2319

RIVERSIDE
5950 Wilderness Avenue
Riverside, CA 92504
909-358-7387

FOR ALL OTHER AREAS CALL 1-888-636-7387

Riverside County gratefully acknowledges the City of Los Angeles Stormwater Program for the design concept of this brochure.

What's the Scoop?

Tips for a Healthy Pet and a Healthier Environment

CREATE A HEALTHY ENVIRONMENT in and around your home by following these simple pet practices. Your pet, family and neighbors will appreciate their clean comfortable surroundings.

HOUSEHOLD PETS

We all love our pets, but pet waste is a subject everyone likes to avoid. Pet waste left on trails, sidewalks, streets, and grassy areas is immediately flushed into the nearest waterway when it rains. Even if you can't see water near you, the rain or waste water WASHES all that PET WASTE and BACTERIA INTO THE STORMDRAIN, where it travels to your neighborhood creek or lake untreated. These animal droppings also contain nutrients that can promote the growth of algae, if they enter our streams and lakes. The risk of STORMWATER CONTAMINATION INCREASES, if pet wastes is allowed to accumulate in animal pen areas or left on sidewalks, streets, or driveways where runoff can carry them to storm sewers.

Some of the DISEASES THAT CAN SPREAD from pet waste are:
Campylobacteriosis — a bacterial infection that causes diarrhea in humans.
Salmonellosis — the most common bacterial infection transmitted to humans from animals.
Toxocarisis — roundworms transmitted from animals to humans.

Flies and other pest insects can also increase when pet waste is disposed of improperly, becoming a nuisance and adding yet another vector for disease transmission.

WHAT CAN YOU DO?

- SCOOP up pet waste and flush it down the toilet.
- NEVER DUMP pet waste into a storm drain or catch basin.
- USE the complimentary BAGS or mutt mitts offered in dispensers at local parks.
- CARRY EXTRA BAGS when walking your dog and make them available to other pet owners who are without.
- TEACH CHILDREN how to properly clean up after a pet.
- TELL FRIENDS AND NEIGHBORS about the ill effects of animal waste on the environment. Encourage them to clean up after pets.

Did You Know . . .
that Californians illegally dump about 80 million gallons of motor oil each year?

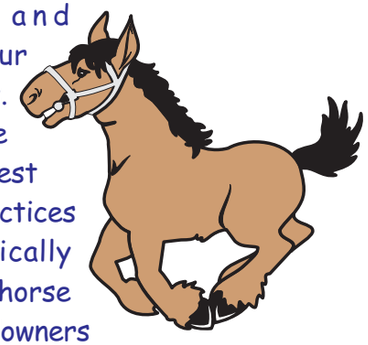
Many communities have "Scoop the Poop" laws that govern pet waste cleanup. Some of these laws specifically require anyone who walks an animal off of their property to carry a bag, shovel, or scooper. Any waste left by the animal must be cleaned up immediately. CALL YOUR LOCAL CODE ENFORCEMENT OFFICER to find out more about pet waste regulations.

Pets are only one of the many fixtures of suburban America that add to water pollution. Lawn fertilizers, rinse water from driveways and motor oil commonly end up in streams and lakes. **CALL 1-800-506-2555 FOR HOUSEHOLD HAZARDOUS WASTE COLLECTION LOCATION AND DATES.** Maintain your automobile to avoid leaks. Dispose of used vehicle fluids properly. Your pets can be poisoned if they ingest gas, oil or antifreeze that drips onto the pavement or is stored in open containers.

NEVER HOSE VEHICLE FLUIDS into the street or gutter. USE ABSORBENT MATERIALS such as cat litter to clean-up spills. SWEEP UP used absorbent materials and place in the trash.

HORSES AND LIVESTOCK

Fortunate enough to own a horse or livestock? You, too, can play a part in protecting and cleaning up our water resources. The following are a few simple Best Management Practices (BMPs) specifically designed for horse owners and landowners with horses.



- STORE your manure properly. Do not store unprotected piles of manure in places where runoff may enter streams, or flood waters may wash the manure away. Place a cover or tarp over the pile to keep rainwater out.
- CHECK with your local conservation district to design manure storage facilities to protect water quality. These structures usually consist of a concrete pad to protect ground water and a short wall on one or two sides to make manure handling easier.
- TRY composting – A vegetative cover placed around buildings or on steeper slopes can help minimize erosion and absorb nutrients while improving the appearance of your property. In addition, avoid costlier erosion controls, vegetative covers will provide animals with better traction during wet or icy conditions.

- KEEP animals out of steams – Designed stream crossings provide a safe, easy way for horses and livestock to ford streams. Fencing encourages the use of the crossing instead of the streambed to navigate streams. This will allow vegetation to stabilize stream banks and reduce sediment pollution.
- MOW pastures to proper height, six inches is typically recommended.
- Material STORAGE SAFETY TIPS – Many of the chemicals found in barns require careful handling and proper disposal. When using these chemicals, be certain to follow these common sense guidelines:
  - Buy only what you need.
  - Treat spills of hoof oils like fuel spill. Use kitty litter to soak up the oil and dispose in a tightly sealed plastic bag.
  - Store pesticides in a locked, dry, well-ventilated area.
  - Protect stored fertilizer and pesticides from rain and surface water.

Call 1-800-506-2555 to locate your local conservation district to find out what to do with your current backyard manure pile, how to re-establish a healthy pasture, what to do about weeds, and what grasses grow best in your soils.

Thank you for doing your part to protect your watershed, the environment, and the equestrian way of life in your community!

Helpful telephone numbers and links:

WATER AGENCY LIST in Riverside County

City of Banning	(951) 922-3130
City of Beaumont	(951) 769-8520
City of Blythe	(760) 922-6161
City of Coachella	(760) 398-3502
Coachella Valley Water District	(760) 398-2651
City of Corona	(951) 736-2259
Desert Center, CSA #51	(760) 227-3203
Eastern Municipal Water District	(951) 928-3777
Elsinore Valley MWD	(951) 674-3146
Farm Mutual Water Company	(951) 244-4198
City of Hemet	(951) 765-3712
Idyllwild Water District	(951) 659-2143
Jurupa Community Services District	(951) 360-8795
Lake Hemet MWD	(951) 658-3241
Lee Lake Water District	(951) 277-1414
March Air Force Base	(951) 656-7000
Mission Springs Water District	(760) 329-6448
City of Palm Springs	(760) 323-8253
Rancho Caballero	(951) 780-9272
Rancho California Water District	(951) 296-6900
Ripley, CSA #62	(760) 922-4951
City of Riverside	(951) 351-6170
Rubidoux Services District	(951) 684-7580
Silent Valley Club, Inc	(951) 849-4501
Valley Sanitary District	(760) 347-2356
Western Municipal Water District	(951) 789-5000
Yucaipa Valley Water District	(909) 797-5117

REPORT ILLEGAL STORM DRAIN DISPOSAL
1-800-506-2555 or online at
www.rcflood.org

Online resources include:

- Riverside County Flood Control and Water Conservation District
  www.rcflood.org
- California Storm Water Quality Association
  www.casqa.org
- State Water Resources Control Board
  www.swrcb.ca.gov/
- Power Washers of North America
  www.thepwna.org

StormWater Pollution

What you should know for...

OUTDOOR CLEANING ACTIVITIES AND PROFESSIONAL MOBILE SERVICE PROVIDERS

Storm drain pollution prevention information for:

- Car Washing / Mobile Detailers
- Window and Carpet Cleaners
- Power Washers
- Waterproofers / Street Sweepers
- Equipment cleaners or degreasers and all mobile service providers

Do you know where street flows actually go?

Storm Drains are NOT connected to sanitary sewer systems and treatment plants!

The primary purpose of storm drains is to carry rain water away from developed areas to prevent flooding. Pollutants discharged to storm drains are transported directly into rivers, lakes and streams. Soaps, degreasers, automotive fluids, litter and a host of materials are washed off buildings, sidewalks, plazas and parking areas. Vehicles and equipment must be properly managed to prevent the pollution of local waterways.

Unintentional spills by mobile service operators can flow into storm drains and pollute our waterways. **Avoid mishaps.** *Always* have a **Spill Response Kit** on hand to clean up unintentional spills**.** Only emergency **Mechanical** repairs should be done in City streets and use drip pans for spills. **Plumbing** should be done on private property. Always store chemicals in a leak-proof container and keep covered when not in use. **Window/Power Washing** waste water shouldn't be released into the streets, but should be disposed of in a sanitary sewer, landscaped area or in the soil. Soiled **Carpet Cleaning** wash water should be filtered before being discharged into the sanitary sewer. Dispose of all filter debris properly. **Car Washing/Detailing** operators should wash cars on private property and use a regulated hose nozzle for water flow control and runoff prevention. Capture and dispose of waste water and chemicals properly. Always prevent runoff water from entering storm drains.

REPORT ILLEGAL STORM DRAIN DISPOSAL 1-800-506-2555

Help Protect Our Waterways!

Use These Guidelines For Outdoor Cleaning Activities and Wash Water Disposal

Did you know that disposing of pollutants into the street, gutter, storm drain or nearest body of water is ***PROHIBITED*** by law and can bring about stiff penalties.

Best Management Practices

Waste wash water from Mechanics, Plumbers, Window/Power Washers, Carpet Cleaners, Car Washing and Mobile Detailing activities may contain significant quantities of motor oil, grease, chemicals, dirt, detergents, brake pad dust, litter and other materials.

Best Management Practices, or BMPs as they are known, are guides to prevent pollutants from entering the storm drains. *Each of us* can do our part to keep storm water clean by using the suggested BMPs below:

Simple solutions for both light and heavy duty jobs:

Do...consider dry cleaning methods first such as a mop, broom, rag or wire brush. Always keep a spill response kit on site.

Do...prepare the work area before power cleaning by using sand bags, rubber mats, vacuum booms, containment pads or temporary berms to keep wash water away from the gutters and storm drains.

Do...use vacuums or other machines to remove and collect loose debris or litter before applying water.

Do...obtain the property owner's permission to dispose *small amounts* of power washing waste water to landscaped, gravel or unpaved surfaces.

Do...check with your local sanitary sewer agency's policies on wash water disposal regulations. (See list on reverse side).

Do...be aware that if discharging to landscape areas, soapy wash water may damage landscaping. Residual wash water may remain on paved surfaces to evaporate. Sweep up solid residuals and dispose of properly. Vacuum booms are another option for capturing and collecting wash water.

Do not let...wash or waste water from sidewalk, plaza or building cleaning go into a street or storm drain.

Report illegal storm drain disposal,
Call Toll Free
1-800-506-2555

Using Cleaning Agents

Try using biodegradable/phosphate-free products. They are easier on the environment, but don't confuse them for being toxic free. Soapy water entering the storm drain system can impact the delicate aquatic environment.

When cleaning surfaces with a *high-pressure washer* or *steam cleaner*, additional precautions should be taken to prevent the discharge of pollutants into the storm drain system. These two methods of surface cleaning can loosen additional material that can contaminate local waterways.

Think Water Conservation

Minimize water use by using high pressure, low volume nozzles. Be sure to check all hoses for leaks.

Screening Wash Water

A thorough dry cleanup before washing exterior surfaces, such as buildings and decks *without loose paint*, sidewalks, or plaza areas should be sufficient to protect receiving waters. Keep debris from entering the storm drain after cleaning by first passing the wash water first through a "20 mesh" or finer screen to catch the solid materials, then disposing the mesh in a refuse container.

Drain Inlet Protection & Collection of Wash Water

- Prior to any washing, block all storm drains with an impervious barrier such as sandbags or berms, or seal the storm drain with plugs or rubber mats.
- Create a containment area with berms and traps or take advantage of a low spot to keep wash water contained.
- Wash vehicles and equipment on grassy or gravel areas so that the wash water can seep into the ground.
- Pump or vacuum up all wash water in the contained area.

Equipment and Supplies

For special materials, equipment and supplies:

- New Pig — (800) 468-4647
- Lab Safety Supply — (800) 356-0783
- C&H — (800) 558-90966
- W.W. Grainger — (800) 994-9174
- Cleaning Equipment Trade Association — (800) 441-0111

Helpful telephone numbers and links:

Riverside County Water Agencies:

City of Banning	(951) 922-3130
City of Beaumont	(951) 769-8520
City of Blythe	(760) 922-6161
City of Coachella	(760) 398-3502
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Western Municipal Water District	(951) 789-5000
Yucaipa Valley Water District	(909) 797-5117

CALL 1-800-506-2555 to:

- Report clogged storm drains or illegal storm drain disposal from residential, industrial, construction and commercial sites into public streets, storm drains and/or water bodies.
- Find out about our various storm drain pollution prevention materials.
- Locate the dates and times of Household Hazardous Waste (HHW) Collection Event.
- Request adult, neighborhood, or classroom presentations.
- Locate other County environmental services.
- Receive grasscycling information and composting workshop information.

Or visit our (Riverside County Flood Control District website at:
www.floodcontrol.co.riverside.ca.us

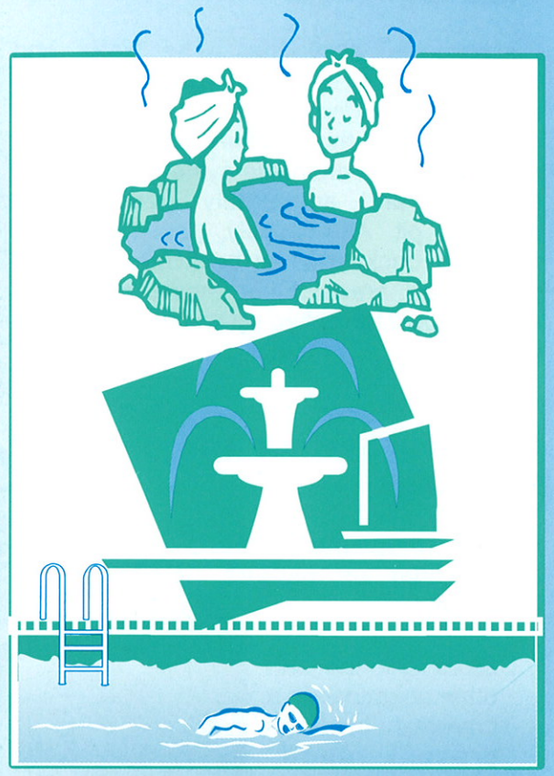
Other links to additional storm drain pollution information:

- County of Riverside Environmental Health: www.rivcoeh.org
- California State Water Resource Conservation Board: www.swrcb.ca.gov/stormwtr/links.html
- California Water Quality Task Force: www.cabmphandbooks.com/
- United State Environmental Protection Agency (EPA): www.epa.gov/opptintr/p2home/programs/busprc.htm (compliance assistance information)

Riverside County Only Rain in the Storm Drain Pollution Protection Program gratefully acknowledges the Bay Area Stormwater Management Agencies Association and the Cleaning Equipment Trade Association for information provided in this brochure.

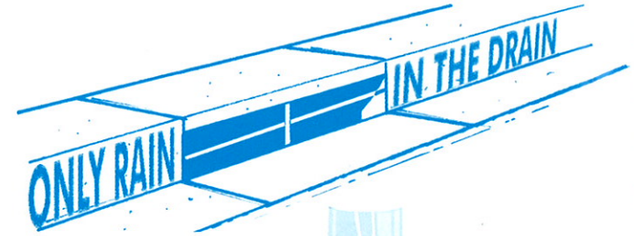
StormWater Pollution

What you should know for...



Swimming Pool, Jacuzzi and Fountain Maintenance

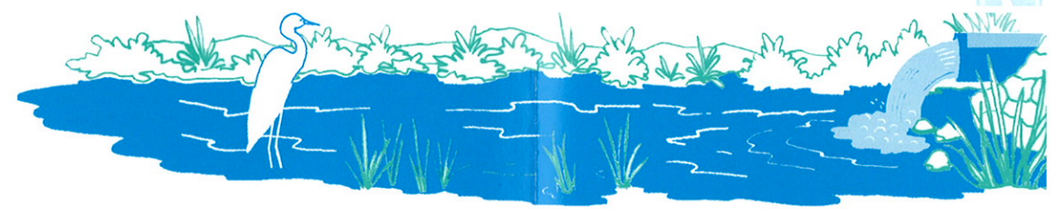
Do you know . . . where the water actually goes?



Storm Drains are not connected to sanitary sewer systems and treatment plants!

The primary purpose of storm drains is to carry rain water away from developed areas to prevent flooding. Untreated storm water and the pollutants it carries flow directly into rivers, lakes, and streams. Wastewater from residential swimming pools, jacuzzis, fishponds, and fountains often contain chemicals used for sanitizing or cleansing purposes. Toxic chemicals (such as chlorine or copper-based algaecides) can damage the environment when wastewater is allowed to flow into our local rivers, lakes, and streams by way of the storm drain system. Each of us can do our part to help clean our water, and that adds up to a pollution solution.

The Cities and County of Riverside have adopted ordinances for storm drain pollution management to maintain discharge control and prevent illegal storm drain discharge. In accordance with state and federal law, these local storm water ordinances prohibit the discharge of pollutants into the storm drain system or local surface waters. The Only Rain in the Storm Drain Pollution Program informs residents and businesses of storm drain pollution prevention activities such as those described in this brochure.



PLEASE NOTE: The discharge of pollutants into the street, gutters, storm drain system, or waterways – without a Regional Water Quality Control board permit or waiver – is strictly prohibited by local ordinances and state and federal law.

Do Your Part to Protect Our Waterways!

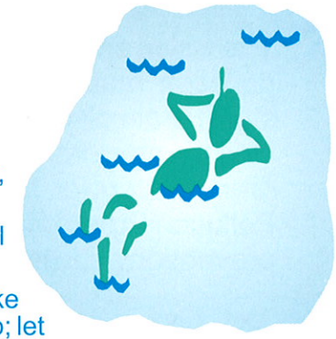
Use These Guidelines For Proper Draining of Your Swimming Pool, Jacuzzi and Fountain Water

Discharge Regulations

Requirements for pool draining may differ from city to city. Check with your water agency to see if disposal to the sanitary sewer line is allowed for pool discharges (see reverse side for Riverside County water purveyors).

If sewer discharge is allowed, a hose can be run from your swimming pool pump to the washing machine drain or a sink or bathtub. If sewer discharge is not allowed, or if your house is served by a septic tank, review the options presented below.

Discharge Options



If your local sewer agency will not accept pool water into their system, or if you are on a septic tank system, follow these guidelines:

1. Reduce or eliminate solids (e.g., debris, leaves or dirt) in the pool water.
2. Allow the chemicals in the pool water to dissipate. This could take up to seven (7) days depending on the time of year. Create a co-op; let your neighbor share your pool while theirs is being prepared for draining, then use their pool while yours is being drained. Chlorinated water should not be discharged into the storm drain or surface waters. This includes large pools such as community swimming pools or spas.
3. When the pool water is free of all chemicals (verify by a home pool water test kit) drain pool water to landscaped areas, lawns, yards, or any areas that will absorb the water.
4. You may have to drain the pool water over a period of a few days to allow the landscape areas to absorb most of the water.
5. Control the flow of the draining pool water to prevent soil erosion. Do not allow sediment to enter the street, gutter or storm drain.
6. Avoid discharging pool water into the street and storm drain system. Water runoff that enters the street can pick up motor oil, pet waste, trash and other pollutants, eventually carrying them into the storm drain system and local surface waters.

Refinishing Pool Surfaces

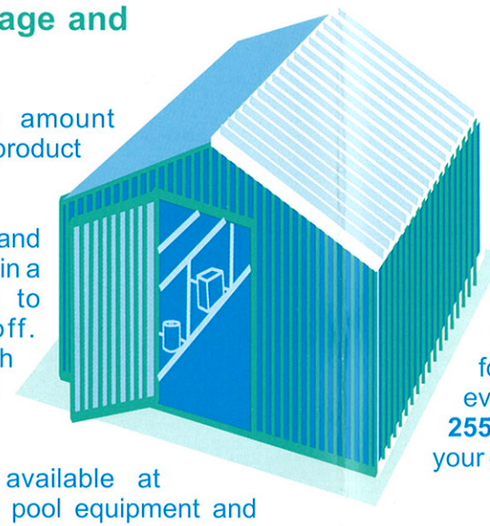
If you are resurfacing your pool, or resurfacing the pool patio area, be sure to hose down mixers, tools and trailers in a dirt area where rinse water won't flow into the street, gutter or storm drain. Local storm water ordinances strictly prohibit the discharge of pollutants into the storm drain system.

Residues from acid washing and similar activities require special handling. Never discharge low or high pH wastewater into the street, gutter or storm drain.

Cleaning Filters

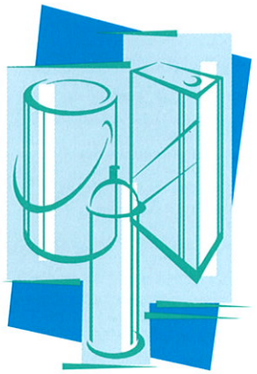
Discharge of pool filter rinse water and backflush to a stream, ditch, or storm drain is prohibited. Backflush from pool filters must be discharged to the sanitary sewer, on-site septic tank and drainfield system (if properly designed and adequately sized), or a seepage pit. Alternatively, pool filter rinse water and backwash may be diverted to dirt or landscaped areas. Filter media and other solids should be picked up and disposed of in the trash.

Chemical Storage and Handling



- Use only the amount indicated on product labels.
- Store chlorine and other chemicals in a covered area to prevent runoff. Keep out of reach of children and pets.
- Chlorine kits, available at retail swimming pool equipment and supply stores, should be used to monitor the chlorine and pH levels.
- Chlorine and other pool chemicals should never be allowed to flow into the gutter or the storm drain system.

Algaecides



Avoid using copper-based algaecides unless absolutely necessary. Control algae with chlorine, organic polymers or other alternatives to copper-based pool chemicals. Copper is a heavy metal that can be toxic to aquatic life.

Proper Disposal of Pool Chemicals

If you need to dispose of unwanted pool chemicals, first try giving them to a neighbor with a pool. If that doesn't work, bring unwanted pool chemicals to a Household Hazardous Waste (HHW) Collection Event. There's no cost for bringing HHW items to collection events - it's FREE! Call **1-800-506-2555** for a schedule of HHW events in your community.

NEVER put unused chemicals into the trash, onto the ground or down a storm drain.

Appendix E

Soils Report

Porchet Method - Conversion of Percolation Rate to Infiltration Rate	Perc Test b-3-9 Average	Legend	Required Entry / Calculated Entry

Company Name:	AM/PAC AND ASSOCIATES, INC.	Date:	1/28/2013
Designed By:	BALLINGER/HAWES	County/City Case No:	13-892
mike lesle project			

Percolation Test Conversion to Infiltration Rate

The conversion equation used is:

$$I_T(in/hr) = \frac{dH(in) \times 60\ (min/hr) \times r(in)}{dt(min) \times [r(in) + 2H_{AVG}(in)]}$$

Hole Radius	$r =$	8.00	inches
Time Interval	$dt =$	10.00	minutes
Initial height of water during selected time interval	$H_0 =$	12.00	inches
Final Height of water during selected time interval	$H_f =$	11.00	inches
Change in height of water during selected time interval	$dH =$	1.00	inches
Average head height over the selected time interval	$H_{AVG} =$	11.50	inches
Converted infiltration rate per test data	$I_T =$	1.55	inches/hour

Comments

F

WAC GEOTECHNICAL INC.

PRELIMINARY SOILS REPORT

PROJECT DATE: JANUARY 28, 2013

PROJECT NUMBER: 13-892

PREPARED FOR:

MR. MIKE LESLE (951) 522-2405
21595 MARBLE CT. WILDOMAR, CA. 92595

SUBJECT:

SUBSURFACE SOILS ENGINEERING AND FOUNDATION EVALUATION INVESTIGATION FOR THE NINE, PROPOSED RESIDENTIAL STRUCTURES. T.T.M.# 36519

JOB SITE LOCATION:

TENTATIVE TRACT MAP # 36519

34915 ORANGE STREET WILDOMAR, CA. 92595

APN: 367-170-029

LONGITUDE: -117.277011 W, LATITUDE: 33.614122 N

P.O. BOX 545 • NORCO, CA 92860
OFC: (951) 354-6500 • FAX: (951) 354-8600

GENTLEMEN:

THE RESULTS OF OUR INVESTIGATION INDICATE THAT THE SOILS UNDERLYING THE PROPOSED BUILDING AREA ARE COMPRISED OF BROWN TO TANNISH BROWN SILTS AND FINE TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, IN A LOOSE TO FIRM AND SLIGHTLY MOIST STATE. BASED UPON INFORMATION SUPPLIED TO THIS OFFICE, IT IS PROPOSED TO CONSTRUCT NINE, CONVENTIONAL FRAME, STUCCO EXTERIOR AND CONCRETE TILE ROOF, SINGLE-FAMILY, RESIDENTIAL STRUCTURES.

THE PROPERTY IS LOCATED IN A WELL DEVELOPED, SEMI-RURAL, AREA, IN THE CITY OF WILDOMAR, COUNTY OF RIVERSIDE, CALIFORNIA. MINOR GRADING IS PROPOSED FOR THIS PROJECT. GRADING PLANS HAVE NOT YET BEEN PREPARED FOR THIS PROJECT. ANY PLANS PREPARED MUST BE APPROVED BY THIS OFFICE WITH RESPECT TO THE FINDINGS, RECOMMENDATIONS AND CONCLUSIONS HEREIN. THE PROPERTY FALLS IN ELEVATION FROM THE NORTHEAST DOWN TO THE SOUTHEAST CORNER APPROXIMATELY 30 FEET OVERALL.

IT IS PROPOSED TO CONSTRUCT CONVENTIONAL SPREAD FOOTINGS FOR SLAB-ON-GRADE RESIDENTIAL BUILDINGS. IT IS OUR OPINION THAT THE SITE SHOULD BE CONSIDERED SUITABLE FOR THE PLANNED DEVELOPMENT, PROVIDED THE RECOMMENDATIONS PRESENTED HEREIN ARE INCORPORATED INTO THE DESIGN AND IN CONSTRUCTION. ADEQUATELY CONSTRUCTED SPREAD FOOTINGS FOUNDED INTO COMPETENT, FIELD APPROVED DENSE COMPACTED FILL ARE EXPECTED TO PROVIDE NECESSARY SUPPORT FOR THE PLANNED RESIDENTIAL STRUCTURES.

THIS REPORT HAS BEEN PREPARED IN ACCORDANCE WITH THE GENERALLY ACCEPTED ENGINEERING STANDARDS CONSIDERED NECESSARY FOR THE PROPOSED DEVELOPMENT. DESIGN PARAMETERS AND RECOMMENDATIONS ARE BASED ON AND DERIVED FROM THE 2010 CBC/IBC.

THANK YOU FOR THE OPPORTUNITY TO BE OF SERVICE ON YOUR PROJECT. SHOULD YOU HAVE ANY QUESTIONS REGARDING THIS REPORT, PLEASE CALL THE UNDERSIGNED AT YOUR CONVENIENCE.

RESPECTFULLY SUBMITTED,
WAC GEOTECHNICAL, INC.

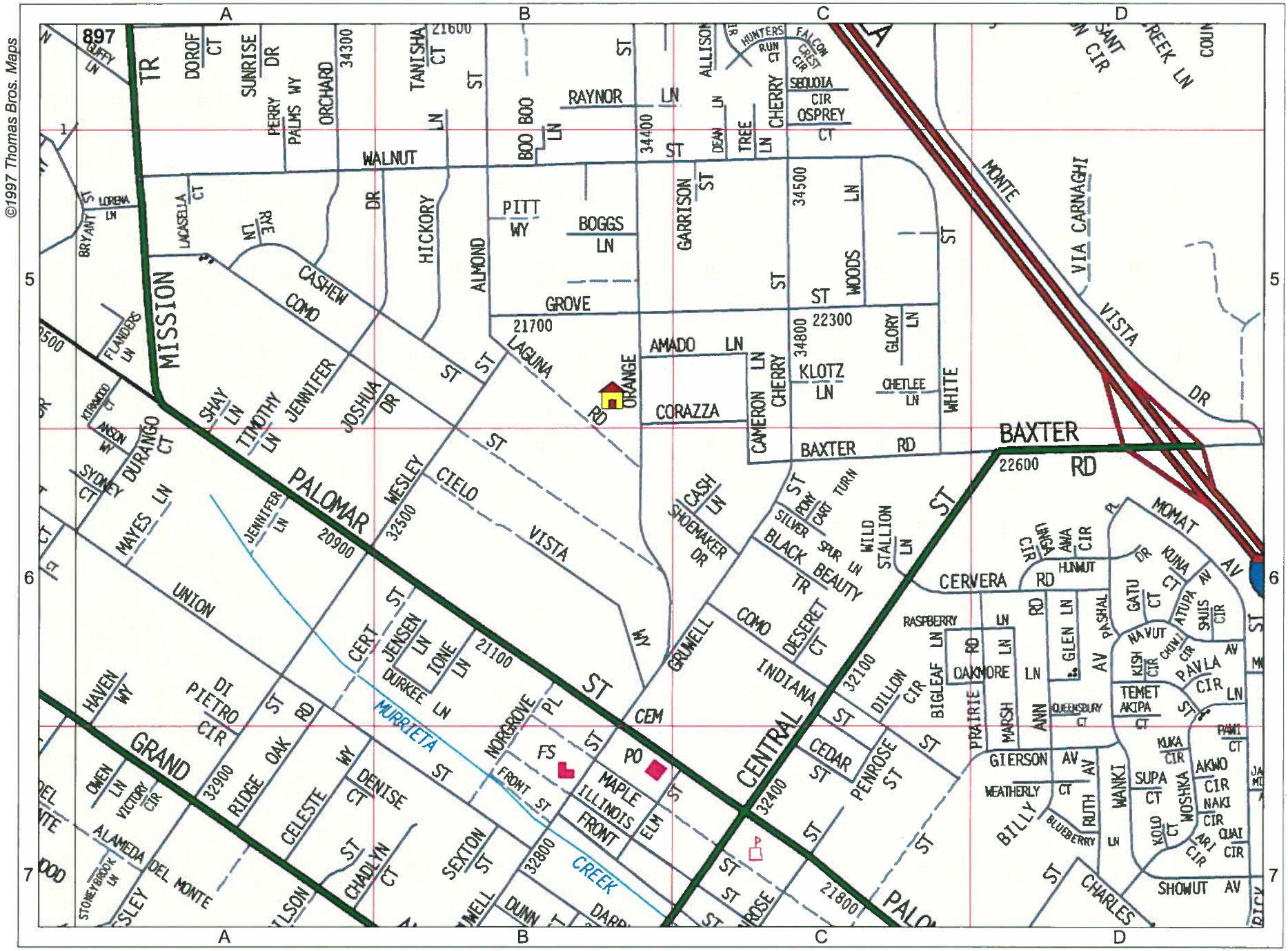
DAVID E. BARLINGER, PRESIDENT
WAC GEOTECHNICAL, INC.

GEORGE E. HAWES, VICE PRESIDENT
RCE C034779, STATE OF CALIFORNIA
LIC. EXP. 9-30-13

REGISTERED PROFESSIONAL ENGINEER
GEORGE E. HAWES
No. C034779
STATE OF CALIFORNIA

THIS OFFICIAL STAMP IS IN BLUE INK, OTHERWISE A COPY

DATE: 1/31/13



34915 Orange St, Wildomar, 92595, Page & Grid 897 B5

1.0 INTRODUCTION

THE PURPOSE OF THIS STUDY IS TO EVALUATE THE NATURE AND ENGINEERING PROPERTIES OF THE SUBSURFACE SOILS, AND TO PROVIDE NECESSARY GEOTECHNICAL RECOMMENDATIONS FOR FOUNDATION DESIGN, SITE GRADING, UTILITY TRENCH BACKFILL, AND FIELD REVIEW DURING CONSTRUCTION. THE FINDINGS AND RECOMMENDATIONS HEREIN ARE BASED ON THE 2010 CALIFORNIA BUILDING CODE, TITLE 24 AND 2010 IBC/UBC.

OUR EVALUATION INCLUDED SUBSURFACE EXPLORATION, SOIL SAMPLING, LABORATORY TESTING, ENGINEERING ANALYSES AND PREPARATION OF THIS REPORT. THE RECOMMENDATIONS CONTAINED HEREIN REFLECT OUR PROFESSIONAL OPINIONS FOR THE SUBSURFACE SOIL CONDITIONS ENCOUNTERED DURING FIELD INVESTIGATION.

1.1 PROPOSED DEVELOPMENT

IT IS PROPOSED TO CONSTRUCT NINE, CONVENTIONAL FRAME, STUCCO EXTERIOR AND CONCRETE TILE, SINGLE-FAMILY RESIDENTIAL STRUCTURES ON THE PROPERTY. CONVENTIONAL SPREAD FOOTINGS ARE EXPECTED FOR THE BUILDING.

IT IS OUR OPINION THAT THE SITE SHOULD BE CONSIDERED SUITABLE FOR THE PLANNED DEVELOPMENT, PROVIDED THE RECOMMENDATIONS PRESENTED HEREIN ARE INCORPORATED INTO DESIGN AND IN CONSTRUCTION. ADEQUATELY CONSTRUCTED SPREAD FOOTINGS FOUNDED INTO COMPETENT, FIELD APPROVED DENSE COMPACTED FILL ARE EXPECTED TO PROVIDE NECESSARY SUPPORT FOR THE PLANNED RESIDENTIAL STRUCTURE.

1.2 SITE DESCRIPTION

THE SUBJECT PROPERTY IS LOCATED AT 34915 ORANGE STREET WILDOMAR, CA. THE PROPERTY IS LOCATED IN A WELL DEVELOPED, SEMI-RURAL, CUSTOM HOME AREA IN THE CITY OF WILDOMAR, COUNTY OF RIVERSIDE, CALIFORNIA. MINOR GRADING IS PROPOSED FOR THIS PROJECT. NO GRADING PLANS HAVE BEEN PREPARED FOR THIS PROJECT AS YET. THE PROPERTY FALLS IN ELEVATION FROM THE NORTHEAST DOWN TO THE SOUTHEAST APPROXIMATELY 30 FEET OVERALL. NO BEDROCK ROCK OUTCROPS, WELLS OR DETRIMENTAL FEATURES WERE NOTED ON THE PARCEL. AN EXISTING HOME IS NOTED ON PROPOSED LOT NUMBER 3. THIS EXISTING RESIDENTIAL STRUCTURE IS TO REMAIN ON THE SITE.

2.0 SCOPE OF WORK

GEOTECHNICAL INVESTIGATION FOR THE SUBJECT SITE INCLUDED SUBSURFACE EXPLORATION UTILIZING A TRUCK MOUNTED MOBILE DRILL B-34 AUGER DRILL RIG, SOIL SAMPLING, LABORATORY TESTING, ENGINEERING ANALYSES AND PREPARATION OF THIS REPORT. IN GENERAL, THE SCOPE OF WORK INCLUDED THE FOLLOWING TASKS:

* NINE EXPLORATORY BORINGS WERE EXCAVATED USING A B-34 DRILL RIG, ADVANCED TO A MAXIMUM DEPTH OF 15 FEET BELOW THE EXISTING GRADE (SEE ATTACHED PLANS AND BORING LOGS, APPENDIX SECTION). DURING EXPLORATION, ENCOUNTERED SUBSURFACE SOILS WERE LOGGED BASED UPON VISUAL AND TACTILE METHODS WITH BULK SAMPLES AND IN-PLACE RING SAMPLES OBTAINED AT SUBSURFACE ZONES AT OR NEAR THE PROPOSED PAD GRADE. COLLECTED SAMPLES WERE TRANSFERRED TO A GEOTECHNICAL LABORATORY FOR TESTING AND ANALYSES.

DESCRIPTIONS OF ENCOUNTERED SUBSURFACE SOILS ARE PROVIDED ON THE BORING LOGS IN THE APPENDIX SECTION. THE APPROXIMATE LOCATIONS OF THE TEST BORINGS ARE SHOWN ON THE ATTACHED PLANS.

* LABORATORY TESTING WAS CONDUCTED ON SELECTED BULK, REMOLDED AND IN-PLACE RING SAMPLES ACCORDING TO THE PROJECT REQUIREMENTS. THE LABORATORY TESTING INCLUDED EVALUATIONS OF MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT, SOIL SHEAR STRENGTH (BASED UPON REMOLDED SAMPLES) UNDER ANTICIPATED STRUCTURAL LOADINGS, CONSOLIDATION TESTS, A CORROSION SERIES, R-VALUES AND EXPANSION INDEX. DESCRIPTIONS OF THE TEST PROCEDURES USED AND TEST RESULTS ARE PROVIDED IN APPENDIX SECTION.

* BASED ON OBTAINED DATA RESULTING FROM OUR FIELD INVESTIGATION, LABORATORY TESTING AND ENGINEERING ANALYSES, THIS REPORT PRESENTS THIS FIRMS RECOMMENDATIONS FOR FOUNDATION DESIGN, SITE PREPARATION, GRADING AND FIELD REVIEWS NECESSARY DURING SITE CONSTRUCTION. CALCULATIONS ARE BASED ON THE MINIMUM RECOMMENDATIONS SET FORTH IN THE 2010 CALIFORNIA BUILDING CODE, TITLE 24 AND THE 2010 IBC/UBC.

3.0 SUBSURFACE CONDITIONS

OUR EVALUATION OF THE SITE SUBSOIL CONDITIONS IS BASED UPON SUBSURFACE SOIL EXPLORATION AND THE NOTED LABORATORY TESTING. BASED UPON OUR FIELD INVESTIGATION, SOIL SAMPLING AND SUBSEQUENT LABORATORY AND ENGINEERING ANALYSES, THE FOLLOWING CHARACTERISTICS FOR THE SITE SOILS ARE OBSERVED:

DUE TO YEARS OF FARMING AND BIO-TURBATION, THE UPPER 3-4 FEET OF THE SITE SOILS APPEARS TO BE LOOSE AND COMPRESSIBLE. THE SUPPORTING SOILS ARE NOTED TO BE BROWN TO TANNISH BROWN SILTS AND FINE TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, IN A LOOSE TO FIRM AND SLIGHTLY MOIST STATE. THIS NATIVE SOIL IS CLASSIFIED AS SITE CLASS D, PER THE 2010 CALIFORNIA BUILDING CODE TABLE 1613.5.2.

DURING GRADING, OVER EXCAVATION TO THE DEPTHS OF 3-4 FEET BELOW THE CURRENT SURFACE IS REQUIRED. ANY PLANT ROOTS, POSSIBLE LARGE ROCKS AND OTHER DELETERIOUS MATERIALS FOUND IN ANY OVER-EXCAVATION MUST BE REMOVED PRIOR TO THE PLACEMENT OF THE CLEAN EXCAVATED SOILS AS COMPACTED FILL.

THESE SUB-SOILS WILL REQUIRE REMOVAL TO COMPETENT BEARING SUB-GRADE FOR FOUNDATION SUPPORT. SEE SECTION 4.1.1 FOR SPECIFIC REQUIREMENTS. THESE IN PLACE SUB-SOILS MAY BE CONSIDERED SUITABLE FOR USE AS STRUCTURAL FILLS INTENDED TO SUPPORT PROPOSED STRUCTURE OR FILL SLOPES. AT TIME OF CONSTRUCTION, ACTUAL FIELD EXPOSURES WILL DICTATE SITE SUITABILITY BASED UPON FIELD REVIEW BY THE PROJECT SOILS ENGINEERING CONSULTANT/REPRESENTATIVE.

LABORATORY SHEAR TESTS CONDUCTED ON THE BULK SAMPLES FROM THE UPPER LAYER, REMOLDED TO 90 PERCENT OF THE LABORATORY EVALUATED MAXIMUM DRY DENSITY, INDICATE VERY GOOD SHEAR STRENGTHS UNDER INCREASED MOISTURE CONDITIONS. THE SOIL IS CONSIDERED MODERATELY CORROSIVE. ALL METAL SHOULD BE PROTECTED FROM THE SOIL. RESULTS OF THE LABORATORY SHEAR TESTS ARE PROVIDED IN THE APPENDIX SECTION.

IF IMPORT SOILS ARE PROPOSED FOR THIS CONSTRUCTION AND FILL, THE MOST CONSERVATIVE TEST RESULT WILL APPLY TO DESIGNS.

3.1 EXCAVATIBILITY

CONSIDERING THE REMOVAL DEPTH AND THE ABSENCE OF BEDROCK TO AT LEAST 15' BELOW GRADE, IT IS OUR OPINION THAT GRADING AND EXCAVATION REQUIRED FOR THE PROJECT MAY BE ACCOMPLISHED USING CONVENTIONAL CONSTRUCTION EQUIPMENT TO THE PROPOSED DESIGN GRADES AND RECOMMENDED REMOVAL DEPTHS.

3.2 GROUNDWATER

GROUND WATER WAS NOT ENCOUNTERED IN OUR SUBSURFACE DRILLING EXCAVATION TO THE DEPTH OF 15' BELOW GRADE. THEREFORE, GROUND WATER IS NOT EXPECTED TO BE A PROBLEM FOR PROPOSED GRADING.

3.3 SUBSURFACE VARIATIONS

BASED UPON THE RESULTS OF OUR SUBSURFACE INVESTIGATION AND ON PAST EXPERIENCE, IT IS THE OPINION OF THIS FIRM THAT VARIATIONS IN THE CONTINUITY AND DEPTHS OF SUBSOIL DEPOSITS MAY BE EXPECTED. DUE TO THE NATURE AND CHARACTERISTICS OF THE SOILS UNDERLYING THE SUBJECT SITE, CARE SHOULD BE EXERCISED IN INTERPOLATING OR EXTRAPOLATING THE CONDITIONS AND PROPERTIES OF THE SUB-SOILS BEYOND THE BORING LOCATIONS.

3.4 LIQUEFACTION

LIQUEFACTION IS CAUSED BY THE BUILD UP OF EXCESS HYDROSTATIC PRESSURE IN SATURATED COHESIONLESS SOILS DUE TO CYCLIC STRESS GENERATED BY GROUND SHAKING DURING AN EARTHQUAKE. THE SIGNIFICANT FACTORS ON WHICH LIQUEFACTION POTENTIAL OF A SOIL DEPOSIT DEPENDS, AMONG OTHERS INCLUDE, SOIL TYPE, RELATIVE SOIL DENSITY, INTENSITY OF EARTHQUAKE, DURATION OF GROUND SHAKING, AND DEPTH OF GROUND WATER.

PROVIDING THE RECOMMENDATIONS SET FORTH IN THIS REPORT ARE MET, 3-4' OVER-EXCAVATION AND RE-COMPACT, THE LIQUEFACTION POTENTIAL MAY BE CONSIDERED LOW FOR THIS PARCEL. GROUND WATER WAS NOT ENCOUNTERED IN OUR SUBSURFACE EXPLORATION PROGRAM, THE UNDERLYING IN-PLACE MATERIALS HAVE AVERAGE COHESION. PER THE RIVERSIDE COUNTY GIS; THIS SITE IS NOT LOCATED IN A FLOOD ZONE, THE LIQUEFACTION POTENTIAL IS NOTED AS MODERATE AND THE SITE IS SUSCEPTIBLE TO SUBSIDENCE.

3.5 POTENTIAL SEISMIC HAZARDS

SEISMIC DESIGN PARAMETERS ARE BASED UPON THE 2010 CBC. THIS PROJECT IS LOCATED IN SEISMIC REGION 1. THIS PARCEL IS LOCATED WITHIN 2 KM OF A TYPE B FAULT. THIS SEISMIC SOURCE IS IDENTIFIED AS THE ELSINORE FAULT (GLEN IVY SEGMENT). THIS IS A TYPE B FAULT. THE SLIP RATE IS 5, THE MG MAX IS NOTED AS 6.8. PER THE RIVERSIDE COUNTY GIS; THIS SITE IS LOCATED WITHIN ½ MILE OF A FAULT.

FOR CALCULATIONS THE SEISMIC DESIGN PARAMETERS ARE PER USGS "DESIGN MAP" ATTACHED. THE DESIGN CRITERIA IS BASED ON SITE CLASS D SOILS AND THE 2010 CBC. THE SOILS UNDERLYING THE SUBJECT SITE, MEDIUM BROWN, SILTY TO MEDIUM GRAINED ALLUVIAL DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST, IS ASSIGNED THE SOIL TYPE PROFILE D.

THE USGS SEISMIC HAZARDS MAPPING GROUND MOTION PAGE IS ATTACHED TO THIS REPORT. A COPY OF THE CDC, DMG ACTIVE FAULT NEAR-SOURCE ZONE MAP IS ALSO ATTACHED TO THIS REPORT. THIS INFORMATION IS PROVIDED BY THE CALIFORNIA GEOLOGICAL SURVEY AND IS DESIGNED TO COMPLIMENT THE 2010 UBC/CBC CRITERIA. THE DATA SHEETS ARE FOUND IN THE APPENDIX PORTION OF THIS REPORT.

Ss = 2.301 (g)	Sms = 2.301 (g)	Sds = 1.534 (g)
S1 = 0.927 (g)	Sm1 = 1.391 (g)	Sd1 = 0.927 (g)

4.0 EVALUATIONS AND RECOMMENDATIONS

4.1 GENERAL EVALUATIONS

BASED ON THIS FIRM'S FIELD INVESTIGATION, LABORATORY TESTING AND SUBSEQUENT ENGINEERING ANALYSIS, IT IS OUR OPINION THAT, FROM A GEOTECHNICAL VIEWPOINT, THE SITE SHOULD BE CONSIDERED SUITABLE FOR THE PLANNED RESIDENTIAL DEVELOPMENT, PROVIDED THE RECOMMENDATIONS PRESENTED HEREIN, ARE INCORPORATED INTO FINAL DESIGN AND IN CONSTRUCTION.

SITE PREPARATION AND GRADING SHOULD BE PERFORMED IN ACCORDANCE WITH THE ENCLOSED RECOMMENDATIONS OF SECTION 5, EARTHWORK/GENERAL GRADING RECOMMENDATIONS OF THIS REPORT, EXCEPT AS MODIFIED IN THE MAIN TEXT AND WITH THE APPLICABLE PORTIONS OF APPENDIX CHAPTER 33 OF THE CURRENT UBC OR APPLICABLE LOCAL ORDINANCE.

STRUCTURAL DESIGN CONSIDERATIONS SHOULD INCLUDE THE PROBABILITY OF MODERATE PEAK GROUND ACCELERATIONS FROM RELATIVELY ACTIVE REGIONAL EARTHQUAKE FAULTS, AS NOTED IN SECTION 3.5. CHEMICAL TEST RESULTS INDICATE THE SOIL IS MODERATELY CORROSIVE; HOWEVER, ALL METAL SHOULD BE PROTECTED FROM THE CORROSIVE SOIL.

4.1.1 SUB-GRADE PREPARATIONS FOR STRUCTURAL PADS AND STREET AREAS

PROGRAMMED AREAS FOR BUILDING SUPPORT AND 5' OUTSIDE OF THE BUILDING PERIMETER, WILL REQUIRE REMOVAL OF LOOSE SOIL IN THE UPPER 3-4 FEET TO COMPETENT IN-PLACE SUB-GRADE. REMOVAL SHALL BE VERIFIED AND APPROVED IN THE FIELD BY A REPRESENTATIVE OF WAC GEOTECHNICAL, INC. PRIOR TO REPLACING AND COMPACTING REMOVED MATERIAL. A REPRESENTATIVE OF WAC GEOTECHNICAL, INC. SHALL VERIFY THAT ALL REPLACED MATERIAL HAS BEEN COMPACTED TO AT LEAST 90% RELATIVE COMPACTION PER ASTM D-1557-91 FOR STRUCTURAL SUPPORT OF THE PROPOSED FILL AND FOUNDATIONS.

AFTER THE ANTICIPATED SOIL REMOVAL (APPROXIMATELY 3-4 FEET), THE EXPOSED SOIL SHOULD BE SCARIFIED 6-INCHES AND MOISTURE CONDITIONED TO INSURE A UNIFORM FILL MAT FOR BUILDING SUPPORT. OVER EXCAVATION SHOULD INCLUDE THE AREA 5-FEET OUTSIDE THE BUILDING FOOTPRINT. ACTUAL DEPTH OF REMOVALS WILL BE PREDICATED ON EXPOSED FIELD CONDITIONS AND APPROVAL BY A REPRESENTATIVE OF WAC GEOTECHNICAL, INC.

ALL FILLS SHALL BE PLACED IN 6 TO 8 INCH LAYERS, MOISTURE CONDITIONED TO AT LEAST OPTIMUM MOISTURE CONTENT AND COMPACTED TO 90% OF MAXIMUM DRY DENSITY PER ASTM D-1557-91. FILL PLACEMENT SHALL BE OBSERVED BY AND COMPACTION TESTING PERFORMED BY A REPRESENTATIVE OF THE PROJECT SOILS ENGINEERING CONSULTANT AND AS NOTED IN SECTION 5.0 "EARTH WORK / GENERAL GRADING RECOMMENDATIONS".

4.2 SPREAD FOUNDATION

FOR ADEQUATE SUPPORT, THE PROPOSED STRUCTURE MAY BE CONSTRUCTED ON CONTINUOUS AND/OR ISOLATED SPREAD FOOTINGS FOUNDED EXCLUSIVELY INTO FIELD APPROVED COMPACTED FILL MATERIALS.

CONVENTIONAL SHALLOW FOUNDATION SYSTEM IS CONSIDERED SUITABLE FOR PLANNED RESIDENTIAL AND ANCILLARY STRUCTURES. DUE TO THE MODERATE CORROSION POTENTIAL, ALL METAL SHOULD BE PROTECTED FROM THE CORROSIVE SOIL.

FOUNDATIONS MAY BE DESIGNED BASED UPON THE FOLLOWING VALUES:

ALLOWABLE BEARING: 5000 LBS./SQ. FT.
LATERAL BEARING: 200 LBS./SQ. FT. PER FT. OF DEPTH TO A MAXIMUM OF 500 LBS./SQ. FT.
SLIDING COEFFICIENT: 0.30

ALLOWABLE BEARING MAY BE INCREASED TO 20 % OF THE ABOVE DESIGNATED VALUE FOR EACH ADDITIONAL FOOT OF DEPTH, UP TO THREE TIMES THE DESIGNATED VALUE. ADDITIONALLY, AN INCREASE OF 1/3 SHALL BE PERMITTED WHEN CONSIDERING LOAD COMBINATIONS, INCLUDING WIND OR EARTHQUAKE LOADS, AS PERMITTED BY 2010 CBC, SECTION 1613.

2. OTHER DESIGN RECOMMENDATIONS:

FOOTING DEPTH

EXTERIOR - 18-INCHES BELOW LOWEST ADJACENT GRADE FOR A ONE-STORY STRUCTURE 18-INCHES FOR A TWO-STORY STRUCTURE, ALL (IN APPROVED DENSE COMPACTED FILL MATERIALS)

INTERIOR - 18-INCHES BELOW LOWEST ADJACENT GRADE FOR A ONE-STORY STRUCTURE 18-INCHES BELOW LOWEST ADJACENT GRADE FOR A TWO-STORY STRUCTURE, ALL (IN APPROVED DENSE COMPACTED FILL MATERIALS)

FOOTING WIDTH

EXTERIOR - 15-INCHES MINIMUM FOR ONE-STORY, 18-INCHES MINIMUM FOR 2-STORY

INTERIOR - 15-INCHES MINIMUM FOR ONE AND 18-INCHES FOR 2-STORY, RESPECTIVELY.

FOOTING REINFORCEMENT

EXTERIOR & INTERIOR - ALL CONTINUOUS; FOUR NO. 4 BARS, TWO NEAR THE TOP AND TWO NEAR THE BOTTOM FOR EXTERIOR AND TWO NO. 4 BARS, ONE NEAR THE TOP AND ONE NEAR THE BOTTOM FOR INTERIOR.

CONCRETE SLABS - SLAB THICKNESS: 4-INCHES REINFORCED WITH NO. 3 BARS AT 24-INCHES ON CENTER EACH WAY.

UNDER-SLAB TREATMENT

10-MIL VISQUEEN; COVER WITH AT LEAST 2 INCHES OF SAND. SUB-GRADE SOILS SHOULD BE PRESOAKED TO CONTAIN AT LEAST OPTIMUM MOISTURE CONTENT IMMEDIATELY PRIOR TO PLACING VISQUEEN AND TO BE VERIFIED BY THE SOILS ENGINEERING CONSULTANT. THE SAND COVER SHOULD BE MOISTENED PRIOR TO PLACING CONCRETE. OPTIMUM MOISTURE CONTENT IN SUB-GRADE SOIL IS TO BE VERIFIED BY THE SOILS ENGINEERING CONSULTANT.

THE SETTLEMENT OF PROPERLY DESIGNED AND CONSTRUCTED FOUNDATIONS SUPPORTED ON APPROVED EARTH MATERIALS, CARRYING MAXIMUM ANTICIPATED VERTICAL LOADINGS, ARE EXPECTED TO BE WITHIN TOLERABLE LIMITS. ESTIMATED TOTAL AND DIFFERENTIAL SETTLEMENTS SHOULD BE NO MORE THAN 3/4 AND 1/2-INCH, RESPECTIVELY.

4.3 RESISTANCE TO LATERAL LOADS

RESISTANCE TO LATERAL LOADS CAN BE RESTRAINED BY FRICTION ACTING AT THE BASE OF FOUNDATIONS AND BY PASSIVE EARTH PRESSURE. REFER TO SECTION 4.2 FOR VALUES.

THE MAXIMUM LATERAL PASSIVE EARTH PRESSURE IS RECOMMENDED NOT TO EXCEED 500 POUNDS. FOR DESIGN, LATERAL EARTH PRESSURES OF LOCAL SOILS WHEN USED AS LEVEL BACKFILL MAY BE ESTIMATED FROM THE FOLLOWING EQUIVALENT FLUID DENSITY:

ACTIVE: 37 PCF
PASSIVE: 200 PCF
AT REST: 59 PCF

4.5 CONSTRUCTION CONSIDERATIONS

4.5.1 UNSUPPORTED EXCAVATION

TEMPORARY CONSTRUCTION EXCAVATION UP TO A MAXIMUM DEPTH OF 5 FEET MAY BE MADE WITHOUT ANY LATERAL SUPPORT. IT IS RECOMMENDED THAT NO SURCHARGE LOADS SUCH AS CONSTRUCTION EQUIPMENT, BE ALLOWED WITHIN A LINE DRAWN UPWARD AT 45 DEGREE FROM THE TOE OF EXCAVATION. USE OF SLOPING FOR DEEP EXCAVATION MAY BE APPLICABLE WHERE PLAN DIMENSIONS OF THE EXCAVATION ARE NOT CONSTRAINED BY ANY EXISTING STRUCTURE.

4.5.2 SUPPORTED EXCAVATIONS

IF VERTICAL EXCAVATIONS EXCEEDING 5 FEET IN DEPTH BECOME WARRANTED, USE OF SHORING TO SUPPORT SIDE WALLS IS RECOMMENDED.

4.6 SITE PREPARATION

SITE PREPARATIONS SHOULD INCLUDE CUT SUB-EXCAVATIONS, IMPORT SOILS, AND PLACEMENT OF SOILS AS ENGINEERED FILL. SUCH EARTH WORK SHOULD BE IN ACCORDANCE WITH THE APPLICABLE GRADING RECOMMENDATIONS PROVIDED IN THE 2010 CBC AND AS RECOMMENDED IN SECTION 5.0 OF THIS REPORT.

THIS OFFICE SHOULD BE NOTIFIED 72 HOURS IN ADVANCE OF IMPORTING SOILS TO SITE FOR PLACEMENT AS COMPACTED FILL. IT WILL BE NECESSARY FOR THE PROJECT SOILS ENGINEERING CONSULTANT TO SAMPLE IMPORT SOILS WITH SUBSEQUENT LABORATORY TESTING TO ASSESS THE SUITABILITY OF IMPORT SOILS FOR PROJECT CONSTRUCTION. IT IS STRONGLY RECOMMENDED THAT IMPORT SOILS BE SIMILAR TO SITE SOILS. THE USE OF CLAYEY SOILS FOR PAD CONSTRUCTION IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE SOILS ENGINEERING CONSULTANT.

4.7 SOIL CAVING

DURING EXCAVATIONS FOR DEEP UTILITY TRENCHES, 'SOME' CAVING MAY BE EXPECTED. ALL TEMPORARY DEEP EXCAVATIONS SHOULD BE MADE AT A 2:1 (HORIZONTAL TO VERTICAL) SLOPE RATIO OR FLATTER, AND/OR AS PER THE CONSTRUCTION GUIDELINES PROVIDED BY CAL-OSHA.

4.8 RETAINING WALL

RETAINING STRUCTURES, IF PLANNED, SHOULD BE DESIGNED USING THE FOLLOWING EQUIVALENT FLUID DENSITY:

SLOPE SURFACE OF RETAINED MATERIAL (HORIZONTAL TO VERTICAL)	EQUIVALENT FLUID DENSITY (PCF)	
	IMPORTED CLEAN SAND	LOCAL SITE SOIL
LEVEL	30	35
2:1	35	40

ONLY FREE-DRAINING GRANULAR MATERIALS (SAND OR GRAVEL) ARE TO BE USED AS RETAINING WALL BACKFILL. BACK-DRAINS AND / OR OMISSION OF HEAD JOINTS @ 32" O.C. IN THE FIRST COURSE ABOVE GRADE ARE REQUIRED BEHIND ALL RETAINING WALLS.

4.9 UTILITY TRENCH BACKFILL

UTILITY TRENCH BACKFILL WITHIN THE STRUCTURAL PAD AND BEYOND, SHOULD BE PLACED IN ACCORDANCE WITH THE FOLLOWING RECOMMENDATIONS:

* EXTERIOR TRENCHES ALONG A FOUNDATION OR A TOE OF A SLOPE AND EXTENDING BELOW A 1:1 IMAGINARY LINE PROJECTED FROM THE OUTSIDE BOTTOM EDGE OF THE FOOTING OR TOE OF THE SLOPE, EXCAVATIONS SHOULD BE COMPACTED TO A MINIMUM 90 PERCENT.

* ALL EXCAVATED TRENCHES SHOULD CONFORM TO THE REQUIREMENTS AND SAFETY AS SPECIFIED BY CAL-OSHA.

4.10 PRE-CONSTRUCTION MEETING

IT IS RECOMMENDED THAT NO CLEARING OF THE SITE OR ANY GRADING OPERATION BE PERFORMED WITHOUT THE PRESENCE OF A REPRESENTATIVE OF THIS OFFICE. AN ON-SITE PRE-GRADING MEETING SHOULD BE ARRANGED BETWEEN THE SOILS ENGINEERING CONSULTANT AND THE GRADING CONTRACTOR PRIOR TO ANY CONSTRUCTION.

4.11 SEASONAL LIMITATIONS

NO STRUCTURAL FILL SHALL BE PLACED, SPREAD OR ROLLED DURING UNFAVORABLE WEATHER CONDITIONS. WHERE THE WORK IS INTERRUPTED BY HEAVY RAINS, FILL OPERATIONS SHALL NOT BE RESUMED UNTIL MOISTURE CONDITIONS ARE CONSIDERED FAVORABLE BY THE SOILS ENGINEERING CONSULTANT.

4.12 PLANTERS

TO MINIMIZE POTENTIAL SETTLEMENT TO FOUNDATIONS DUE TO MIGRATING IRRIGATION WATER, PLANTERS REQUIRING IRRIGATION SHOULD BE RESTRICTED FROM USE IF ADJACENT TO FOOTINGS. IF UNAVOIDABLE, PLANTER BOXES WITH SEALED BOTTOMS AND DRAIN OUTLETS TO APPROVED AREAS, AWAY FROM THE FOUNDATION, SHOULD BE CONSTRUCTED.

4.13 LANDSCAPE MAINTENANCE/DRAINAGE

ONLY THE AMOUNT OF IRRIGATION NECESSARY TO SUSTAIN PLANT LIFE SHOULD BE PROVIDED. PAD DRAINAGE SHOULD BE DIRECTED TOWARDS STREETS AND/OR TO OTHER APPROVED AREAS AWAY FROM FOUNDATIONS. SLOPE AREAS, WHEN APPLICABLE, SHOULD BE PLANTED WITH DRAUGHT RESISTANT VEGETATION.

4.14 OBSERVATIONS AND TESTING DURING CONSTRUCTION

RECOMMENDATIONS PROVIDED IN THIS REPORT ARE BASED UPON THE ASSUMPTION THAT ALL FOUNDATIONS WILL BE PLACED UPON FIELD APPROVED FILL MATERIALS FOR STRUCTURES. EXCAVATED FOOTINGS SHALL BE FIELD REVIEWED, VERIFIED AND APPROVED BY SOILS ENGINEERING CONSULTANT PRIOR TO FORMING, STEEL AND CONCRETE PLACEMENT TO ENSURE THEIR SUFFICIENT EMBEDMENT AND PROPER BEARING ON APPROVED DENSE COMPACTED FILL MATERIALS.

ADDITIONAL FIELD REVIEWS BY SOILS ENGINEERING CONSULTANT IS RECOMMENDED TO VERIFY FOOTING EXCAVATIONS BEING FREE OF LOOSE AND DISTURBED MATERIAL. ALL STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED UNDER DIRECT OBSERVATION AND TESTING BY THIS FACILITY. EXCESS SOILS GENERATED FROM FOOTING EXCAVATIONS SHOULD BE REMOVED FROM PAD AREAS AND SHOULD NOT BE ALLOWED ON SUB GRADES AS UNCOMPACTED FILL FOR AREAS PROGRAMMED TO RECEIVE CONCRETE SLAB-ON-GRADE.

5.0 EARTH WORK/GENERAL GRADING RECOMMENDATIONS

STRUCTURAL BACKFILL:

DURING GRADING, EXCAVATED SITE SOILS MAY BE CONSIDERED SUITABLE FOR REUSE AS BACKFILL MATERIAL. LOOSE SOILS, FORMWORK AND DEBRIS SHOULD BE REMOVED PRIOR TO BACKFILLING THE WALLS. ON-SITE SAND BACKFILL SHOULD BE PLACED AND COMPACTED IN ACCORDANCE WITH THE RECOMMENDED SPECIFICATIONS PROVIDED BELOW. WHERE SPACE LIMITATIONS DO NOT ALLOW CONVENTIONAL BACKFILLING OPERATIONS, SPECIAL BACKFILL MATERIALS AND PROCEDURES MAY BE REQUIRED. PEA GRAVEL OR OTHER SELECT BACKFILL CAN BE USED IN LIMITED SPACE AREAS.

RECOMMENDATIONS FOR PLACEMENT AND DENSIFICATION OF PEA GRAVEL OR OTHER SPECIAL BACKFILL CAN BE PROVIDED DURING CONSTRUCTION.

SITE DRAINAGE:

ADEQUATE POSITIVE DRAINAGE SHOULD BE PROVIDED AWAY FROM THE STRUCTURE TO PREVENT WATER FROM PONDING AND TO REDUCE PERCOLATION OF WATER INTO SUBSOIL AT FOUNDATION AREAS. A DESIRABLE SLOPE FOR SURFACE DRAINAGE SHOULD BE A MINIMUM OF 2 PERCENT IN LANDSCAPE AREAS AND 1 PERCENT IN PAVED AREAS. PLANTERS AND LANDSCAPED AREAS ADJACENT TO BUILDING PERIMETER SHOULD BE AVOIDED OR DESIGNED BY A QUALIFIED LANDSCAPE ARCHITECT UTILIZING A SEALED PLANTER BOX WITH DRAINS AWAY FROM FOOTINGS TO MINIMIZE WATER FILTRATION INTO SUB-SOILS.

UTILITY TRENCHES:

BURIED UTILITY CONDUITS SHOULD BE BEDDED AND BACKFILLED AROUND THE CONDUIT IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. WHERE CONDUIT UNDERLIES CONCRETE SLAB-ON-GRADE AND PAVEMENT, THE REMAINING TRENCH BACKFILL ABOVE THE PIPE SHOULD BE PLACED AND COMPACTED IN ACCORDANCE WITH THE FOLLOWING GRADING SPECIFICATIONS.

GENERAL GRADING RECOMMENDATIONS:

RECOMMENDED GENERAL SPECIFICATIONS FOR SURFACE PREPARATION TO RECEIVE FILL AND COMPACTION FOR STRUCTURAL AND UTILITY TRENCH BACKFILL AND OTHER EXCAVATIONS, ARE PRESENTED BELOW.

1. AREAS TO BE GRADED, BACKFILLED OR PAVED, SHALL BE GRUBBED, STRIPPED AND CLEANED OF ALL BURIED AND UNDETECTED DEBRIS, STRUCTURES, CONCRETE, VEGETATION AND OTHER DELETERIOUS MATERIALS PRIOR TO GRADING.

2. WHERE COMPACTED FILL IS TO PROVIDE VERTICAL SUPPORT FOR FOUNDATIONS, ALL LOOSE, SOFT AND OTHER INCOMPETENT SOILS SHOULD BE REMOVED TO FULL DEPTH AS APPROVED BY SOILS ENGINEERING CONSULTANT, OR AT LEAST UP TO THE DEPTH AS PREVIOUSLY DESCRIBED IN THIS REPORT. THE AREAS OF SUCH REMOVAL SHOULD EXTEND AT LEAST 5 FEET BEYOND THE PERIMETER OF EXTERIOR FOUNDATION LIMIT OR TO THE EXTENT AS APPROVED BY SOILS ENGINEERING CONSULTANT DURING GRADING.

3. THE REQUIRED COMPACTION FOR FILL TO SUPPORT FOUNDATIONS AND SLAB-ON-GRADE IS 90% OF THE MAXIMUM DRY DENSITY AT OR NEAR OPTIMUM MOISTURE CONTENT. TO MINIMIZE ANY POTENTIAL DIFFERENTIAL SETTLEMENT FOR FOUNDATIONS AND SLAB-ON-GRADE STRADDLING OVER DAYLIGHT LINES, THE CUT PORTION SHOULD BE OVER EXCAVATED A MINIMUM OF 3 FEET AND REPLACED AS COMPACTED FILL, COMPACTED TO AT LEAST 90% OF THE MAXIMUM DRY DENSITY AS DESCRIBED IN THIS REPORT.

4. UTILITY TRENCHES WITHIN BUILDING PAD AREAS AND BEYOND SHOULD BE BACKFILLED WITH GRANULAR MATERIAL AND SUCH SHOULD BE COMPACTED TO AT LEAST 90% OF THE MAXIMUM DENSITY FOR THE MATERIAL USED.

5. FIELD DENSITY FOR ALL STRUCTURAL FILLS SHALL BE COMPARED TO THE MAXIMUM DRY DENSITY AS EVALUATED BY ASTM D1557-90 COMPACTION METHODS. ALL IN-SITU FIELD DENSITY OF COMPACTED FILL SHALL BE DETERMINED BY THE ASTM D1556 STANDARD METHODS OR BY OTHER APPROVED PROCEDURES.

6. ALL NEW IMPORTED SOILS, IF REQUIRED, SHALL BE CLEAN, GRANULAR, NON-EXPANSIVE MATERIAL OR AS APPROVED BY THE SOILS ENGINEERING CONSULTANT.

7. ALL FILLS SHALL BE PLACED IN 6 TO 8 INCH LAYERS, MOISTURE CONDITIONED TO AT LEAST OPTIMUM MOISTURE CONTENT AND COMPACTED TO 90% OF MAXIMUM DRY DENSITY PER ASTM D 1557-91

8. NO ROCKS OVER EIGHT INCHES IN DIAMETER, SHALL BE PERMITTED IN FILL SLOPES OR WITHIN 3 FEET OF THE SURFACE WITHOUT PRIOR APPROVAL OF THE SOILS ENGINEERING CONSULTANT.

9. NO JETTING AND/OR WATER TAMPING MAY BE CONSIDERED FOR BACKFILL COMPACTION FOR UTILITY TRENCHES WITHOUT PRIOR APPROVAL OF THE SOILS ENGINEERING CONSULTANT. FOR SUCH BACKFILL, HAND TAMPING WITH FILL LAYERS OF 8 TO 12 INCHES IN THICKNESS, OR AS APPROVED BY THE SOILS ENGINEERING CONSULTANT IS RECOMMENDED.

10. ANY AND ALL UTILITY TRENCHES AT DEPTH AS WELL AS CESSPOOL AND ABANDONED SEPTIC TANKS WITHIN BUILDING PAD AREA AND BEYOND, SHOULD EITHER BE COMPLETELY EXCAVATED AND REMOVED FROM THE SITE, OR SHOULD BE BACKFILLED WITH GRAVEL, SLURRY OR BY OTHER MATERIAL, AS APPROVED BY SOILS ENGINEERING CONSULTANT.

11. ANY AND ALL IMPORT SOILS IF REQUIRED DURING GRADING, SHALL BE EQUIVALENT TO THE SITE SOILS OR BETTER. SUCH SHOULD BE APPROVED BY THE SOILS ENGINEERING CONSULTANT PRIOR TO IMPORT. AT LEAST 72 HOURS OF ADVANCE NOTICE IS REQUIRED PRIOR TO IMPORTING SOILS FOR SITE USE TO ALLOW THE SOILS ENGINEERING CONSULTANT TIME TO SAMPLE AND ANALYZE THE IMPORT SOILS.

12. ANY AND ALL GRADING REQUIRED FOR PAVEMENT, SIDEWALK OR OTHER FACILITIES TO BE USED BY GENERAL PUBLIC, SHOULD BE CONSTRUCTED UNDER DIRECT OBSERVATION OF SOILS ENGINEERING CONSULTANT, OR AS REQUIRED BY THE LOCAL PUBLIC AGENCIES.

13. A SITE MEETING (PRE-GRADE MEETING) SHALL BE HELD BETWEEN THE GRADING CONTRACTOR AND SOILS ENGINEERING CONSULTANT PRIOR TO ACTUAL CONSTRUCTION. THREE DAYS OF PRIOR NOTICE WILL BE REQUIRED FOR SUCH MEETING.

14. ALL FILL SLOPES ARE TO BE KEYED INTO FIELD APPROVED DENSE EARTH MATERIALS AND APPROVED BY THE PROJECT SOILS CONSULTANTS. KEYWAY IS TO BE 1/2 THE SLOPE HEIGHT IN WIDTH OR 15 FEET, WHICHEVER IS GREATER. HEEL SHALL HAVE A 1-FOOT DIFFERENTIAL FROM TOE (SLOPING TO HEEL).

15. FILL OVER CUT SHALL BE BENCHED INTO APPROVED DENSE EARTH MATERIALS AND FOUNDED UPON A KEYWAY, A MINIMUM WIDTH OF 10-FEET WITH THE HEEL 1-FOOT DEEPER THAN TOE (SLOPING TO HEEL).

16. FOR GRADIENTS STEEPER THAN 5:1, FILL SHALL BE BENCHED A MINIMUM OF 4-FEET HORIZONTALLY INTO NATIVE EARTH MATERIALS FOR EVERY 4 VERTICAL FEET OF FILL PLACED.

6.0 CLOSURE

THE CONCLUSIONS AND RECOMMENDATIONS CONTAINED HEREIN ARE BASED UPON THE FINDINGS AND OBSERVATIONS MADE AT THE TIME OF THE SUBSURFACE INVESTIGATION. THE RECOMMENDATIONS PRESENTED, SHOULD BE CONSIDERED "PRELIMINARY" SINCE THEY ARE BASED ON SOIL SAMPLES ONLY. IF DURING CONSTRUCTION, THE SUBSOIL CONDITIONS APPEAR TO BE DIFFERENT FROM THOSE DISCLOSED DURING FIELD INVESTIGATION, THIS OFFICE SHOULD BE NOTIFIED TO CONSIDER ANY POSSIBLE NEED FOR MODIFICATION FOR THE GEOTECHNICAL RECOMMENDATIONS PROVIDED IN THIS REPORT.

RECOMMENDATIONS PROVIDED ARE BASED ON THE ASSUMPTIONS THAT STRUCTURAL FOOTINGS WILL BE ESTABLISHED EXCLUSIVELY INTO FIELD APPROVED COMPACTED FILL.

IT IS RECOMMENDED THAT FINAL PRECISE GRADING AND FOUNDATION PLANS SHOULD BE REVIEWED BY THIS OFFICE WHEN THEY BECOME AVAILABLE (IF DIFFERENT THAN NOTED PLAN REVIEW UTILIZED FOR THIS REPORT). SITE GRADING MUST BE PERFORMED UNDER REVIEW BY GEOTECHNICAL REPRESENTATIVES OF THIS OFFICE. ALL FOOTING EXCAVATIONS SHOULD BE FIELD REVIEWED (BY THIS OFFICE) PRIOR TO FORMING, STEEL AND CONCRETE PLACEMENT TO ENSURE THAT FOUNDATIONS ARE FOUNDED INTO SATISFACTORY SOILS AND EXCAVATIONS ARE FREE OF LOOSE AND DISTURBED MATERIALS.

THIS REPORT HAS BEEN PREPARED EXCLUSIVELY FOR THE USE OF THE ADDRESSEE FOR THE PROJECT REFERENCED IN CONTEXT. IT SHALL NOT BE TRANSFERRED OR BE USED BY OTHER PARTIES WITHOUT WRITTEN CONSENT BY WAC GEOTECHNICAL, INC. WE CANNOT BE RESPONSIBLE FOR USE OF THIS REPORT BY OTHERS WITHOUT REVIEW OF THE GRADING OPERATION BY OUR PERSONNEL.

SHOULD THE PROJECT BE DELAYED BEYOND ONE YEAR AFTER THE DATE OF THIS REPORT, THE RECOMMENDATIONS PRESENTED SHALL BE REVIEWED TO CONSIDER ANY POSSIBLE CHANGE IN SITE CONDITIONS OR CODE REQUIREMENTS.

THE RECOMMENDATIONS PRESENTED ARE BASED ON THE ASSUMPTION THAT THE NECESSARY GEOTECHNICAL OBSERVATIONS AND TESTING DURING CONSTRUCTION WILL BE PERFORMED BY A REPRESENTATIVE OF THIS OFFICE. THE FIELD OBSERVATIONS ARE CONSIDERED A CONTINUATION OF THE GEOTECHNICAL INVESTIGATION PERFORMED. IF ANOTHER FIRM IS RETAINED FOR GEOTECHNICAL OBSERVATIONS AND TESTING, OUR PROFESSIONAL LIABILITY AND RESPONSIBILITY SHALL BE DEEMED TO HAVE BEEN ASSUMED BY THE FIRM REPLACING WAC GEOTECHNICAL, INC. EXCEPT FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF WAC GEOTECHNICAL, INC.

7.0 APPENDIX SECTION

BORING LOGS

B-1

1-3'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
3-10'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
10-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

B-2

1-5'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
5-10'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
10-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

B-3

1-4'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
4-10'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
10-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

B-4

1-3'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
3-8'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
8-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

B-5

1-3'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
3-10'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
10-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

B-6

1-5'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
5-10'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
10-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

B-7

1-2'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
2-7'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
7-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

B-8

1-3'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
3-10'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
10-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

B-9

1-4'	S/M	MEDIUM BROWN, SILTY TO MEDIUM GRAINED, ALLUVIAL, DECOMPOSED GRANITE SANDS, LOOSE TO FIRM AND SLIGHTLY MOIST.
4-11'	S/M	TANNISH BROWN, FINE TO MEDIUM GRAINED SANDS WITH SLIGHT AMOUNTS OF SUB-ROUNDED GRAVELS, 1" TO THE LARGEST DIMENSION, FIRM TO VERY FIRM AND DRY.
11-15'	S/M	TAN, GRANITIC SANDS, FINE TO MEDIUM GRAINED DENSE AND DRY

NO GROUND WATER, BEDROCK OR REFUSAL NOTED IN ANY BORING

8.0 APPENDIX B

LABORATORY TESTING

LABORATORY TESTS WERE CONDUCTED ON REPRESENTATIVE SOILS FOR THE PURPOSE OF CLASSIFICATION AND FOR THE ASSESSMENT OF THE PHYSICAL PROPERTIES AND ENGINEERING CHARACTERISTICS. THE NUMBER AND SELECTION OF THE TYPES OF TESTING FOR A GIVEN STUDY ARE BASED ON THE GEOTECHNICAL CONDITIONS OF THE SITE. A SUMMARY OF THE VARIOUS LABORATORY TESTS PERFORMED FOR THE PROJECT IS PRESENTED BELOW.

MAXIMUM DENSITY OPTIMUM MOISTURE CONTENT (ASTM D1557)
IN-SITU SOILS SAMPLES WERE OBTAINED USING A SPLIT SPOON SAMPLER.

DIRECT SHEAR (ASTM D 3080)
DATA OBTAINED FROM THIS TEST PERFORMED AT INCREASED MOISTURE CONDITIONS ON REMOLDED TO 90 % SOIL SAMPLES WERE USED TO EVALUATE SOIL SHEAR STRENGTHS. SAMPLES CONTAINED IN BRASS SAMPLER RINGS, PLACED DIRECTLY ON TEST APPARATUS ARE SHEARED AT A CONSTANT STRAIN RATE UNDER A NORMAL LOAD, APPROPRIATE TO REPRESENT ANTICIPATED STRUCTURAL LOADINGS. SHEARING DEFORMATIONS ARE RECORDED TO FAILURE. PEAK AND/OR RESIDUAL SHEAR STRENGTHS ARE OBTAINED FROM THE MEASURED SHEARING LOAD VERSUS DEFLECTION CURVE. TEST RESULTS, PLOTTED ON GRAPHICAL FORM, ARE PRESENTED IN THE SOILS TEST RESULTS.

EXPANSION INDEX (ASTM D4829)

CONSOLIDATION TEST REPORT (ASTM D2435)

RESISTANCE R-VALUE AND EXPANSION PRESSURE (ASTM D 2844)

LABORATORY TEST RESULTS;

MAXIMUM DRY DENSITY/OPTIMUM MOISTURE CONTENT RELATIONSHIP(ASTM D1557-07)

SAMPLE LOCATION	MAX. DRY DENSITY	OPT. MOISTURE CONTENT
B-1, 0-5' (BULK SAMPLE)	135.0 (PCF)	8.5 %

SHEAR ANGLE OF INTERNAL FRICTION

B-1 = 31.1 DEGREES

EXPANSION INDEX = 21 (LOW POTENTIAL FOR EXPANSION)

PAVEMENT DESIGN

R-VALUE TESTING OF SOIL SAMPLES COLLECTED AT THE SITE GAVE RESULTS OF 17 BY EXUDATION AT 300 PSI. SECTIONS CALCULATED USING THE R-VALUE OF 17 ARE PRESENTED FOR VARIOUS TRAFFIC INDEXES. ALL RECOMMENDATIONS ARE IN INCHES THICKNESS.

TRAFFIC INDEX:	6	7	8	9	10
ASPHALT CONC.	6	6	6	7	8
ASPHALT BASE	5	8	10	11	13

ASPHALT BASE MUST MEET OR EXCEED CAL-TRANS CLASS II AND BE COMPACTED TO 95% OF ITS MAXIMUM DENSITY.

CORROSION SERIES

PH = 6.7 **SOL. SULFATES PPM = 119** **SOLUBLE CHLORIDES PPM = 72**

MIN. RESISTIVITY = 6800

SEE ATTACHED LAB TEST RESULTS:

PROFESSIONAL LIMITATIONS

OUR INVESTIGATION WAS PERFORMED USING THE DEGREE OF CARE AND SKILL ORDINARILY EXERCISED, UNDER SIMILAR CIRCUMSTANCES BY OTHER REPUTABLE SOILS ENGINEERS PRACTICING IN THESE GENERAL OR SIMILAR LOCALITIES. NO OTHER WARRANTY, EXPRESSED OR IMPLIED, IS MADE AS TO THE CONCLUSIONS AND PROFESSIONAL ADVICE INCLUDED IN THIS REPORT.

THE INVESTIGATIONS ARE BASED ON SOIL SAMPLES ONLY; CONSEQUENTLY THE RECOMMENDATIONS PROVIDED SHALL BE CONSIDERED 'PRELIMINARY'. THE SAMPLES TAKEN AND USED FOR TESTING AND THE OBSERVATIONS MADE ARE BELIEVED REPRESENTATIVE OF SITE CONDITIONS; HOWEVER, SOIL AND GEOLOGIC CONDITIONS CAN VARY SIGNIFICANTLY BETWEEN TEST BORINGS. AS IN MOST MAJOR PROJECTS, CONDITIONS REVEALED BY EXCAVATIONS MAY VARY WITH PRELIMINARY FINDINGS. IF THIS OCCURS, THE CHANGED CONDITIONS MUST BE EVALUATED BY THE PROJECT SOILS ENGINEERING CONSULTANT AND DESIGNS ADJUSTED AS REQUIRED OR ALTERNATE DESIGN RECOMMENDED.

THE REPORT IS ISSUED WITH THE UNDERSTANDING THAT IT IS THE RESPONSIBILITY OF THE OWNER, OR OF HIS REPRESENTATIVE, TO ENSURE THAT THE INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN ARE BROUGHT TO THE ATTENTION OF THE PROJECT ARCHITECT AND ENGINEERS. APPROPRIATE RECOMMENDATIONS SHOULD BE INCORPORATED INTO STRUCTURAL PLANS. THE NECESSARY STEPS SHOULD BE TAKEN TO SEE THAT THE CONTRACTOR AND SUBCONTRACTORS CARRY OUT SUCH RECOMMENDATIONS IN THE FIELD.

THE FINDINGS OF THIS REPORT ARE VALID AS OF THIS PRESENT DATE. HOWEVER, CHANGES IN THE CONDITIONS OF A PROPERTY CAN OCCUR WITH THE PASSAGE OF TIME, WHETHER THEY DUE TO NATURAL PROCESS OR THE WORKS OF MAN ON THIS OR ADJACENT PROPERTIES. IN ADDITION, CHANGES IN APPLICABLE OR APPROPRIATE STANDARDS MAY OCCUR FROM LEGISLATION OR BROADENING OF KNOWLEDGE. ACCORDINGLY, THE FINDINGS OF THIS REPORT MAY BE INVALIDATED WHOLLY OR PARTIALLY BY CHANGE OUTSIDE OF OUR CONTROL. THEREFORE, THIS REPORT IS SUBJECT TO REVIEW AND SHOULD BE UPDATED AFTER A PERIOD OF ONE YEAR.

RECOMMENDED SERVICES

THE REVIEW OF GRADING PLANS AND SPECIFICATIONS, FIELD OBSERVATIONS AND TESTING BY THE GEOTECHNICAL REPRESENTATIVE IS AN INTEGRAL PART OF THE CONCLUSIONS AND RECOMMENDATIONS MADE IN THIS REPORT. IF WAC GEOTECHNICAL, INC. IS NOT RETAINED FOR THESE SERVICES, THE CLIENT AGREES TO ASSUME WAC GEOTECHNICAL, INC. RESPONSIBILITY FOR ANY POTENTIAL CLAIMS THAT MAY ARISE DURING AND AFTER CONSTRUCTION, OR DURING THE LIFETIME USE OF THE STRUCTURE AND ITS APPURTENANT. THE REQUIRED TESTS, OBSERVATIONS AND CONSULTATION BY THE GEOTECHNICAL CONSULTANT DURING CONSTRUCTION INCLUDES, BUT NOT BE LIMITED TO:

A. CONTINUOUS OBSERVATION AND TESTING DURING SITE PREPARATION AND GRADING, AND PLACEMENT OF ENGINEERED FILL.

B. OBSERVATION AND INSPECTION OF FOOTING TRENCH PRIOR TO STEEL AND CONCRETE PLACEMENT,

C. CONSULTATIONS AS REQUIRED DURING CONSTRUCTION, OR UPON YOUR REQUEST.

EXPANSION INDEX

ASTM D 4829 / U.B.C. 18-2

Project Name:	WAC Geotechnical #13-892	Tested By :	RV
Project No. :	7802A22	Date Tested:	1/23/2013
Client:	WAC Geotechnical	Input By:	IC
Sampled By:	Client	Checked By:	IC
Date Sampled:	1/18/2013	Depth(ft.):	-
Sample Location:	-	Lab No.:	#173
Visual Sample Description:	Brown Sandy Clay w/ Gravel	Sample No.:	1

ASTM D 4829 [X] U.B.C. 18-2 [ ]

Initial Moisture Content					Oven Moist. Cont.		Final Moist. Cont.	
wet wt.	268.1				wet wt.	326.1	wet wt.	
dry wt.	245.5				dry wt.	300.9	dry wt.	
wt. water	22.6				wt. water	25.2	wt. water	
% moist	9.2%				% moist	8.4%	% moist	

	INITIAL	INITIAL	INITIAL	FINAL
wt. Soil & Ring	624.4			624.4
wt. Ring	208.3			208.3
wt. Soil	416.1			416.1
Volume of Ring	0.007159486			0.007159486
Wet Density (pcf)	128.1			128.1
Moisture %	9.2%			8.4%
Dry Density (pcf)	117.3			118.2
% Saturation	57.3%			53.5%
RAW INDEX				
CORRECTED INDEX				

EI *meas* = measured expansion index

S meas = degree of saturation

EI(50) = estimate of the expansion inde:

$$EI\ meas = \frac{\Delta H \times 1000}{H1}$$

21

$$EI = EI\ meas - (50 - S\ meas)\ \frac{65 + EI\ meas}{220 - S\ meas}$$

	INITIAL	OVEN	
S =	57%	53%	Percent Saturation
w =	9.2%	8.4%	Water Content, %
Gs =	2.7	2.7	Specific Gravity, 2.7 , unless known
Yw =	62.3	62.3	Unit Weight of Water
Yd =	117.3	118.2	Dry Unit Weight

ΔH = change in height (D2 - D1)	0.021
H1 = initial Height	0.9845
D1 = Initial Dial	0.000
D2 = Final Dial	0.0207

$$S = \frac{wGsYd}{GsYw - Yd}$$

S= 57% INITIAL

53% OVEN

EXPANSION MEASUREMENTS

DATE	TIME	LOAD	READING	% SWELL
1/22/2013	9:50	10:00	0.0000	0.0%
1/23/2013	8:00	N/A	0.0207	2.1%

EXPANSION INDEX

0-20 **Very Low**

21-50 **Low**

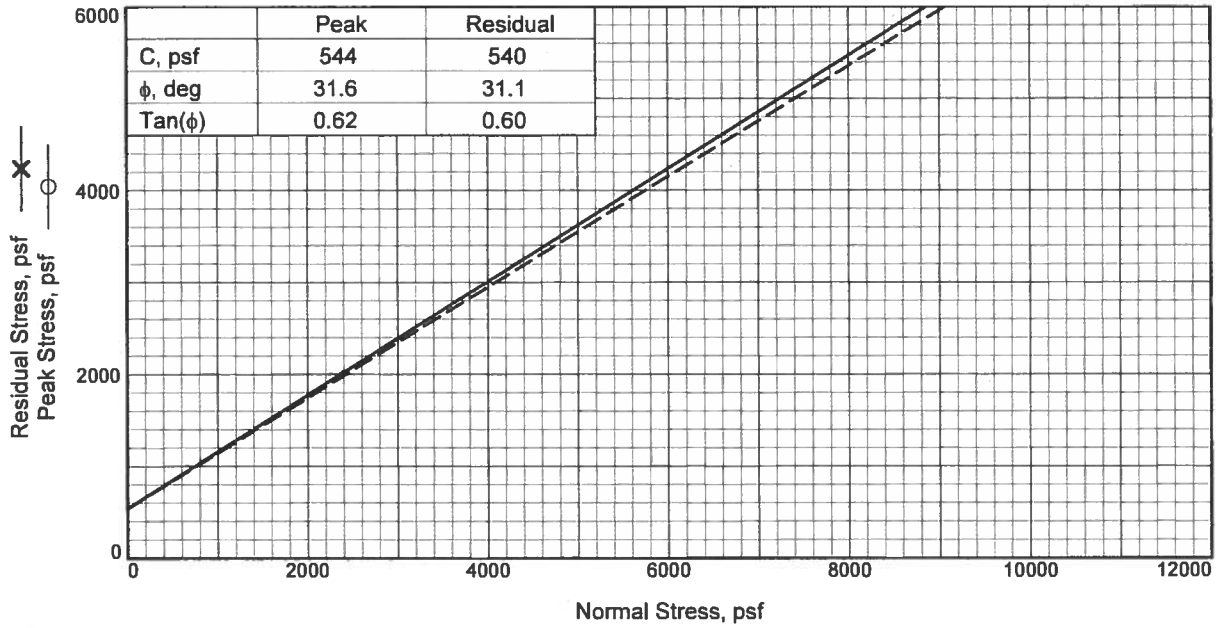
51-90 **Medium**

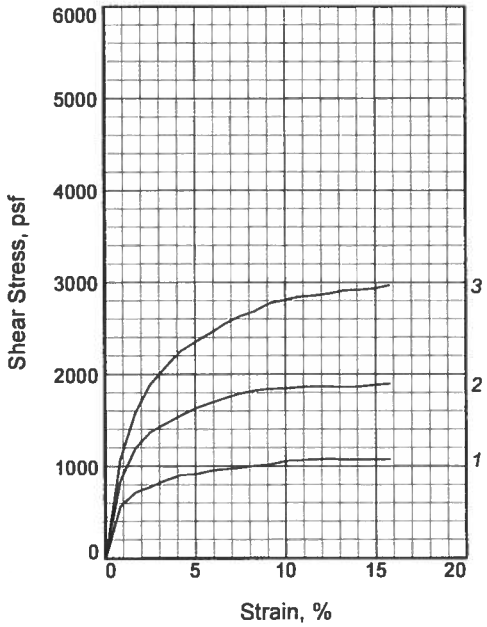
91-130 **High**

Above 130 **Very High**

Wet Density = (wt. wet soil/453.6)/vol

Dry Density = wet den/(1+(w/100))





Sample No.		1	2	3
Initial	Water Content, %	9.5	9.8	8.6
	Dry Density, pcf	116.1	117.2	117.8
	Saturation, %	55.3	59.1	52.4
	Void Ratio	0.4682	0.4546	0.4473
	Diameter, in.	2.41	2.41	2.41
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	17.1	16.9	15.7
	Dry Density, pcf	116.1	117.2	117.8
	Saturation, %	99.6	101.7	95.7
	Void Ratio	0.4682	0.4546	0.4473
	Diameter, in.	2.41	2.41	2.41
	Height, in.	1.00	1.00	1.00
Normal Stress, psf		1000	2000	4000
Peak Stress, psf		1080	1894	2967
Strain, %		12.4	15.8	15.8
Residual Stress, psf		1066	1859	2911
Strain, %		13.3	13.3	13.3
Strain rate, in./min.		N/A	N/A	N/A

Sample Type: Remolded
Description: Brown Sandy Clay w/ Gravel

Assumed Specific Gravity= 2.73
Remarks:

Figure _____

Client: WAC Geotechnical

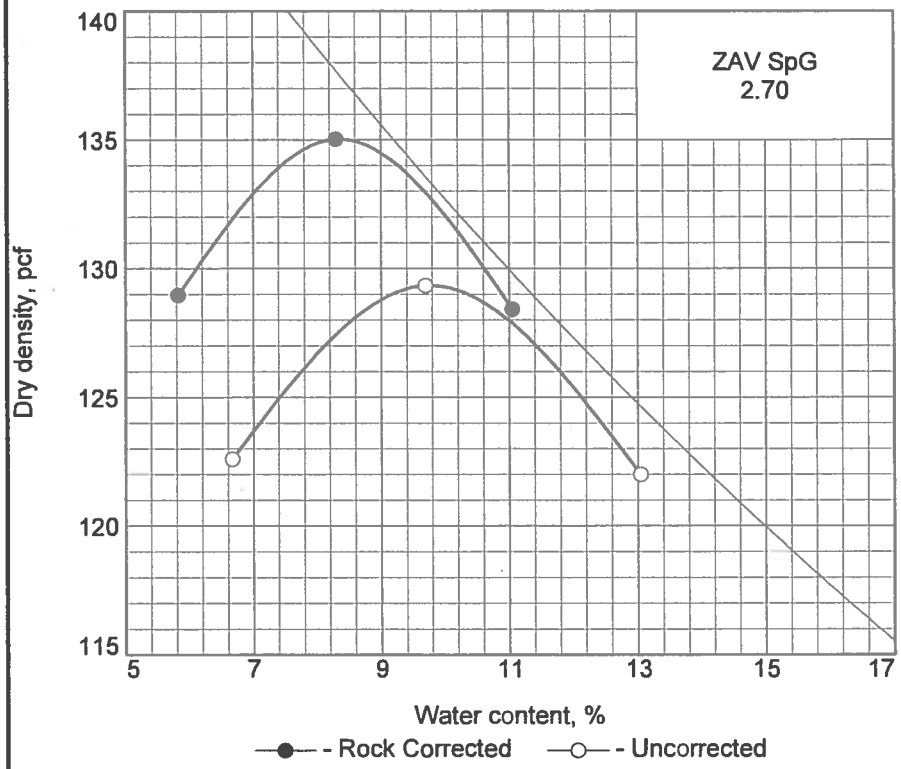
Project: Mike Leslie (#13-892)

Sample Number: 1

Proj. No.: 7802A22 **Date Sampled:** 1/18/13

DIRECT SHEAR TEST REPORT
MTGL, Inc.
Anaheim, CA

COMPACTION TEST REPORT



Curve No.
#13-892

Test Specification:
ASTM D 1557 Method B Modified
ASTM D 4718-87 Oversize Corr. Applied to Each Test Point

Preparation Method Moist
Hammer Wt. 10 lb.
Hammer Drop 18 in.
Number of Layers five
Blows per Layer 25
Mold Size 0.03333 cu. ft.

Test Performed on Material Passing 3/8 in. **Sieve**

NM ____ **LL** ____ **PI** ____
Sp.G. (ASTM D 854) 2.7
%>3/8 in. 18.1 **%<No.200** ____
USCS CL **AASHTO** ____
Date Sampled 1/18/13
Date Tested 1/22/13
Tested By RV

TESTING DATA

	1	2	3	4	5	6
WM + WS	6492.0	6432.0	6324.0			
WM	4347.0	4347.0	4347.0			
WW + T #1	623.3	624.8	590.3			
WD + T #1	568.2	552.7	553.4			
TARE #1	0.0	0.0	0.0			
WW + T #2						
WD + T #2						
TARE #2						
MOISTURE	8.3	11.0	5.8			
DRY DENSITY	135.0	128.4	129.0			

ROCK CORRECTED TEST RESULTS	UNCORRECTED	Material Description
Maximum dry density = 135.0 pcf	129.5 pcf	Brown Sandy Clay w/ Gravel
Optimum moisture = 8.5 %	10.0 %	

Remarks:

Project No. 7802A22 **Client:** WAC Geotechnical
Project: Mike Leslie (#13-892)

○ **Sample Number:** 1

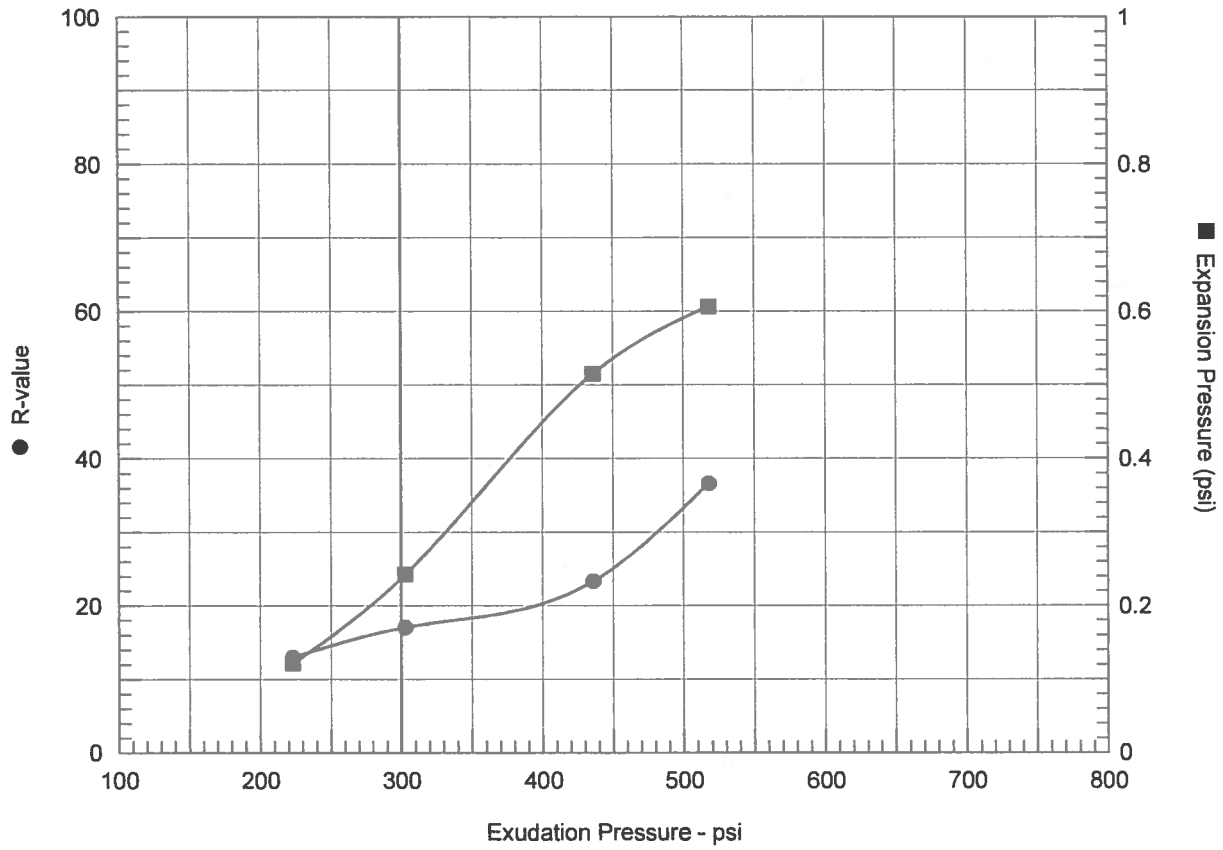
Checked by: IC
Title:

MTGL, Inc.

Anaheim, CA

Figure

R-VALUE TEST REPORT



Resistance R-Value and Expansion Pressure - ASTM D 2844

No.	Compact. Pressure psi	Density pcf	Moist. %	Expansion Pressure psi	Horizontal Press. psi @ 160 psi	Sample Height in.	Exud. Pressure psi	R Value	R Value Corr.
1	300	127.9	11.8	0.61	93	2.63	518	34	37
2	300	125.0	13.9	0.52	116	2.69	436	21	23
3	250	124.0	14.6	0.24	126	2.67	303	15	17
4	200	122.1	15.8	0.12	130	2.54	223	13	13

Test Results	Material Description
R-value at 300 psi exudation pressure = 17 **Exp. pressure at 300 psi exudation pressure =** 0.24 psi	Brown Sandy Clay w/ Gravel
Project No.: 7802A22 **Project:** Mike Leslie (#13-892) **Sample Number:** 1 **Date:** 1/23/2013	**Tested by:** RV **Checked by:** IC **Remarks:**
R-VALUE TEST REPORT **MTGL, Inc.**	**Figure** _____

ANAHEIM TEST LABORATORY

3008 ORANGE AVENUE
SANTA ANA, CALIFORNIA 92707
PHONE (714) 549-7267

TO:

WAC GEOTECHNICAL
2900 ADAMS STREET, STE. C-35
RIVERSIDE, CA 92504

ATTN: DAVE BALLINGER

DATE: 1/23/13

P.O. NO: TRANSMITTAL

LAB NO: B-6201

SPECIFICATION: CA-417/422/643

MATERIAL: SOIL

CLIENT: Mike Lesle
JOB#
APN#: 367-170-029
34915 Orange St.
Wildomar, CA

ANALYTICAL REPORT

CORROSION SERIES
SUMMARY OF DATA

PH	SOLUBLE SULFATES per CA. 417 ppm	SOLUBLE CHLORIDES per CA. 422 ppm	MIN. RESISTIVITY per CA. 643 ohm-cm
6.7	119	72	6,800

RESPECTFULLY SUBMITTED

WES BRIDGER CHEMIST

USGS Design Maps Summary Report

User-Specified Input

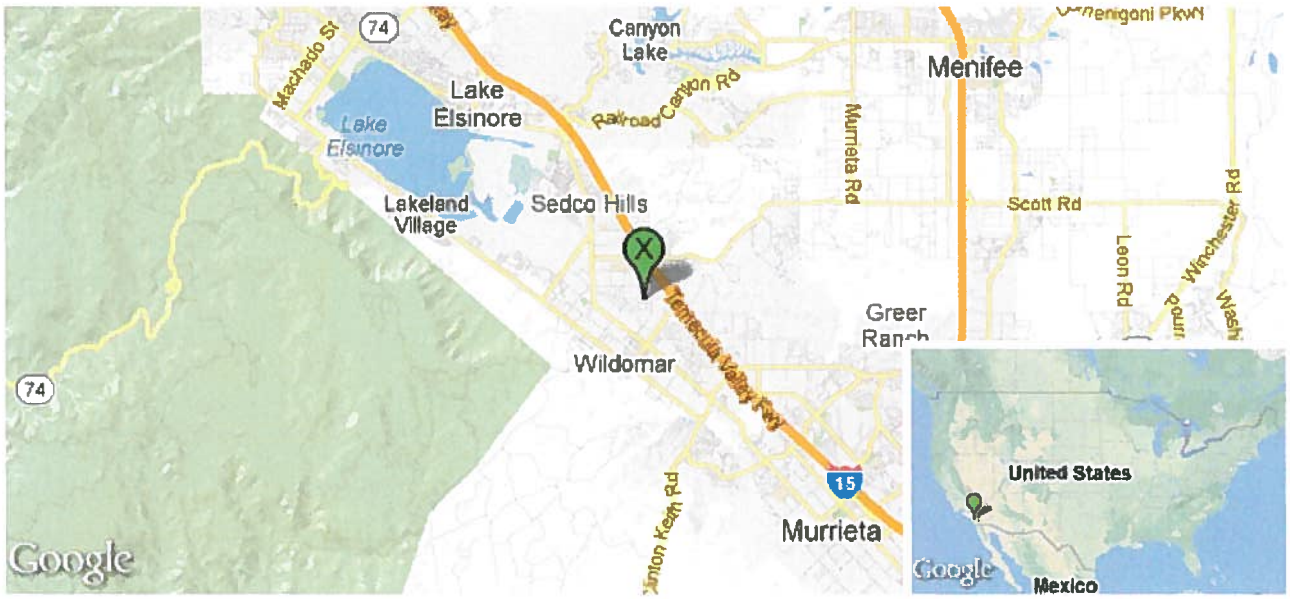
Report Title PRELIMINARY SOILS REPORT T.T.M. 36519
Mon January 28, 2013 19:58:12 UTC

Building Code Reference Document ASCE 7-10 Standard
(which makes use of 2008 USGS hazard data)

Site Coordinates 33.61598°N, 117.27337°W

Site Soil Classification Site Class D – "Stiff Soil"

Risk Category I/II/III

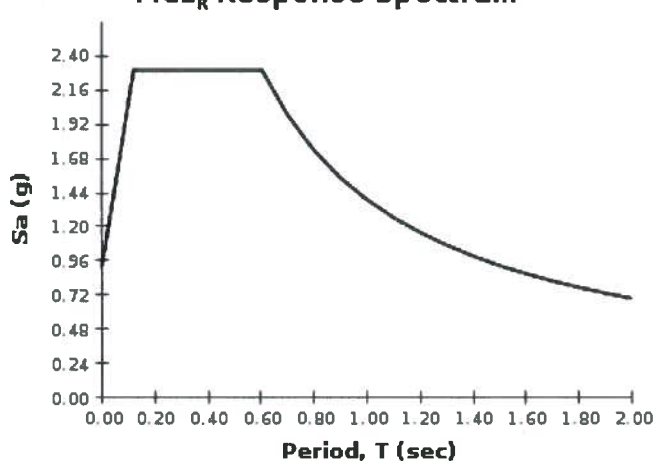


USGS-Provided Output

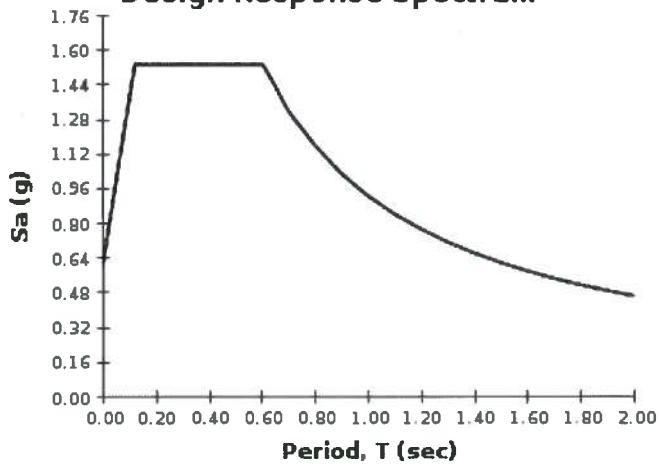
S_S =	2.301 g	S_{MS} =	2.301 g	S_{DS} =	1.534 g
S_1 =	0.927 g	S_{M1} =	1.391 g	S_{D1} =	0.927 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.

MCE_R Response Spectrum



Design Response Spectrum



For PGA_M, T_L, C_{RS}, and C_{R1} values, please view the detailed report.

USGS Design Maps Detailed Report

ASCE 7-10 Standard (33.61598°N, 117.27337°W)

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1] $S_S = 2.301$ g

From Figure 22-2 [2] $S_1 = 0.927$ g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\bar{v}_s$	$\bar{N}$ or $\bar{N}_{ch}$	$\bar{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index $PI > 20$, • Moisture content $w \geq 40\%$, and • Undrained shear strength $\bar{s}_u < 500$ psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk-Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4-1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_S \leq 0.25$	$S_S = 0.5$	$S_S = 0.75$	$S_S = 1$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of S_S

For Site Class = D and S_S = 2.301 g, F_a = 1.000

Table 11.4-2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1-s Period				
	$S_1 \leq 0.1$	$S_1 = 0.2$	$S_1 = 0.3$	$S_1 = 0.4$	$S_1 \geq 0.5$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight-line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 0.927 g, F_v = 1.500

Equation (11.4-1): $S_{MS} = F_a S_S = 1.000 \times 2.301 = 2.301$ g

Equation (11.4-2): $S_{M1} = F_v S_1 = 1.500 \times 0.927 = 1.391$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

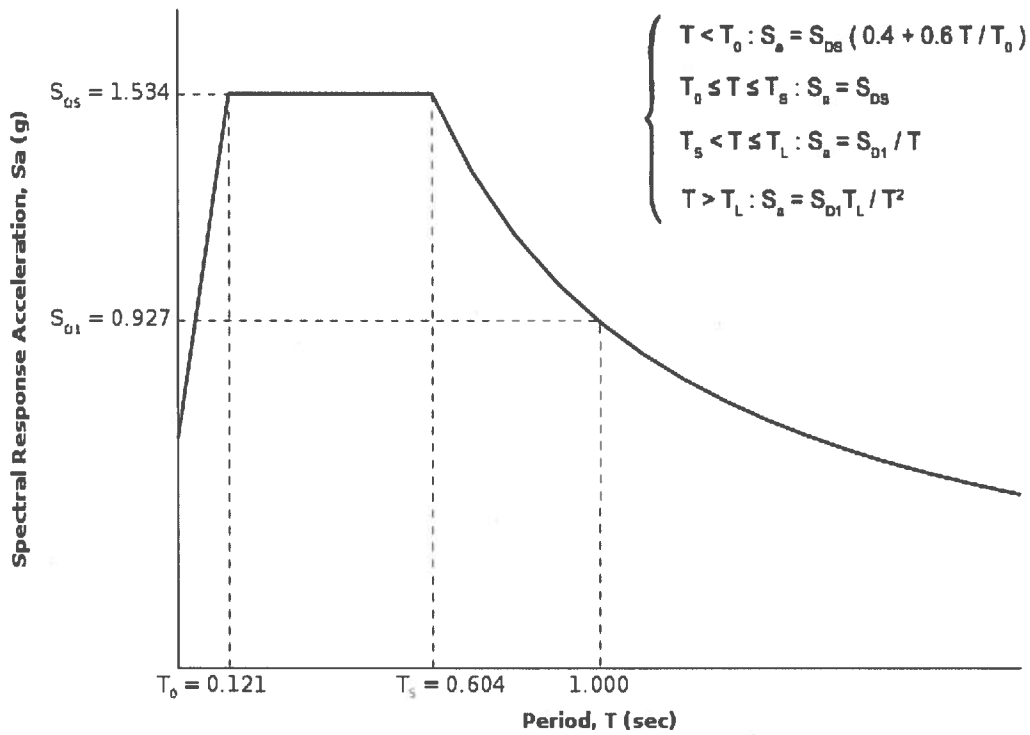
Equation (11.4-3): $S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 2.301 = 1.534$ g

Equation (11.4-4): $S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 1.391 = 0.927$ g

Section 11.4.5 — Design Response Spectrum

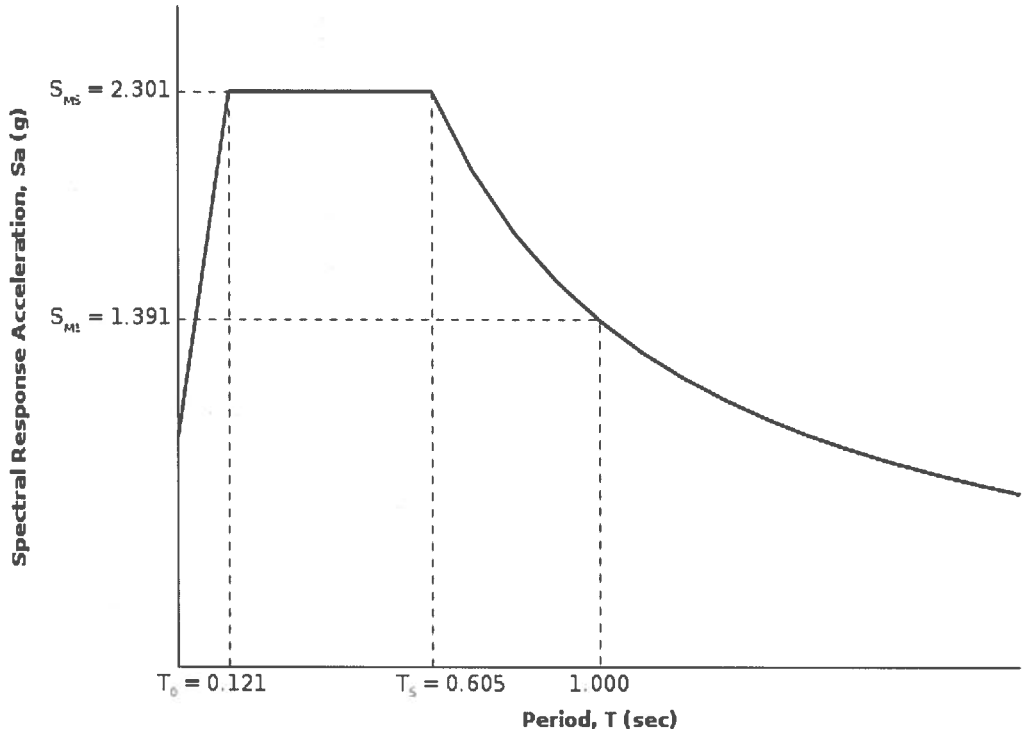
From Figure 22-12 [3] $T_L = 8$ seconds

Figure 11.4-1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 0.916

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 1.000 \times 0.916 = 0.916$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.1	PGA = 0.2	PGA = 0.3	PGA = 0.4	PGA ≥ 0.5
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = D and PGA = 0.916 g, F_{PGA} = 1.000

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 0.906

From Figure 22-18 [6] C_{R1} = 0.894

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 1.534 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 0.927 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = E

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: http://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

RIVERSIDE COUNTY GIS

Selected parcel(s):
367-170-029

IMPORTANT
Maps and data are to be used for reference purposes only. Map features are approximate, and are not necessarily accurate to surveying or engineering standards. The County of Riverside makes no warranty or guarantee as to the content (the source is often third party), accuracy, timeliness, or completeness of any of the data provided, and assumes no legal responsibility for the information contained on this map. Any use of this product with respect to accuracy and precision shall be the sole responsibility of the user.

STANDARD WITH PERMITS REPORT

APNs
367-170-029-3

OWNER NAME
NOT AVAILABLE ONLINE

ADDRESS

ADDRESS
367-170-029
34915 ORANGE ST
WILDOMAR, CA. 92595

MAILING ADDRESS
(SEE OWNER)
21595 MARBLE CT
WILDOMAR CA. 92595

LEGAL DESCRIPTION
RECORDED BOOK/PAGE: MB 10/58
SUBDIVISION NAME: SEDCO TRACT 1
LOT/PARCEL: 48, BLOCK: NOT AVAILABLE
, Por.TRACT NUMBER: NOT AVAILABLE

LOT SIZE
RECORDED LOT SIZE IS 5.09 ACRES

PROPERTY CHARACTERISTICS
WOOD FRAME, 1760 SQFT., 1 BDRM/ 2 BATH, 4 STORY, ATTACHED GARAGE(480 SQ. FT), CONST'D 1968COMPOSITION, ROOF, CENTRAL HEATING

THOMAS BROS. MAPS PAGE/GRID
PAGE: 897 GRID: B5, B6

CITY BOUNDARY/SPHERE
CITY OF WILDOMAR
NOT WITHIN A CITY SPHERE
ANNEXATION DATE: NOT APPLICABLE
LAFCO CASE #: NOT APPLICABLE
PROPOSALS: NOT APPLICABLE

MARCH JOINT POWERS AUTHORITY
NOT IN THE JURISDICTION OF THE MARCH JOINT POWERS AUTHORITY

INDIAN TRIBAL LAND
NOT IN A TRIBAL LAND

SUPERVISORIAL DISTRICT 2011 (ORD. 813)
KEVIN JEFFRIES, DISTRICT 1

SUPERVISORIAL DISTRICT (2001 BOUNDARIES)
BOB BUSTER, DISTRICT 1

TOWNSHIP/RANGE
T6SR4W SEC 27

ELEVATION RANGE
1320/1332 FEET

PREVIOUS APN
367-170-004

PLANNING

LAND USE DESIGNATIONS
Consult with the city for land use information.

SANTA ROSA ESCARPMENT BOUNDARY
NOT IN THE SANTA ROSA ESCARPMENT BOUNDARY

AREA PLAN (RCIP)
ELSINORE

COMMUNITY ADVISORY COUNCILS
NOT IN A COMMUNITY ADVISORY COUNCIL AREA

GENERAL PLAN POLICY OVERLAYS

NOT IN A GENERAL PLAN POLICY OVERLAY AREA

GENERAL PLAN POLICY AREAS
NONE

ZONING CLASSIFICATIONS (ORD. 348)
See the city for more information

ZONING DISTRICTS AND ZONING AREAS
RANCHO CALIFORNIA AREA

ZONING OVERLAYS
NOT IN A ZONING OVERLAY

HISTORIC PRESERVATION DISTRICTS
NOT IN AN HISTORIC PRESERVATION DISTRICT

SPECIFIC PLANS
NOT WITHIN A SPECIFIC PLAN

AGRICULTURAL PRESERVE
NOT IN AN AGRICULTURAL PRESERVE

REDEVELOPMENT AREAS
NOT IN A REDEVELOPMENT AREA

AIRPORT INFLUENCE AREAS
NOT IN AN AIRPORT INFLUENCE AREA

AIRPORT COMPATIBLITY ZONES
NOT IN AN AIRPORT COMPATIBILTY ZONE

ENVIRONMENTAL

CVMSHCP (COACHELLA VALLEY MULTI-SPECIES HABITAT CONSERVATION PLAN) CONSERVATION AREA
NOT IN A CONSERVATION AREA

CVMSHCP FLUVIAL SAND TRANSPORT SPECIAL PROVISION AREAS
NOT IN A FLUVIAL SAND TRANSPORT SPECIAL PROVISION AREA

WRMSHCP (WESTERN RIVERSIDE COUNTY MULTI-SPECIES HABITAT CONSERVATION PLAN) CELL GROUP
NOT IN A CELL GROUP

WRMSHCP CELL NUMBER
NOT IN A CELL

HANS/ERP (HABITAT ACQUISITION AND NEGOTIATION STRATEGY/EXPEDITED REVIEW PROCESS)
NONE

VEGETATION (2005)
AGRICULTURAL LAND
DEVELOPED/DISTURBED LAND

FIRE

HIGH FIRE AREA (ORD. 787)
NOT IN A HIGH FIRE AREA

FIRE RESPONSIBLITY AREA
NOT IN A FIRE RESPONSIBILITY AREA

DEVELOPMENT FEES

CVMSHCP FEE AREA (ORD. 875)

CVMSHCP FEE AREA (ORD. 875)
NOT WITHIN THE COACHELLA VALLEY MSHCP FEE AREA

WRMSHCP FEE AREA (ORD. 810)
IN OR PARTIALLY WITHIN THE WESTERN RIVERSIDE MSHCP FEE AREA. SEE MAP FOR MORE INFORMATION.

ROAD & BRIDGE DISTRICT
SOUTHWEST AREA A

EASTERN TUMF (TRANSPORTATION UNIFORM MITIGATION FEE ORD. 673)
NOT WITHIN THE EASTERN TUMF FEE AREA

WESTERN TUMF (TRANSPORTATION UNIFORM MITIGATION FEE ORD. 824)
IN OR PARTIALLY WITHIN A TUMF FEE AREA. SEE MAP FOR MORE INFORMATION.SOUTHWEST

DIF (DEVELOPMENT IMPACT FEE AREA ORD. 659)
ELSINORE

SKR FEE AREA (STEPHEN'S KANGAROO RAT ORD. 663.10)
NOT WITHIN AN SKR FEE AREA.

DEVELOPMENT AGREEMENTS
NOT IN A DEVELOPMENT AGREEMENT AREA

TRANSPORTATION

CIRCULATION ELEMENT ULTIMATE RIGHT-OF-WAY
IN OR PARTIALLY WITHIN A CIRCULATION ELEMENT RIGHT-OF-WAY. SEE MAP FOR MORE INFORMATION. CONTACT THE TRANSPORTATION DEPT. PERMITS SECTION AT (951) 955-6790 FOR INFORMATION REGARDING THIS PARCEL IF IT IS IN AN UNINCORPORATED AREA.

ROAD BOOK PAGE
77

TRANSPORTATION AGREEMENTS
NOT IN A TRANSPORTATION AGREEMENT

CETAP (COMMUNITY AND ENVIRONMENTAL TRANSPORTATION ACCEPTABILITY PROCESS) CORRIDORS
NOT IN A CETAP CORRIDOR.

HYDROLOGY

FLOOD PLAIN REVIEW
NOT REQUIRED

WATER DISTRICT
WMWD

FLOOD CONTROL DISTRICT
RIVERSIDE COUNTY FLOOD CONTROL DISTRICT

WATERSHED
SANTA MARGARITA

GEOLOGIC

FAULT ZONE
NOT IN A FAULT ZONE

FAULTS
WITHIN A 1/2 MILE OF
ELSINORE FAULT
ELSINORE FAULTS
UNNAMED FAULT IN ELSINORE FAULT ZONE
WILDOMAR FAULT

LIQUEFACTION POTENTIAL
MODERATE

SUBSIDENCE
SUSCEPTIBLE

PALEONTOLOGICAL SENSITIVITY
HIGH SENSITIVITY (HIGH A).
BASED ON GEOLOGIC FORMATIONS OR MAPPABLE ROCK UNITS THAT ARE ROCKS THAT CONTAIN FOSSILIZED BODY ELEMENTS, AND TRACE FOSSILS SUCH AS TRACKS, NESTS AND EGGS. THESE FOSSILS OCCUR ON OR BELOW THE SURFACE.

MISCELLANEOUS

SCHOOL DISTRICT
LAKE ELSINORE UNIFIED

COMMUNITIES
NOT IN A COMMUNITY

COUNTY SERVICE AREA
NOT IN A COUNTY SERVICE AREA.

LIGHTING (ORD. 655)
ZONE B, 29.59 MILES FROM MT. PALOMAR OBSERVATORY

2000 CENSUS TRACT
046405

FARMLAND
OTHER LANDS

TAX RATE AREAS
025005
•CITY OF WILDOMAR
•COUNTY FREE LIBRARY
•CSA 152
•ELS MURRIETA ANZA RESOURCE CONS
•ELSINORE AREA ELEM SCHOOL FUND
•ELSINORE VALLEY MUNICIPAL WATER
•FLOOD CONTROL ADMINISTRATION
•FLOOD CONTROL ZONE 3
•GENERAL
•GENERAL PURPOSE
•LAKE ELSINORE UNIF IMP NO 96-1
•LAKE ELSINORE UNIFIED
•METRO WATER EAST 1301999
•METRO WATER WEST
•MT SAN JACINTO JUNIOR COLLEGE
•RIV CO REG PARK & OPEN SPACE
•RIV. CO. OFFICE OF EDUCATION
•WESTERN MUNICIPAL WATER
•WILDOMAR CEMETERY
•WILDOMAR FIRE PROTECTION

SPECIAL NOTES
NO SPECIAL NOTES

BUILDING PERMITS

Case #	Description	Status
027769	GAS CONVERSION	CONTACT THE BUILDING AND SAFETY RECORDS DEPARTMENT AT 951-955-2017
BZ160795	DWLG & ATT GARAGE	CONTACT THE BUILDING AND SAFETY RECORDS DEPARTMENT AT 951-955-2017
BZ261368	ADD RM OVER GARAGE	CONTACT THE BUILDING AND SAFETY RECORDS DEPARTMENT AT 951-955-2017

ENVIRONMENTAL HEALTH PERMITS

Case #	Description	Status
NO ENVIRONMENTAL PERMITS	NOT APPLICABLE	NOT APPLICABLE

PLANNING PERMITS

Case #	Description	Status
NO PLANNING PERMITS	NOT APPLICABLE	NOT APPLICABLE

REPORT PRINTED ON...Wed Jan 30 2013 14:38:28 GMT-0800 (Pacific Standard Time)
Version 121101

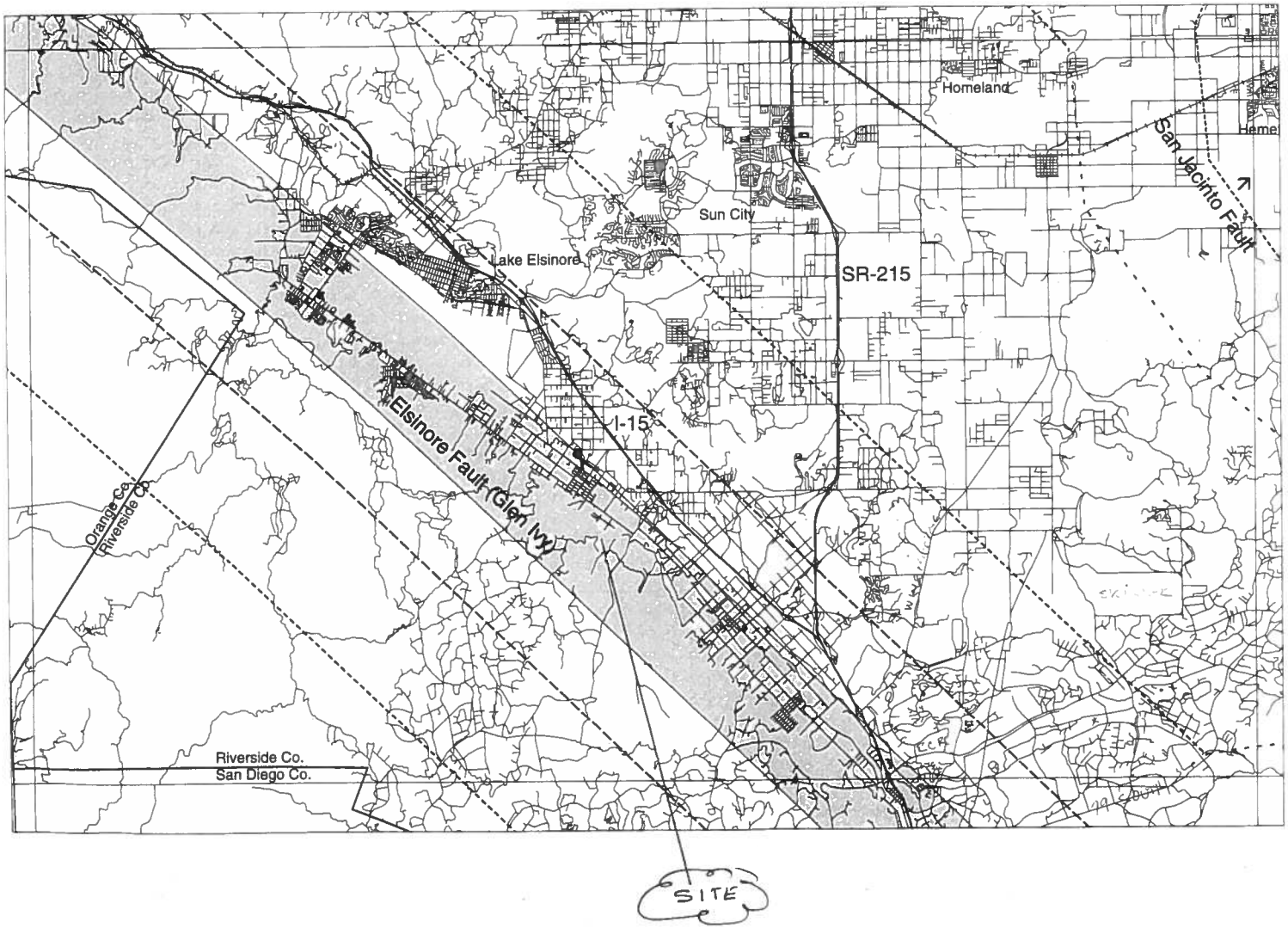
O-34

Active Fault Near-Source Zones

This map is intended to be used in conjunction with
the 1997 Uniform Building Code, Tables 16-S and 16-T

O-34

California Department of Conservation
Division of Mines and Geology



LEGEND

See expanded legend and index map

Shaded zones are within 2 km of known seismic sources.

A fault

B fault

Contours of closest horizontal distance to known seismic sources.

5 km

10 km

15 km

0 5 10

Kilometers

1/4" is approximately equal to 1 km

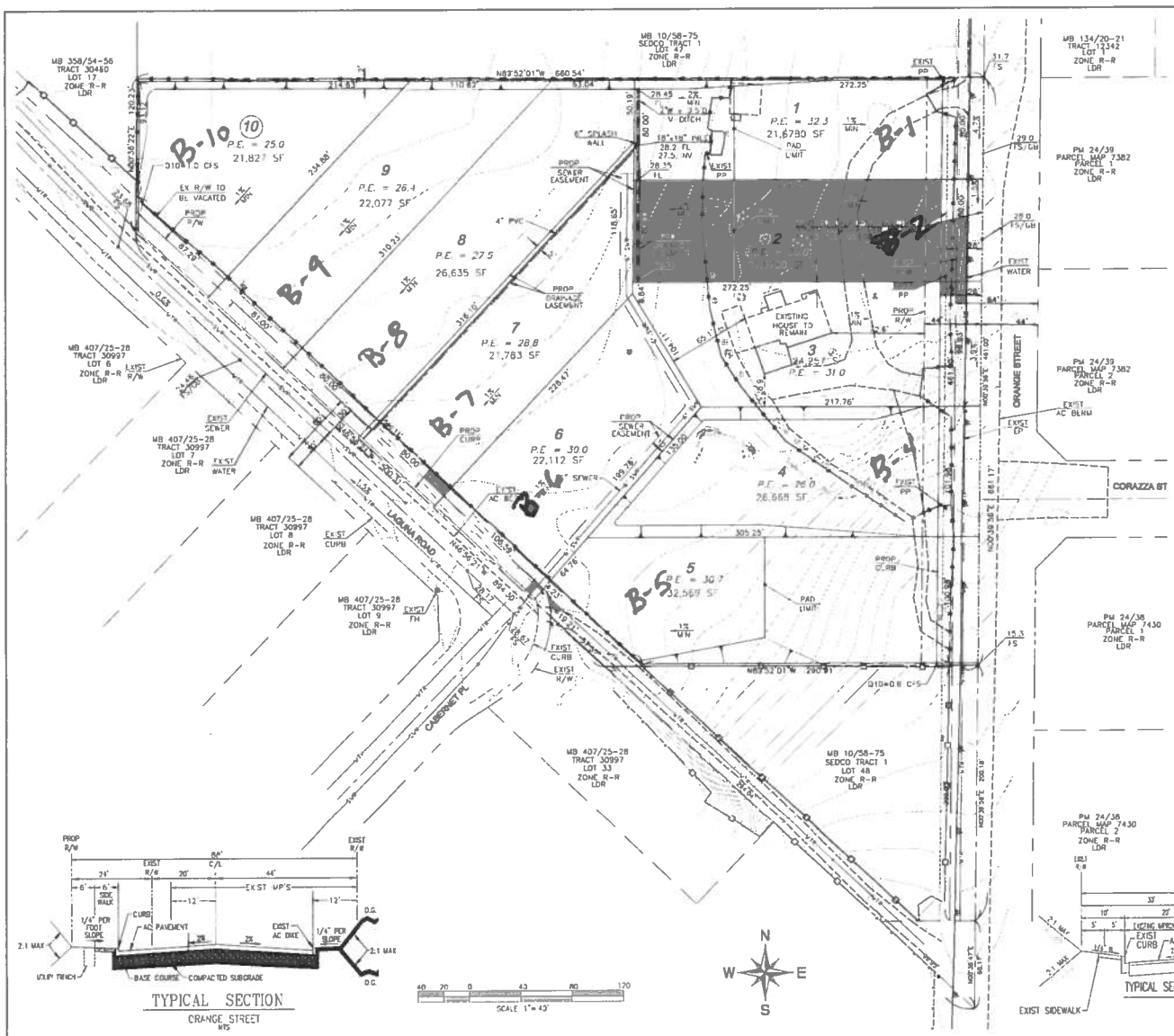
August, 1997

B-1~10 = BORE SITES

WAC # 13-892
1-28-13

TENTATIVE TRACT 36519

IN THE CITY OF WILDOMAR, CALIFORNIA



OWNER/APPLICANT

MIKE LESLE
21595 MARBLE CT
WILDOMAR, CA 92595
T (951) 522-2405
F (xxx) XXX-XXXX FAX

ENGINEER/EXHIBIT PREPARER

LOVE ENGINEERING
ATTN: THOMAS S. LOVE
31915 RANCHO CALIFORNIA ROAD
SUITE 200-166
TEMECULA, CA 92591
T (951) 440-8149 F (951)-303-6701

ASSESSOR'S PARCEL NO.

367-170-029

PROPERTY ADDRESS

34915 ORANGE STREET

LEGAL DESCRIPTION

LOTS (S) 48 OF SEDCO TRACT NO. 1, IN THE CITY OF WILDOMAR, AS SHOWN BY MAP ON FILE IN BOOK 10 PAGE(S) 58 TO 75, INCLUSIVE, OF MAPS, RECORDS OF RIVERSIDE COUNTY; EXCEPTING THEREFROM THE SOUTHERLY 200 FEET, SAID 200 FEET BEING MEASURED ALONG THE EAST LINE OF SAID LOT 48, AND THE NORTH LINE OF SAID 200 FEET BEING PARALLEL WITH THE NORTH LINE OF SAID LOT 48

EXISTING EASEMENTS

26' EASEMENT TO CALIFORNIA ELECTRIC POWER COMPANY RECORDED 05/08/1952 PER INSTRUMENT #18643

ACREAGE

ACREAGE: 5.54 ACRES GROSS/5.09 ACRES NET
MINIMUM LOT SIZE: 1/2 ACRE

LAND USE

10 RESIDENTIAL LOTS

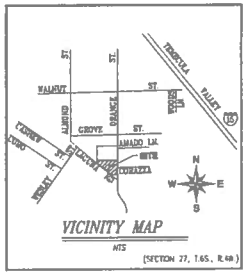
EXISTING LAND USE:	LDR
PROPOSED LAND USE:	LDR
EXISTING ZONING:	R-R
PROPOSED ZONING:	R-R
MINIMUM LOT:	20,000 SF

UTILITIES

WATER	- ELSINORE VALLEY MUNICIPAL WATER DISTRICT
SEWER	- ELSINORE VALLEY MUNICIPAL WATER DISTRICT
GAS	- SOUTHERN CALIFORNIA GAS COMPANY
ELECTRIC	- SOUTHER CALIFORNIA EDISON
TELEPHONE	- VERIZON
CABLE	- N/A
SCHOOL	- LAKE ELSINORE UNIFIED SCHOOL DISTRICT

TOPOGRAPHY

CONTOURS & ELEVATIONS PROVIDED FROM FIELD DATA GATHERED ON 9/29/12 & OCT 10/1/12 BY:
HESS SURVEY
28639 SCOTT RD, SUITE D-387
MURRIETA, CA 92563
PH (951) 325-7200



VICINITY MAP
NTS
(SECTION 27, T.6S., R.4W.)

NOTES

1. 2011 THOMAS BROS. MAP BOOK: PAGE 897, GRIDS B5-B6
2. ALL IMPROVEMENTS SHALL BE PER SCHEDULE "B"
3. PROJECT INCLUDES THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DARKER.
4. THIS PROJECT IS NOT WITHIN A SPECIFIC PLAN
5. THE PROPERTY IS NOT WITHIN A COUNTY SERVICE AREA OR COMMUNITY FACILITIES DISTRICT.
6. THERE ARE NO WELLS ON THE PROPERTY OR WITHIN 200 FEET OF THE PROPERTY BOUNDARY.
7. SUBSURFACE SEPTIC SEWAGE DISPOSAL IS INTENDED ON LOTS 3 & 4 ONLY.
8. P.E. = XXXX.X INDICATES PRELIMINARY PAD ELEVATION.
9. SITE IS NOT SUBJECT TO LIQUEFACTION, OR OTHER GEOLOGIC HAZARDS AND IS NOT WITHIN SPECIAL STUDIES ZONE.
10. SITE IS NOT SUBJECT TO OVERFLOW, INUNDATION, OR FLOOD HAZARD.
11. EXISTING HOUSE TO REMAIN
12. ALL SLOPES ARE 2:1 RATIO, UNLESS OTHERWISE NOTED.
13. ALL STREETS ARE PROPOSED PUBLIC STREETS.
14. A WATER QUALITY MANAGEMENT PLAN HAS BEEN PREPARED
15. NO COMMON AREAS OR OPEN SPACE ARE PROPOSED.
16. FEMA MAP NUMBER 06065C0825G

SOILS ENGINEER & ENGINEERING GEOLOGIST

WAC GEOTECHNICAL, INC
2900 ADAMS STREET, SUITE C-35
RIVERSIDE, CA 92504
PH (951) 354-4500

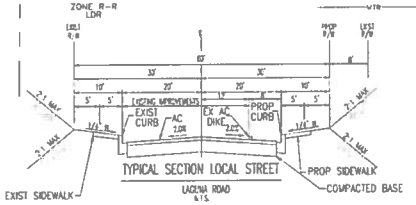
WATER QUALITY FEATURES

EACH LOT SHALL CONTAIN AN INFILTRATION TRENCH PER WATER QUALITY MANAGEMENT PLAN

LEGEND

BOUNDARY	FIRE HYDRANT
CENTERLINE	FLOW LINE
EASEMENT (DRAINAGE)	LOT LINE
EASEMENT (SEWER)	POWER POLE
EDGE OF PAVEMENT	SEWER (EXISTING)
EXISTING TOPOGRAPHY CONTOUR	STREET RIGHT-OF-WAY
EXISTING WATER	VINYL FENCE
	WIRE FENCE

TYPICAL SECTION
ORANGE STREET
NTS



TYPICAL SECTION LOCAL STREET
LAGUNA ROAD
NTS

ABBREVIATIONS

AC	Asphalt Concrete	BW	Invert
CFS	Cubic Feet Per Second	PE	Proposed Pad Elevation
EP	Edge of Pavement	PP	Power Pole
FL	Flowline	PROP	Proposed
FS	Finished Surface	R/W	Right-of-Way
GB	Grade Break	SD	Storm Drain
HP	High Point	SF	Square Feet

PLATE # 1

Underground Service Alert
DIAL BEFORE YOU DIG — TWO WORKING DAYS YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

EXHIBIT AMENDMENTS

DATE	BY	DESCRIPTION

SEAL

LOVE ENGINEERING
PLANNING - ENGINEERING - SURVEYING
31915 Rancho California Road, Suite 200-166, Temecula, CA 92591
TEL (951) 440 - 8149 / FAX (951) 303 - 6701

PREPARED UNDER THE SUPERVISION OF: R.C.E. NO: EXP. DATE: 9-30-13
THOMAS S. LOVE — DATE

BENCHMARK: USGS BM #1254 RESET
AT THE SOUTHWEST CORNER OF CENTRAL STREET AND PALOMAR STREET.
ELEVATION = 1288.07
DATUM = NAVD 88

SCALE: 1"=40'
DATE: NOVEMBER 13, 2012

IN THE CITY OF WILDOMAR, CALIFORNIA

TENTATIVE TRACT 36519

SHEET NO. 1 OF 1 SHTS.

ID: 10-001

COUNTY FILE NO.

Appendix F

Treatment Control BMP Sizing Calculations and Design Details

***Initial submittal includes calculation for largest lot only to estimate worse case infiltration trench sizing

Santa Margarita Watershed

BMP Design Volume, V_{BMP} (Rev. 03-2012)

Legend: Required Entries / Calculated Cells

(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)

Company Name	Love Engineering	Date	2/11/2013
Designed by	T Love	County/City Case No	TR 36519
Company Project Number/Name	Lesle Tract (10 Lots Orange St)		
Drainage Area Number/Name	Lot 4		

Enter the Area Tributary to this Feature A_T = 0.61 acres

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

Site Location

Township 6S

Range 4W

Section 27

Enter the 85th Percentile, 24-hour Rainfall Depth D_{85} = 0.70

Determine the Effective Impervious Fraction

Type of post-development surface cover (use pull down menu): Mixed Surface Types

Effective Impervious Fraction I_f = 0.35

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ C = 0.25

Determine Design Storage Volume, V_{BMP}

Calculate V_U, the 85% Unit Storage Volume $V_U = D_{85} \times C$ V_u = 0.18 (in*ac)/ac

Calculate the design storage volume of the BMP, V_{BMP}.

$$V_{BMP}\ (ft^3) = \frac{V_U\ (in\text{-}ac/ac) \times A_T\ (ac) \times 43{,}560\ (ft^2/ac)}{12\ (in/ft)}$$

V_{BMP} = 399 ft^3

Notes:

Infiltration Trench - Design Procedure	BMP ID	Legend:	Required Entries
			Calculated Cells

Company Name:	Love Engineering	Date:	2/11/2013
Designed by:	T Love	County/City Case No.:	TR 36519

Design Volume

Enter the area tributary to this feature, Max = 10 acres — A_t= 1 acres

Enter V_{BMP} determined from Section 2.1 of this Handbook — V_{BMP}= 399 ft^3

Calculate Maximium Depth of the Reservoir Layer

Enter Infiltration rate — I = 1.5 in/hr

Enter Factor of Safety, FS (unitless) — FS = 6

Obtain from Table 1, Appendix A: "Infiltration Testing" of this BMP Handbook

n = 40 %

Calculate D_1.

$$D_1 = \frac{I\ (in/hr) \times 72\ hrs}{12\ (in/ft) \times (n/100) \times FS}$$

D_1 = 3.75 ft

Enter depth to historic high groundwater mark (measured from finished grade) — 15 ft

Enter depth to top of bedrock or impermeable layer (measured from finished grade) — 15 ft

D_2 is the smaller of:

Depth to groundwater - 11 ft; & Depth to impermeable layer - 6 ft — D_2 = 4.0 ft

D_{MAX} is the smaller value of D_1 and D_2, must be less than or equal to 8 feet. — D_{MAX} = 3.8 ft

Trench Sizing

Enter proposed reservoir layer depth D_R, must be $\leq D_{MAX}$ — D_R = 3.75 ft

Calculate the design depth of water, d_W

Design $d_W = (D_R) \times (n/100)$ — Design d_W= 1.50 ft

Minimum Surface Area, A_S

$$A_S = \frac{V_{BMP}}{d_W}$$

A_S = 266 ft^2

Proposed Design Surface Area — A_D = 270 ft^2

Minimum Width = D_R + 1 foot pea gravel — 4.75 ft

Sediment Control Provided? (Use pulldown) — Yes

Geotechnical report attached? (Use pulldown) — Yes

If the trench has been designed correctly, there should be no error messages on the spreadsheet.

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

EXHIBIT 2

Mitigation Monitoring and Reporting Program (MMRP)

LESLE TRACT MAP (TM 36519) MND (PROJECT NO. 12-0392)
MITIGATION MONITORING AND REPORTING PROGRAM

1 INTRODUCTION

This document is the Mitigation Monitoring and Reporting Program (MMRP) for the **Lesle Tract Map (TM 36519) MND** (Planning Application No. 12-0392) project. This MMRP has been prepared pursuant to Section 21081.6 of the California Public Resources Code, which requires public agencies to "adopt a reporting and monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment." An MMRP is required for the proposed project because the EIR has identified significant adverse impacts and measures have been identified to mitigate those impacts.

2 MITIGATION MONITORING AND REPORTING PROGRAM

As the lead agency, the City of Wildomar will be responsible for monitoring compliance with all mitigation measures. Different departments within the City are responsible for aspects of the project. The MMRP identifies the department with the responsibility for ensuring the measure is completed; however, it is expected that one or more departments will coordinate efforts to ensure compliance.

The MMRP is presented in tabular form on the following pages. The components of the MMRP are described briefly below:

- **Mitigation Measure:** The mitigation measures are taken from the Initial Study/Mitigated Negative Declaration (IS/MND), in the same order that they appear in the IS/MND.

- **Timing:** Identifies at which stage of the project the mitigation must be completed.

- **Monitoring Responsibility:** Identifies the department within the City with responsibility for mitigation monitoring.

- **Verification (Date and Initials):** Provides a contact who reviewed the mitigation measure and the date the measure was determined complete.

MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Timing	Monitoring Responsibility	Verification (Date and Initials)
3.1 Aesthetics – none required	N/A	N/A	N/A
3.2 Agricultural Resources – none required	N/A	N/A	N/A
3.3 Air Quality – none required	N/A	N/A	N/A
AQ-1 The project applicant shall ensure that all disturbed areas will be watered 3 times daily during construction activities.	During construction activities	City of Wildomar Planning and Public Works Departments	
3.4 Biological Resources			
BIO-1 The project applicant shall conduct construction and clearing activities outside of the avian nesting season (January 15–August 31), where feasible. If clearing and/or construction activities occur during the nesting season, preconstruction surveys for nesting raptors, migratory birds, and special-status resident birds (e.g., coastal California gnatcatcher) shall be conducted by a qualified biologist, up to 14 days before initiation of construction activities. The qualified biologist shall survey the construction zone and a 250-foot radius surrounding the construction zone to determine whether the activities taking place have the potential to disturb or otherwise harm nesting birds. If an active nest is located within 100 feet (250 feet for raptors) of construction activities, the project applicant shall establish an exclusion zone (no ingress of personnel or equipment at a minimum radius of 100 feet or 250 feet, as appropriate, around the nest). Alternative exclusion zones may be established through consultation with the CDFW and the USFWS, as necessary. The exclusion zones shall remain in force until all young have fledged. Reference to this requirement and to the Migratory Bird Treaty Act shall be included in the construction specifications. If construction activities or tree removal are proposed to occur during the non-breeding season (September 1–January 14), a survey is not required, no further studies are necessary, and no mitigation is	The project applicant shall incorporate requirements into all rough and/or precise grading plan documents. The project applicant's construction inspector shall monitor to ensure that measures are implemented during construction.	City of Wildomar Planning and Public Works Departments	

	Mitigation Measure	Timing	Monitoring Responsibility	Verification (Date and Initials)
	required.			
BIO-2	Per MSHCP Species-Specific Objective 6, preconstruction presence/ absence surveys for burrowing owl within the survey area, where suitable habitat is present, will be conducted for all covered activities through the life of the building permit. Surveys will be conducted 30 days prior to disturbance. Take of active nests will be avoided. Passive relocation (use of one-way doors and collapse of burrows) will occur when owls are present outside the nesting season. If construction is delayed or suspended for more than 30 days after the survey, the area shall be resurveyed. Surveys shall be completed for occupied burrowing owl burrows within all construction areas and within 150 meters (500 feet) of the project work areas (where possible and appropriate based on habitat). All occupied burrows will be mapped on an aerial photo.	Thirty days prior to any vegetation removal or ground-disturbing activities	City of Wildomar Planning and Public Works Departments	
BIO-3	If burrowing owls are identified during the survey period, the City shall require the project applicant to take the following actions to offset impacts prior to ground disturbance: Active nests within the areas scheduled for disturbance or degradation shall be avoided from February 1 through August 31, and a minimum 75-meter (250-foot) buffer shall be provided until fledging has occurred. Following fledging, owls may be passively relocated by a qualified biologist. If impacts on occupied burrows in the non-nesting period are unavoidable, on-site passive relocation techniques may be used if approved by the CDFW to encourage owls to move to alternative burrows outside of the impact area. However, no occupied burrows shall be disturbed during the nesting season. A qualified biologist must verify through noninvasive methods that the burrow is no longer occupied. If relocation of the owls is approved for the site by the CDFW, the City shall require the developer to hire a qualified biologist to prepare a plan for relocating the owls to a suitable site. The relocation plan must include all of the following:	Prior to any vegetation removal or ground-disturbing activities	City of Wildomar Planning and Public Works Departments	

Mitigation Measure	Timing	Monitoring Responsibility	Verification (Date and Initials)
• The location of the nest and owls proposed for relocation. • The location of the proposed relocation site. • The number of owls involved and the time of year when the relocation is proposed to take place. • The name and credentials of the biologist who will be retained to supervise the relocation. • The proposed method of capture and transport for the owls to the new site. • A description of site preparation at the relocation site (e.g., enhancement of existing burrows, creation of artificial burrows, one-time or long-term vegetation control). • A description of efforts and funding support proposed to monitor the relocation. If paired owls are present within 50 meters (160 feet) of a temporary project disturbance (e.g., parking areas), active burrows shall be protected with fencing/cones/flagging and monitored by a qualified biologist throughout construction to identify losses from nest abandonment and/or loss of reproductive effort. Any identified loss shall be reported to the CDFW.			
3.5 Cultural Resources			
CUL-1 Prior to future development approval on the project site and issuance of any grading, building, or other permit authorizing ground-disturbing activity, the following wording shall be included in all construction contract documentation: If during grading or construction activities cultural resources are discovered on the project site, work shall be halted immediately within 50 feet of the discovery and the resources shall be evaluated by a qualified archeologist and the Pechanga Tribe. Any unanticipated cultural resources that are discovered shall be evaluated and a final report prepared, by the qualified archeologist. The report shall include a list of the resources discovered, documentation of each site/locality, and	As a condition of future development approval, and implemented during ground-disturbing construction activities	City of Wildomar Building and Planning Departments	

Mitigation Measure	Timing	Monitoring Responsibility	Verification (Date and Initials)
interpretation of resources identified, and the method of preservation and/or recovery for identified resources. In the event the significant resources are recovered and if the qualified archaeologist and the Tribe determines the resources to be historic or unique, avoidance and/or mitigation would be required pursuant to and consistent with CEQA Guidelines Sections 15064.5 and 15126.4 and Public Resources Code Section 21083.2 and the Cultural Resources Treatment and Monitoring Agreement required by mitigation measure **CUL-2**.			
• **CUL-2** At least 30 days prior to seeking a grading permit, the project applicant(s) for future development shall contact the appropriate Tribe to notify the Tribe of grading, excavation, and the monitoring program, and to coordinate with the City of Wildomar and the Tribe to develop a Cultural Resources Treatment and Monitoring Agreement.[1] The agreement shall address the treatment of known cultural resources; the designation, responsibilities, and participation of Native American Tribal monitors during grading, excavation, and ground-disturbing activities; project grading and development scheduling; terms of compensation; and treatment and final disposition of any cultural resources, sacred sites, and human remains discovered on the site.	Prior to the issuance of a grading permit	City of Wildomar Engineering and Planning Departments	
CUL-3 Prior to future development approval on the project site and issuance of any grading, building, or other permit authorizing ground-disturbing activity, the project applicant(s) shall include the following wording on all construction contract documentation: If human remains are encountered, California Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b), remains shall be left in place	As a condition of future development approval, and implemented during ground-disturbing construction activities	City of Wildomar Engineering and Planning Departments	

[1] It is anticipated that the Pechanga Band of Luiseño Indians will be the "appropriate" Tribe due to their prior and extensive coordination with the surrounding cities in determining potentially significant impacts and appropriate mitigation measures.

Mitigation Measure	Timing	Monitoring Responsibility	Verification (Date and Initials)
and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission shall be contacted within a reasonable time frame. Subsequently, the Native American Heritage Commission shall identify the "most likely descendant." The most likely descendant shall then make recommendations and engage in consultations concerning the treatment of the remains as provided in Public Resources Code Section 5097.98.			
CUL-4 All cultural materials, with the exception of sacred items, burial goods, and human remains (which will be addressed in the Cultural Resources Treatment and Monitoring Agreement required by mitigation measure **CUL-2**), that are collected during the grading monitoring program and from any previous archeological studies or excavations on the project site shall be curated according to the current professional repository standards. The collections and associated records shall be transferred, including title, to the Pechanga Tribe's curation facility, which meets the standards set forth in 36 CRF Part 79 for federal repositories.	As a condition of project approval, and implemented during ground-disturbing construction activities	City of Wildomar Engineering and Planning Departments	
CUL-5 All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible as determined by a qualified professional in consultation with the Pechanga Tribe. To the extent that a sacred site cannot be feasibly preserved in place or left in an undisturbed state, mitigation measures shall be required pursuant to and consistent with Public Resources Code Section 21083.2.	As a condition of project approval, and implemented during ground-disturbing construction activities	City of Wildomar Engineering and Planning Departments	
CUL-6 Prior to future development approval on the project site and issuance of any grading, building, or other permit authorizing ground-disturbing activity, the project applicant(s) shall include the following wording on all construction contract documentation: If inadvertent discoveries of subsurface archaeological resources are discovered during grading, work shall be halted immediately within 50 feet of the discovery and the developer and Tribe shall	As a condition of future development approval, and implemented during ground-disturbing construction activities	City of Wildomar Engineering and Planning Departments	

Mitigation Measure	Timing	Monitoring Responsibility	Verification (Date and Initials)
meet and confer regarding the significance of and mitigation for such resources. If the developer and the Tribe cannot agree on the significance of or the mitigation for such resources, these issues will be presented to the City of Wildomar Planning Director for decision. The Planning Director shall make the determination based on the provisions of CEQA with respect to archaeological resources and shall take into account the religious beliefs, customs, and practices of the Pechanga Tribe. Notwithstanding any other rights available under the law, the decision of the Planning Director shall be appealable to the City of Wildomar. In the event the significant resources are recovered and if the qualified archaeologist determines the resources to be historic or unique as defined by relevant state and local law, avoidance and mitigation would be required pursuant to and consistent with CEQA Guidelines Sections 15064.5 and 15126.4 and Public Resources Code Section 21083.2.			
CUL-7 Prior to the issuance of a grading permit, the project applicant(s) for future development shall identify to the City of Wildomar the qualified paleontologist who has been retained to evaluate the significance of any inadvertently discovery paleontological resources. If paleontological resources are encountered during grading or project construction, all work in the area of the find shall cease. The project applicant shall notify the City of Wildomar and retain a qualified paleontologist to investigate the find. The qualified paleontologist shall make recommendations as to the disposition of the paleontological resources to the City of Wildomar Planning Director. The developer shall comply with the recommendations of the qualified paleontologist that are approved by the City of Wildomar Planning Director for the recovery, treatment and storage of any discovered resources. The developer shall pay for all required treatment and storage of discovered resources.	Prior to the issuance of a grading permit	City of Wildomar Engineering and Planning Departments	

Mitigation Measure	Timing	Monitoring Responsibility	Verification (Date and Initials)
CUL-8 To address the possibility that cultural resources may be encountered during future grading or construction, a qualified professional archeologist shall monitor all construction activities that could potentially impact archaeological deposits (e.g., grading, excavation, and/or trenching). However, monitoring should be discontinued as soon the qualified professional is satisfied that construction will not disturb cultural resources.	As a condition of future development approval, and implemented during ground-disturbing construction activities	City of Wildomar Engineering and Planning Departments	
CUL-9 A qualified paleontologist or paleontological monitor shall monitor all mass grading and excavation activities. Monitoring will be conducted in areas of grading or excavation in undisturbed formational sediments of the sandstone member of the Pauba Formation (Qpfs) and the sandstone member of the Sandstone and Conglomerate of Wildomar (QTsw), of late Pliocene to middle Pleistocene age, as well as where over-excavation of surficial alluvial sediments will encounter these formations in the subsurface. Paleontological monitors shall be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediment that are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or if present, are determined on exposure and examination by qualified paleontological personnel to have low potential to contain fossil resources.	As a condition of project approval, and implemented during ground-disturbing activities.	City of Wildomar Engineering and Planning Departments	
CUL-10 Any recovered paleontological specimens shall be identified to the lowest taxonomic level possible and prepared for permanent preservation, including screen-washing of sediments to recover small invertebrates and vertebrates shall occur if necessary.	As a condition of project approval, and implemented during ground-disturbing activities	City of Wildomar Engineering and Planning Departments	

Mitigation Measure	Timing	Monitoring Responsibility	Verification (Date and Initials)
CUL-11 Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage approved by the City of Wildomar shall occur. The paleontological program shall include a written repository agreement prior to the initiation of mitigation activities.	As a condition of project approval, and implemented during ground-disturbing construction activities	City of Wildomar Engineering and Planning Departments	
CUL-12 A final monitoring and mitigation report of findings and significance shall be prepared, including lists of all fossils recovered and necessary maps and graphics to accurately record their original location. The report, when submitted to and accepted by the City of Wildomar, shall signify satisfactory completion of the project program to mitigate impacts to any potential nonrenewable paleontological resources (i.e., fossils) that might have been lost or otherwise adversely affected without such a program in place.	Following ground-disturbing activities, and implemented prior to the issuance of a building permit	City of Wildomar Engineering and Planning Departments	
3.6 Geology and Soils			
GEO-1 All grading shall conform to the California Building Code, Chapter 16.12 of the Wildomar Municipal Code, and all other relevant laws, rules, and regulations governing grading in Wildomar. Prior to commencing any grading which includes 50 or more cubic yards, the developer shall obtain a grading permit from the Building Department.	Prior to the issuance of a grading permit	City of Wildomar Engineering and Planning Departments	
GEO-2 Prior to issuance of a grading permit, the developer shall provide the Engineering Department evidence of compliance with the National Pollutant Discharge Elimination System (NPDES) and obtain a construction permit from the State Water Resources Control Board (SWRCB).	Prior to the issuance of a grading permit	City of Wildomar Engineering and Planning Departments	
GEO-3 Erosion control-landscape plans, required for manufactured slopes greater than 3 feet in vertical height, are to be signed by a registered landscape architect and bonded per the requirements of California Building Code as adopted by the City of Wildomar in section 15.12.010 of the city municipal code. Planting shall occur within 30	Prior to the issuance of a grading permit	City of Wildomar Engineering and Planning Departments	

Mitigation Measure	Timing	Monitoring Responsibility	Verification (Date and Initials)
days of meeting final grades to minimize erosion and to ensure slope coverage prior to the rainy season. The developer shall plant and irrigate all manufactured slopes steeper than a 4:1 (horizontal to vertical) ratio and 3 feet or greater in vertical height with grass or ground cover; slopes 15 feet or greater in vertical height shall be planted with additional shrubs or trees or as approved by the City Engineer.			
3.7 Greenhouse Gas Emissions – none required	N/A	N/A	N/A
3.8 Hazards and Hazardous Materials			
HAZ-1 Homeowners of the proposed project shall comply with California Government Code Section 51182 which, among other provisions, includes the following requirements for residences within a Very High Fire Hazard Severity Zone: • (1) Maintain defensible space of 100 feet from each side and from the front and rear of the structure, but not beyond the property line except as provided in paragraph (2). The amount of fuel modification necessary shall take into account the flammability of the structure as affected by building material, building standards, location, and type of vegetation. Fuels shall be maintained in a condition so that a wildfire burning under average weather conditions would be unlikely to ignite the structure. This paragraph does not apply to single specimens of trees or other vegetation that are well-pruned and maintained so as to effectively manage fuels and not form a means of rapidly transmitting fire from other nearby vegetation to a structure or from a structure to other nearby vegetation. The intensity of fuels management may vary within the 100-foot perimeter of the structure, the most intense being within the first 30 feet around the structure. Consistent with fuels management objectives, steps should be taken to minimize erosion. • (2) A greater distance than that required under paragraph (1) may be required by state law, local ordinance, rule, or regulation. Clearance beyond the property line may only be required if the state law, local ordinance, rule, or regulation includes findings that the clearing is	Prior to the issuance of a certificate of occupancy	City of Wildomar Code Enforcement Division	

Mitigation Measure	Timing	Monitoring Responsibility	Verification (Date and Initials)
necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure, and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. Clearance on adjacent property shall only be conducted following written consent by the adjacent landowner. • (3) An insurance company that insures an occupied dwelling or occupied structure may require a greater distance than that required under paragraph (1) if a fire expert, designated by the fire chief or fire official from the authority having jurisdiction, provides findings that the clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure, and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. The greater distance may not be beyond the property line unless allowed by state law, local ordinance, rule, or regulation. • (4) Remove that portion of a tree that extends within 10 feet of the outlet of a chimney or stovepipe. • (5) Maintain a tree, shrub, or other plant adjacent to or overhanging a building free of dead or dying wood. • (6) Maintain the roof of a structure free of leaves, needles, or other vegetative materials.			
3.9 Hydrology and Water Quality – none required	N/A	N/A	N/A
3.10 Land Use and Planning – none required	N/A	N/A	N/A
3.11 Mineral Resources – none required	N/A	N/A	N/A
3.12 Noise			
NOI-1 Future development on the project site shall implement the following construction noise mitigation measures to reduce potential construction noise impacts to a less than significant level: • All construction and general maintenance activities (except in an emergency) shall be limited to the hours of 6:00 a.m. to 6:00 p.m. from June through September and 7:00 a.m. to 6:00 p.m. from	During construction	City of Wildomar Building and Planning Departments	

Mitigation Measure	Timing	Monitoring Responsibility	Verification (Date and Initials)
October through May. • Construction equipment staging and storage areas shall be located as far from the existing residential land uses as possible. • All construction equipment shall be properly maintained with operating mufflers and air intake silencers as effective as those installed by the original manufacturer. • Residents living up to 1,000 feet from the property line shall be provided with a construction schedule and contact information to file a complaint. Timely notification shall accompany any major changes to this schedule. • A temporary noise barrier shall be erected along the project boundaries during all construction activities.			
NOI-2 Prior to the issuance of a grading permit, a construction noise mitigation plan shall be drafted by the developer and submitted to the City for review and approval. The plan shall depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of the proposed project. Methods for mitigating for any noise impact may include: • the construction of a noise attenuation fence; • preferential location of equipment; and • the use of current noise suppression technology and equipment.	Prior to grading	City of Wildomar Building and Planning Departments	
3.13 Population and Housing – none required	N/A	N/A	N/A
3.14 Public Services – none required	N/A	N/A	N/A

3.15 Recreation – none required	N/A	N/A	N/A
3.16 Transportation/Traffic			
• **TRA-1** Lots 1, 2, 3, and 4 shall include a driveway design which allows for on-site vehicle turn-around for front ingress from Orange Street to the proposed lot and front egress from the proposed lot to Orange Street.	Prior to the issuance of a building permit	City of Wildomar Engineering and Planning Departments	
3.17 Utilities and Service Systems – none required	N/A	N/A	N/A

EXHIBIT 3

Comments on IS/MND and Responses to Comments

RESPONSE TO COMMENTS

List of Commenters

The following individuals and representatives of organizations and agencies submitted written comments on the Draft MND.

Letter	Agency, Organization, or Individual	Date
A	County of Riverside Department of Environmental Health	October 16, 2013
B	Pechanga Cultural Resources	October 25, 2013
C	Johnson and Sedlack	October 28, 2013
D	Jeff Fagin, Wildomar Ranches Homeowners Association	July 2, 2013

Comments and Responses

Written comments on the Draft MND are reproduced on the following pages, along with responses to those comments.

Where changes to the Draft MND text result from responding to comments, those changes are included in the response and demarcated with revision marks (underline for new text, ~~strikeout~~ for deleted text). The responses to comments were prepared by City staff and PMC.

Comment Letter A
County of Riverside Department of Environmental Health
October 16, 2013

Letter A

COUNTY OF RIVERSIDE
DEPARTMENT OF ENVIRONMENTAL HEALTH

Steve Van Stockum, Director

October 16, 2013

RECEIVED
OCT 22 2013
CITY OF WILDOMAR

City of Wildomar
Planning Department
Attn: Matthew C. Bassi, Planning Director
23873 Clinton Keith Road, Suite 201
Wildomar, CA 92595

SUBJECT: CITY OF WILDOMAR – PLANNING APPLICATION#12-0392
LESLE TENTATIVE TRACT MAP SUBDIVISION PROJECT
TR 36519 (APN 367-170-029)

Dear Mr. Bassi,

Based on our review of the Initial Study/Mitigated Negative Declaration for the project listed in the subject heading of this letter, the Department of Environmental Health (DEH) offers the following comments:

1) Page 48 item#1 states, "Septic tanks currently exist on the property. Any buried septic system shall be properly removed following Riverside County Environmental Health Department guidelines." Prior to the map recordation of the subdivision map, it is recommended that the applicant properly removes or abandon all existing septic systems under permit with Riverside County Environmental Health Department. **A-1**

2) Page 69 states, "Sewer service will be provided through connection to an existing 8-inch gravity feed sewer line in Laguna Road…The proposed project will not result in a flow of wastewater that exceeds the permitted flow of this facility. Any impact would be less than significant". It is recommended that the applicant submit an original copy of a "will-serve" letter from Elsinore Valley Municipal Water District (EVMWD) for water and sewer service to DEH for review and acceptance prior to the Planning Department's approval of the planning case. Please note that the purpose of the "will-serve" letter is to outline the conditions of water and sewer service for each parcel and to ensure that sufficient capacity is available to serve new construction. **A-2**

Letter A Continued

COUNTY OF RIVERSIDE
DEPARTMENT OF ENVIRONMENTAL HEALTH

Steve Van Stockum, Director

3) Page 55 (a) states, "The exposure of persons to, or the generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies" would result in a less than significant impact. It is recommended that the applicant submit a noise study to DEH Office of Industrial Hygiene for review to ensure the validity of this statement. Please note that the purpose of the noise study is to address the requirements for determining and mitigating noise related impacts of the project to the surrounding vicinity as well as determining and mitigating noise related impacts to the project emanating from existing adjacent land use types and impacts associated with the ultimate build-out of adjacent roads (i.e. Orange Street – Secondary Road – 100' Road Right-of-way). For further information, please contact Steve Hinde at (951) 955-8982. **A-3**

4) It is recommended that the applicant submit to DEH Environmental Cleanup Programs for review an original copy of a Phase 1 Environmental Site Assessment to determine whether any chemicals and/or pesticides were used on the property, the location of use, and any possible lingering negative effects. This condition requires the applicant to compile sufficient information about the property and land uses to aid the Department in making a determination of whether additional investigation is needed. For further information, please contact Yvonne Reyes at (951) 955-8980. **A-4**

Should you have any questions, please contact me by email at mmistica@rivcoeh.org or by phone at (951) 955-8980.

Sincerely,

Michael Mistica, MBA, REHS
Environmental Protection and Oversight Division
Land Use and Water Resources Program

Comment Letter A Responses
County of Riverside Department of Environmental Health

A-1 As a standard condition, any septic systems are required to be properly removed following Riverside County Departmental Health guidelines prior to the issuance of a grading permit.

A-2 As stated on page 69 of the IS/MND, the lift station and treatment plant that will receive flows from the proposed project will have adequate treatment capacity for the proposed project. In addition, the Elsinore Valley Municipal Water (EVMWD) district develops facility service thresholds based on the current land use designations established by the municipalities within the EVMWD service area. Since the proposed project is not proposing to change the land use designation of the project site there will be no changes to the service level projections made by EVMWD during the development and planned maintenance of their facilities. Finally, the copy of the draft document was sent directly to EVMWD during the public review period. No comments from EVMWD were received.

A-3 Because of the existing residential neighborhood, large residential lot sizes, small amount of traffic generated by the proposed project and the existing roadway network the City determined that a detailed noise analysis was unnecessary for the project. When the City spoke with Steve Hinde, the referenced contact for this issue, he was unaware of the project, the environment surrounding the project and uncertain as to why a noise study would be required.

A-4 The proposed project is not located on any hazardous materials site as designated by Government Code Section 65962.5. A review of the information on the Department of Toxic Substances Control website (2013) did not identify any other hazardous materials sites on or adjacent to the project site. However, the following standard condition and requirement will be added to page 48 the final MND:

4. <u>Prior to any ground disturbing activities a Phase 1 Environmental Site Assessment shall be prepared by a qualified geologist or engineer. The scope of the assessment shall include but not be limited to, a records search and physical investigation of the project site to determine if there are underground storage tanks present, contaminated soils or groundwater present, or any other substances present that known to be harmful to environmental or human health. Upon completion, the assessment shall be submitted to the City for review.</u>

Comment Letter B
Pechanga Cultural Resources
October 25, 2013

Letter B

PECHANGA CULTURAL RESOURCES
Temecula Band of Luiseño Mission Indians

Post Office. Box 2183 • Temecula, CA 92593
Telephone (951) 308-9295 • Fax (951) 506-9491

Chairperson:
Mary Bear Magee

Vice Chairperson:
Darlene Miranda

Committee Members:
Evie Gerber
Bridgett Barcello Maxwell
Richard B. Scearce, III
Germaine Arenas

Director:
Gary DuBois

Coordinator:
Paul Macarro

Cultural Analyst:
Anna Hoover

October 25, 2013

VIA E-MAIL and USPS

Mr. Matt Bassi
Planning Director
City of Wildomar
23873 Clinton Keith Rd. Ste. 201
Wildomar, CA 92595

Re: Pechanga Tribe Comments on the Notice for Public Hearing and Initial Study/Mitigated Negative Declaration for Tentative Tract Map No. 36519

Dear Mr. Bassi:

This comment letter is written on behalf of the Pechanga Band of Luiseño Indians (hereinafter, "the Tribe"), a federally recognized Indian tribe and sovereign government. The Tribe formally requests, pursuant to Public Resources Code §21092.2, to be notified and involved in the entire CEQA environmental review process for the duration of the above referenced project (the "Project"). If you have not done so already, please add the Tribe to your distribution list(s) for public notices and circulation of all documents, including environmental review documents, archaeological reports, and all documents pertaining to this Project. The Tribe further requests to be directly notified of all public hearings and scheduled approvals concerning this Project. Please also incorporate these comments into the record of approval for this Project.

The Tribe thanks the City of Wildomar and the Developer for providing mitigation to preserve and protect the sensitive Luiseño cultural resources and traditional landscapes found in this area and to require both archaeological and Pechanga tribal monitoring during earthmoving activities. The State and Federal governments have mandated that cultural resources must be appropriately mitigated for within the confines of development projects. The Tribe appreciates the active role the County takes to maintain the significant history of the Tribe and California.

Letter B Continued

PECHANGA CULTURAL AFFILIATION TO PROJECT AREA

The Pechanga Tribe asserts that the Project area is part of Luiseño, and therefore the Tribe's, aboriginal territory as evidenced by the existence of Luiseño place names, *tóota yixélval* (rock art, pictographs, petroglyphs), traditional landscapes, cultural areas and an extensive Luiseño artifact record in the vicinity of the Project. This culturally sensitive area is affiliated with the Pechanga Band of Luiseño Indians because of the Tribe's cultural ties to this area as well as the close proximity of the Project to the Tribal reservation lands.

The Pechanga Tribe has a specific legal and cultural interest in this Project as the Tribe is culturally affiliated with the geographic area that comprises the Project property and is the closest affiliated tribe to the Property. The Tribe has been named the Most Likely Descendent (Cal. Pub. Res. C. §5097.98) on Projects in the nearby vicinity of the proposed Project and has specific knowledge of cultural resources and sacred places near the proposed Project which we have shared with the County on previous occasions on this and other projects.

The Tribe welcomes the opportunity to meet with the City to further explain and provide documentation concerning our specific cultural affiliation to lands within your jurisdiction, if so desired.

REQUESTED TRIBAL INVOLVEMENT AND MITIGATION

The Pechanga Band is not opposed to this Project; however, we are opposed to any direct, indirect and cumulative impacts this Project may have to tribal cultural resources. The Tribe's primary concerns stem from the Project's proposed impacts on Native American cultural resources. The Tribe is concerned about both the protection of unique and irreplaceable cultural resources, such as Luiseño village sites, sacred sites and archaeological items which would be displaced by ground disturbing work on the Project, and on the proper and lawful treatment of cultural items, Native American human remains and sacred items likely to be discovered in the course of the work.

The Tribe is in receipt of the Project Mitigated Negative Declaration. The proposed Project is located in a highly sensitive region of Luiseño territory – a traditional cultural landscape, and the Tribe believes that the possibility for recovering subsurface resources during ground-disturbing activities is high. The Tribe has over thirty-five (35) years of experience in working with various types of construction projects throughout its territory. The combination of this knowledge and experience, along with the knowledge of the culturally-sensitive areas and oral tradition, is what the Tribe relies on to make fairly accurate predictions regarding the likelihood of subsurface resources in a particular location.

Based upon the information provided to the Tribe, there are no known cultural resources located within the Project boundaries. Therefore, the sensitivity of this Project lies with the potential to impact subsurface, unknown cultural resources during earthmoving activities. At

Letter B Continued

this time, the Tribe thanks the City of Wildomar for working closely with us to develop appropriate and adequate mitigation measures. These are identified in the Initial Study/Mitigated Negative Declaration as Cul-1, Cul-2, Cul-3, Cul-4, Cul-5, and Cul-6 and have been copied below. We request that these measures/conditions of approval be incorporated into the final environmental documents approved by the City.

CUL-1 Prior to future development approval on the project site and issuance of any grading, building, or other permit authorizing ground-disturbing activity, the following wording shall be included in all construction contract documentation:

If during grading or construction activities cultural resources are discovered on the project site, work shall be halted immediately within 50 feet of the discovery and the resources shall be evaluated by a qualified archeologist and the Pechanga Tribe. Any unanticipated cultural resources that are discovered shall be evaluated and a final report prepared, by the qualified archeologist. The report shall include a list of the resources discovered, documentation of each site/locality, and interpretation of resources identified, and the method of preservation and/or recovery for identified resources. In the event the significant resources are recovered and if the qualified archaeologist and the Tribe determines the resources to be historic or unique, avoidance and/or mitigation would be required pursuant to and consistent with CEQA Guidelines Sections 15064.5 and 15126.4 and Public Resources Code Section 21083.2 and the Cultural Resources Treatment and Monitoring Agreement required by mitigation measure CUL-2.

CUL-2 At least 30 days prior to seeking a grading permit, the project applicant(s) for future Development shall contact the appropriate Tribe to notify the Tribe of grading, excavation, and the monitoring program, and to coordinate with the City of Wildomar and the Tribe to develop a Cultural Resources Treatment and Monitoring Agreement.4 The agreement shall address the treatment of known cultural resources; the designation, responsibilities, and participation of Native American Tribal monitors during grading, excavation, and ground-disturbing activities; project grading and development scheduling; terms of compensation; and treatment and final disposition of any cultural resources, sacred sites, and human remains discovered on the site.

CUL-3 Prior to future development approval on the project site and issuance of any grading, building, or other permit authorizing ground-disturbing activity, the project applicant(s) shall include the following wording on all construction contract documentation:

If human remains are encountered, California Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b), remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County

Letter B Continued

Coroner determines the remains to be Native American, the Native American Heritage Commission shall be contacted within a reasonable time frame. Subsequently, the Native American Heritage Commission shall identify the "most likely descendant." The most likely descendant shall then make recommendations and engage in consultations concerning the treatment of the remains as provided in Public Resources Code Section 5097.98.

CUL-4 All cultural materials, with the exception of sacred items, burial goods, and human Remains (which will be addressed in the Cultural Resources Treatment and Monitoring Agreement required by mitigation measure **CUL-2**), that are collected during the grading monitoring program and from any previous archeological studies or excavations on the project site shall be curated according to the current professional repository standards. The collections and associated records shall be transferred, including title, to the Pechanga Tribe's curation facility, which meets the standards set forth in 36 CRF Part 79 for federal repositories.

CUL-5 All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible as determined by a qualified professional in consultation with the Pechanga Tribe. To the extent that a sacred site cannot be feasibly preserved in place or left in an undisturbed state, mitigation measures shall be required pursuant to and consistent with Public Resources Code Section 21083.2.

CUL-6 Prior to future development approval on the project site and issuance of any grading, building, or other permit authorizing ground-disturbing activity, the project applicant(s) shall include the following wording on all construction contract documentation:
If inadvertent discoveries of subsurface archaeological resources are discovered during grading, work shall be halted immediately within 50 feet of the discovery and the developer and Tribe shall meet and confer regarding the significance of and mitigation for such resources. If the developer and the Tribe cannot agree on the significance of or the mitigation for such resources, these issues will be presented to the City of Wildomar Planning Director for decision. The Planning Director shall make the determination based on the provisions of CEQA with respect to archaeological resources and shall take into account the religious beliefs, customs, and practices of the Pechanga Tribe. Notwithstanding any other rights available under the law, the decision of the Planning Director shall be appealable to the City of Wildomar. In the event the significant resources are recovered and if the qualified archaeologist determines the resources to be historic or unique as defined by relevant state and local law, avoidance and mitigation would be required pursuant to and consistent with CEQA Guidelines Sections 15064.5 and 15126.4 and Public Resources Code Section 21083.2.

The Pechanga Tribe looks forward to continuing to work together with the City of Wildomar in protecting the invaluable Pechanga cultural resources found in the Project area.

Letter B Continued

Please contact me at 951-770-8113 or at eozdil@pechanga-nsn.gov once you have had a chance to review these comments if you have any comments or concerns. Thank you.

Sincerely,

Tuba Ebru Ozdil
Planning Specialist

cc: Pechanga Office of the General Counsel

Comment Letter B Responses
Pechanga Cultural Resources
October 25, 2013

B No response is required for the letter labeled as response letter B.

Comment Letter C (October 28, 2013)
Johnson and Sedlack

Letter C

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October 28, 2013

VIA U.S. MAIL AND EMAIL

Matthew C. Bassi
Planning Director
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RE: Lesle Tract Map, Wildomar Subdivision Tentative Tract Map No. 36519, Planning Application No. 12-0392, Comments on Initial Study/Mitigated Negative Declaration

Greetings:

On behalf of the Alliance for Intelligent Planning, I hereby submit these comments on and in opposition to the Lesle Tentative Tract Map Subdivision Project, Tentative Tract Map No. 36519 (Planning Application No. 12-0392).

General Comments:

The California Environmental Quality Act (CEQA) was adopted as a disclosure and transparency document. The theory is that by providing a document that adequately describes the environmental consequences of a project to decision makers and the public, the decision makers will make a rational decision based upon the true environmental consequences of the project and if they do not, the electorate can hold them accountable for their decisions. The core of this statutory structure is the adequacy of the document as an informational document.

The EIR requirement is the "heart of CEQA." (State CEQA Guidelines § 15003 (a).) An EIR is required for any proposed project that may have a significant effect on the environment. (Public Resources Code §21100 (a).) A lead agency may prepare a mitigated negative declaration for a proposed project only when: (1) revisions in the project would avoid or mitigate the potentially significant project effects to a point where *clearly* no significant effects would occur; and (2) there is no substantial evidence in light of the whole record that the project as revised *may* have a significant effect on the environment. (State CEQA Guidelines § 15070 (b).)

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The adoption of a Mitigated Negative Declaration ("MND") for the Lesle Tentative Tract Map Subdivision Project, TTM 36519 (PA 12-0392) (the "Project"), is improper where, as here, there is substantial evidence in the record of a fair argument of a significant environmental impact as a result of the Project. For the reasons detailed below, an EIR must be prepared for this Project.

The Project is likely to have significant impacts that were not adequately addressed in the MND. Specifically, there is a fair argument that the project will have significant impacts to/from, at least, air quality/health risks, biological resources, cultural resources, geology, greenhouse gas emissions, hazards and hazardous material, noise, traffic, utilities, and cumulative impacts. Significant impacts are not shown to be mitigated below a level of significance.

Furthermore, CEQA requires that mitigation measures adopted for a project be fully enforceable and certain to occur. This Project fails to ensure that mitigation will occur with this Project and instead provides vague, uncertain, and unenforceable mitigation measures.

Mitigation measures are also improperly deferred. "Formulation of mitigation measures should not be deferred until some future time." (Guidelines § 15126.4(a)(1)(B).) Deferral is proper only when "mitigation is known to be feasible, but …practical considerations prohibit devising such measures early in the planning process" and such measures "will satisfy specific performance criteria articulated at the time of project approval." (*Oakland Heritage Alliance v. City of Oakland* (2011) 195 Cal.App. 4th 884, 906.) Here, for example, BIO-3 requires that if relocation of owls is approved for the site, the developer must prepare a plan for relocating the owl. There are no practical considerations prohibiting devising this plan presently and disclosing the location of a proposed relocation site, name and credential of the biologist, proposed method of capture and transport, description of site preparation, and description of efforts and funding to monitor the relocation to ensure that it is successful.

Overall, the conclusions in the MND are not based on substantial evidence.

Air Quality

The conclusions that the Project will result in a less than significant impact to air quality are unsupported by evidence. All assumptions relied on for the air quality modeling are not provided. Discrepancies in the air quality modeling cannot be discerned from the CalEEMod outputs alone. **C-1**

Table 3-1 states that 313 truck trips will be required to export 2,500 cubic yards of soil. There is no discussion of whether any soils import will be required, and no disclosure of how many truck trips per day will occur in the site preparation phase. The CalEEMod air quality modeling also does not appear to reflect these trips or disclose them in any way in either site preparation or grading calculations, though given that assumptions are omitted, it is impossible to tell. **C-2**

Truck trips are also understated. The MND does not disclose how 313 total trips to export 2,500 **C-3**

cubic yards of soil was calculated. However, in the Final EIR prepared for the Perris Valley Line Project in Riverside County (adopted by Riverside County Transportation Commission July 25, 2011), it was noted that on average one cubic yard of earth weighs 1.35 tons (1.35 tons /cubic yard) and a typical dump truck has a weight capacity of 15 tons. Accordingly here, it would take 225 trucks to export the soils onsite (3,375 tons soil/ 15 tons per truck), meaning 450 trips (225 empty trucks in, 225 full trucks out).

Further, Table 3-4 shows that on-site site preparation $PM_{2.5}$ emissions **exceed** the local significance threshold at nearby residences or other sensitive receptors with 8.08 lbs/ day, above the 8 lbs/day threshold so that significant impacts **would** occur. The MND's statement that emissions would be insignificant is incorrect. **C-4**

There is no discussion of the actual distance to nearby sensitive receptors. The MND assumes receptors at 25 meters, but they may in fact be closer. **C-5**

Without evidence that air quality emissions will be less than significant, and with evidence that localized $PM_{2.5}$ emissions will in fact be significant, such emissions must be treated as significant. The following additional mitigation measures should be incorporated: **C-6**

CONSTRUCTION IMPACTS

1. Gravel pads must be installed at all access points to prevent tracking of mud onto public roads.

2. Install and maintain trackout control devices in effective condition at all access points where paved and unpaved access or travel routes intersect (e.g. Install wheel shakers, wheel washers, and limit site access.)

3. All roadways, driveways, sidewalks, etc., should be completed as soon as possible. In additional, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.

4. Pave all construction roads.

5. Pave all construction access roads at least 100 feet on to the site from the main road.

6. Limit fugitive dust sources to 20 percent opacity.

7. Require a dust control plan for earthmoving operations.

8. When materials are transported off-site, all material shall be covered, effectively wetted to limited visible dust emissions, and at least six inches of freeboard space from the top of the

Letter C Continued

container shall be maintained.

9. All streets shall be swept at least once a day using SCAQMD Rule 1186 certified street sweepers utilizing reclaimed water trucks if visible soil materials are carried to adjacent streets.

10. The contractor of builder shall designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite.

11. Post a publicly visible sign with the telephone number and person to contact regarding dust complaints. This person shall respond and take corrective action within 24 hours.

12. Extend grading period sufficiently to reduce air quality impacts below a level of significance.

13. The simultaneous disturbance of the site shall be limited to five acres per day.

14. Any vegetative cover to be utilized onsite shall be planted as soon as possible to reduce the disturbed area subject to wind erosion. Irrigation systems required for these plants shall be installed as soon as possible to maintain good ground cover and to minimize wind erosion of the soil.

15. Any on-site stockpiles of debris, dirt or other dusty material shall be covered or watered three times daily.

16. Any site access points within 30 minutes of any visible dirt deposition on any public roadway shall be swept or washed.

17. A high wind response plan shall be formulated for enhanced dust control if winds are forecast to exceed 25 mph in any upcoming 24-hour period.

18. Implement activity management techniques including a) development of a comprehensive construction management plan designed to minimize the number of large construction equipment operating during any given time period; b) scheduling of construction truck trips during non-peak hours to reduce peak hour emissions; c) limitation of the length of construction work-day period; and d) phasing of construction activities.*

19. Develop a trip reduction plan to achieve a 1.5 AVR for construction employees.

20. Require high pressure injectors on diesel construction equipment.

21. Restrict truck operation to "clean" trucks, such as a 2007 or newer model year or 2010 compliant vehicles.*

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22. Require the use of CARB certified particulate traps that meet level 3 requirements on all construction equipment.*

23. Utilize only CARB certified equipment for construction activities.*

24. The developer shall require all contractors to turn off al construction equipment and delivery vehicles when not in use and/or idling in excess of 3 minutes.*

25. Restrict engine size of construction equipment to the minimum practical size.*

26. Use electric construction equipment where technically feasible.*

27. Substitute gasoline-powered for diesel-powered construction equipment.*

28. Require use of alternatively fueled construction equipment, using, e.g., compressed natural gas, liquefied natural gas, propane, or biodiesel.*

29. Use methanol-fueled pile drivers.*

30. Install catalytic converters on gasoline-powered equipment.*

31. Require the use of Alternative Diesel Fuels on diesel equipment used. Alternative diesel fuels exist that achieve PM_{10} and NO_x reductions. PuriNO_x is an alternative diesel formulation that was verified by CARM on January 31, 2001 as achieving a 14% reduction in NO_x and a 63% reduction in PM_{10} compared to CARB diesel. It can be used in any direct-injection, heavy-duty compression ignition engine and is compatible with existing engines and existing storage, distribution, and vehicle fueling facilities. Operation experience indicates little or no difference in performance and startup time, no discernible operational differences, no increased engine noise, and significantly reduced visible smoke.

32. Electrical powered equipment shall be utilized in-lieu of gasoline-powered engines where technically feasible.*

33. All forklifts shall be electric or natural gas powered.*

34. Suspend use of all construction equipment operations during second stage smog alerts.*

35. Provide temporary traffic controls such as a flag person, during all phases of construction to maintain smooth traffic flow.*

36. Provide dedicated turn lanes for movement of construction trucks and equipment on- and off-

Letter C Continued

site.*

37. Reroute construction trucks away from congested streets and sensitive receptor areas.*

38. Configure construction parking to minimize traffic interference.*

39. Prior to the issuance of a grading and building permit, the applicant shall submit verification that a ridesharing program for the construction crew has been encouraged and will be supported by the contractor via incentives or other inducements,*

40. Minimize construction worker trips by requiring carpooling and providing for lunch onsite.*

41. Provide shuttle service to food service establishments/commercial areas for the construction crew.*

42. Provide shuttle service to transit stations/multimodal centers for the construction crew.*

43. Require the use of Zero-VOC paints, coatings, and solvents.

(*Would reduce impacts to GHGs as well.)

OPERATIONAL EMISSIONS

1. Buildings shall exceed Title 24 requirements by 30%.*

2. Orient 75 percent or more of homes and buildings to face either north or south (within 20 degrees of N/S) and plant trees and shrubs that shed their leaves in winter nearer to these structures to maximize shade to the building during the summer and allow sunlight to strike the building during the winter months.*

3. Design buildings for passive heating and cooling and natural light, including building orientation, proper orientation and placement of windows, overhangs, skylights, etc.*

4. Construct photovoltaic solar or alternative renewable energy sources sufficient to provide 100% of all electrical usage for the entire Project.*

5. Construct renewable energy sources sufficient to offset the equivalent of 100% of all greenhouse gas emission from mobile sources (internal combustion engines) for the entire Project.*

6. Install solar water heating systems to generate all hot water requirements.*

7. Plant at least 50 percent low-ozone forming potential (Low-OFP) trees and shrubs, preferably native, drought-resistant species, to meet city/county landscaping requirement.*

8. Plant Low-OFP native, drought-resistant, tree and shrub species, 20% in excess of that already required by city or county ordinance. Consider roadside, sidewalk, and driveway shading.*

9. Provide grass paving, tree shading, or reflective surface for unshaded parking lot areas, driveways, or fire lanes that reduce standard black asphalt paving by 10% or more.*

10. Electrical outlets shall be installed on the exterior walls of all residential and commercial buildings (and perhaps parking lots) to promote the use of electric landscape maintenance equipment.*

11. Provide a complimentary cordless electric lawnmower to each buyer.

(*Would reduce impacts to GHGs as well.)

Biological Impacts

The Project is likely to result in significant and unmitigated biological impacts to at least burrowing owls. Preparation of an EIR and further study is essential.

The mitigation for impacts to burrowing owls is insufficient and will not *clearly* reduce impacts to the owls below a level of significance. A recent "Staff Report on Burrowing Owl Mitigation" by the Department of Fish and Game found that 1) passive relocation is ineffective and 2) construction must occur further from nesting sites to mitigate for impacts to the owls. The Staff Report provides updated guidance on the distance necessary from nesting sites based on construction disturbance, and the methods for passive relocation of burrowing owls. This guidance must be incorporated into any successful mitigation. ("Staff Report on Burrowing Owl Mitigation," State of California Natural Resources Agency, Department of Fish and Game March 7, 2012, <http://www.dfg.ca.gov/wildlife/nongame/docs/BUOWStaffReport.pdf>.) It is clear from the mitigation measures below that further information and evaluation is needed before mitigation may be implemented or determined to be successfully implementable. **C-7**

To ensure adequate mitigation of impacts to the owls, the following additional mitigation measures, in lieu of or in addition to BIO-1, BIO-2, and BIO-3 must be incorporated into the Project: **C-8**

1. Where habitat will be temporarily disturbed, restore the disturbed area to pre-project condition including decompacting soil and revegetating. Permanent habitat protection may be warranted if there is the potential that the temporary impacts may render a nesting site

Letter C Continued

(nesting burrow and satellite burrows) unsustainable or unavailable depending on the time frame, resulting in reduced survival or abandonment.

2. Mitigation for permanent impacts to nesting, occupied and satellite burrows and/or burrowing owl habitat such that the habitat acreage, number of burrows and burrowing owls impacted are replaced based on site-specific analysis and accounting for natal area, home range, foraging area, and other factors influencing burrowing owls and burrowing owl population persistence in the project area.

3. Mitigation for permanent impacts to nesting, occupied and satellite burrows and burrowing owl habitat with (a) permanent conservation of similar vegetation communities (grassland, scrublands, desert, urban, and agriculture) to provide for burrowing owl nesting, foraging, wintering, and dispersal (i.e. during breeding and non-breeding season) comparable to or better than that of the impact area, and (b) sufficiently large acreage, and presence of fossorial mammals.

4. Alternatively, where a burrowing owl population appears to be highly adapted to heavily altered habitats such as gold courses, airports, athletic fields, and business complexes, permanently protecting the land, augmenting the site with artificial burrows, and enhancing and maintaining those areas may enhance sustainability of the burrowing owl population onsite. Maintenance includes keeping lands grazed or moved with weedeaters or push mowers, free from trees and shrubs, and preventing excessive human and human-related disturbance (e.g., walking, jogging, off-road activity, dog-waling) and loose and feral pets (chasing and, presumably, preying upon owls) that make the environment uninhabitable for burrowing owls.

5. Permanently protect mitigation land through a conservation easement deeded to a nonprofit conservation organization or public agency with a conservation mission, for the purpose of conserving burrowing owl habitat and prohibiting activities incompatible with burrowing owl use. If the project is located within the service area of a Department approved burrowing owl conservation bank, the project proponent may purchase available burrowing owl conservation bank credits.

6. Fund the maintenance and management of mitigation land through the establishment of a long-term funding mechanism such as an endowment.

Adequate mitigation based on the habitat assessment complaint with MSHCP criteria is absolutely essential and was not complied with here. An EIR must be prepared as impacts are not demonstrably reduced below a level of significance with mitigation incorporated.

Additionally, BIO-1 is vague as to the timing of preconstruction surveys. Surveys should be

Letter C Continued

required to be conducted not more than 30 days prior to initiation of any construction activities. If construction is delayed or suspended for more than 30 days, resurvey should be a requirement.

Cultural Resources

The Project site is identified as having a high potential/ sensitivity for paleontological resources. CUL-7 and CUL-8 are vague and thus insufficient to reduce potential impacts to these resources below a level of significance. At CUL-7, there is no description of what items will be recovered, how they will be treated, or where they will be stored. At Cul-8, there are no standards for determining that construction will not disturb cultural resources (e.g. grading above a certain depth, some percent of the entire site has contained no resources, etc.)

The Paleontological Resource Assessment recommended mitigation that must be adopted for this Project to reduce paleontological impacts, including:

1. A foot survey by a qualified paleontologist or paleontological monitor prior to grading activities can be conducted following clearing and grubbing of any surface vegetation across the site. Fossils on relatively flat alluvial areas are rarely exposed above the zone of soil formation (pedogenic horizons), but may, nevertheless, reveal areas of special concern to the paleontologist.

2. Monitoring of mass grading and excavation activities in areas identified as likely to contain paleontological resources by a qualified paleontologist or paleontological monitor. Monitoring will be conducted in areas of grading or excavation in undisturbed formational sediments of the sandstone member of the Pauba Formation (Qps), as well as where overexcavation of surficial alluvial sediments will encounter these formations in the subsurface. Paleontological monitors will be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediment that are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor must be empowered to temporarily halt or divert equipment to allow for the removal of abundant or large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or if present, are determined upon exposure and examination by qualified paleontological personnel to have low potential to contain fossil resources. **C-10**

3. Preparation of recovered specimens to a point of identification and permanent preservation, including screen-washing of sediments to recover small invertebrates and vertebrates if necessary. Preparation of individual vertebrate fossils is often more time consuming than for accumulations of invertebrate fossils.

4. Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage *(e.g.,*

Letter C Continued

the Western Center for Archaeology and Paleontology Museum on Searl Parkway in Hemet, Riverside County, California). The paleontological program should include a written repository agreement prior to the initiation of mitigation activities. The lead agency may select another repository if they so desire.

C-10 cont.

5. Preparation of a final monitoring and mitigation report of findings and significance, including lists of all fossils recovered and necessary maps and graphics to accurately record their original location. The report, when submitted to, and accepted by, the appropriate lead agency, will signify satisfactory completion of the project program to mitigate impacts to any potential nonrenewable paleontological resources *(i.e .,* fossils) that might have been lost or otherwise adversely affected without such a program in place.

Geology and Soils

The MND omits discussion of a pond on the project site that was previously filled without a permit from the City. In order to provide suitable soil that is capable of supporting the proposed structures the Project will need to over-excavate and re-compact the site to provide suitable support. According to Table 3-1, 2,500 cubic yards of soil will be exported in 313 truck trips. Since over-excavation will be required, the Project will require exportation of, and potentially require importation of, new soils. The MND provides no discussion of this pond, or the soils to be imported/exported in the geology/soils section of the MND. Instead, the only discussion is a footnote to a table in the air quality section. There is no evaluation of potential traffic impacts, health risk impacts, noise impacts, and other effects of this soils work. There is also no evidence that these truck trips were considered in the air quality analysis.

C-11

Further, the fill of the pond occurred without a permit as required by Section 3306.1 of the Uniform Building Code (UBC). (Riverside County Ordinance 457.103 section 4(J)(2), Wildomar Ordinance No. 18.) Grading done in violation of the UBC "shall be grounds for denying for five years all applications for building permits, use permits, subdivisions, changes of zones, specific plans, specific plan amendments, general plan amendments, and any other land development application proposed for the property in which the violation occurred." (Riverside County Ordinance 457.103 section 4(J)(3).) Therefore, the City may deny the Project and refuse to adopt the MND because of the unpermitted fill.

The MND notes that the Project is located less than 1.5 miles from the Glen Ivy Segment of the Elsinore fault, less than 900 from the identified Wildomar fault, and may be expected to experience occasional strong ground motions from earthquakes from local and regional faults. In spite of this, the MND concludes that ground shaking impacts will be less than significant with mitigation incorporated. There is no evidence that the three Geological mitigation measures required, two of which (GEO-2 and -3) pertain to water quality/drainage and erosion, will reduce impacts from earthquakes and liquefaction below a level of significance.

C-12

Letter C Continued

The Project is also located on expansive and unstable soils, yet the MND finds that impacts will be less than significant with the mitigation incorporated. Again, the proposed mitigation is insufficient to reduce impacts below significance. C-13

Appendix 6 details recommendations that must be followed to ensure the Project site is suitable for support and geological/soils impacts adequately mitigated. The geotechnical report specifically states that the site should be considered suitable for the planned development *provided the recommendations presented herein are incorporated into the design and in construction.* Although the MND states at subdivision (d) that compliance with these recommendations is required by mitigation measure GEO-1, this mitigation measure does not require *or even mention* compliance with the recommendations in the preliminary soils report. Mitigation measure GEO-1 merely requires that the Project comply with the law. The recommendations of the Preliminary Geotechnical Report, Appendix 6, must be incorporated into the Project as mitigation measures to ensure that they such needed measures are fully incorporated into the Project, certain to occur, and enforceable. As is, Geological/Soils impacts are significant and unmitigated. C-14

GHGs

The MND omits discussion of whether the Project will comply with state policies to reduce GHG emissions, and to meet the goals of AB 32. The Project will not. For instance, the Project does not comply with the million solar roofs initiative or other goals designed to reduce GHGs. The MND fails to show that the Project will have no significant impact to GHG absent detailing whether it complies with the goals of the state. C-15

Hazards and Hazardous Materials

The MND fails to consider impacts to *people* from fire hazards, as mandated for review by the threshold question: would the project "[e]xpose *people* or structures to a significant risk of loss, injury, or death involving wildland fires. . ." [emphasis added]. The MND only considers the risk to structures. Potential impacts from lack of adequate evacuation, smoke (versus only flames), etc. are not considered. Given that the southeastern portion of the Project is located in a Very High Fire Severity Zone, this omission may be injurious to the future residents. At the very least, this omission renders inadequate the MND and its findings of less than significant hazards impacts. C-16

Noise

The MND states that because the City of Wildomar General Plan does not set standards for temporary noise impacts, any construction noise would not exceed City standards. This is false. City standards allow for a maximum exterior noise level of 65 Leq (10 minutes) from 7 a.m. to 10 p.m. and 45 Leq (10 minutes) from 10 p.m. to 7 a.m., and a maximum interior noise level of C-17

Letter C Continued

55 Leq (10 minutes) from 7 a.m. to 10 p.m. and 40 Leq (10 minutes) from 10 p.m. to 7 a.m. There is no limitation that these standards apply only to project operation, not construction. From Table 12-1, it is apparent that construction noise will exceed City standards.

The MND fails to disclose actual noise levels likely experienced with Project construction and operation, as there was no noise study prepared for the Project. The evaluation of noise in the MND thus omits analyses of increases in either construction noise or operational noise in ambient noise levels. The MND instead only states that noise increases would be similar to those experienced elsewhere in the City, but fails to quantify those increases. Noise increases may be particularly significant on this presently undeveloped site in an area with rural residences, as the existing noise levels are relatively low so that increases may be more markedly perceived.

Mitigation adopted for construction noise impacts will not demonstrably reduce such impacts below a level of significance where neither the noise levels anticipated nor the amount of noise reduction from mitigation are disclosed. For NOI-1: Limiting the hours of construction does nothing to reduce the noise levels experienced when construction is ongoing. Requiring that construction staging be located as far from residential land uses "as possible" is vague and unenforceable. The ability of residents to complain provides no mitigation absent the requirement that, after a complaint is received, the applicant must reduce noise to an acceptable level below City thresholds within, for instance, 24 hours. There is no evidence that a temporary noise barrier can be sufficient to reduce construction noise below applicable thresholds.

C-17 Cont.

NOI-2 impermissibly defers the creation of a noise mitigation plan. As discussed above, deferral of the creation of mitigation is proper only when mitigation is known to be feasible, but practical considerations prohibit devising such measures early in the planning process. There is no reason a construction noise mitigation plan cannot be drafted presently and disclosed to the public and decisionmakers.

Overall, the MND's consideration of noise impacts is wholly deficient and fails to show that no significant noise effects may be caused by this Project.

The following mitigation measures must be adopted to reduce noise associated with the Project:

1. Where technically feasible, utilize only electrical construction equipment.
2. During construction, the developer shall require that all contractors turn off all construction equipment and delivery vehicles when not in use and prohibit idling in excess of 3 minutes.
3. Provide upgraded windows with a minimum Sound Transmission Class (STC) rating of 34 for all buildings, and/or require the installation of double-paned windows.
4. Prohibit stock-piling of construction materials or equipment staging within 300 feet of

sensitive receptors.

5. Require the use of rubberized asphalt for construction of all roadways and parking areas.

6. Maintain quality pavement conditions that are free of bumps, pot holes, pavement cracks, differential settlement in bridge approaches or individual pavement slabs, etc.

7. Require resurfacing of roads.

8. Ban heavy trucks near the Project.

9. Use alternate construction methods and tools to reduce construction vibrations. Examples are predrilling of pile holes, avoiding cracking and seating methods for resurfacing concrete pavements near vibration sensitive areas, using rubber tired as opposed to tracked vehicles, placing haul roads away from vibration sensitive areas.

Transportation/Traffic

Construction traffic impacts are not evaluated or mitigated where the Project is stated to add at least 313 truck trips to the road for soils export alone (and, as discussed above, this figure is underestimated.) As construction traffic impacts may be significant, the following mitigation measures must be incorporated: C-18

1. Provide temporary traffic controls such as a flag person, during all phases of construction to maintain smooth traffic flow.

2. Provide dedicated turn lanes for movement of construction trucks and equipment on- and off-site.

3. Reroute construction trucks away from congested streets and sensitive receptor areas.

4. Configure construction parking to minimize traffic interference.

5. Prior to the issuance of a grading and building permit, the applicant shall submit verification that a ridesharing program for the construction crew has been encouraged and will be supported by the contractor via incentives or other inducements.

6. Minimize construction worker trips by requiring carpooling and providing for lunch onsite.

7. Provide shuttle service to food service establishments/commercial areas for the construction crew.

8. Provide shuttle service to transit stations/multimodal centers for the construction crew.

9. Improve traffic flow by signal synchronization.

Letter C Continued

10. Work with Caltrans to ensure adequate LOS at impacted on- and off- ramps.

Even with this mitigation, construction traffic impacts are likely to be significant.

Utilities and Service Systems

The MND contains no "will-serve" letter or similar information from EVMWD stating it has sufficient resources to provide water to this Project. The MND fails to demonstrate that supplies are sufficient, stating only the supply of EVMWD but not the current demands of other projects on EVMWD's limited supplies. Instead, the MND again makes the argument that this Project's incremental increase/ fraction of the total supply is not significant. This fractional reasoning does not show that, in fact, EVMWD has available supplies to serve this Project.

C-19

It is a well-known fact that water supplies in California are scarce and subject to additional scarcity and risk from reduced supplies. Adding additional demand to this already short supply of water will either result in this project failing to receive water from EVMWD and/or unavailability of sufficient water supplies for other uses in the area. The lack of available water could also result in fire hazards due to low fire flow to either the project or neighbors reliant on water supplies, an impact also not considered with the project. Impacts to the water supply from landscaping are not detailed in the MND. There is no discussion about whether recycled water is available or required at the site for this purpose. This Project may, therefore, have a significant impact on water supply. An EIR must be prepared.

The following mitigation measures should also be adopted for this Project to reduce impacts to the water supply:

1. Use only recycled water for landscaping purposes. Require installation of a recycled water line to the Project.
2. Install only ultra-low-flow plumbing fixtures in all buildings.
3. Install only dual flush toilets, which allow users to choose a larger or smaller flush as needed.
4. Require drip irrigation for landscaping where technically feasible.
5. Require mulching or equivalent organic ground cover to reduce water needs for all landscaped areas.
6. Require that any pool be covered at night and when not in use to reduce water loss through evaporation.
7. Provide all residents with free shower timers to help reduce time spent showering.

Cumulative Impacts

Letter C Continued

The cumulative impact assessment for this Project is absolutely unacceptable and negligible. First, there is no discussion of what cumulative projects were considered. Was the 370-unit Oak Creek Canyon project considered, where it would result in a 2.7 percent increase in the population of Wildomar and a 2.5 percent increase in the number of homes within the City? Were other nearby projects considered? The conclusions in the MND regarding potential cumulative effects are utterly unsupported by evidence or reasoning.

C-20

The cumulative impact assessment also appears to miss the point of a cumulative assessment – that is, impacts may be individually insignificant but cumulatively considerable. Most of the MND's "evaluation" of cumulative impacts does nothing more than reiterate that individual impacts were deemed insignificant or mitigable. Again, the MND fails to shown that no potentially significant cumulative impacts would occur with this Project. In fact, if local projects are considered it's likely that this Project would cumulatively affect noise, traffic, biological resources, aesthetics, GHGs, water quality, and other environmental resources. An EIR is essential to adequately consider such impacts.

Conclusion

Thank you for your consideration of these comments and the attached.

Sincerely,

Raymond W. Johnson
JOHNSON & SEDLACK

Comment Letter C Responses
Johnson and Sedlack
October 28, 2013

C-1 The air pollutant emissions modeling conducted for the project are based on default settings in the California Air Resource Board-approved CalEEMod air quality model computer program for Riverside County. The commenter is referred to Table 3-1 of the Initial Study for a summary of CalEEMod construction-related defaults for phase duration, equipment use, number of worker trips daily, on-site soils movement, and length of worker trip commutes. In terms of CalEEMod defaults for operational emission sources, the commenter is referred to Appendix 3 of the Initial Study for average daily vehicle trips and energy consumption.

C-2 Table 3-1 and 3-2 have a footnote that says the site preparation phase of the CalEEMod air quality model assumed export of 2,500 cubic yards of material from the project site with an estimated 313 truck trips. Although export of 2,500 cubic yards of soil from the site was assumed in the model, the proposed project actually 'balances' needing neither import nor export of soil. As stated on Figure 3, Tentative Tract Map in the initial study, the proposed project will result in 4,000 cubic yards of cut and fill, and 2,500 cubic yards of material over excavated. The over excavated material will remain on the site and will either be reused as part of fill during the construction process or placed elsewhere in accordance with the grading plan. The air quality modeling assumed a greater level of impact than is proposed with the project. See also response to comment C-11 ~ C-14 of this letter.

C-3 The determination that 313 truck trips will be necessary to export 2,500 cubic yards of soil off-site over the course of the 10-day site preparation phase of construction is derived from the California Air Resource Board-approved CalEEMod air quality model computer program default setting.

C-4 A correction will be included in the final version of the document.

The following text on page 25 of the Initial Study will be corrected to read:

> Sensitive receptors include residences, schools, hospitals, and similar uses. Existing residential uses surround the project site on most sides. **Table 3-4** shows that the emissions of ~~these~~ $PM_{2.5}$ pollutants on the peak day of construction would ~~not~~ potentially result in concentrations of pollutants at nearby residences or other sensitive receptors, and ~~less than~~ potentially significant impacts ~~would~~ could occur.

Table 3-4
Construction Local Significance Threshold (LST) Impacts (Pounds per Day)

Emissions Source	Nitrogen Oxide	Carbon Monoxide	PM_{10}	$PM_{2.5}$
On-Site Site Preparation Emissions	74.88	43.05	11.74	8.08
On-Site Grading Emissions	45.66	30.18	5.32	3.96
LST Threshold [1]	371	1,965	13	8
Significant Emissions?	**No**	**No**	**No**	**~~No~~ Yes**

[1] *Source: SCAQMD 2008. The site preparation phase accounts for 313 truck trips in order to export 2,500 cubic yards of soil. Modeling inputs account for SCAQMD Rule 403, Fugitive Dust, which requires all construction site roads to be either paved, watered periodically, or chemically stabilized (modeling inputs assume periodic watering) and limits construction vehicle speeds to a maximum 15 miles per hour.*

The City General Plan Air Quality Policy 4.9 requires compliance with SCAQMD Rules 403 and 403.1 in order to reduce fugitive dust emanating from construction sites. As stated, the modeling inputs in **Table 3-4** account for SCAQMD Rule 403, Fugitive Dust, which requires all construction site roads to be either paved, watered periodically, or chemically stabilized. The modeling inputs assume periodic watering twice daily as opposed to the construction-site road paving and/or application of chemical dust suppressant options. This is because periodic watering has been determined by SCAQMD's *Table XI-D, Mitigating Measure Examples: Fugitive Dust from Unpaved Road* (2007) to result in the least amount of fugitive dust reduction (55%) compared with construction site road paving (99% fugitive dust reduction) and application of chemical dust suppressants (84% fugitive dust reduction), and thus yields a conservative analysis.

As shown in **Table 3-4**, periodic watering twice daily does not result in the reduction of fugitive dust emissions to below a level of significance for the $PM_{2.5}$ construction LST. Therefore, mitigation measure **AQ-1**, which mandates periodic watering three times daily, is required. According to the CalEEMod model (SCAQMD 2011), periodic watering three times daily reduces fugitive dust emissions by 61 percent. Therefore implementation of mitigation measure **AQ-1** would reduce localized air quality impacts to a less than significant level. (On-site, uncontrolled fugitive $PM_{2.5}$ dust emissions generated during site preparation equals a maximum of 9.93 pounds daily (see Appendix 3). 0.61 x 9.93 = 6.05. 9.93 – 6.05 = 3.88 pounds of fugitive $PM_{2.5}$ daily. On-site $PM_{2.5}$ emissions generated from construction equipment equals a maximum of 3.61 pounds daily (see Appendix 3). 3.88 + 3.61 = 7.49 pounds of on-site, construction generated $PM_{2.5}$. This is under the LST threshold of 8 pounds.)

The following text on page 29 of the Initial Study will be corrected to read:

Mitigation Measures:

~~None required~~ **AQ-1** The project applicant shall ensure that all disturbed areas will be watered 3 times daily during construction activities.

Timing/Implementation: During Construction Activities.

Enforcement/Monitoring: City of Wildomar Planning and Public Works Departments

C-5 The closest receptor distance on the SCAQMD mass rate local significance threshold (LST) look-up tables is 25 meters. According to the SCAQMD, "It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters" (SCAQMD 2008).

C-6 The commenter is referred to Response C-1 and Response C-4.

C-7 The proposed project is located within the Western Riverside Multiple Species Habitat Conservation Plan (MSHCP) Area. The MSHCP has not adopted the revised guidelines for burrowing owl presented in the California Department of Fish and Wildlife's (CDFW) March 7,2012 Staff Report. Therefore, the surveys and habitat assessment presented in the report provided in Appendix 4 of the MND were conducted in accordance with the Burrowing Owl survey Instruction for MSHCP. The findings presented in the report came to the conclusion that the property did not contain suitable habitat for burrowing owls due to a lack of suitable burrows and the presence of domestic dogs and feral cats. In accordance with the MSHCP guidelines preconstruction surveys are required within 30-days prior to ground disturbance. Participation in the MSHCP ensures that project related impacts to biological resources are fully mitigated.

C-8 Mitigation measure **BIO-1** is intended to address impacts to nesting migratory birds and raptors, while mitigation measures **BIO-2** and **BIO-3** are incorporated in accordance with the requirements of the MSHCP. The additional mitigation measures requested for incorporation are in accordance with the CDFW 2012 Staff Report. As a result, no change is proposed **to BIO-2** or **BIO-3**.

C-9 Mitigation measure **BIO-1** currently states that surveys shall be conducted 14 days prior to initiating construction activities during the nesting season (Jan 15 – Aug 31). Language to provide for resurvey if the project is delayed for more than 30 days will be added and the revised measure shall read.

"The project applicant shall conduct construction and clearing activities outside of the avian nesting season (January 15–August 31), where feasible. If clearing and/or construction activities occur during the nesting season, preconstruction surveys for nesting raptors, migratory birds, and special-status resident birds (e.g., coastal California gnatcatcher) shall be conducted by a qualified biologist, up to 14 days before initiation of construction activities. The qualified biologist shall survey the construction zone and a 250-foot radius surrounding the construction

zone to determine whether the activities taking place have the potential to disturb or otherwise harm nesting birds. If construction activities are delayed for more than 30 days during the nesting season (January 15 – August 31), then the site shall be resurveyed prior to reinitiation of construction activities.

If an active nest is located within 100 feet (250 feet for raptors) of construction activities, the project applicant shall establish an exclusion zone (no ingress of personnel or equipment at a minimum radius of 100 feet or 250 feet, as appropriate, around the nest). Alternative exclusion zones may be established through consultation with the CDFW and the USFWS, as necessary. The exclusion zones shall remain in force until all young have fledged.

Reference to this requirement and to the Migratory Bird Treaty Act shall be included in the construction specifications.

If construction activities or tree removal are proposed to occur during the non-breeding season (September 1–January 14), a survey is not required, no further studies are necessary, and no mitigation is required."

C-10 Per the Paleontological Resource Assessment performed for the proposed project and included in the public review period of the draft MND as **Appendix 5A**, the project area overlies the exposures of the middle Pleistoncene (late Irvingtonian and early Rancholabrean) sandstone member of the Pauba Formation. More than 400 terrestrial vertebrate fossil localities are known from the Pauba formation and underlying units in the Elsinore fault zone across the greater Murrieta and Temecula areas. Vertebrate fossils previously recovered from the Pauba Formation include mammoths, mastodons, ground sloths, saber-tooth cats, tapirs, horses, camels, llamas, and abundant vertebrates and invertebrates. (Smith and Associates 2013; **Appendix 5a**) However, given that the discovery of any potential paleontological resources would rely on disturbing the site, is not possible to determine what, if any, resources would be discovered. In the event that paleontological resources are discovered, the following changes will be made to mitigation measure **CUL-8** will be made:

> **CUL-8** To address the possibility that cultural resources may be encountered during future grading or construction, a qualified professional archeologist shall monitor all construction activities that could potentially impact archaeological deposits ~~and a qualified paleontologist shall monitor all construction activities that could potentially impact paleontological deposits~~ (e.g., grading, excavation, and/or trenching). However, monitoring should be discontinued as soon the qualified professional is satisfied that construction will not disturb cultural resources.
>
> *Timing/Implementation: As a condition of future development approval, and implemented during ground-disturbing construction activities*
>
> *Enforcement/Monitoring: City of Wildomar Engineering and Planning Departments*

In addition, the following mitigation measures will be added the final MND:

CUL-9 A qualified paleontologist or paleontological monitor shall monitor all mass grading and excavation activities. Monitoring will be conducted in areas of grading or excavation in undisturbed formational sediments of the sandstone member of the Pauba Formation (Qpfs) and the sandstone member of the Sandstone and Conglomerate of Wildomar (QTsw), of late Pliocene to middle Pleistocene age, as well as where over-excavation of surficial alluvial sediments will encounter these formations in the subsurface. Paleontological monitors shall be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediment that are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or if present, are determined on exposure and examination by qualified paleontological personnel to have low potential to contain fossil resources.

Timing/Implementation: As a condition of project approval, and implemented during ground-disturbing construction activities

Enforcement/Monitoring: City of Wildomar Engineering and Planning Departments

CUL-10 Any recovered paleontological specimens shall be identified to the lowest taxonomic level possible and prepared for permanent preservation, including screen-washing of sediments to recover small invertebrates and vertebrates shall occur if necessary.

Timing/Implementation: As a condition of project approval, and implemented during ground-disturbing construction activities

Enforcement/Monitoring: City of Wildomar Engineering and Planning Departments

CUL-11 Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage approved by the City of Wildomar shall occur. The paleontological program shall include a written repository agreement prior to the initiation of mitigation activities.

Timing/Implementation: As a condition of project approval, and implemented during ground-disturbing construction activities

Enforcement/Monitoring: City of Wildomar Engineering and Planning Departments

CUL-12 A final monitoring and mitigation report of findings and significance shall be prepared, including lists of all fossils recovered and necessary maps and graphics to accurately record their original location. The report, when submitted to and accepted by the City of Wildomar, shall signify satisfactory completion of the project program to mitigate impacts to any potential nonrenewable paleontological resources (i.e., fossils) that might have been lost or otherwise adversely affected without such a program in place.

Timing/Implementation: Following ground-disturbing activities, and implemented prior to the issuance of a building permit

Enforcement/Monitoring: City of Wildomar Engineering and Planning Departments

Finally, since it is not possible to determine the possibility or location of any potential cultural resource discoveries, it is not possible to determine standards for avoiding these potential discoveries.

C-11 though C-14

In preparation of this response, the City reviewed historical aerial photographs on Google Earth from 1994 through 2013, and could find no indication of a pond on the proposed project site as suggested by the commenter. The aerial photographs show periodic discing of the site for weed control or agricultural purposes, but do not reveal any water courses or ponds. There is no evidence to support the assertion that the soil stockpiled on the project site was placed on a pond.

On July 3, 2013, the City of Wildomar Code Enforcement Department sent a courtesy letter to the Michael S. Lesle Trust regarding grading and/or stockpiling without permits which would be a potential violation of Section 15.12 of the Wildomar Municipal Code. On July 17, the Public Works Director and City Engineer Dan York, conducted a field visit and on July 22, 2013, met with the owner and engineer of work to discuss the condition of the property. As a result of the meeting, the applicant and engineer of work were informed to cease the import of material, leave the existing material in place and install an erosion control plan for the material. On August 2, 2013, Dan York conducted a field visit and confirmed that the erosion control measures were in place. The applicant was directed to complete the tentative map process and request an approved grading plan for the site. The complaint process was concluded on October 7, 2013.

The Riverside County Ordinances cited in the comment letter are not in effect in Wildomar. The City did adopt County Ordinance 457 upon incorporation (via Ordinance No. 18), but that was superseded in 2011 when the City adopted Ordinance No. 56 adopting and amending the 2010

Building Codes. The provision regarding illegal grading being grounds for denying any permit for the property for 5 years is a local amendment the County made to the Building Code and in only in effect within unincorporated Riverside County. The 2010 Building Code does not contain a similar penalty provision and the City did not amend the Building Code to include one when it adopted Ordinance No. 56.

While the proposed project is within 1.5 miles of the Glen Ivy Segment of the Elsinore fault, the site is outside of any special study area identified by the State or Riverside County. Mitigation Measure GEO-1 ensures that structural fill as a result of grading be approved by the City. The intent of the mitigation measure is to address the issue of liquefaction identified as item a) iii) of the checklist. The California Building Code requires that specific building construction materials and methods designed to reduce the effects of ground shaking (i.e. shear materials, additional bracing, specific fasteners) be part of building plans and applied at the time of building permit issuance. As the City of Wildomar has adopted and implements the California Building Code, it is unnecessary to require compliance with the California Building Code as a mitigation measure.

California Building Code (CBC) Section 1803 Geotechnical Investigation requires a geotechnical soils report as part of the building permit submittal requirements. The soils report will indicate the extent of excavation and type of footing necessary for the proposed construction. The term over excavation, when used in this context, refers to increasing the depth and/or width of any trenching done for building footings and either providing additional compaction or engineering of the structure to compensate for the soils. The over excavation is done only in the area(s) that would be expected to support a building or other improvement that required a sound foundation. Often the material(s) removed from the excavated area can be replaced under supervision of the soils engineer and compacted in accordance with engineering standards to support the structure. The details of the amount of over excavation and compaction would be spelled out in the soils report prepared as part of the building permit application. Because it is expensive to move and dispose of material, soil that is not replaced in the over excavated areas, will remain on site and be placed in areas not anticipated for construction. There is nothing in the geotechnical report or the City's knowledge of the proposed project area that would suggest the site is unsuitable for future development of single family homes. Further, the City will require the submittal of a geotechnical soils report that is specific to the proposed building areas, and will require compliance with the findings of the soils report as part of the building permit and approval process.

C-15 The draft MND did not analyze the potential for the proposed project to generate renewable energies because no building plans have been submitted to the City.

C-16 Any building plans submitted to the city will be reviewed and approved based on their compliance with the California Building Code which ensures that any proposed structures are built to minimize fire threats for occupants.

C-17 In response to the comment**,** the following changes will be made to Noise Impact Analysis discussion of the draft MND:

Impact Analysis 12a on page 56 of the draft MND:

The City of Wildomar General Plan does not set decibel standards for temporary construction noise impacts. Chapter 9.48 of the Wildomar Municipal Code contains noise standards in addition to the standards contained in the General Plan, but Section 9.48.010 specifically states that the noise standards contained in that Chapter are not thresholds of significance for the purposes of CEQA review. In addition, Section 9.48.020(I) of the Wildomar Municipal Code states that sound emanating from private construction projects located within one-quarter of a mile from an inhabited dwelling is exempt from the noise ordinance, provided that:

1. Construction does not occur between the hours of 6:00 p.m. and 6:00 a.m. during the months of June through September, and
2. Construction does not occur between the hours of 6:00 p.m. and 7:00 a.m. during the months of October through May;

Without an adopted construction noise standard the proposed project cannot generate noise in excess of currently established standards.

~~However, the City of Wildomar General Plan does not set standards for temporary noise impacts so any noise generation during the construction of the proposed project will not result in a generation of noise in excess of currently established standards. Any impact would be less than significant.~~

Impact Analysis 12b on page 57 of the draft MND:

Future development on the project site may require the use of bulldozers and trucks. According to the Federal Transit Administration (FTA), vibration levels associated with the use of a large bulldozer are 0.089 inches per second (in/sec) peak particle velocity (PPV) and 87 vibration decibels [VdB referenced to 1 micro inch per second (gin/sec) and based on the RMS velocity amplitude] at 25 feet, as shown in **Table 12-2**. Using the FTA-recommended procedure for applying a propagation adjustment to these reference levels, predicted worst-case vibration levels of approximately 0.03 in/sec PPV and 81 dBA at approximately 50 feet from the project site's boundary could occur from use of a large bulldozer. These vibration levels would not exceed the California Department of Transportation's recommended standard of 0.2 in/sec PPV (Caltrans 2002) with respect to the prevention of structural damage for normal buildings~~.~~, which standard is also incorporated into the Noise Element of the City of Wildomar General Plan. Vibration levels at greater distances would be substantially diminished. Because zoning provides for residential development, no vibration impacts are anticipated from operations. Any impacts would be less than significant.

~~Implementation of mitigation measure **NOI-1** would ensure that construction activities associated with future development on the project site are limited to the hours of 6:00 a.m. to 6:00 p.m. from June through September, and 7:00 a.m. to 6:00 p.m. October through May. In addition, mitigation measure **NOI-2** would ensure that sources of construction noise are identified and individually mitigated for by planned actions such as equipment location and the placement of noise barriers. Upon completion of development, no excessive ground vibrations or noises are expected to occur. Following the implementation of mitigation measures **NOI-1** and **NOI-2**, any impacts would be less than significant.~~

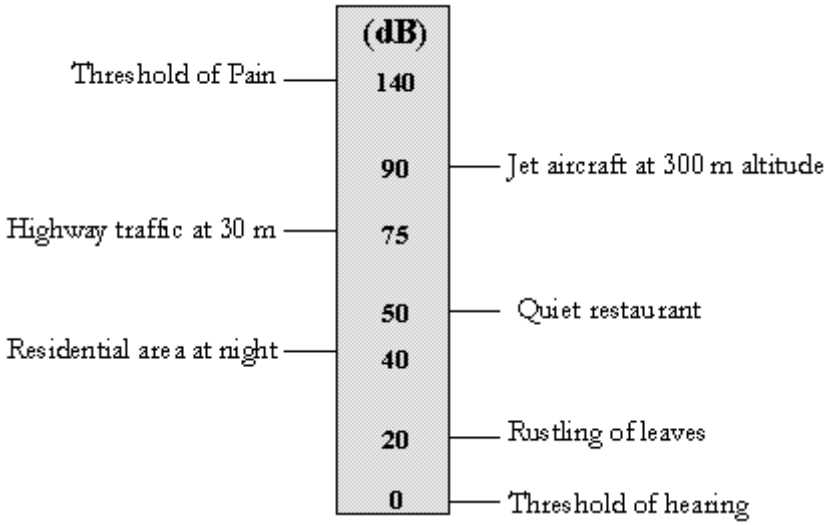
Impact analysis 12d of the draft MND:

Less Than Significant Impact With Mitigation Incorporated. ~~The proposed project may result in a substantial temporary increase in ambient noise levels above existing levels and construction of future development on the project site would temporarily increase ambient noise levels. This is expected to occur as the site is graded and as homes are constructed. These noise impacts have the potential to be significant considering the distance to adjacent residences. However, implementation of mitigation measure **NOI-1** would require that all construction activities (except in emergencies) be limited to the hours of 6:00 a.m. to 6:00 p.m. from June through September, and 7:00 a.m. to 6:00 p.m. from October through May. In addition, people working near the heavy equipment would be exposed to high noise levels for short periods of time; however, the City and private contractors are required to comply with Occupational Safety and Health Administration (OSHA) requirements for employee protection during construction. With the implementation of mitigation measures **NOI-1 and NOI-2**, no significant noise impact is expected to occur.~~

Future construction activity on the project site would temporarily increase ambient noise levels above existing levels. This is expected to occur as the site is graded and as the homes and other site improvements are constructed. These noise impacts have the potential to be significant considering the proximity to adjacent residences. However, when considering the noise levels of typical construction equipment in **Table 12-1** and table in **Figure 6**, any potential construction noise impacts would not approach a dangerous threshold.

Figure 6

Approximate Decibel Values for Common Sounds



Source: FHWA 2011

Further, mitigation measure **NOI-1** and compliance with Section 9.48.048 of the noise ordinance limiting times of construction, ensure that the construction noise impacts do not result in sleep disturbance. As the noise is below the safety level shown in **Figure 6**, and is mitigated to further reduce noise impacts during construction through **NOI-1**, this impact is considered less than significant.

And mitigation measure **NOI-1** on page 58 of the draft MND:

NOI-1 Future development on the project site shall implement the following construction noise mitigation measures to reduce potential construction noise impacts to a less than significant level:

- All construction and general maintenance activities (except in an emergency) shall be limited to the hours of 6:00 a.m. to 6:00 p.m. from June through September and 7:00 a.m. to 6:00 p.m. from October through May.
- Construction equipment staging and storage areas shall be located as far from the existing residential land uses as possible.
- All construction equipment shall be properly maintained with operating mufflers and air intake silencers as effective as those installed by the original manufacturer.
- Residents living up to 1,000 feet from the property line shall be provided with a construction schedule and contact information to file a complaint. Timely notification shall accompany any major changes to this schedule.

- A temporary noise barrier shall be erected along the project boundaries during all construction activities. ~~The barrier shall be capable of reducing any construction-related noise impacts to levels below the thresholds within the city of Wildomar General Plan.~~

  Timing/Implementation: *During construction*

  Enforcement/Monitoring: *City of Wildomar Building and Planning Departments*

C-18 Changes to Impact Analysis statement 16a on page 66 of the final MND will include:

> While the city has not yet received any proposed grading or building plans, assumptions of construction traffic may be made based on the assumptions included in Table 3-1 of the Air Quality Impact Analysis section. Considering the potential export of soils from the project site during a 10-day site preparation period, it may be estimated that 313 truck trips would occur. This estimation would result in an additional 31 daily trips on local roadways. An increase of 31 daily trips would not result in a change of the LOS for Orange Street or Laguna Road.

C-19 As discussed in Impact Statement e of the Utilities and Service Systems section of the draft MND, the Elsinore Valley Municipal Water District (EVMWD) determines future demand for water and wastewater services by calculating the projected usage rates based on land use designations. Since the proposed project does not proposed to change the existing general plan land use designation of the project site, the proposed project EVMWD has already determined that it will have adequate facilities and resources to provide service to the site. The draft document was sent directly to the EVMWD for review during the public review period.

C-20 Changes to the draft MND in Section V. Mandatory Findings of Significant, Impact Analysis Section b on pages 71 through 74 will include the following:

> **Population and Housing**
>
> The proposed project and associated future residential development on the project site would not result in any significant impact to population and housing. In determining the potential of the proposed project to contribute to the cumulative impacts of recently approved projects, the Bundy Canyon Road and Orange Street Subdivision (Tentative Tract Map 30522) was considered. Tentative Tract Map (TTM) 30522 will result in new commercial development within in the City which will lead to new employment opportunities. However, the new employment opportunities that will result from TTM 30522 will not substantial enough to result in any impact to population and housing. Furthermore, the proposed project does not include a change to the land use of the project site so any potential impact from the proposed project has been analyzed by the Wildomar General Plan. Any impact to the housing and population of the City would be less than cumulatively considerable.

Transportation/Traffic

In determining if the proposed project will result in any cumulative impacts, the average daily vehicle trips associated with the approved commercial subdivision at Orange Street and Bundy Canyon Road (Tentative Tract Map 30522) was considered. As reported in the environmental analysis for Tentative Tract Map (TTM) 30522, the existing level of service at the intersection of Orange Street and Bundy Canyon Road is C. The trips associated with the proposed project will not affect the level of service at this intersection since there is currently sufficient capacity. In the cumulative condition, improvements associated with TTM 30522 were required to meet the traffic demands of TTM 30522 as well as need of forecasted growth including the proposed project. The proposed project does not include a change of land use for the proposed project and will therefore not result in impacts that have not already been analyzed by the Western Riverside Council of Governments and the Wildomar General Plan. Any impact would be less than cumulatively considerable.

Utilities and Service Systems

The proposed project and any future development of the project site would not result in any impacts to utilities and Service Systems because providing service to the project site has previously been analyzed by the EVMWD based on the existing land use of the proposed site. However, future development of the surrounding areas could result in potential impacts to utilities and service systems. These potential impacts would be offset by the payment of service fees and would therefore be less than significant.

Comment Letter D
Wildomar Ranches Homeowners Association

Letter D

City of Wildomar

City Hall
23873 Clinton Keith Rd., Suite 201
Wildomar, CA 92595

City Manager Gary Nordquist & Planning Director Mathew Bassi

RE: Lesle Track Map No. 36519, project (PA 12-0392)

Gentleman,

Reviewing the Mitigated Negative Declaration (MND) for Tentative Tract Map No. 36519 we find that under topic number **9. Hydrology and Water Quality; subsection(c)** the intent is to allow the storm water runoff from area "A" of the project, to flow into an existing street inlet on Laguna Road and then north to an existing Detention Basin on Cashew Street.

Please be advised that the Detention Basin mentioned in the MND is **PRIVATE PROPERTY** and is the responsibility of and is maintained by the Wildomar Ranches Home Owners Association. "Public Access" is not permitted. Each member of the association pays monthly dues for the purpose of maintaining that Detention Basin, as well as, funding a reserve account for future repair and/or replacement of that asset. Having an adjacent Tract storm water runoff introduced into that facility, without equal compensation to the association, **is not acceptable**. **D-1**

The Wildomar Ranches HOA will require that the applicants for this project be conditioned, by the City of Wildomar, to be annexed by the Wildomar Ranches Homeowners Association or otherwise compensate the association for the upkeep of the Detention Basin.

Respectfully,

The Wildomar Ranches Homeowners Association

Jeff Fagin

Board of Directors Member

Comment Letter D Responses
Wildomar Ranches Homeowners Association

D-1 The final MND will be changed to include the following Standard Condition and Requirement to the Hydrology Impact Analysis section on page 52:

> 2. Prior to final map approval the project applicant shall provide the city with written evidence that the applicant has been granted the right to use the detention basin on Cashew Street from the Wildomar Ranches Homeowners Association.

ATTACHMENT B

PC Resolution No. 13-16
Tentative Tract Map No. 36519

PC RESOLUTION NO. 13-16

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF WILDOMAR, CALIFORNIA, APPROVING TENTATIVE TRACT MAP NO. 36519 (PLANNING APPLICATION NO. 12-0392) FOR THE SUBDIVISION OF APPROXIMATELY 5.4 ACRES INTO 10 (1/2 ACRE) LOTS FOR FUTURE SINGLE FAMILY RESIDENTIAL DEVELOPMENT IN THE R-R (RURAL RESIDENTIAL) ZONE LOCATED AT 34915 ORANGE STREET, SUBJECT TO CONDITIONS (APN: 367-170-029).

WHEREAS, the Planning Department has received an application for Tentative Tract Map No. 36519 for the subdivision of 5.54 acres into 10 lots for future single family residential development located at 34915 Orange Street by:

Applicant/Owner:	Mr. Mike Lesle
Project Location:	34915 Orange Street
APN(s):	367-170-029
Project Area:	5.54 acres

WHEREAS, in accordance with the California Government Code Section 66452 – 66452.22 (Subdivision Map Act) and the City of Wildomar Subdivision Ordinance (Title 16), and the City of Wildomar Zoning Ordinance (Title 17) the Planning Commission of the City of Wildomar, California, has the authority and has reviewed the proposed Tentative Tract Map No. 36519; and

WHEREAS, in accordance with Government Code Section 66452.3, the City has provided the applicant with a copy of the Planning Department staff report and resolutions for Tentative Tract Map No. 36519 containing staff's recommendation to the Planning Commission at least three (3) days prior to the below referenced noticed public hearing; and

WHEREAS, the proposed Tentative Parcel Map No. 34915 (Planning Application No. 12-0392) is considered a "project" as defined by the California Environmental Quality Act, Public Resources Code § 21000 et seq. ("CEQA"); and

WHEREAS, after completion of an Initial Study, the Planning Director determined that there were potentially significant effects on the environment. Therefore, staff prepared, and has recommended that the Planning Commission adopt, a Mitigated Negative Declaration for this project; and

WHEREAS, the proposed Mitigated Negative Declaration consists of the following documents: Initial Study/Mitigated Negative Declaration, Technical Appendices, Mitigation Monitoring and Reporting Program, , and comments received on the draft IS/MND and responses to those comments. References to the "Mitigated Negative Declaration" contained herein refer to all of the documents listed above; and

WHEREAS, on September 26, 2013, using a method required under CEQA Guidelines Section 15072(b), the City provided a Notice of Intent to adopt the proposed Initial Study/Mitigated Negative Declaration to the State Clearinghouse, general public, local distribution list, responsible/trustee agencies, and the Riverside County Clerk; and

WHEREAS, on September 26, 2013, the draft Initial Study/Mitigated Negative Declaration was posted in three public places for review at: 1) Wildomar City Hall, 2) Wildomar Mission Trail Library, 3) the City of Wildomar website; and

WHEREAS, the City made the proposed Initial Study/Mitigated Negative Declaration document available for public review commencing on September 26, 2013 and concluding on October 28, 2013, a period of not less than 30 days. During the public review period, the City received four (4) written comments concerning the proposed Initial Study/Mitigated Negative Declaration and staff responded to each comment as shown in Exhibit 2 hereto; and

WHEREAS, the City of Wildomar Planning Commission conducted a public hearing on December 18, 2013, at which time interested persons had an opportunity to testify in support of, or opposition to the proposed the Mitigated Negative Declaration and at which time the Planning Commission received public testimony concerning the Mitigated Negative Declaration.

WHEREAS, in accordance with Wildomar Municipal Code Section 16.12.140(A) the City of Wildomar Planning Department, on December 6, 2013, published a legal notice in “The Press Enterprise”, a local newspaper of general circulation, notifying the public of the holding of a public hearing for Tentative Tract Map No. 36519 (Planning Application No. 12-0392) that would be considered by the City of Wildomar Planning Commission; and

WHEREAS, in accordance with Government Code Sections 65353, 65355 and 65090, the City of Wildomar Planning Department, on December 4, 2013, gave public notice by mailing a public hearing notice to all property owners within a 600-foot radius of the project boundaries (including the EVMWD and LEUSD) notifying them of the date and time of the public hearing for Tentative Tract Map No. 36519 (Planning Application No. 12-0392) that would be considered by the City of Wildomar Planning Commission; and

WHEREAS, in accordance with Wildomar Municipal Code Section 16.12.140(A) and Government Code Section 65353the City of Wildomar Planning Commission conducted the duly noticed public hearing on December 18, 2013, at which time interested persons had an opportunity to testify in support of, or opposition to, Tentative Tract Map No. 36519 (Planning Application No. 12-0392), and at which time the Planning Commission received public testimony concerning the proposed tentative tract map.

NOW, THEREFORE, the Planning Commission of the City of Wildomar does hereby resolve, determine and order as follows:

SECTION 1. CEQA FINDINGS:

The Planning Commission approved and adopted a Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program for Tentative Tract Map No. 36519 via Planning Commission Resolution No. 13-15 adopted on December 18, 2013.

SECTION 2. TENTATIVE TRACT MAP FINDINGS.

In accordance with Wildomar Municipal Code Title 16 and Title 17, and Government Code § 66473.1, § 66473.5 and § 66474, the Planning department, in light of the whole record before it, including but not limited to the Planning Department's staff report and all documents incorporated by reference therein, the City's General Plan, Subdivision Ordinance, Zoning Ordinance, standards for public streets and facilities, and any other evidence within the record or provided at the public hearing of this matter, recommends that the Planning Commission hereby find and determine as follows:

A. The proposed tract map is consistent with the City's General Plan and any applicable specific plan as specified in Government Code Section 65451.

Evidence: The current General Plan Land Use Designation for the site is Low Density Residential (LDR). The LDR land use designation is intended for single family residential subdivisions with a density of 2 units / acre with 21,780 gross square-foot minimum lot sizes. In reviewing the applicant's request to subdivide 5.54 acres into 10 single family residential lots, the overall density proposed is consistent with the General Plan and minimum lot sizes. In terms of specific land use policies related to this project, the proposed tract map promotes (and is consistent with) the following residential related land use policies:

LU 3.1 (Community Design) – "Accommodate land use development in accordance with the patterns and distribution of uses and density depicted on the General Plan Land Use map."

LU 6.1 (Land Use Compatibility) – "Require land uses to develop in accordance with the General Plan and area plans to ensure compatibility and minimize impacts."

LU12.6 (Circulation) - "Require that adequate and accessible circulation facilities exist to meet the demands of a proposed land use."

LU22.1 (Community Development) - “Accommodate the development of single and multi family residential units in areas appropriately designated by the General Plan and area plan land use maps. “

LU22.3 (Community Development) - “Require that adequate and available circulation facilities, water resources and sewer facilities exist to meet the demands of the proposed residential land use.”

B. The design or improvement of the proposed subdivision is consistent with the City’s General Plan and any applicable specific plan.

Evidence: The proposed subdivision has been designed to meet all City standards applicable to residential subdivisions which are designed to provide satisfactory pedestrian and vehicular circulation, including emergency vehicle access and on-site and off-site public improvements. Further, all streets, utilities, and drainage facilities have been designed and are required to be constructed in conformance with City standards.

C. The site is physically suitable for the type and proposed density of development.

Evidence: The project site encompasses 5.54 acres and is relatively flat. The tentative map proposes to subdivide the project area into 10 lots for single family residential development. The density allowed by the LDR allows for lots sizes of 21,780 square feet per dwelling. Therefore, the proposed project site is physically suitable for the type and proposed density of development.

D. The design of the subdivision or proposed improvements are not likely to cause substantial environmental damage or substantially and avoidably injure fish or wildlife or their habitat.

Evidence: The City prepared an Initial Study for the proposed tract map project that resulted in the preparation, processing and review of a Mitigated Negative Declaration (MND). The MND analyzed the environmental issues required by CEQA law, including potential impacts to fish and wildlife and their respective habitats. Based on this review, it was determined that the project improvements will not cause substantial environmental damage or substantially and avoidably injure fish or wildlife or their habitat. Therefore, the proposed tract map meets this finding.

E. The design of the subdivision or type of improvements is not likely to cause serious public health problems.

Evidence: The design of the subdivision is in conformance with the City’s General Plan, Zoning Code and Subdivision Ordinance. The design and construction of all improvements to accommodate the project have been conditioned in accordance with all applicable City of Wildomar ordinances, codes, and standards including,

but not limited to, the California Uniform Building Code, the City's Ordinances relating to stormwater runoff management and adopted public works standards. As the City's ordinances, codes, and standards have been created based on currently accepted standards and practices for the preservation of the public health, safety and welfare, the proposed tract map project meets this finding.

F. The design of the subdivision or the type of improvements will not conflict with easements, acquired by the public at large, for access through or use of, property within the proposed subdivision.

Evidence: No easements of record or easements established by judgment of a court of competent jurisdiction for public access across the site have been disclosed in a search of the title records for the site and the City does not otherwise have any constructive or actual knowledge of any such easements.

SECTION 3. PLANNING COMMISSION ACTION

The Planning Commission hereby adopts PC Resolution No. 13-16 approving Tentative Tract Map No. 36519 (Planning Application No. 12-0392) subject to conditions as provided herein and attached hereto to this Resolution as Exhibit 1.

PASSED, APPROVED AND ADOPTED this 18th day of December 2013, by the following vote:

AYES.
NOES:
ABSENT:
ABSTAINED:

_____
Planning Commission Chairman

ATTEST:

_____
Matthew C. Bassi
Planning Director/Minutes Secretary

APPROVED AS TO FORM:

_____
Eric L. Vega
Assistant City Attorney

EXHIBIT 1 - ATTACHMENT A
CONDITIONS OF APPROVAL

Project Application: Tentative Tract Map No. 36519 (Planning Application No. 12-0392)

APN: 367-170-029

Planning Commission Approval Date: December 18, 2013	**Expiration Date: December 18, 2016**		
Conditions of Approval	**Timing / Implementation**	**Enforcement / Monitoring**	**Verification (Date and Signature)**
PLANNING DEPARTMENT CONDITIONS			
General Conditions			
1. In compliance with Section 15094 of the CEQA Guidelines, a Notice of Determination (NOD) shall be filed with the Riverside County Clerk within five (5) days of project approval by the Planning Commission. The Notice shall include the required California Department of Fish and Game (Code Section 711.4.d.3) and Riverside County Clerk fee (**totaling $2,206.25**). Failure to pay the required fee will result in the project being deemed null and void (California Fish and Game Code Section 711.4(c). The above fee is broken down as follows: a. California Department of Fish & Game = $2,156.25 b. Riverside County Clerk Admin. Fee = $50.00	Dec. 23, 2013	Planning Department	
2. The applicant shall review and sign below verifying the "Acceptance of the Conditions of Approval" and return the signed page to the Wildomar Planning Department no later than December 24, 2013. Applicant Signature: Date:	Dec. 24, 2013	Planning Department	
3. The applicant shall indemnify, protect, defend, and hold harmless, the City, and/or any of its officials, officers, employees, agents, departments, agencies, and instrumentalities thereof, from any and all claims, demands, law suits, writs of mandamus, and other actions and proceedings (whether legal, equitable, declaratory, administrative or adjudicatory in nature), and alternative dispute resolutions procedures (including, but not limited to arbitrations, mediations, and other such procedures), (collectively "Actions"), brought against the City, and/or any of its officials, officers, employees, agents, departments, agencies,	On-Going	Planning Department	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
	and instrumentalities thereof, that challenge, attack, or seek to modify, set aside, void, or annul, the any action of, or any permit or approval issued by, the City and/or any of its officials, officers, employees, agents, departments, agencies, and instrumentalities thereof (including actions approved by the voters of the City), for or concerning the project, whether such Actions are brought under the California Environmental Quality Act, the Planning and Zoning Law, the Subdivisions Map Act, Code of Civil Procedure Section 1085 or 1094.5, or any other state, federal, or local statute, law, ordinance, rule, regulation, or any decision of a court of competent jurisdiction. City shall promptly notify the applicant of any Action brought and request that applicant defend the City. It is expressly agreed that applicant may select legal counsel providing the applicant's defense and the City shall have the right to approve separate legal counsel providing the City's defense. The applicant shall reimburse City for any attorneys' fees, costs and expenses directly and necessarily incurred by the City in the course of the defense. Applicant agrees that City will forward monthly invoices to Applicant for attorneys' fees, costs and expenses it has incurred related to its defense of any Action and applicant agrees to timely payment within thirty (30) days of receipt of the invoice. Applicant agrees to post adequate security or a cash deposit with City in an amount to cover the City's estimated attorneys' fees, costs and expenses incurred by City in the course of the defense in order to ensure timely payment of the City's invoices. The amount of the security or cash deposit shall be determined by the City. City shall cooperate with applicant in the defense of any Action.			
4.	Approval of Tentative Tract Map No. 36519 (Planning Application No. 12-0392) shall expire on December 18, 2016 if the final tract map has not been recorded. The applicant may file with the Planning Department a request for a one-year time extension as permitted in	Dec. 18, 2016	Planning Department	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
	the Wildomar Subdivision Ordinance provided a written request is made with the required EOT application and fee no later than October 18, 2016 (60 days prior to expiration).			
5.	Within 30 days of approval by the Planning Commission of Tentative Parcel Map No. 36519 (Project No. 12-0392) , the applicant shall pay all outstanding deposit account balances, as applicable. Failure to pay the outstanding balance by the due date may result in delays in the processing of the final tract map.	Jan. 16, 2014	Planning Department	
6.	The project shall be subdivided and developed in accordance with the tentative tract map approved by the Planning Commission on December 18, 2013. The applicant may request a modification/revision to the approved project as outlined in the Wildomar Subdivision Ordinance.	On-Going	Planning Department	
7.	Prior to any ground disturbing activities, a Phase 1 Environmental Site Assessment shall be prepared by a qualified geologist or engineer. The scope of the assessment shall include but not be limited to, a records search and physical investigation of the project site to determine if there are underground storage tanks present, contaminated soils or groundwater present, or any other substances present that known to be harmful to environmental or human health. Upon completion, the assessment shall be submitted to the City for review	Prior to any ground disturbing activities	Planning & Engineering Depts.	
8.	Prior to final map approval, the project applicant shall provide the city with a written agreement with the Wildomar Ranches Homeowners Association (Association) demonstrating that an agreement exists between the applicant and the Association for the use and maintenance of the detention basin on Cashew Street.	Prior to final map approval	Planning & Engineering Depts.	
9.	Lots 1-4 will need to take access from Orange Street	On-Going	Planning & Engineering Depts.	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
10.	Lots 5-10 will take access from Laguna Road. In addition, Lot 5 is prohibited from taking access from Orange Street.	On-Going	Planning & Engineering Depts.	
11.	Currently the site is being served by a septic and well system. The division of land will necessitate the project site to extend into municipal services (Water, Sewer, EDISON etc.)	On-Going	Planning & Engineering Depts.	
12.	If human remains are encountered during grading activities, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further, pursuant to Public Resource Code Section 5097.98(b) remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission shall be contacted within a reasonable timeframe. Subsequently, the Native American Heritage Commission shall identify the "most likely descendant." The most likely descendant shall then make recommendations and engage in consultation concerning the treatment of the remains as provided in Public Resources Code Section 5097.98.	On-Going	Planning & Engineering Depts.	
13.	If during ground disturbance activities unique cultural resources are discovered, that were not assessed by the archaeological report(s) and/or environmental assessment conducted prior to project approval, the following procedures shall be followed. Unique cultural resources are defined, for this condition, as being multiple artifacts in close association with each other, but may include fewer artifacts if the area of the find is determined to be of significance due to its sacred or cultural importance. (1) All ground disturbance activities within 100 feet of the discovered cultural resources shall be halted until a meeting is convened between the developer, the archaeologist, the Native	On-Going	Planning & Engineering Depts.	

		Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
		American tribal representative and the planning director to discuss the significance of the find. (2) At the meeting, the significance of the discoveries shall be discussed and after consultation with the Pechanga and Soboba Band representatives and the archaeologist, a decision shall be made, with the concurrence of the planning director, as to the appropriate mitigation (documentation, recovery, avoidance, etc.) for the cultural resources. (3) Grading of further ground disturbance shall not resume within the area of the discovery until an agreement has been reached by all parties as to the appropriate mitigation.			
MITIGATED NEGATIVE DELCARATION (MND) Mitigation Measures:					
14.	AQ-1	The project applicant shall ensure that all disturbed areas will be watered 3 times daily during construction activities	During construction activities	City of Wildomar Planning and Public Works Departments	
15.	BIO-1	The project applicant shall conduct construction and clearing activities outside of the avian nesting season (January 15–August 31), where feasible. If clearing and/or construction activities occur during the nesting season, preconstruction surveys for nesting raptors, migratory birds, and special-status resident birds (e.g., coastal California gnatcatcher) shall be conducted by a qualified biologist, up to 14 days before initiation of construction activities. The qualified biologist shall survey the construction zone and a 250-foot radius surrounding the construction zone to determine whether the activities taking place have the potential to disturb or otherwise harm nesting birds. If an active nest is located within 100 feet (250 feet for raptors) of construction activities, the project applicant shall establish an exclusion zone (no ingress of personnel or equipment at a minimum radius of 100 feet or 250 feet, as appropriate, around the nest). Alternative exclusion zones may be established	Prior to the Issuance of a Grading Permit	Planning & Engineering Depts.	

		through consultation with the CDFW and the USFWS, as necessary. The exclusion zones shall remain in force until all young have fledged. Reference to this requirement and to the Migratory Bird Treaty Act shall be included in the construction specifications. If construction activities or tree removal are proposed to occur during the non-breeding season (September 1–January 14), a survey is not required, no further studies are necessary, and no mitigation is required.			
16.	BIO-2	Per MSHCP Species-Specific Objective 6, preconstruction presence/ absence surveys for burrowing owl within the survey area, where suitable habitat is present, will be conducted for all covered activities through the life of the building permit. Surveys will be conducted 30 days prior to disturbance. Take of active nests will be avoided. Passive relocation (use of one-way doors and collapse of burrows) will occur when owls are present outside the nesting season. If construction is delayed or suspended for more than 30 days after the survey, the area shall be resurveyed. Surveys shall be completed for occupied burrowing owl burrows within all construction areas and within 150 meters (500 feet) of the project work areas (where possible and appropriate based on habitat). All occupied burrows will be mapped on an aerial photo.	Prior to the Issuance of a Grading Permit	Planning & Engineering Depts.	
17.	BIO-3	If burrowing owls are identified during the survey period, the City shall require the project applicant to take the following actions to offset impacts prior to ground disturbance: Active nests within the areas scheduled for disturbance or degradation shall be avoided from February 1 through August 31, and a minimum 75-meter (250-foot) buffer shall be provided until fledging has occurred. Following fledging, owls may be passively	Prior to the Issuance of a Grading Permit	Planning & Engineering Depts.	

	relocated by a qualified biologist. If impacts on occupied burrows in the non-nesting period are unavoidable, on-site passive relocation techniques may be used if approved by the CDFW to encourage owls to move to alternative burrows outside of the impact area. However, no occupied burrows shall be disturbed during the nesting season. A qualified biologist must verify through noninvasive methods that the burrow is no longer occupied. If relocation of the owls is approved for the site by the CDFW, the City shall require the developer to hire a qualified biologist to prepare a plan for relocating the owls to a suitable site. The relocation plan must include all of the following: • The location of the nest and owls proposed for relocation. • The location of the proposed relocation site. • The number of owls involved and the time of year when the relocation is proposed to take place. • The name and credentials of the biologist who will be retained to supervise the relocation. • The proposed method of capture and transport for the owls to the new site. • A description of site preparation at the relocation site (e.g., enhancement of existing burrows, creation of artificial burrows, one-time or long-term vegetation control). • A description of efforts and funding support proposed to monitor the relocation. If paired owls are present within 50 meters (160 feet) of a temporary project disturbance (e.g., parking areas), active burrows shall be protected with fencing/cones/flagging and			

		Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
		monitored by a qualified biologist throughout construction to identify losses from nest abandonment and/or loss of reproductive effort. Any identified loss shall be reported to the CDFW.			
18.	CUL-1	Prior to future development approval on the project site and issuance of any grading, building, or other permit authorizing ground-disturbing activity, the following wording shall be included in all construction contract documentation: If during grading or construction activities cultural resources are discovered on the project site, work shall be halted immediately within 50 feet of the discovery and the resources shall be evaluated by a qualified archeologist and the Pechanga Tribe. Any unanticipated cultural resources that are discovered shall be evaluated and a final report prepared, by the qualified archeologist. The report shall include a list of the resources discovered, documentation of each site/locality, and interpretation of resources identified, and the method of preservation and/or recovery for identified resources. In the event the significant resources are recovered and if the qualified archaeologist and the Tribe determines the resources to be historic or unique, avoidance and/or mitigation would be required pursuant to and consistent with CEQA Guidelines Sections 15064.5 and 15126.4 and Public Resources Code Section 21083.2 and the Cultural Resources Treatment and Monitoring Agreement required by mitigation measure CUL-2.		Planning & Engineering Depts.	
19.	CUL-2	At least 30 days prior to seeking a grading permit, the project applicant(s) for future development shall contact the appropriate Tribe to notify the Tribe of grading, excavation, and the monitoring program, and to coordinate with the City of Wildomar and the Tribe to develop a Cultural Resources Treatment and	Prior to the issuance of a grading permit	Planning & Engineering Depts.	

		Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
		Monitoring Agreement.[2] The agreement shall address the treatment of known cultural resources; the designation, responsibilities, and participation of Native American Tribal monitors during grading, excavation, and ground-disturbing activities; project grading and development scheduling; terms of compensation; and treatment and final disposition of any cultural resources, sacred sites, and human remains discovered on the site.			
20.	CUL-3	Prior to future development approval on the project site and issuance of any grading, building, or other permit authorizing ground-disturbing activity, the project applicant(s) shall include the following wording on all construction contract documentation: If human remains are encountered, California Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b), remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission shall be contacted within a reasonable time frame. Subsequently, the Native American Heritage Commission shall identify the "most likely descendant." The most likely descendant shall then make recommendations and engage in consultations concerning the treatment of the remains as provided in Public Resources Code Section 5097.98.	As a condition of future development approval, and implemented during ground-disturbing construction activities	Planning & Engineering Depts.	

[2] It is anticipated that the Pechanga Band of Luiseño Indians will be the "appropriate" Tribe due to their prior and extensive coordination with the surrounding cities in determining potentially significant impacts and appropriate mitigation measures.

21.	CUL-4	All cultural materials, with the exception of sacred items, burial goods, and human remains (which will be addressed in the Cultural Resources Treatment and Monitoring Agreement required by mitigation measure CUL-2), that are collected during the grading monitoring program and from any previous archeological studies or excavations on the project site shall be curated according to the current professional repository standards. The collections and associated records shall be transferred, including title, to the Pechanga Tribe's curation facility, which meets the standards set forth in 36 CRF Part 79 for federal repositories.	As a condition of future development approval, and implemented during ground-disturbing construction activities	Planning & Engineering Depts.	
22.	CUL-5	All sacred sites, should they be encountered within the project area, shall be avoided and preserved as the preferred mitigation, if feasible as determined by a qualified professional in consultation with the Pechanga Tribe. To the extent that a sacred site cannot be feasibly preserved in place or left in an undisturbed state, mitigation measures shall be required pursuant to and consistent with Public Resources Code Section 21083.2.	As a condition of future development approval, and implemented during ground-disturbing construction activities	Planning & Engineering Depts.	
23.	CUL-6	Prior to future development approval on the project site and issuance of any grading, building, or other permit authorizing ground-disturbing activity, the project applicant(s) shall include the following wording on all construction contract documentation: If inadvertent discoveries of subsurface archaeological resources are discovered during grading, work shall be halted immediately within 50 feet of the discovery and the developer and Tribe shall meet and confer regarding the significance of and mitigation for such resources. If the developer and the Tribe cannot agree on the significance of or the mitigation for such resources, these	As a condition of future development approval, and implemented during ground-disturbing construction activities	Planning & Engineering Depts.	

		Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
		issues will be presented to the City of Wildomar Planning Director for decision. The Planning Director shall make the determination based on the provisions of CEQA with respect to archaeological resources and shall take into account the religious beliefs, customs, and practices of the Pechanga Tribe. Notwithstanding any other rights available under the law, the decision of the Planning Director shall be appealable to the City of Wildomar. In the event the significant resources are recovered and if the qualified archaeologist determines the resources to be historic or unique as defined by relevant state and local law, avoidance and mitigation would be required pursuant to and consistent with CEQA Guidelines Sections 15064.5 and 15126.4 and Public Resources Code Section 21083.2.			
24.	CUL-7	Prior to the issuance of a grading permit, the project applicant(s) for future development shall identify to the City of Wildomar the qualified paleontologist who has been retained to evaluate the significance of any inadvertently discovery paleontological resources. If paleontological resources are encountered during grading or project construction, all work in the area of the find shall cease. The project applicant shall notify the City of Wildomar and retain a qualified paleontologist to investigate the find. The qualified paleontologist shall make recommendations as to the disposition of the paleontological resources to the City of Wildomar Planning Director. The developer shall comply with the recommendations of the qualified paleontologist that are approved by the City of Wildomar Planning Director for the recovery, treatment and storage of any discovered resources. The developer shall pay for all required treatment and storage of discovered resources.	Prior to the issuance of a grading permit	Planning & Engineering Depts	
25.	CUL-8	To address the possibility that cultural resources may be	As a condition	Planning &	

		Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
		encountered during future grading or construction, a qualified professional archeologist shall monitor all construction activities that could potentially impact archaeological deposits (e.g., grading, excavation, and/or trenching). However, monitoring should be discontinued as soon the qualified professional is satisfied that construction will not disturb cultural resources.	of future development approval, and implemented during ground-disturbing construction activities	Engineering Depts	
26.	CUL-9	A qualified paleontologist or paleontological monitor shall monitor all mass grading and excavation activities. Monitoring will be conducted in areas of grading or excavation in undisturbed formational sediments of the sandstone member of the Pauba Formation (Qpfs) and the sandstone member of the Sandstone and Conglomerate of Wildomar (QTsw), of late Pliocene to middle Pleistocene age, as well as where over-excavation of surficial alluvial sediments will encounter these formations in the subsurface. Paleontological monitors shall be equipped to salvage fossils as they are unearthed to avoid construction delays and to remove samples of sediment that are likely to contain the remains of small fossil invertebrates and vertebrates. The monitor must be empowered to temporarily halt or divert equipment to allow removal of abundant or large specimens in a timely manner. Monitoring may be reduced if the potentially fossiliferous units are not present in the subsurface, or if present, are determined on exposure and examination by qualified paleontological personnel to have low potential to contain fossil resources.	As a condition of project approval, and implemented during ground-disturbing activities.	City of Wildomar Engineering and Planning Departments	
27.	CUL-10	Any recovered paleontological specimens shall be identified to the lowest taxonomic level possible and prepared for permanent preservation, including screen-washing of sediments to recover	As a condition of project approval, and implemented	Planning & Engineering Depts	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
	small invertebrates and vertebrates shall occur if necessary.	during ground-disturbing activities		
28.	CUL-11 Identification and curation of specimens into a professional, accredited public museum repository with a commitment to archival conservation and permanent retrievable storage approved by the City of Wildomar shall occur. The paleontological program shall include a written repository agreement prior to the initiation of mitigation activities.	As a condition of project approval, and implemented during ground-disturbing construction activities	Planning & Engineering Depts	
29.	CUL-12 A final monitoring and mitigation report of findings and significance shall be prepared, including lists of all fossils recovered and necessary maps and graphics to accurately record their original location. The report, when submitted to and accepted by the City of Wildomar, shall signify satisfactory completion of the project program to mitigate impacts to any potential nonrenewable paleontological resources (i.e., fossils) that might have been lost or otherwise adversely affected without such a program in place.	Following ground-disturbing activities, and implemented prior to the issuance of a building permit	Planning & Engineering Depts	
30.	GEO-1 All grading shall conform to the California Building Code, Chapter 16.12 of the Wildomar Municipal Code, and all other relevant laws, rules, and regulations governing grading in Wildomar. Prior to commencing any grading which includes 50 or more cubic yards, the developer shall obtain a grading permit from the Building Department.	Prior to the issuance of a grading permit	Planning & Engineering Depts	
31.	GEO-2 Prior to issuance of a grading permit, the developer shall provide the Engineering Department evidence of compliance with the National Pollutant Discharge Elimination System (NPDES) and	Prior to the issuance of a grading permit	Planning & Engineering Depts	

		Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
		obtain a construction permit from the State Water Resources Control Board (SWRCB).			
32.	GEO-3	Erosion control-landscape plans, required for manufactured slopes greater than 3 feet in vertical height, are to be signed by a registered landscape architect and bonded per the requirements of California Building Code as adopted by the City of Wildomar in section 15.12.010 of the city municipal code. Planting shall occur within 30 days of meeting final grades to minimize erosion and to ensure slope coverage prior to the rainy season. The developer shall plant and irrigate all manufactured slopes steeper than a 4:1 (horizontal to vertical) ratio and 3 feet or greater in vertical height with grass or ground cover; slopes 15 feet or greater in vertical height shall be planted with additional shrubs or trees or as approved by the City Engineer.	Prior to the issuance of a grading permit	Planning & Engineering Depts	
33.	HAZ-1	Homeowners of the proposed project shall comply with California Government Code Section 51182 which, among other provisions, includes the following requirements for residences within a Very High Fire Hazard Severity Zone: (1) Maintain defensible space of 100 feet from each side and from the front and rear of the structure, but not beyond the property line except as provided in paragraph (2). The amount of fuel modification necessary shall take into account the flammability of the structure as affected by building material, building standards, location, and type of vegetation. Fuels shall be maintained in a condition so that a wildfire burning under average weather conditions would be unlikely to ignite the structure. This paragraph does not apply to single specimens of trees or other vegetation that are well-pruned and maintained so as to effectively manage fuels and not form a means of rapidly transmitting fire from other nearby vegetation to a structure or	Prior to the issuance of a certificate of occupancy	Planning & Engineering Depts	

	from a structure to other nearby vegetation. The intensity of fuels management may vary within the 100-foot perimeter of the structure, the most intense being within the first 30 feet around the structure. Consistent with fuels management objectives, steps should be taken to minimize erosion. (2) A greater distance than that required under paragraph (1) may be required by state law, local ordinance, rule, or regulation. Clearance beyond the property line may only be required if the state law, local ordinance, rule, or regulation includes findings that the clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure, and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. Clearance on adjacent property shall only be conducted following written consent by the adjacent landowner. (3) An insurance company that insures an occupied dwelling or occupied structure may require a greater distance than that required under paragraph (1) if a fire expert, designated by the fire chief or fire official from the authority having jurisdiction, provides findings that the clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure, and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. The greater distance may not be beyond the property line unless allowed by state law, local ordinance, rule, or regulation. (4) Remove that portion of a tree that extends within 10 feet of the outlet of a chimney or stovepipe. (5) Maintain a tree, shrub, or other plant adjacent to or overhanging a building free of dead or dying wood.			

		Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
		(6) Maintain the roof of a structure free of leaves, needles, or other vegetative materials.			
34.	NOI-1	Future development on the project site shall implement the following construction noise mitigation measures to reduce potential construction noise impacts to a less than significant level: • All construction and general maintenance activities (except in an emergency) shall be limited to the hours of 6:00 a.m. to 6:00 p.m. from June through September and 7:00 a.m. to 6:00 p.m. from October through May. • Construction equipment staging and storage areas shall be located as far from the existing residential land uses as possible. • All construction equipment shall be properly maintained with operating mufflers and air intake silencers as effective as those installed by the original manufacturer. • Residents living up to 1,000 feet from the property line shall be provided with a construction schedule and contact information to file a complaint. Timely notification shall accompany any major changes to this schedule. A temporary noise barrier shall be erected along the project boundaries during all construction activities.	During construction	City of Wildomar Building and Planning Departments	
35.	NOI-2	Prior to the issuance of a grading permit, a construction noise mitigation plan shall be drafted by the developer and submitted to the City for review and approval. The plan shall depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of the proposed project. Methods for mitigating for any noise impact may include:	Prior to grading	City of Wildomar Building and Planning Departments	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
	• the construction of a noise attenuation fence; • preferential location of equipment; and • the use of current noise suppression technology and equipment.			
36.	TRA-1 Lots 1, 2, 3, and 4 shall include a driveway design which allows for on-site vehicle turn-around for front ingress from Orange Street to the proposed lot and front egress from the proposed lot to Orange Street.	Prior to the issuance of a building permit	City of Wildomar Engineering and Planning	
Prior to Issuance of a Grading Permit				
37.	Prior to the issuance of the 1st first grading permit for Tentative tract Map No. 36519, the applicant shall enter into a Cultural Resources Treatment and Monitoring Agreement" with the Pechanga Band of Luiseno Indians. The agreement shall, include, but not be limited to, outlining provisions and requirements for addressing the treatment of cultural resources and establishing on-site monitoring provisions/requirements during all on-site ground disturbing activities. A copy of this signed agreement shall be provided to the Planning Director and Building Official prior to the issuance of the 1st grading permit.	Prior to Issuance of a Grading Permit	Planning Department	
38.	Thirty (30) days prior to grading any of the 10 lots within Tentative Tract Map No. 36519, the applicant shall prepare and submit a Burrowing Owl Survey to the Planning Department demonstrating that there are no burrowing owls on the lots. The survey shall be prepared by a registered biologist.	Prior to Issuance of a Grading Permit	Planning Department	
39.	The grading plan shall include the following information in the Notes Section of the Grading Plan: "No grubbing/clearing of the site shall occur prior to scheduling the pre-grading meeting with Engineering. All project sites containing suitable habitat for burrowing owls, whether	Prior to Issuance of a Grading Permit	Planning Department	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
	owls were found or not, require a 30-day preconstruction survey that shall be conducted within 30 days prior to ground disturbance to avoid direct take of burrowing owls. If the results of the survey indicate that no burrowing owls are present on-site, then the project may move forward with grading, upon Planning Department approval. If burrowing owls are found to be present or nesting on-site during the preconstruction survey, then the following recommendations must be adhered to: Exclusion and relocation activities may not occur during the breeding season, which is defined as March 1 through August 31, with the following exception: From March 1 through March 15 and from August 1 through August 31 exclusion and relocation activities may take place if it is proven to the City and appropriate regulatory agencies (if any) that egg laying or chick rearing is not taking place. This determination must be made by a qualified biologist."			
40.	The grading plan shall include the following information in the Notes Section of the Grading Plan: "If at any time during excavation/construction of the site, archaeological/cultural resources, or any artifacts or other objects which reasonably appears to be evidence of cultural or archaeological resource are discovered, the property owner shall immediately advise the City of such and the City shall cause all further excavation or other disturbance of the affected area to immediately cease. The Planning Director at his/her sole discretion may require the property owner to deposit a sum of money it deems reasonably necessary to allow the City to consult and/or authorize an independent, fully qualified specialist to inspect the site at no cost to the City, in order to assess the significance of the find. Upon determining that the discovery is not an archaeological/cultural resource, the Planning Director shall notify the property owner of such determination and shall authorize the resumption of work. Upon determining that the discovery is an archaeological/cultural resource, the Planning Director shall notify the property owner that no further	Prior to Issuance of a Grading Permit	Planning Department	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
	excavation or development may take place until a mitigation plan or other corrective measures have been approved by the Planning Director."			
41.	Prior to the issuance of the 1st grading permit the applicant shall receive approval of a haul permit for any import of material to the site or export of material off-site. The request for a haul permit shall include a haul route plan addressing the limitations of haul hours, number of loads per day and the posting of traffic control personnel at all approved entrances/exits onto public roads. This haul permit shall be in place prior to the issuance of the grading permit and the mobilization of equipment on the project site. If the proposed material source or disposal site was not previously evaluated by the mitigated negative declaration, a grading environmental assessment shall be approved by the planning director prior to the issuance of the haul permit.	Prior to Issuance of a Grading Permit	Planning & Engineering Depts.	
42.	Prior to the issuance of the 1st grading permit, the applicant shall submit for review and approval by the Planning Department two sets of detailed landscape and irrigation plans for the right-of-way landscaping.	Prior to Issuance of a Grading Permit	Planning Department	
Prior to Final Map Approval / Recordation				
43.	Prior to the recordation of the final tract map for TTM 36519 the Applicant shall pay all fees in accordance with Zone A of the Southwest Road and Bridge Benefit District.	Prior to Final Map Approval	Planning & Building Depts.	
44.	Prior to the recordation of the final tract map for TTM 36519 the applicant shall pay the appropriate impact mitigation fee to the Riverside County Flood Control and Water Conservation District.	Prior to Final Map Approval	Planning & Building Depts.	
Prior to Issuance of a Building Permit				

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
45.	Prior to the issuance of a building permit for development of any of the 10 parcels within the boundaries of Tract Map No. 36519, the applicant shall submit construction plans to the Building Department for review and approval as part of the building permit plan check process. All proposed dwelling units shall be designed to be consistent with the City's residential design guidelines.	Prior to Issuance of a Building Permit	Building Department	
46.	Prior to the issuance of building permits for development of each lot, the applicant shall pay all applicable Development Impact Fees and any other required Mitigation Fees as determined by the Building and Engineering departments.	Prior to Issuance of Building Permits	Building and Engineering Departments	
Prior to Issuance of a Certificate of Occupancy				
47.	Prior to the issuance of a certificate of occupancy for any dwelling unit within each phase/planning area, all conditions of approval for that phase/planning area shall be satisfied.	Prior to Issuance of a Certificate of Occupancy	Planning and Building Department	
PUBLIC WORKS/ENGINEERING/BUILDING DEPARTMENT CONDITIONS				
General Requirements/Conditions				
1.	The developer shall obtain City approval for any modifications or revisions to the approval of this project. Deviations not identified on the plans may not be approved by the City, potentially resulting in the need for the project to be redesigned. Amended entitlement approvals may be necessary as a result.	On-Going	Engineering Dept.	
2.	No grading shall be performed without the prior issuance of a grading permit by the City.	On-Going	Engineering Dept.	
3.	Written permission shall be obtained from the affected property owners allowing the proposed grading and/or facilities to be installed outside of the project boundaries.	On-Going	Engineering Dept.	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
4.	The developer's contractor is required to submit for a haul route permit for the hauling of material to and from the project site. Said permit will include limitations of haul hours, number of loads per day and the posting of traffic control personnel at all approved entrances/exits onto public roads. This permit shall be in place prior to the issuance of the grading permit and the mobilization of equipment on the project site.	On-Going	Engineering Dept.	
5.	The Developer shall dedicate, design and construct all improvements in accordance the City of Wildomar Road Improvement Standards & Specification, Improvement Plan Check Policies and Guidelines, as further conditioned herein and to the satisfaction of the City Engineer.	On-Going	Engineering Dept.	
6.	The Developer shall be responsible for all costs associated with off-site right-of-way acquisition, including any costs associated with the eminent domain process, if necessary.	On-Going	Engineering Dept.	
7.	All grading shall conform to the California Building Code, including Appendix J, and all other relevant laws, rules, and regulations governing grading in the City of Wildomar. Prior to commencing any grading which includes 50 or more cubic yards, the developer shall obtain a grading permit from the Building Department.	On-Going	Engineering Dept.	
8.	All necessary measures to control dust shall be implemented by the developer during grading to the satisfaction of the City Engineer. A PM10 plan may be required at the time a grading permit is issued.	On-Going	Engineering Dept.	
9.	Graded slopes shall be limited to a maximum steepness ratio of 2:1 (horizontal to vertical) unless otherwise approved by the City Engineer.	On-Going	Engineering Dept.	
10.	Grading in excess of 199 cubic yards will require performance security to be posted with the City.	On-Going	Engineering Dept.	
11.	All retaining walls shall require a separate permit from the Building Department.	On-Going	Building Dept.	
12.	Erosion control – landscape plans, required for manufactured slopes	On-Going	Engineering Dept.	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
	greater than 3 feet in vertical height, are to be signed by a registered landscape architect and bonded per the requirements of Ordinance 457 (refer to dept. form 284-47). Planting shall occur within 30 days of meeting final grades to minimize erosion and to ensure slope coverage prior to the rainy season. The Developer shall plant & irrigate all manufactured slopes steeper than a 4:1 (horizontal to vertical) ratio and 3 feet or greater in vertical height with grass or ground cover; slopes 15 feet or greater in vertical height shall be planted with additional shrubs or trees or as approved by the City Engineer.			
13.	Should this project lie within any assessment/benefit district, the project proponent shall, prior to acceptance of improvements, make application for and pay for their reapportionment of the assessments or pay the unit fees in the benefit district unless said fees are otherwise deferred.	On-Going	Engineering Dept.	
14.	The developer shall design and construct all driveways in accordance with the City of Wildomar Improvement Standards.	On-Going	Engineering Dept.	
15.	The improvement plans for the required public improvements must be prepared and shall be based upon a design profile extending a minimum of 300 feet beyond the project boundaries at a grade and alignment as approved by the City Engineer.	On-Going	Engineering Dept.	
16.	All above-ground utilities, including but not limited to communication and power that are 33KV in size or less, shall be undergrounded by the developer in accordance with City requirements. The undergrounding of utilities shall be reflected on the project improvement plans.	On-Going	Engineering Dept.	
17.	All flood control plans to be reviewed shall be submitted through the City of Wildomar, unless otherwise directed by the City Engineer.	On-Going	Engineering Dept.	
18.	Proposed outlets from “V” ditches (section D-D on TTM) to street right	On-Going	Engineering Dept.	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
	of way shall discharge through either a curb outlet (Std. 308) or by pipe to an existing catch basin. Minimum storm drain pipe diameter shall be 18 inches within the public right of way.			
19.	Cross lot drainage easements shall be recorded by separate instrument. The instrument shall clarify maintenance, cleaning and repair of the drainage facility is the responsibility of the property owner.	On-Going	Engineering Dept.	
20.	Landscape and irrigation improvements on down slopes and within the right of way shall be maintained by the property owner. A maintenance agreement shall be recorded by separate instrument.	On-Going	Engineering Dept.	
Prior to the Issuance of Grading Permits				
21.	Prior to the issuance of a grading permit, the developer shall submit a geotechnical soils reports to the City Engineer for review and approval prior to issuance of grading permit. The findings and recommendations shall reflect current conditions and the report shall be no older than one (1) year. All grading shall be in conformance with the recommendations of the geotechnical/soils reports as approved by City of Wildomar.	Prior to Issuance of a Grading Permit	Engineering Dept.	
22.	Prior to the issuance of a grading permit, it shall be the sole responsibility of the developer to obtain any and all easements and/or permissions necessary to perform the grading required for the project. A notarized letter of permission from all affected property owners or easement holders, or encroachment permit, is required for all off-site grading.	Prior to Issuance of a Grading Permit	Engineering Dept.	
23.	Prior to the issuance of grading permits, the project specific SWPPP shall be approved by the City Engineer.	Prior to Issuance of a Grading Permit	Engineering Dept.	
24.	Prior to issuance of grading permits the Developer shall provide the Engineering Department evidence of compliance with the National Pollutant Discharge Elimination System (NPDES) and obtain a construction permit from the State Water Resource Control Board	Prior to Issuance of a Grading Permit	Engineering Dept.	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
	(SWRRCB).			
25.	Prior to the issuance of a grading permit, the developer shall have obtained approval for the import/export location from the City of Wildomar. Additionally, if either location was not previously approved by an Environmental Assessment, prior to issuing a grading permit, a Grading Environmental Assessment shall be submitted to the Planning Director for review and comment and to the City Engineer for approval.	Prior to Issuance of a Grading Permit	Engineering Dept.	
26.	Prior to the issuance of a grading permit, the developer shall submit a Final Water Quality Management Plan (WQMP), in conformance with the requirements of the San Diego and/or Santa Ana Regional Water Quality Control Board. Applicant shall confirm the watershed requirements relative to their project location. All stormwater quality treatment devices shall be located outside of the ultimate public right of way. The developer shall design the stormwater quality treatment devices to accommodate all project runoff, ensuring post-construction flows and volumes do not exceed pre-construction levels, in accordance with City of Wildomar's Hydrology Manual, Stormwater Quality Best Management Practice Design Handbook, Improvement Standards, and to the satisfaction of the City Engineer. These BMPs shall be consistent with the Final WQMP and installed to the satisfaction of the City Engineer.	Prior to Issuance of a Grading Permit	Engineering Dept.	
27.	If the project location is within the Santa Ana River Watershed: Prior to the issuance of a grading permit, the developer is to provide the appropriate documentation that will allow this project a waiver for mitigation volume related to the Lake Elsinore sub watershed of the Santa Ana Watershed. Please note the City is not a permittee in the MS4 permit for the Santa Ana River Watershed (Lake Elsinore) and is governed only by the MS4 permit for the Santa Margarita Watershed, therefore the Applicant needs to provide evidence that this waiver has	Prior to Issuance of a Grading Permit	Public Works Dept.	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
	been approved by the Santa Ana Regional Water Quality Control Board. Otherwise volume has to be addressed.			
28.	Prior to the issuance of grading permit, the developer shall prepare and submit a comprehensive drainage study and plan that includes, but is not limited to: definition with mapping of the existing watersheds; a detailed pre- and post-project hydrologic and hydraulic analysis of the project and project impacts; definition of the local controlling 100-year frequency water levels existing and with project; the proposed method of flow conveyance to mitigate the potential project impacts with adequate supporting calculations; any proposed improvements to mitigate the impacts of increased runoff from the project and any change in runoff; including quality, quantity, volume, and duration in accordance with City of Wildomar's Hydrology Manual, Improvement Standards, and to the satisfaction of the City Engineer. Specifically, the study will: a. Analyze the detention basin drainage area for a project using the Rational Method 100-year storm event for the pre-project and post-project. b. Analyze 4 hydrographs for the detention basin drainage area for a project using the Unit Hydrograph 100-year storm event for the 1-hour, 3-hour, 6-hour, and 24-hour storm durations for post-project condition. c. Using the Unit Hydrographs determine which duration provides the highest flow rate. Adjust parameters such as lag time, flow line roughness coefficient or other parameters to calibrate Unit Hydrograph model to provide results similar to the Rational Method. d. Using the calibrated Unit Hydrograph for the detention basin drainage area perform basin routing analysis to demonstrate that	Prior to Issuance of a Grading Permit	Engineering Dept.	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
	the outflow is less than the pre-project Rational Method flow rate.			
29.	Prior to the 1st Improvement Plan submittal, the developer shall show all easements per the Title Report to the satisfaction of Public Works. Any conflicts with existing easements shall result in the site being redesigned and potentially going back to Planning Commission.	Prior to Issuance of a Grading Permit	Engineering Dept.	
Prior to Recordation of the Final Map				
30.	Prior to final map approval, improvement plans shall be prepared, processed, approved and complete the improvements; or execute an Improvement Agreement and Improvement Security. This condition shall be in conformance with local regulations and the Subdivision Map Act.	Prior to Final Map Approval	Public Works Dept.	
31.	Prior to Final Map or first building permit, whichever comes first, the developer shall dedicate, design and construct the westerly half - section of Orange Street, measured, 50' from the approved centerline. Right of way will be based on a 100' secondary, Standard No. 94, in accordance with the City of Wildomar Improvement Standards & Specifications and to the satisfaction of the City Engineer.	Prior to Recordation of Final Map	Engineering Dept.	
32.	Prior to Final Map or first building permit, whichever comes first, the developer shall dedicate, design and construct Laguna Road based on a 60' local street, Standard No. 105 C, in accordance with the City of Wildomar Road Improvement Standards & Specification to the satisfaction of the City Engineer. Improvements shall consist of the north-easterly half of Laguna Road, measured 30' from approved centerline, including all appropriate slopes and off-site transitions.	Prior to Recordation of Final Map	Engineering Dept.	
33.	Prior to Final Map or first building permit, whichever comes first, the developer shall dedicate, design and construct all appropriate offsite transition on Laguna Road in accordance with the City of Wildomar Improvement Standards & Specifications and to the satisfaction of the	Prior to Recordation of Final Map	Engineering Dept.	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
	City Engineer.			
34.	Prior to Final Map or first building permit, whichever comes first, the developer shall dedicate, design and construct streetlights in accordance with the City of Wildomar Road Improvement Standards & Specification, Improvement Plan Check Policies and Guidelines, City Ordinances and to the satisfaction of the City Engineer.	Prior to Recordation of Final Map	Engineering Dept.	
35.	Prior to Final Map or first building permit, whichever comes first, the developer shall dedicate a public utility easement adjacent to all public and private streets for overhead and/or underground facilities and appurtenances to the satisfaction of the City Engineer.	Prior to Recordation of Final Map	Engineering Dept.	
36.	Prior to Final Map or first building permit, whichever comes first, the developer shall submit landscaping and irrigation plans within the public right-of-way to the Planning Department. These plans shall include water usage calculations, estimate of irrigation and the location of all existing trees that will remain. All plans and calculations shall be designed and calculated per the City of Wildomar Road Improvement Standards & Specification, Improvement Plan Check Policies and Guidelines, City Codes and to the satisfaction of the City Engineer.	Prior to Recordation of Final Map	Engineering Dept.	
37.	Prior to Final Map or first building permit, whichever comes first, the developer shall submit to the City Engineer traffic control plans along Laguna Road and Orange Street to ensure the continued flow of traffic during construction.	Prior to Recordation of Final Map	Engineering Dept.	
38.	Prior to Final Map or first building permit, whichever comes first, the developer shall execute a maintenance agreement for the stormwater quality control treatment device to the satisfaction of the City Engineer.	Prior to Recordation of Final Map	Engineering Dept.	
39.	Prior to Final Map or first building permit, whichever comes first, the developer shall record by separate instrument: cross lot drainage easement(s); landscape and irrigation maintenance; and, private sewer easement(s).	Prior to Recordation of Final Map	Engineering Dept.	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
40.	Prior to Final Map or first building permit, whichever comes first, the developer shall record by separate instrument: vacation of Laguna Road across Lots 5 through 10, inclusive; and, the utility easement.	Prior to Recordation of Final Map	Engineering Dept.	
	Prior to Issuance of a Building Permit			
41.	Prior to the issuance of any building permit, the property owner shall obtain a grading permit and/or approval to construct from the City Engineer.	Prior to Issuance of a Building Permit	Building Dept.	
42.	Prior to the issuance of a building permit Improvement plans shall be approved by the City Engineer and all improvements to be constructed shall be secured by the Developer.	Prior to Issuance of a Building Permit	Building Dept.	
43.	Prior to issuance of a building permit the developer shall provide will serve letters from the appropriate water and sewer agencies.	Prior to Issuance of a Building Permit	Building Dept.	
44.	Prior to issuance of a building permit the developer shall install streetlights in accordance with the City of Wildomar Road Improvement Standards & Specification, Improvement Plan Check Policies and Guidelines, City Ordinances and to the satisfaction of the City Engineer	Prior to Issuance of a Building Permit	Building Dept.	
45.	Prior to issuance of a building permit the developer shall install all street name signs at intersections adjacent to the project, public or private and/or replace street name signs in accordance with the City of Wildomar Standard Details and to the satisfaction of the City Engineer.	Prior to Issuance of a Building Permit	Building Dept.	
46.	Prior to issuance of a building permit the developer shall annex into all applicable Maintenance Districts, Community Service Areas and Landscaping Maintenance District for landscaping, lighting, drainage and maintenance to the satisfaction of the City Engineer or otherwise form a District where one is not currently in place.	Prior to Issuance of a Building Permit	Building Dept.	

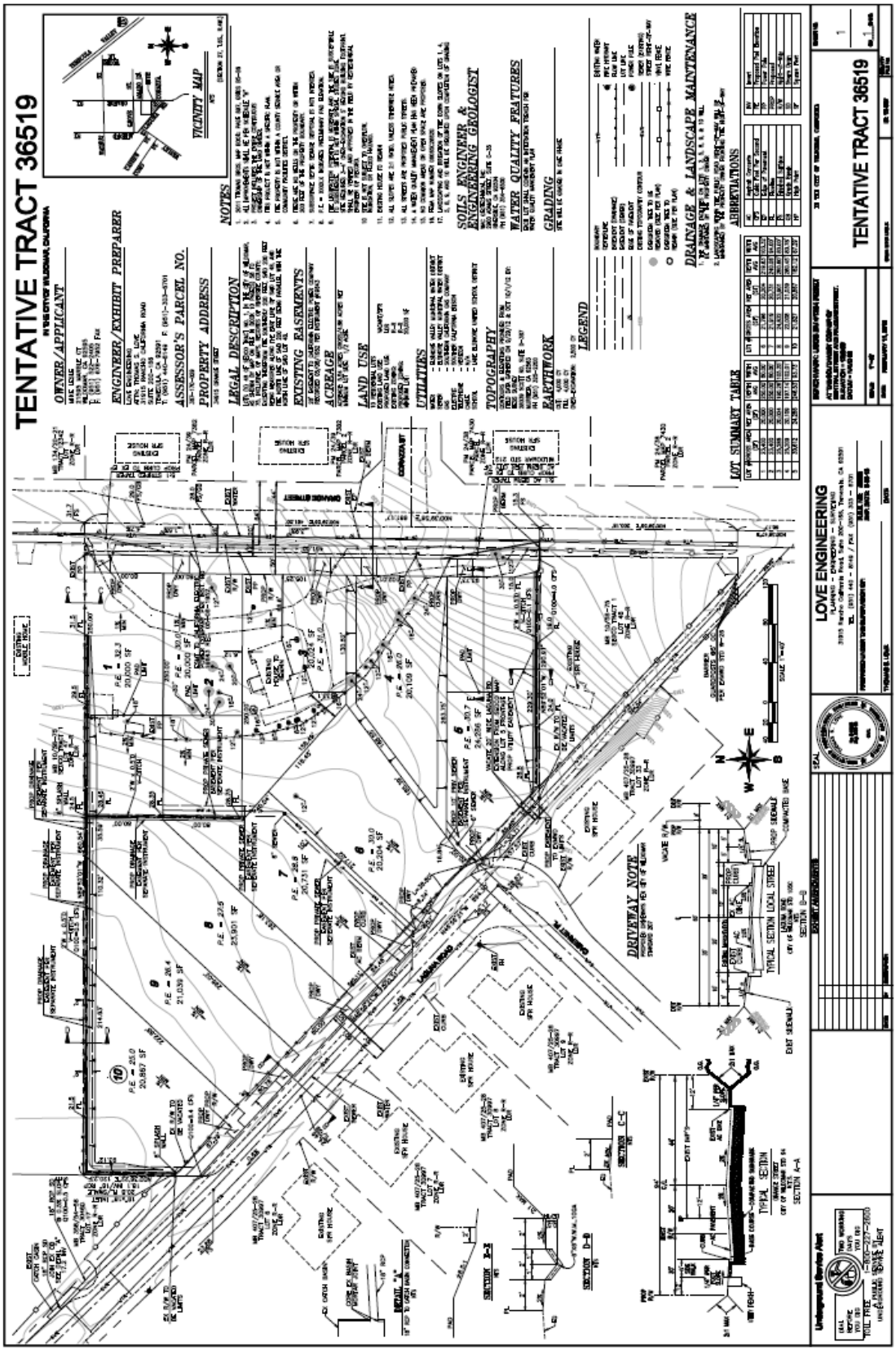
	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
47.	Prior to issuance of a building permit the developer shall pay all fees in accordance with Zone A of the Southwest Road and Bridge Benefit District.	Prior to Issuance of a Building Permit	Building Dept.	
48.	Prior to issuance of a building permit the developer shall pay the appropriate impact mitigation fee to the Riverside County Flood Control and Water Conservation District.	Prior to Issuance of a Building Permit	Building Dept.	
49.	Prior to issuance of a building permit the developer shall pay all necessary impact and mitigation fees required. These fees include, but are not limited to, fees associated with Transportation Uniform Mitigation Fee (TUMF), Quimby (parkland in-lieu) Fee, and City Development Impact Fees.	Prior to Issuance of a Building Permit	Building Dept.	
50.	Prior to issuance of a building permit the developer shall construct the stormwater quality treatment devices to accommodate all project runoff from in accordance with City of Wildomar's Hydrology Manual, Stormwater Quality Best Management Practice Design Handbook, Improvement Standards, and to the satisfaction of the City Engineer. All stormwater quality treatment devices shall be constructed outside of the ultimate public right of way.	Prior to Issuance of a Building Permit	Engineering /Building Dept.	
RIVERSIDE COUNTY FIRE DEPARTMENT				
General Conditions				
1.	10.FIRE.999 MAP #50-BLUE DOT REFLECTORS Blue retro-reflective pavement markers shall be mounted on private streets, public streets and driveways to indicate location of fire hydrants. Prior to installation, placement of markers must be approved by the Riverside County Fire Dept.	On-Going	Fire Department	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
2.	10. FIRE.999 MAP-#16-HYDRANT/SPACING: Schedule B fire protection approved standard fire hydrants, (6"x 4"x 2 ½") locate one at each street intersection and space no more than 500 feet apart in any direction, with no portion of any lot frontage more than 250 feet from hydrant. Minimum fire flow shall be 1000 GPM for 2 hours duration at 20 PSI. Shall include perimeter streets at each intersection and spaced 660 feet apart.	On-Going	Fire Department	
Prior to Recordation of Final Map				
3.	50.FIRE.999 MAP-#64-ECS-DRIVEWAY ACCESS: ECS map must be stamped by the Riverside County Surveyor with the following Note: Driveways exceeding 150' in length, but less than 800' in length, shall provide a turnout near the midpoint of the driveway. Where the driveway exceeds 800', turnouts shall be provided no more than 400'apart. Turnouts shall be a minimum of 10'wide and 30'on length, with a minimum 25' taper on each end. An approved turnaround shall be provided at all building sites on driveways over 150 feet in length and shall be within 50' of the building.	Prior to Recordation of Final Map	Fire Department	
4.	50.FIRE.999 MAP-#73-ECS-DRIVEWAY REQUIREMENTS: ECS map must be stamped by the Riverside County Surveyor with the following note: Access will not have an up, or downgrade of more than15%. Access will not be less than 20 feet in width per the 2010 CFC and will have a vertical clearance of 15'. Access will be designed to withstand the weight of 75 thousand pounds over 2 axles. Access will have a turning radius of 38 feet capable of accommodating fire apparatus.	Prior to Recordation of Final Map	Fire Department	
5.	50.FIRE.999 MAP-#46-WATER PLANS: The applicant or developer shall furnish one copy of the water system plans to the Fire Department for review. Plans shall be signed by a registered civil engineer, containing a Fire Department approval	Prior to Recordation of Final Map	Fire Department	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (Date and Signature)
	signature block, and shall conform to hydrant type, location, spacing and minimum fire flow. Once plans are signed by local water company, the originals shall be presented to the Fire Department for signature.			
6.	50.FIRE.999 MAP-#53-ECS-WTR PRIOR/COMBUSTION: ECS map must be stamped by Riverside County Surveyor with the following Note: "The required water system, including fire hydrants, shall be installed and accepted by the appropriate water agency prior to any combustible building material placed on an individual lot."	Prior to Recordation of Final Map	Fire Department	
Prior to Issuance of a Building Permit				
7.	80. FIRE.999 MAP-#50-TRACT WATER VERIFICATION: The required water system, including all fire hydrant(s), shall be installed and accepted by the appropriate water agency and the Riverside County Fire Department prior to any combustible building material placed on an individual lot. Contact the Riverside County Fire Department to inspect the required fire flow, street signs, all weather surface, and all access and/or secondary. Approved water plans must be at the job site.	Prior to Issuance of Building Permits	Fire Department	
Prior to Final Inspection				
8.	90. FIRE.999 MAP – RESIDENTIAL FIRE SPRINKLER: Residential fire sprinklers are required in all one and two family dwellings per the California Residential code, California Building Code and the California Fire Code. Install Fire Sprinkler Systems per NFPA 13D, 2010 Edition. Plans must be submitted to the Fire Dept. for review and approval prior to installation.	Prior to Final Inspection	Fire Department	

ATTACHMENT C

Tentative Tract Map No. 36519 Exhibit


TENTATIVE TRACT 36519
OWNER/APPLICANT
ENGINEER/EXHIBIT PREPARER
ASSESSOR'S PARCEL NO.
PROPERTY ADDRESS
LEGAL DESCRIPTION
EXISTING EASEMENTS
ACREAGE
LAND USE
UTILITIES
TOPOGRAPHY
EARTHWORK
LEGEND
NOTES
VICINITY MAP
SOILS ENGINEER & ENGINEERING GEOLOGIST
WATER QUALITY FEATURES
GRADING
DRAINAGE & LANDSCAPE MAINTENANCE
ABBREVIATIONS
LOT SUMMARY TABLE
DRIVEWAY NOTE
TYPICAL SECTION LOCAL STREET
LOVE ENGINEERING
TENTATIVE TRACT 36519

CITY OF WILDOMAR – PLANNING COMMISSION
Agenda Item #2.2
PUBLIC HEARING
Meeting Date: December 18, 2013

TO: Chairman and Members of the Planning Commission

FROM: Alfredo Garcia, Assistant Planner

SUBJECT: **Public Use Permit 12-0105 (Planning Application No. 12-0105):** Planning Commission consideration of a Public Use Permit (PUP) to construct three (3) modular trailers totaling 1,800 square feet each to be used as Sunday School classrooms as an extension to an existing church (Gracepoint of the Nazarene) located at 21400 Canyon Drive (APN: 367-020-031).

STAFF RECOMMENDATION

The Planning Department recommends that the Planning Commission take the following action:

1. Adopt a Resolution entitled:

PC RESOLUTION NO. 13-22

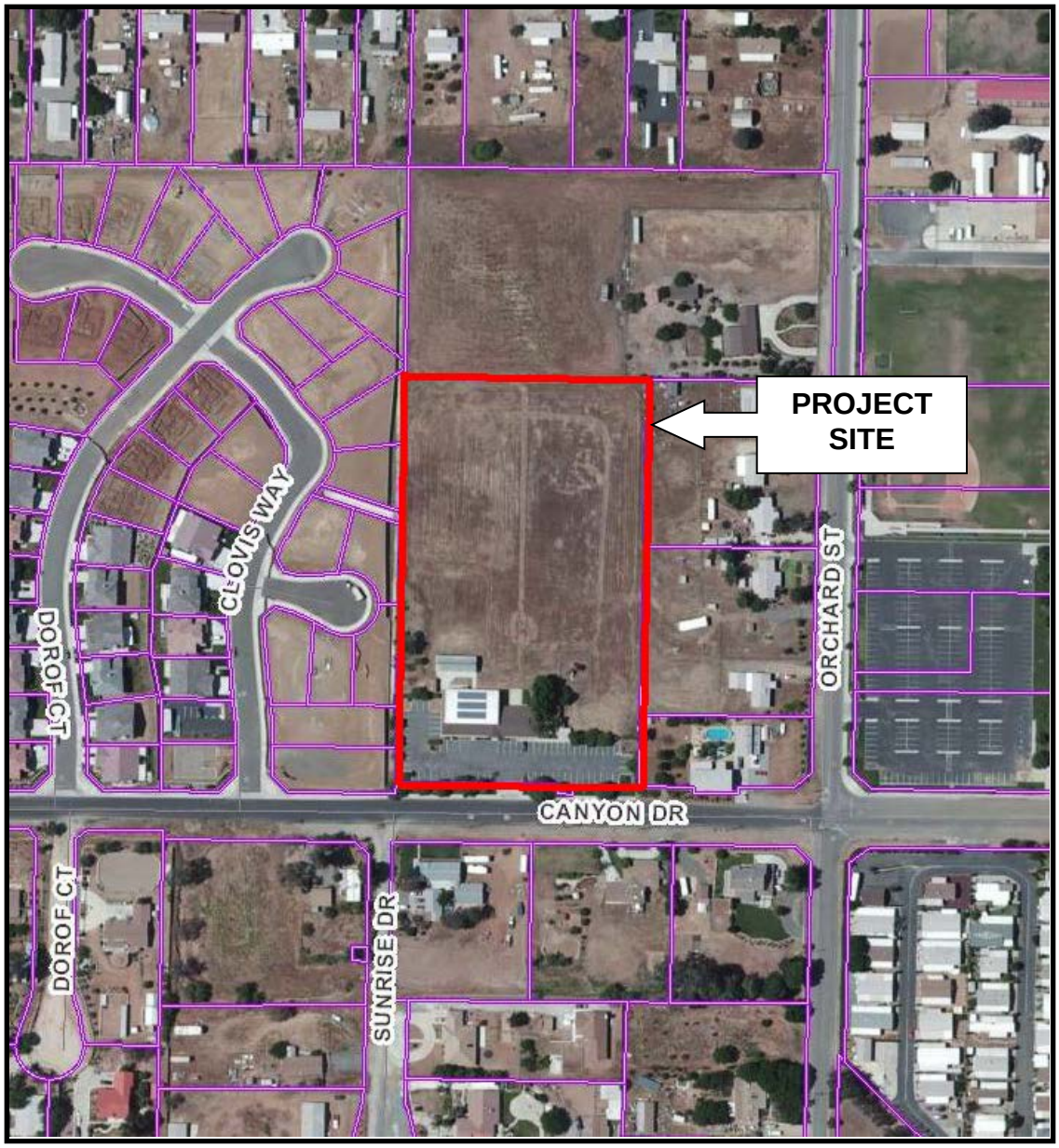
A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF WILDOMAR, CALIFORNIA, ADOPTING A CATEGORICAL EXEMPTION PER SECTION 15303 (NEW CONSTRUCTION OR CONVERSION OF SMALL STRUCTURES) OF THE CEQA GUIDELINES AND APPROVAL OF A PUBLIC USE PERMIT (PLANNING APPLICATION NO. 12-0105), SUBJECT TO CONDITIONS, TO CONSTRUCT THREE (3) 1,800 SQUARE FOOT MODULAR TRAILERS, TO BE USED AS SUNDAY SCHOOL CLASSROOMS AS AN EXTENSION TO AN EXISTING CHURCH (GRACEPOINT OF THE NAZARENE) LOCATED AT 21400 CANYON DRIVE (APN: 367-020-031).

PROJECT DESCRIPTION

The subject property is a 5.25 acre parcel with a fully operational church building of approximately 6,853 square feet with an existing detached classroom building of 1,440 square feet and a parking lot. The existing church was approved by the County of Riverside on January 26, 1993 (application PUP00740) and was later approved for a detached classroom building on August 21, 2002.

The church submitted a Public Use Permit to the City as an amendment to the original PUP to add three (3) modular buildings on April 11, 2012, requesting approval to use them for Sunday school classrooms. Figure 1 shows an aerial photograph and the location of the proposed project and vicinity.

Figure 1: Vicinity/Location Map



Surrounding Land Uses

The project site is surrounded by existing residential uses. Table 1 below summarizes the current land use, General Plan land use designation, and Zoning information related to the proposed project. Staff has also provided two figures (Figure 2 and 3 on the

following pages) showing the General Plan land use designation and zone district from our GIS database.

Table 1 – Adjacent Land Use, General Plan Land Use Designation, and Zoning

Location	Current Land Use	General Plan Land Use Designation	Zoning
Subject Property	Church	Low Density Residential (LDR)	Rural Residential (R-R)
North	Residential	Low Density Residential (LDR)	Rural Residential (R-R)
South	Residential	Low Density Residential (LDR)	Rural Residential (R-R)
West	Residential	Medium Density Residential (MDR)	Single Family Residential (R-1)
East	Residential	Low Density Residential (LDR)	Rural Residential (R-R)

Figure 2: General Plan Land Use Designation (Low Density Residential)

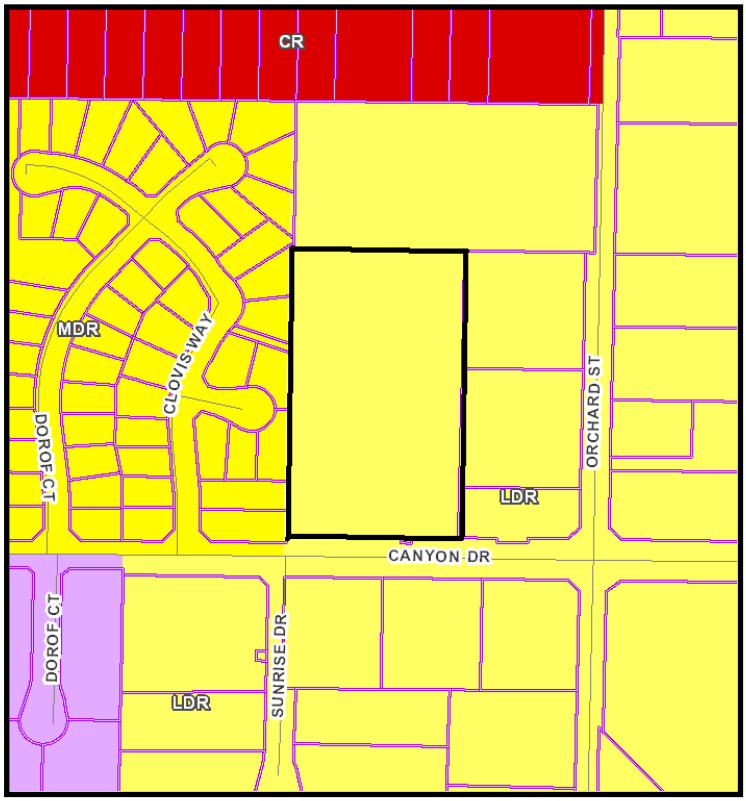
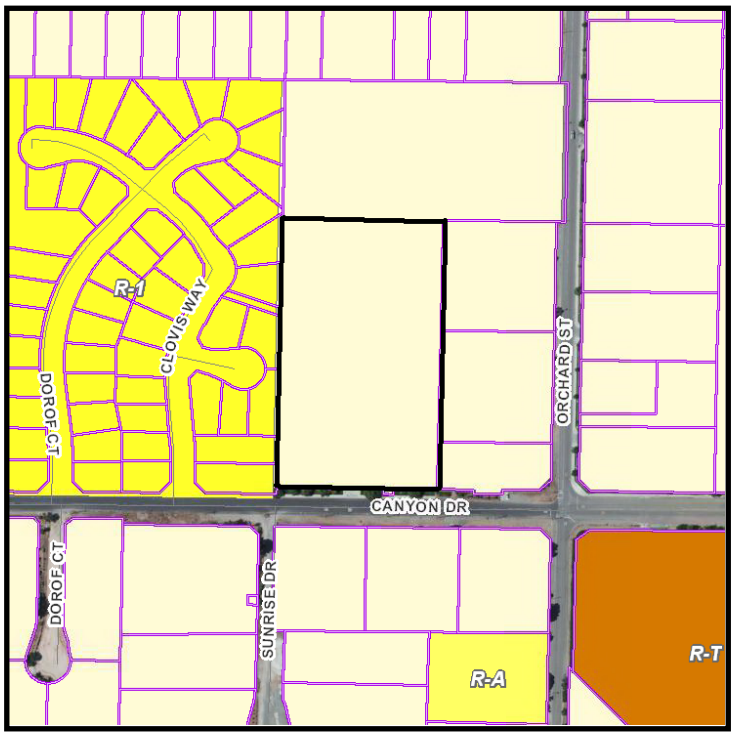


Figure 3: Zoning
(Rural Residential)



Public Use Permit /Site Plan

The proposed Public Use Permit is a request to approve three (3) modular classrooms, each with a square footage of 1,800 square feet, to be used as Sunday school classrooms on a parcel with an existing church and classroom building. The site generally drains from the east to west and is fairly flat. Site access is provided via a driveway off Canyon Drive. On-site circulation is provided via a 35-foot-wide drive aisle. The existing design meets City and the Riverside County Fire Department standards.

Currently, a 6-foot-high chain-link fence exists along the north and east property lines. In addition there is a 6-foot high block wall located on the West property line screening the church from the Canyon Village development, a single family residential development, and a two-foot high landscape berm between the church parking lot and Canyon Drive.

Additional landscaping will be installed around the perimeter of the proposed classrooms and will blend in with the current existing landscaping.

PROJECT ANALYSIS

Public Use Permit/Site Plan:

The proposed site plan has been evaluated to ensure compliance with the development standards for the R-R (Rural Residential) zone (Chapter 17.16) and the City's Off Street parking Ordinance (Chapter 17.188). As Table 2 illustrates, the proposed site plan meets and/or exceeds the minimum development standards for the R-R zone.

Table 2 – Development Standards

Development Standard	Zoning Ordinance Standard	Proposed Project Specifics	Meets Requirements
Front Setback[1]	20 feet	82 feet	Yes
Side Setback(s) [1]	5 and 10 feet	58 and 210 feet	Yes
Rear Setback[1]	10 feet	405 feet	Yes
Building Height[1]	40 feet max.	11 feet 6 inches	Yes
Off-Street Parking[2]	66 spaces	78 spaces	Yes
Landscaping [2]	10%	33.6%	Yes

1. Refers to code section 17.16 (Rural Residential)
2. Refers to code section 17.188 (Off street vehicle)

Land Use Compatibility:

The current Church is located on a parcel that is 5.25 acres in size. It is surrounded currently by residential uses in accordance with the General Plan. Churches are usually considered to be compatible with residential uses, however there can be concerns about parking, special events and loud music that can be disruptive to a neighborhood. The Gracepoint Community Church has been in operation since 1993 and operates on a daily basis in the afternoons for bible study and has its highest concentration of activity on Sundays for service. Since it has been in operation, there have been no complaints from neighbors due to the activity of the site.

Landscape Plan:

The City's Landscape Architect has reviewed the proposed landscape design and has determined that the plan complies with the City's landscape standards requiring water-efficient landscaping and water conservation.

Architectural Elevations:

The existing church office building was approved by the County of Riverside in January 26, 1993. The building has a stucco exterior with concrete tile roof. The existing classroom located behind the Church building was approved by the County of Riverside on August 22, 2002, that building was conditioned to be painted to match the existing church in color. To remain consistent with the previous approvals, staff is recommending Planning Department Condition Number 9 that requires that the modular classrooms be painted to match, or be complementary to, the existing Church and classroom in color to provide an overall consistency with all of the buildings on site.

CEQA Compliance:

Staff is recommending that the project be found exempt from the California Environmental Quality Act (CEQA) under CEQA Guideline 15303 (Class 3, New Construction of Conversion of Small Structures). The project qualifies for this exemption because the project site is not located within an environmentally sensitive area and it consists of the installation of three (3) structures that are 1,800 square feet each on an existing developed parcel. Approval of the project would not result in any significant effects relating to traffic, noise, air quality, or water quality. Churches and classrooms are not associated with the use of significant amounts of hazardous materials. The site is adequately served by all required utilities and public services.

REQUIRED PROJECT FINDINGS

CEQA Findings:

In accordance with Section 15303 of the CEQA Guidelines, the "construction and location of limited number of new, small facilities or structures" is exempt from CEQA. Specifically, subsection (c) of Section 15303 provides the following small structures are exempt from CEQA:

> (c) A store, motel, office, restaurant or similar structure not involving the use of significant amounts of hazardous substances, and not exceeding 2500 square feet in floor area. In urbanized areas, the exemption also applies to up to four such commercial buildings not exceeding 10,000 square feet in floor area on sites zoned for such use, if not involving the use of significant amounts of hazardous substances where all necessary public services and facilities are available and the surrounding are is not environmentally sensitive.

The proposed project meets these standards and as such is Categorically Exempt. The modular classrooms will be used for Sunday school, which will not involve significant amounts of hazardous substances. Also, the City of Wildomar is considered an "urbanized area" for CEQA purposes. CEQA Guideline 15387 defines "urbanized area" to mean a city or group of contiguous cities with a population of 50,000 or more, together with adjacent areas with a population density of at least 1,000 persons per

square mile. Guideline 15387 provides that a lead agency may determine an area to be an “urbanized area” by referencing the U.S. Census Bureau maps for urban areas. Per the 2010 U.S. Census Bureau maps, the City of Wildomar, including the project site, is within the “Murrieta-Temecula-Menifee” urbanized area. Since the project site is in an urbanized area, up to four building not exceeding 10,000 square feet in floor area may be constructed under this exemption. As the applicant is proposing three buildings with a total of 5400 square feet, this exemption applies.

Public Use Permit Findings:

Pursuant to Section 17.208.040 of the Wildomar Zoning Ordinance, staff recommends that the Planning Commission hereby find and determine as follows:

A. The proposed use is consistent with the Wildomar General Plan and Zoning Ordinance.

Evidence - The proposed Public Use Permit is consistent with the existing General Plan land use designation of Low Density Residential for the project site. The project furthers the objectives of the General Plan As follows:

LU6.1 (Land Use Compatibility) “Require land uses to develop in accordance with the General Plan and area plans to ensure compatibility and minimize impacts.”

LU6.2 (Land Use Compatibility) “Direct public, educational, religious , and utility uses established to serve the surrounding community toward those areas designated for Community Development and Rural Community uses on the applicable Area Plan land use maps. These uses may be found consistent with any of the Community Development, Rural Community, or Rural foundation designation (Land Use Compatibility), including Rural Village Overlay, as well as the Open Space – Rural and Agriculture designations.”

LU 23.7 (Community Design) “Require that adequate and available circulation facilities, water resources and sewer facilities exist to meet the demands of the proposed land use.”

The project is consistent with the R-R Rural Residential Zoning District and meets the development standards for the zone as shown in this staff report. The project complies with the applicable provisions of the Zoning Ordinance, including, but not limited to, Chapter 17.188 (Off-Street Vehicle Parking Standards) and Chapter 17.208 (Public Use Permit). Additionally, conditions have been added to the project to ensure that all the minimum requirements of the City’s Zoning Ordinance are met.

B. The overall development of the land shall be designed for the protection of the public health, safety, and general welfare.

Evidence - The proposed project meets the requirements of public works and the fire department regarding emergency vehicle access. The project will meet the California Building Code requirements for the proposed classroom use and the project is conditioned to be painted similar to the existing church buildings. The site is of sufficient size to accommodate the new buildings without affecting the surrounding uses, and landscaping is proposed to soften the edges of the project.

PUBLIC COMMUNICATION/NOTICING

In accordance with Government Code Sections 65854, and 65090, 65091, the Planning Department, on December 4, 2013, mailed a public hearing notice to all property owners within a 300-foot radius of the project boundaries notifying them of the December 18, 2013, Planning Commission public hearing for the proposed project. In addition, on December 6, 2013, a legal notice was published in The Press Enterprise, a local newspaper of general circulation, notifying the general public of the December 18, 2013, Planning Commission hearing for the approval of the public use permit.

Respectfully Submitted
Matthew C. Bassi
Planning Director

Prepared By
Alfredo Garcia
Assistant Planner

Reviewed by
Erica L. Vega
Assistant City Attorney

ATTACHMENTS

A. PC Resolution No. 13-22 for Public Use Permit No. 12-0105
   Exhibit 1 – Conditions of Approval
B. Public Use Permit Exhibits (reductions)

ATTACHMENT A

PC Resolution No. 13-22

PC RESOLUTION NO. 13-22

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF WILDOMAR, CALIFORNIA, ADOPTING A CATEGORICAL EXEMPTION PER SECTION 15303 (NEW CONSTRUCTION OR CONVERSION OF SMALL STRUCTURES) OF THE CEQA GUIDELINES AND APPROVAL OF A PUBLIC USE PERMIT (PLANNING APPLICATION NO. 12-0105), SUBJECT TO CONDITIONS, TO CONSTRUCT (3) 1,800 SQUARE FOOT MODULAR TRAILERS, TO BE USED AS SUNDAY SCHOOL CLASSROOMS AS AN EXTENSION TO AN EXISTING CHURCH (GRACEPOINT OF THE NAZARENE) LOCATED AT 21400 CANYON DRIVE (APN: 367-020-031).

WHEREAS, the Planning Department has received an application for a Public Use Permit (Planning Application No. 12-0105) to permit and allow the use of three (3) modular buildings, each 1,800 square feet, to be used as classrooms on a 5.25-acre site located at 21400 Canyon Drive by:

Applicant/Owner:	Gracepoint Church of Nazarene
Project Location:	21400 Canyon Drive
APN(s):	367-020-031
Project Area:	5.25 acres

WHEREAS, in accordance with the City of Wildomar Zoning Ordinance (Title 17) the Planning Commission of the City of Wildomar, California, has the authority and has reviewed the proposed Public Use Permit ; and

WHEREAS, the proposed Public Use Permit is Categorically Exempt from the California Environmental Act (CEQA) Guidelines in accordance with Section 15303 (New Construction or Conversion of Small Structures); and

WHEREAS, in accordance with Government Code Sections 65854, 65090 and 65091, the City of Wildomar Planning Department, on December 4, 2013, gave public notice by mailing a public hearing notice to all property owners within a 600-foot radius of the project boundaries notifying said property owners of the date and time of the public hearing for the Public Use Permit (Planning Application No. 12-0105) that would be considered by the City of Wildomar Planning Commission; and

WHEREAS, in accordance with California Government Code Sections 65090, the City of Wildomar Planning Department, on December 6, 2013, published a legal notice in The Press Enterprise, a local newspaper of general circulation, notifying the public of the holding of a public hearing for the Public Use Permit (Planning Application No. 12-0105) that would be considered by the City of Wildomar Planning Commission; and

WHEREAS, in accordance with California Government Code Section 65096 and 65854 the City of Wildomar Planning Commission conducted the duly noticed public hearing on December 18, 2013, at which time interested persons had an opportunity to testify in support of, or opposition to, the Public Use Permit (Planning Application No. 12-0105), and at which time the Planning Commission received public testimony concerning the proposed Public Use Permit.

NOW, THEREFORE, the Planning Commission of the City of Wildomar does hereby resolve, determine, and order as follows:

SECTION 1. CEQA FINDINGS

In accordance with Section 15303 of the CEQA Guidelines, the "construction and location of limited number of new, small facilities or structures" is exempt from CEQA. Specifically, subsection (c) of Section 15303 provides the following small structures are exempt from CEQA:

> "(c) A store, motel, office, restaurant or similar structure not involving the use of significant amounts of hazardous substances, and not exceeding 2500 square feet in floor area. In urbanized areas, the exemption also applies to up to four such commercial buildings not exceeding 10,000 square feet in floor area on sites zoned for such use, if not involving the use of significant amounts of hazardous substances where all necessary public services and facilities are available and the surrounding are is not environmentally sensitive."

The proposed project meets these standards and as such is Categorically Exempt. The modular classrooms will be used for Sunday school, which will not involve significant amounts of hazardous substances. Also, the City of Wildomar is considered an "urbanized area" for CEQA purposes. CEQA Guideline 15387 defines "urbanized area" to mean a city or group of contiguous cities with a population of 50,000 or more, together with adjacent areas with a population density of at least 1,000 persons per square mile. Guideline 15387 provides that a lead agency may determine an area to be an "urbanized area" by referencing the U.S. Census Bureau maps for urban areas. Per the 2010 U.S. Census Bureau maps, the City of Wildomar, including the project site, is within the "Murrieta-Temecula-Menifee" urbanized area. Since the project site is in an urbanized area, up to four building not exceeding 10,000 square feet in floor area may be constructed under this exemption. As the applicant is proposing three buildings with a total of 5400 square feet, this exemption applies.

SECTION 2. PUBLIC USE PERMIT FINDINGS

Pursuant to Section 17.208.040 of the Wildomar Zoning Ordinance, staff recommends that the Planning Commission hereby find and determine as follows:

A. The proposed use is consistent with the Wildomar General Plan and Zoning Ordinance.

Evidence - The proposed Public Use Permit is consistent with the existing General Plan land use designation of Low Density residential for the project site. The project furthers the objectives of the General Plan As follows:

LU 6.1 (Land Use Compatibility) "Require land uses to develop in accordance with the General Plan and area plans to ensure compatibility and minimize impacts."

LU 6.2 (Land Use Compatibility) "Direct public, educational, religious , and utility uses established to serve the surrounding community toward those areas designated for Community Development and Rural Community uses on the applicable Area Plan land use maps. These uses may be found consistent with any of the Community Development, Rural Community, or Rural foundation designation (Land Use Compatibility), including Rural Village Overlay, as well as the Open Space – Rural and Agriculture designations."

LU 23.7 (Community Design) "Require that adequate and available circulation facilities, water resources and sewer facilities exist to meet the demands of the proposed land use."

The project is consistent with the R-R Rural Residential Zoning District and meets the development standards for the zone as shown in this staff report. The project complies with the applicable provisions of the Zoning Ordinance, including, but not limited to, Chapter 17.188 (Off-Street Vehicle Parking Standards) and Chapter 17.208 (Public Use Permit). Additionally, conditions have been added to the project to ensure that all the minimum requirements of the City's Zoning Ordinance are met.

B. The overall development of the land shall be designed for the protection of the public health, safety, and general welfare.

Evidence - The proposed project meets the requirements of public works and the fire department regarding emergency vehicle access. The project will meet the California Building Code requirements for the proposed classroom use and the project is conditioned to be painted similar to the existing church buildings. The site is of sufficient size to accommodate the new buildings without affecting the surrounding uses, and landscaping is proposed to soften the edges of the project.

SECTION 3. PLANNING COMMISSION ACTION

The Planning Commission hereby adopts PC Resolution No. 13-22 adopting a Categorical Exemption for, and approving Public Use Permit No. 12-0105, subject to the conditions attached to this Resolution as Exhibit 1.

PASSED, APPROVED, AND ADOPTED this 18th day of December 2013, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAINED:

_____
Stan Smith
Planning Commission Chairman

ATTEST:

_____
Matthew C. Bassi
Planning Director/Minutes Secretary

APPROVED AS TO FORM:

_____
Erica L. Vega
Assistant City Attorney

EXHIBIT 1 – ATTACHMENT A CONDITIONS OF APPROVAL			
Project Application: Public Use Permit (Planning Application No. 12-0105)			
APN: 367-020-031			
Planning Commission Approval Date: December 18, 2013	**Expiration Date: December 18, 2014**		
Conditions of Approval	**Timing/ Implementation**	**Enforcement/ Monitoring**	**Verification (Date and Signature)**

PLANNING DEPARTMENT CONDITIONS				
General Conditions				
1.	In compliance with Section 15094 of the CEQA Guidelines, a Notice of Exemption (NOE) shall be filed with the Riverside County Clerk within five (5) days of project approval by the Planning Commission (12/23/13). The Notice shall include the required California Department of Fish and Game (Code Section 711.4.d.3) fee and the Riverside County Clerk administrative fee. Failure to pay the required fee will result in the project being deemed null and void (California Fish and Game Code Section 711.4(c)).The above fee is broken down as follows: a. Riverside County Clerk Administrative Fee = $50.00	Dec. 23, 2013	Planning Department	
2.	The applicant shall review and sign below verifying "Acceptance of the Conditions of Approval" and return the signed page to the Wildomar Planning Department no later than December 27, 2013. Applicant Signature Date	Dec. 27, 2013	Planning Department	
3.	The applicant shall indemnify, protect, defend, and hold harmless, the City, and/or any of its officials, officers, employees, agents, departments, agencies, and instrumentalities thereof, from any and all claims, demands, law suits, writs of mandamus, and other actions and proceedings (whether legal, equitable, declaratory, administrative or adjudicatory in nature), and alternative dispute resolutions procedures (including, but not limited to arbitrations, mediations, and other such procedures), (collectively "Actions"), brought against the City, and/or any of its officials, officers, employees, agents, departments, agencies,	Ongoing	Planning Department	

	and instrumentalities thereof, that challenge, attack, or seek to modify, set aside, void, or annul, the any action of, or any permit or approval issued by, the City and/or any of its officials, officers, employees, agents, departments, agencies, and instrumentalities thereof (including actions approved by the voters of the City), for or concerning the project, whether such Actions are brought under the California Environmental Quality Act, the Planning and Zoning Law, the Subdivisions Map Act, Code of Civil Procedure Section 1085 or 1094.5, or any other state, federal, or local statute, law, ordinance, rule, regulation, or any decision of a court of competent jurisdiction. City shall promptly notify the applicant of any Action brought and request that applicant defend the City. It is expressly agreed that applicant may select legal counsel providing the applicant's defense and the City shall have the right to approve separate legal counsel providing the City's defense. The applicant shall reimburse City for any attorneys' fees, costs and expenses directly and necessarily incurred by the City in the course of the defense. Applicant agrees that City will forward monthly invoices to Applicant for attorneys' fees, costs and expenses it has incurred related to its defense of any Action and applicant agrees to timely payment within thirty (30) days of receipt of the invoice. Applicant agrees to post adequate security or a cash deposit with City in an amount to cover the City's estimated attorneys' fees, costs and expenses incurred by City in the course of the defense in order to ensure timely payment of the City's invoices. The amount of the security or cash deposit shall be determined by the City. City shall cooperate with applicant in the defense of any Action.			
4.	Approval of Public Use Permit Application No. 12-0105 shall expire on December 18, 2014, if the Public Use Permit has not been completed and finalized. The applicant may file with the Planning Department a request for a one-year time extension as permitted by the Zoning	Oct. 18, 2014	Planning Department	

	Ordinance, provided a written request is made with the required EOT application and fee no later than October18, 2014 (60 days prior to expiration).			
5.	The project shall be developed in accordance with the Plans approved by the Planning Commission on December 18, 2013. The applicant may request a modification/revision to the approved project as outlined in the Wildomar Zoning Ordinance.	Ongoing	Planning Department	
6.	Within 30 days of approval of Project No. 12-0105 by the Planning Commission, any outstanding deposit account balance, if applicable, shall be paid in full by the applicant.	Jan. 18, 2014	Planning Department	
7.	If human remains are encountered during grading activities, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the Riverside County Coroner has made the necessary findings as to origin. Further, pursuant to Public Resources Code Section 5097.98(b), remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission shall be contacted within a reasonable timeframe. Subsequently, the Native American Heritage Commission shall identify the "most likely descendant." The most likely descendant shall then make recommendations and engage in consultation concerning the treatment of the remains as provided in Public Resources Code Section 5097.98.	Ongoing	Planning and Engineering Departments	
8.	If during ground-disturbing activities unique cultural resources are discovered that were not assessed by the archaeological report(s) and/or environmental assessment conducted prior to project approval, the following procedures shall be followed. Unique cultural resources are defined, for this condition, as being multiple artifacts in close association with each other, but may include fewer artifacts if the area	Ongoing	Planning and Engineering Departments	

	of the find is determined to be of significance due to its sacred or cultural importance. (1) All ground disturbance activities within 100 feet of the discovered cultural resources shall be halted until a meeting is convened between the applicant, the archaeologist, the Native American tribal representative, and the Planning Director to discuss the significance of the find. (2) At the meeting, the significance of the discoveries shall be discussed and after consultation with the Pechanga and Soboba Band representatives and the archaeologist, a decision shall be made, with the concurrence of the Planning Director, as to the appropriate mitigation (documentation, recovery, avoidance, etc.) for the cultural resources. (3) Grading or further ground disturbance shall not resume within the area of the discovery until an agreement has been reached by all parties as to the appropriate mitigation.			
9.	The modular classrooms shall be painted to match the existing church wall and trim color as illustrated in the approved development plans.	Ongoing	Planning Department	
10.	According to the City of Wildomar Zoning Ordinance Chapter 17.252 banners cannot be used as permanent signage. The Applicant shall submit building/sign permit for Planning Department review and approval for a permanent wall mounted sign within six (6) months of the Planning Commission approval.	July 18, 2014	Planning and Building Departments	
BUILDING AND SAFETY DEPARTMENT CONDITIONS				
Prior to Issuance of a Certificate of Occupancy				
1.	Prior to the issuance of a certificate of occupancy, all conditions of approval shall be satisfied.	Prior to Issuance of a Certificate of Occupancy	Planning and Building Departments	

2.	The applicant shall submit plans for building department review and approval prior to the issuance of permits.	Prior to Issuance of a Certificate of Occupancy	Planning and Building Departments	
PUBLIC WORKS/ENGINEERING/BUILDING DEPARTMENT CONDITIONS				
General Requirements/Conditions				
1.	The developer shall obtain City approval for any modifications or revisions to the approval of this project. Deviations not identified on the plans may not be approved by the City, potentially resulting in the need for the project to be redesigned. Amended entitlement approvals may be necessary as a result.	On-Going	Engineering Dept.	
2.	No grading shall be performed without the prior issuance of a grading permit by the City.	On-Going	Engineering Dept.	
3.	Written permission shall be obtained from the affected property owners allowing the proposed grading and/or facilities to be installed outside of the project boundaries.	On-Going	Engineering Dept.	
4.	The developer's contractor is required to submit for a haul route permit for the hauling of material to and from the project site. Said permit will include limitations of haul hours, number of loads per day and the posting of traffic control personnel at all approved entrances/exits onto public roads. This permit shall be in place prior to the issuance of the grading permit and the mobilization of equipment on the project site.	On-Going	Engineering Dept.	
5.	The Developer shall dedicate, design and construct all improvements in accordance the City of Wildomar Road Improvement Standards & Specification, Improvement Plan Check Policies and Guidelines, as further conditioned herein and to the satisfaction of the City Engineer.	On-Going	Engineering Dept.	

6.	The Developer shall be responsible for all costs associated with off-site right-of-way acquisition, including any costs associated with the eminent domain process, if necessary.	On-Going	Engineering Dept.	
7.	All grading shall conform to the California Building Code, including Appendix J, and all other relevant laws, rules, and regulations governing grading in the City of Wildomar. Prior to commencing any grading which includes 50 or more cubic yards, the developer shall obtain a grading permit from the Building Department.	On-Going	Engineering Dept.	
8.	All necessary measures to control dust shall be implemented by the developer during grading to the satisfaction of the City Engineer. A PM10 plan may be required at the time a grading permit is issued.	On-Going	Engineering Dept.	
9.	Graded slopes shall be limited to a maximum steepness ratio of 2:1 (horizontal to vertical) unless otherwise approved by the City Engineer.	On-Going	Engineering Dept.	
10.	Grading in excess of 199 cubic yards will require performance security to be posted with the City.	On-Going	Engineering Dept.	
11.	All retaining walls shall require a separate permit from the Building Department.	On-Going	Building Dept.	
12.	Erosion control – landscape plans, required for manufactured slopes greater than 3 feet in vertical height, are to be signed by a registered landscape architect and bonded per the requirements of Ordinance 457 (refer to dept. form 284-47). Planting shall occur within 30 days of meeting final grades to minimize erosion and to ensure slope coverage prior to the rainy season. The Developer shall plant & irrigate all manufactured slopes steeper than a 4:1 (horizontal to vertical) ratio and 3 feet or greater in vertical height with grass or ground cover; slopes 15 feet or greater in vertical height shall be planted with additional shrubs or trees or as approved by the City Engineer.	On-Going	Engineering Dept.	
13.	Should this project lie within any assessment/benefit district, the project proponent shall, prior to acceptance of improvements, make	On-Going	Engineering Dept.	

	application for and pay for their reapportionment of the assessments or pay the unit fees in the benefit district unless said fees are otherwise deferred.			
14.	The developer shall design and construct all driveways in accordance with the City of Wildomar Improvement Standards.	On-Going	Engineering Dept.	
15.	The improvement plans for the required public improvements must be prepared and shall be based upon a design profile extending a minimum of 300 feet beyond the project boundaries at a grade and alignment as approved by the City Engineer.	On-Going	Engineering Dept.	
16.	All above-ground utilities, including but not limited to communication and power that are 33KV in size or less, shall be undergrounded by the developer in accordance with City requirements. The undergrounding of utilities shall be reflected on the project improvement plans.	On-Going	Engineering Dept.	
17.	All flood control plans to be reviewed shall be submitted through the City of Wildomar, unless otherwise directed by the City Engineer.	On-Going	Engineering Dept.	
Prior to the Issuance of Grading Permits				
18.	Prior to the issuance of a grading permit, the developer shall submit a geotechnical soils reports to the City Engineer for review and approval prior to issuance of grading permit. The findings and recommendations shall reflect current conditions and the report shall be no older than one (1) year. All grading shall be in conformance with the recommendations of the geotechnical/soils reports as approved by City of Wildomar.	Prior to Issuance of a Grading Permit	Engineering Dept.	
19.	Prior to the issuance of a grading permit, it shall be the sole responsibility of the developer to obtain any and all easements and/or permissions necessary to perform the grading required for the project. A notarized letter of permission from all affected property owners or	Prior to Issuance of a Grading Permit	Engineering Dept.	

	easement holders, or encroachment permit, is required for all off-site grading.			
20.	Prior to the issuance of grading permits, the project specific SWPPP shall be approved by the City Engineer.	Prior to Issuance of a Grading Permit	Engineering Dept.	
21.	Prior to issuance of grading permits the Developer shall provide the Engineering Department evidence of compliance with the National Pollutant Discharge Elimination System (NPDES) and obtain a construction permit from the State Water Resource Control Board (SWRRCB).	Prior to Issuance of a Grading Permit	Engineering Dept.	
22.	Prior to the issuance of a grading permit, the developer shall have obtained approval for the import/export location from the City of Wildomar. Additionally, if either location was not previously approved by an Environmental Assessment, prior to issuing a grading permit, a Grading Environmental Assessment shall be submitted to the Planning Director for review and comment and to the City Engineer for approval.	Prior to Issuance of a Grading Permit	Engineering Dept.	
23.	Prior to the issuance of a grading permit, the developer shall submit a Final Water Quality Management Plan (WQMP), in conformance with the requirements of the San Diego and/or Santa Ana Regional Water Quality Control Board. Applicant shall confirm the watershed requirements relative to their project location. All stormwater quality treatment devices shall be located outside of the ultimate public right of way. The developer shall design the stormwater quality treatment devices to accommodate all project runoff, ensuring post-construction flows and volumes do not exceed pre-construction levels, in accordance with City of Wildomar's Hydrology Manual, Stormwater Quality Best Management Practice Design Handbook, Improvement Standards, and to the satisfaction of the City Engineer. These BMPs shall be consistent with the Final WQMP and installed to the satisfaction of the City Engineer.	Prior to Issuance of a Grading Permit	Engineering Dept.	

24.	If the project location is within the Santa Ana River Watershed: Prior to the issuance of a grading permit, the developer is to provide the appropriate documentation that will allow this project a waiver for mitigation volume related to the Lake Elsinore sub watershed of the Santa Ana Watershed. Please note the City is not a permittee in the MS4 permit for the Santa Ana River Watershed (Lake Elsinore) and is governed only by the MS4 permit for the Santa Margarita Watershed, therefore the Applicant needs to provide evidence that this waiver has been approved by the Santa Ana Regional Water Quality Control Board. Otherwise volume has to be addressed.	Prior to Issuance of a Grading Permit	Public Works Dept.	ALL PHASES
25.	Prior to the issuance of grading permit, the developer shall prepare and submit a comprehensive drainage study and plan that includes, but is not limited to: definition with mapping of the existing watersheds; a detailed pre- and post-project hydrologic and hydraulic analysis of the project and project impacts; definition of the local controlling 100-year frequency water levels existing and with project; the proposed method of flow conveyance to mitigate the potential project impacts with adequate supporting calculations; any proposed improvements to mitigate the impacts of increased runoff from the project and any change in runoff; including quality, quantity, volume, and duration in accordance with City of Wildomar's Hydrology Manual, Improvement Standards, and to the satisfaction of the City Engineer. Specifically, the study will: a. Analyze the detention basin drainage area for a project using the Rational Method 100-year storm event for the pre-project and post-project. b. Analyze 4 hydrographs for the detention basin drainage area for a project using the Unit Hydrograph 100-year storm event for the 1-hour, 3-hour, 6-hour, and 24-hour storm durations for post-project condition.	Prior to Issuance of a Grading Permit	Engineering Dept.	

	c. Using the Unit Hydrographs determine which duration provides the highest flow rate. Adjust parameters such as lag time, flow line roughness coefficient or other parameters to calibrate Unit Hydrograph model to provide results similar to the Rational Method. d. Using the calibrated Unit Hydrograph for the detention basin drainage area perform basin routing analysis to demonstrate that the outflow is less than the pre-project Rational Method flow rate.			
26.	Prior to the 1st Improvement Plan submittal, the developer shall show all easements per the Title Report to the satisfaction of Public Works. Any conflicts with existing easements may result in the site being redesigned and Public Use Permit Amendment approved by Planning.	Prior to Issuance of a Grading Permit	Engineering Dept.	
Prior to Issuance of a Building Permit				
27.	Prior to the issuance of any building permit, the property owner shall obtain a grading permit and/or approval to construct from the City Engineer.	Prior to Issuance of a Building Permit	Building Dept.	
28.	Prior to the issuance of a building permit Improvement plans shall be approved by the City Engineer and all improvements to be constructed shall be secured by the Developer.	Prior to Issuance of a Building Permit	Building Dept.	
29.	Prior to issuance of a building permit the developer shall provide will serve letters from the appropriate water and sewer agencies.	Prior to Issuance of a Building Permit	Building Dept.	
30.	Prior to issuance of a building permit the developer shall install streetlights in accordance with the City of Wildomar Road Improvement Standards & Specification, Improvement Plan Check Policies and Guidelines, City Ordinances and to the satisfaction of the City Engineer.	Prior to Issuance of a Building Permit	Building Dept.	

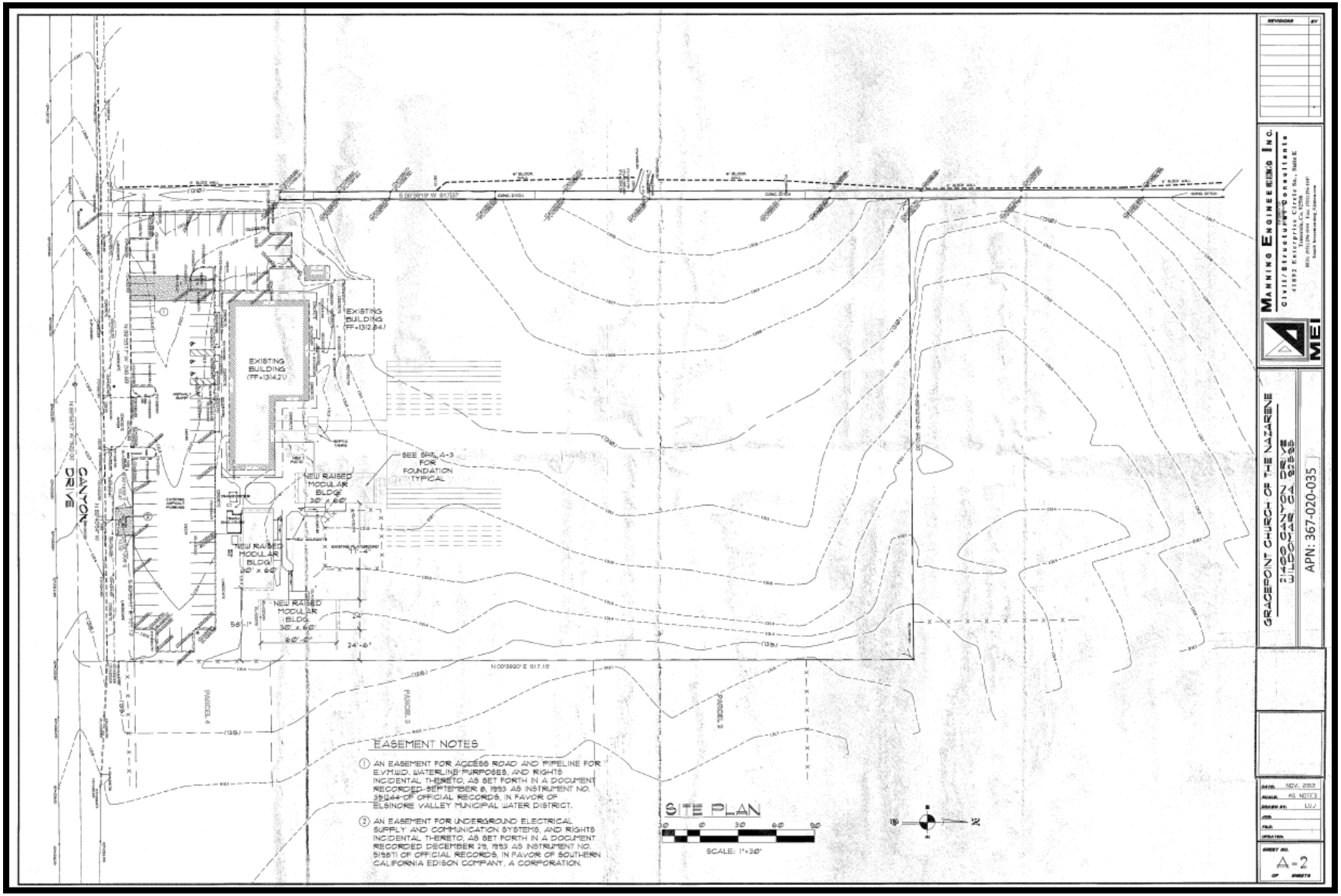
31.	Prior to issuance of a building permit the developer shall install all street name signs at intersections adjacent to the project, public or private and/or replace street name signs in accordance with the City of Wildomar Standard Details and to the satisfaction of the City Engineer.	Prior to Issuance of a Building Permit		
32.	Prior to issuance of a building permit the developer shall pay all fees in accordance with Zone A of the Southwest Road and Bridge Benefit District.	Prior to Issuance of a Building Permit		
33.	Prior to issuance of a building permit the developer shall pay the appropriate impact mitigation fee to the Riverside County Flood Control and Water Conservation District.	Prior to Issuance of a Building Permit	Building Dept.	
34.	Prior to issuance of a building permit the developer shall pay all necessary impact and mitigation fees required. These fees include, but are not limited to, fees associated with Transportation Uniform Mitigation Fee (TUMF) and City Development Impact Fees.	Prior to Issuance of a Building Permit	Building Dept.	
35.	Prior to issuance of a building permit the developer shall construct the stormwater quality treatment devices to accommodate all project runoff from in accordance with City of Wildomar's Hydrology Manual, Stormwater Quality Best Management Practice Design Handbook, Improvement Standards, and to the satisfaction of the City Engineer. All stormwater quality treatment devices shall be constructed outside of the ultimate public right of way.	Prior to Issuance of a Building Permit		
RIVERSIDE COUNTY FIRE DEPARTMENT				
General Conditions				
1.	10.FIRE.999 MAP #50 - BLUE DOT REFLECTORS Blue retro-reflective pavement markers shall be mounted on private streets, public streets, and driveways to indicate location of fire hydrants. Prior to installation, placement of markers must be approved by the Riverside County Fire Department.	Ongoing	Fire Department	

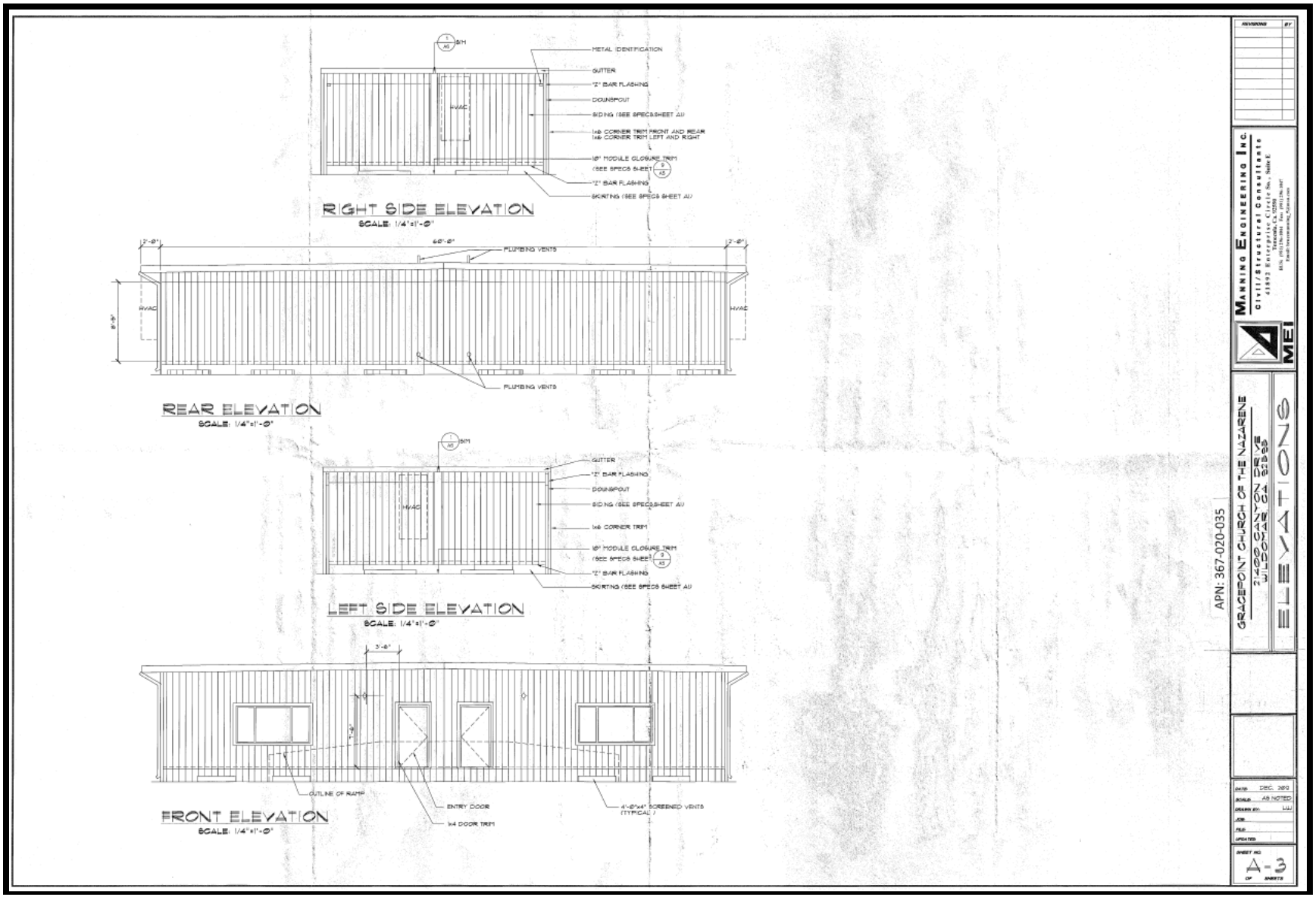
2.	10. FIRE.999 -#23 – MIN REQ FIRE Minimum required fire flow shall be 1500 GPM for 2-hour duration at 20 PSI residual operating pressure, which must be available before any combustible material is placed on the job site.	Ongoing	Fire Department	
3.	10. FIRE.999 USE-#20 – SUPER FIRE HYDRANT Super fire hydrant(s) (6" x 4" x 2½") shall be located not less than 25 feet or more than 250 feet from any portion of the building as measured along approved vehicular travelways.	Ongoing	Fire Department	
PRIOR TO BUILDING PERMIT ISSUANCE				
4.	80. FIRE.999 USE-#4 – WATER PLANS The applicant or developer shall separately submit two copies of the water system plans to the Fire Department for review and approval. Calculated velocities shall not exceed 100 feet per second. Plans shall conform to the fire hydrant types, location, and spacing. The system shall meet the fire flow requirements. Plans shall be signed and approved by a registered civil engineer and the local water company with the following certification: "I certify that the design of the water system is in accordance with the requirements prescribed by the Riverside County Fire Department."	Ongoing	Fire Department	
PRIOR TO CLASSROOM MODULAR FINAL INSPECTION				
5.	90. FIRE.999 USE-#45 – FIRE LANES The applicant shall prepare and submit to the Fire Department for approval, a site plan designating required fire lanes with appropriate lane painting and/or signs.	Ongoing	Fire Department	
6.	90. FIRE.999 USE-#27 – EXTINGUISHERS Install portable fire extinguishers with a minimum rating of 2A-10BC and signage. Fire extinguishers located in public areas shall be in	Ongoing	Fire Department	

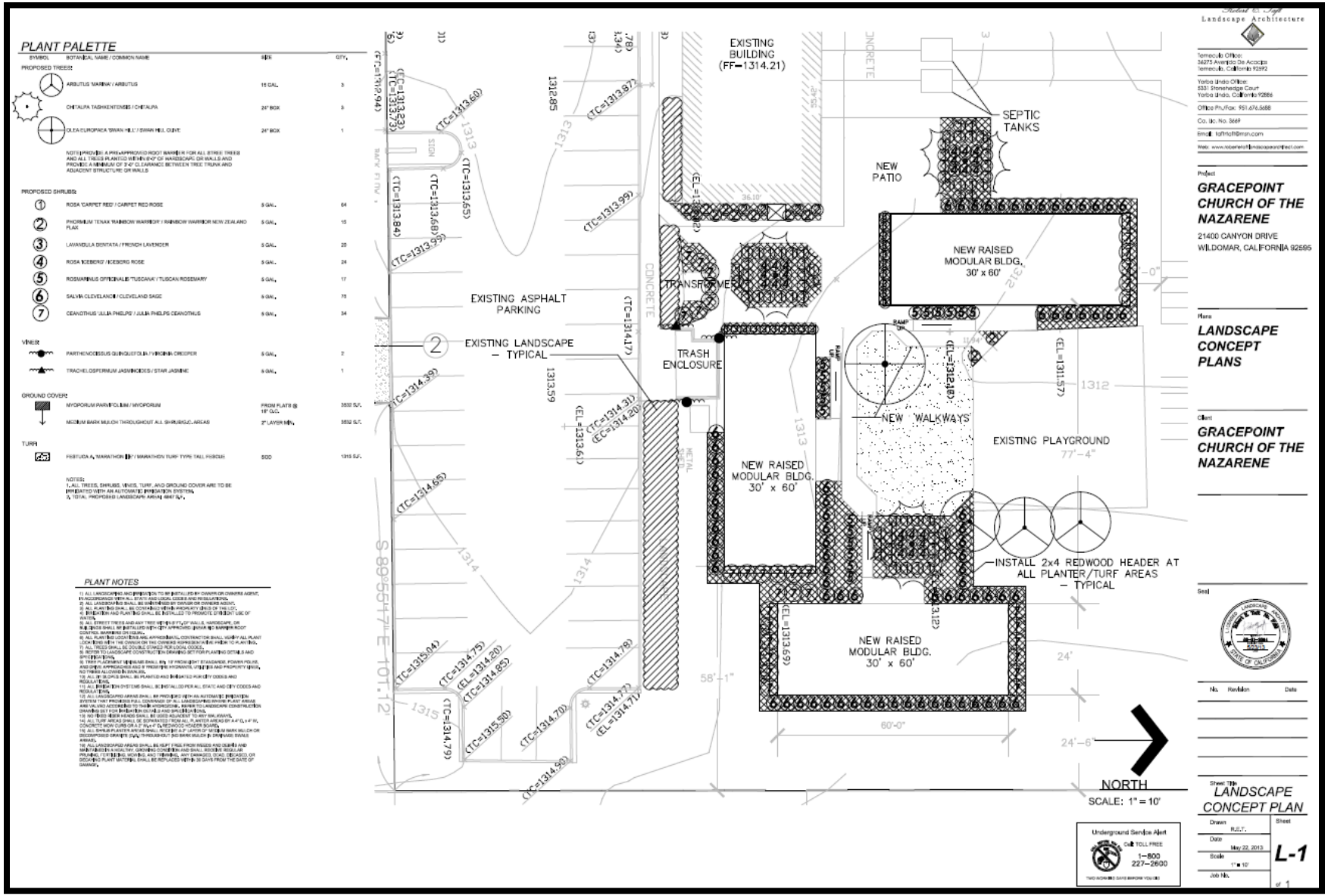
	recessed cabinets mounted 48” (inches) to center above the floor level with maximum 4” projection from the wall. Contact the Fire Department for proper placement of equipment prior to installation.			

ATTACHMENT B

Public Use Permit Exhibits


EXISTING BUILDING (FF=1312.84)
EXISTING BUILDING (FF=1314.21)
NEW RAISED MODULAR BLDG 30' x 60'
NEW RAISED MODULAR BLDG 30' x 60'
NEW RAISED MODULAR BLDG 30' x 60'
SEE SHT. A-3 FOR FOUNDATION TYPICAL
CANYON DRIVE
PARCEL 4
PARCEL 3
PARCEL 2
EASEMENT NOTES
① AN EASEMENT FOR ACCESS ROAD AND PIPELINE FOR E.V.M.W.D. WATERLINE PURPOSES, AND RIGHTS INCIDENTAL THERETO, AS SET FORTH IN A DOCUMENT RECORDED SEPTEMBER 8, 1953 AS INSTRUMENT NO. 35244 OF OFFICIAL RECORDS, IN FAVOR OF ELSINORE VALLEY MUNICIPAL WATER DISTRICT.
② AN EASEMENT FOR UNDERGROUND ELECTRICAL SUPPLY AND COMMUNICATION SYSTEMS, AND RIGHTS INCIDENTAL THERETO, AS SET FORTH IN A DOCUMENT RECORDED DECEMBER 29, 1953 AS INSTRUMENT NO. 51987 OF OFFICIAL RECORDS, IN FAVOR OF SOUTHERN CALIFORNIA EDISON COMPANY, A CORPORATION.
SITE PLAN
SCALE: 1"=30'
MANNING ENGINEERING INC.
Civil/Structural Consultants
GRACEPOINT CHURCH OF THE NAZARENE
21400 CANYON DRIVE
ELSINORE, CA 92530
APN: 367-020-035
NOV. 2012
AS NOTED
LUJ
A-2


RIGHT SIDE ELEVATION
SCALE: 1/4"=1'-0"
REAR ELEVATION
SCALE: 1/4"=1'-0"
LEFT SIDE ELEVATION
SCALE: 1/4"=1'-0"
FRONT ELEVATION
SCALE: 1/4"=1'-0"
METAL IDENTIFICATION
GUTTER
"Z" BAR FLASHING
DOWNSPOUT
SIDING (SEE SPECS SHEET A1)
1x6 CORNER TRIM FRONT AND REAR
1x6 CORNER TRIM LEFT AND RIGHT
10" MODULE CLOSURE TRIM
(SEE SPECS SHEET A3)
SKIRTING (SEE SPECS SHEET A1)
HVAC
PLUMBING VENTS
1x6 CORNER TRIM
OUTLINE OF RAMP
ENTRY DOOR
1x4 DOOR TRIM
4'-0"x4' SCREENED VENTS
(TYPICAL)
APN: 367-020-035
GRACEPOINT CHURCH OF THE NAZARENE
2400 SOUTH NAOMI STREET
ELEVATIONS
MANNING ENGINEERING INC.
Civil/Structural Consultants
DATE DEC. 2013
SCALE AS NOTED
A-3


PLANT PALETTE
PLANT NOTES
EXISTING BUILDING (FF=1314.21)
SEPTIC TANKS
NEW PATIO
NEW RAISED MODULAR BLDG. 30' x 60'
TRANSFORMER
EXISTING ASPHALT PARKING
EXISTING LANDSCAPE – TYPICAL
TRASH ENCLOSURE
NEW WALKWAYS
EXISTING PLAYGROUND
INSTALL 2x4 REDWOOD HEADER AT ALL PLANTER/TURF AREAS – TYPICAL
NORTH
SCALE: 1" = 10'
Landscape Architecture
GRACEPOINT CHURCH OF THE NAZARENE
21400 CANYON DRIVE
WILDOMAR, CALIFORNIA 92595
LANDSCAPE CONCEPT PLANS
GRACEPOINT CHURCH OF THE NAZARENE
LANDSCAPE CONCEPT PLAN
L-1

AGENDA SECTION 3.0

GENERAL BUSINESS ITEMS

CITY OF WILDOMAR – PLANNING COMMISSION
Agenda Item No. 3.1
GENERAL BUSINESS
Meeting Date: December 18, 2013

TO: Chairman and Members of the Planning Commission

FROM: Matthew C. Bassi, Planning Director

SUBJECT: **Strata/Prielipp GPA Initiation (Planning Application No. 13-0039):** Planning Commission consideration of a request by Strata Equity Group (Applicant) to initiate a General Plan Amendment (GPA) for a 20.2 acre project site located at the northwest corner of Elizabeth Lane and Prielipp Road (APN: 380-250-023).

RECOMMENDATION

That the Planning Commission recommend the City Council adopt an order to initiate proceedings for a general plan amendment for the "Strata/Prielipp Project" located at the northwest corner of Elizabeth Lane and Prielipp Road (APN: 380-250-023)

BACKGROUND

The applicant (Strata Equity Group) submitted a Pre-Application (PAR) to the City several months ago for a proposed project that could include a 84-unit/104 bed congregate care facility/assisted living facility on 7.5 acres, and a 143-unit multi-family townhome project on 12.7 acres. The PAR also included a general plan amendment for the entire 20.2 acre site from Business Park (BP) to High Density Residential (HDR) to accommodate the future project. No formal development plans have been submitted to the City.

The exhibit on the following page shows an aerial of the project site. At this time, the applicant is seeking Commission support to move forward with the General Plan Amendment (GPA). A discussion of the GPA is provided in the Analysis section of this report.

Vicinity/Location (General) Map

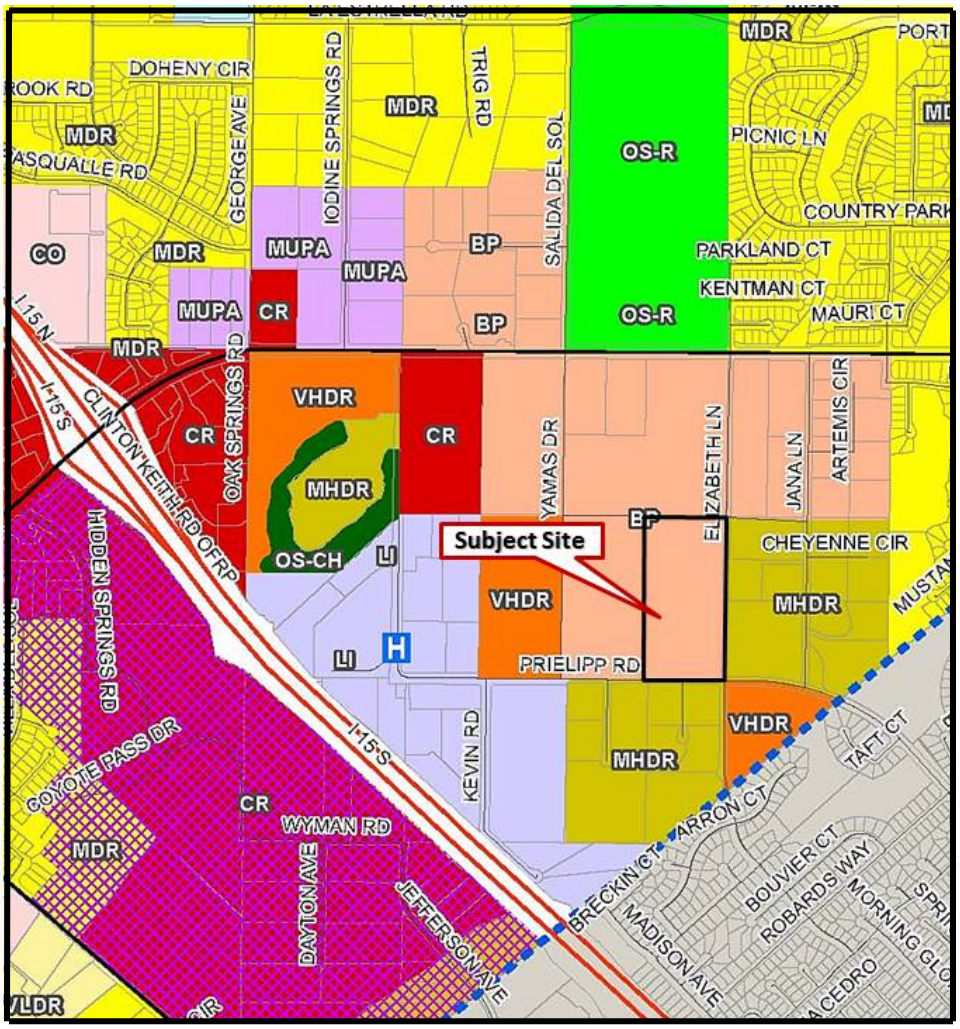
PROJECT ANALYSIS

Since the future project would require a GPA, the request must follow the procedures outlined in Section 17.08.010.B and 17.08.040.B of the Zoning Ordinance. As discussed in these sections, the initiation of a general plan amendment by a property owner/applicant first requires the order of the City Council, adopted by the affirmative vote of not less than a majority of the entire membership of the Council. Once the Council adopts an order to initiate a general plan amendment, the amendment process then follows the standard process outlined by state law and Section 17.08.010 and 17.08.100 of the Zoning Ordinance. The order to initiate a general plan amendment that is presented to the City Council must first include comments from the Planning Commission. Hence, staff has brought this request forward for Commission review and consideration.

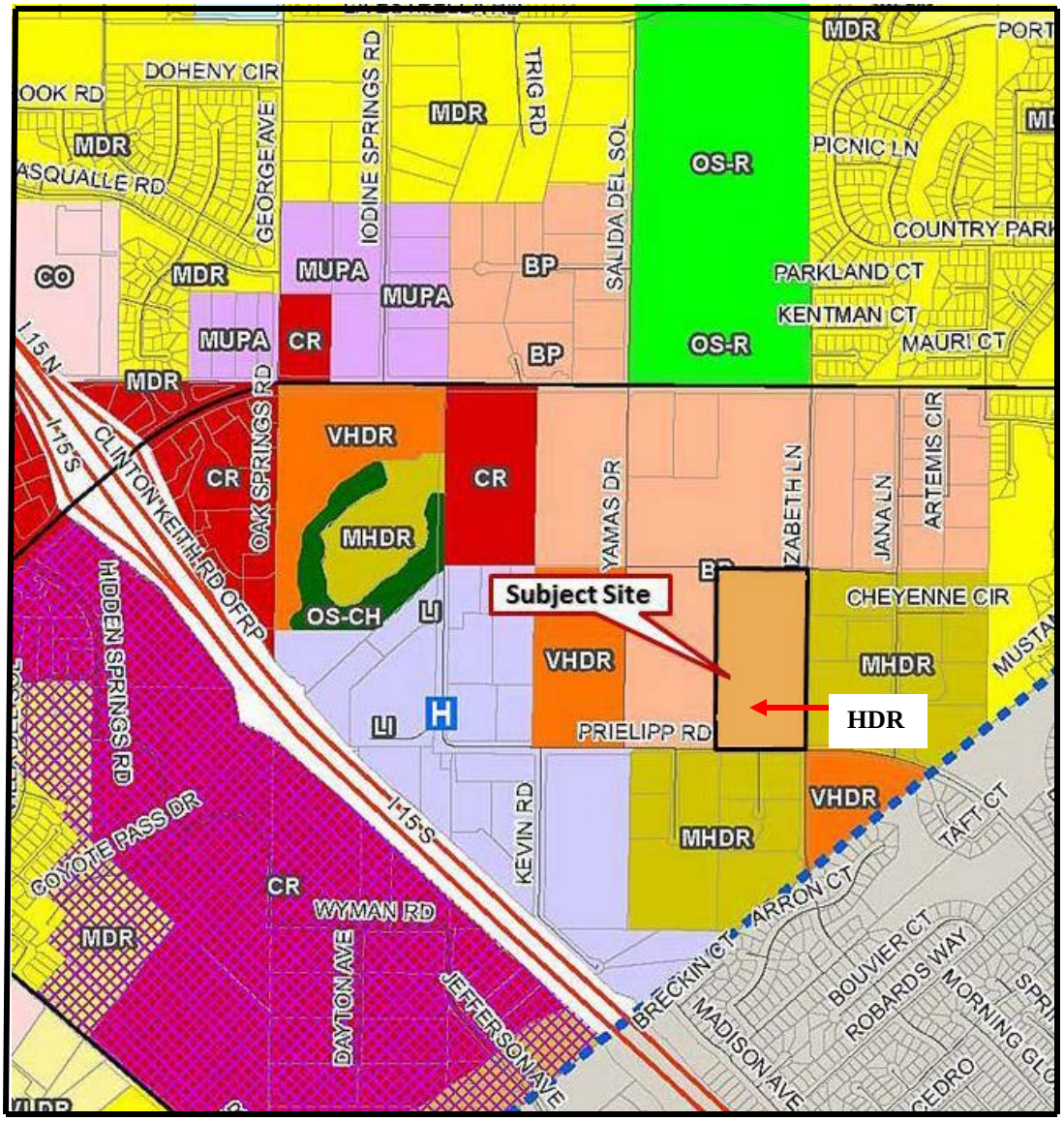
General Plan Amendment Initiation Request:

The applicant desires to amend the general plan land use map for the entire 20.2 acre site. The proposal is to change the existing land use designation of Business Park (BP) to High Density Residential (HDR) to accommodate the future project. The HDR designation allows a residential density between 8 to 14 units/acre. The existing and proposed land use designation of the project site and surrounding area are depicted in the two exhibits on the following pages.

Existing Land Use Designation



Proposed Land Use Designation



In addition to the GPA, this project would require the following development applications:

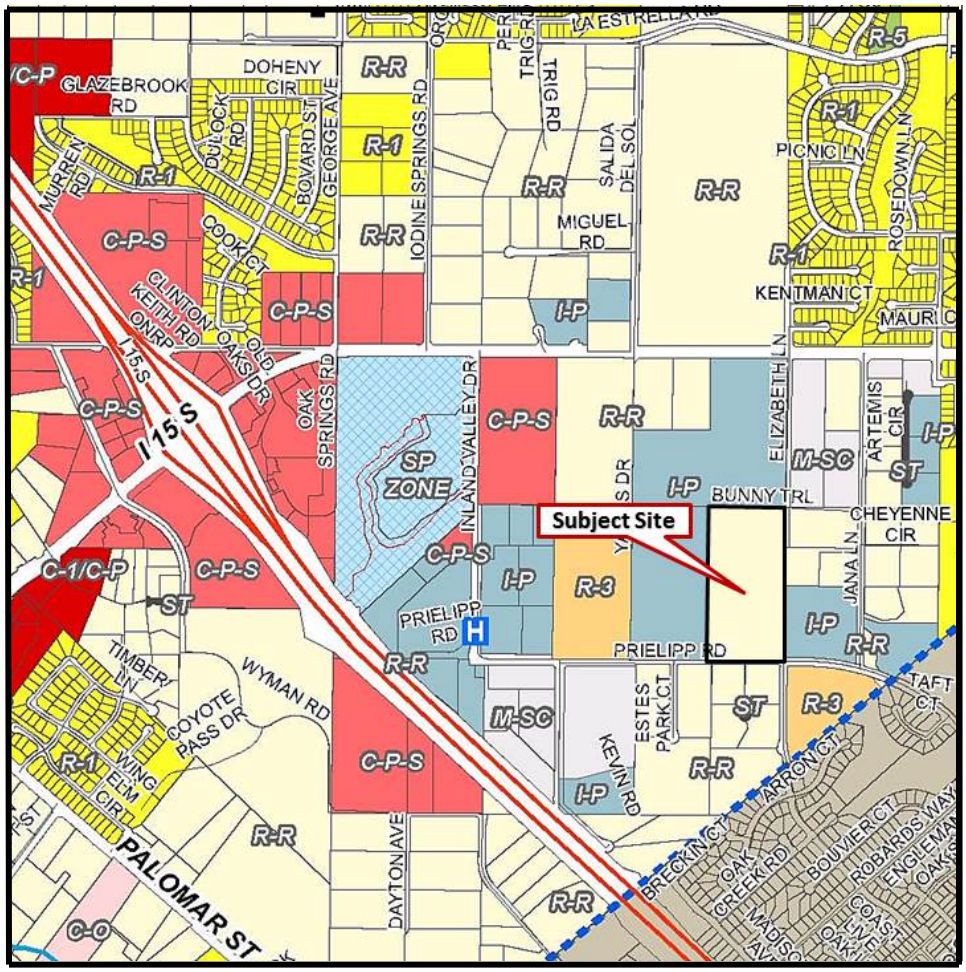
- Change of Zone – The City will require the processing of a Change of Zone from the current zoning designation of R-R (Rural Residential) to R-3 (General Residential) to accommodate the proposed residential development project.

- Plot Plan – The City will require the processing of a Plot Plan application in accordance with the R-3 zoning and development standards to accommodate the proposed project and the development standards for congregate care living facilities in Chapter 17.272 to accommodate the proposed project.

- <u>Environmental Review</u> – The City will require an environmental review for the proposed project, in the form of an EIR or MND (to be determined upon a formal submittal package).

While the change of zone is not part of the GPA initiation process, the exhibit below depicts the existing zoning of the project site and the surrounding areas. As noted, the applicant desires to establish the R-3 (General Residential) zone category to accommodate the future development proposal.

<u>Existing Zoning Designation</u>



No formal development plans have been submitted to the City at this time. If the GPA is supported by Commission and Council, then the applicant would follow up with the formal submittal. Neither the change of zone, plot plan or environmental review is part of the GPA initiation process at this time.

In making its recommendation to the City Council regarding initiation of a general plan amendment, the Commission may consider the proposed and surrounding land use and zoning designations, the location of the project in relation to surrounding land uses, and other

factors deemed appropriate by Commission. These comments will be forwarded to the Council for consideration. The GPA initiation request is tentatively scheduled for the January 22, 2014 Council meeting.

If the Council supports the request to initiate the general plan amendment, the project would also require the review and processing of development applications outlined above.

Conclusion

In conclusion, the applicant desires to move forward with the GPA process and formal development application submittal. They intend to provide a power point presentation and materials for Commission consideration at the December 18 meeting. The Applicant has also retained a real estate market consultant to analyze the Highest and Best Use for the property based on current supply and future demand of various land use categories to determine the optimal development types for these locations. The results of this analysis informed the design of the current conceptual site plans and therefore the proposed General Plan Amendment to accommodate the optimal land uses suggested by this market analysis.

Further, the Applicant has completed both a Fiscal Impact Analysis and Economic Impact Analysis to understand the anticipated effects of the proposed project on the City's Revenue Sources and Job Generation respectively. These completed reports conclude that the proposed project will have a significantly positive effect on City revenues and job creation at build out and operation of the project. These reports will be submitted to the City as part of the formal project application submittal.

Staff is recommending the Commission recommend Council support to initiate the general plan amendment. It is important to clarify that if the Council allows the GPA to be processed, the decision does not imply that the proposed amendment will be formally approved. As previously stated, the general plan amendment application, and all other applicable development applications, is required to go through the formal and complete staff review process, and is subject to a full public hearing before the Planning Commission and City Council, along with the CEQA environmental review document.

Respectfully Submitted,
Matthew C. Bassi
Planning Director

Reviewed By,
Erica Vega
Assistant City Attorney

ATTACHMENTS
None.