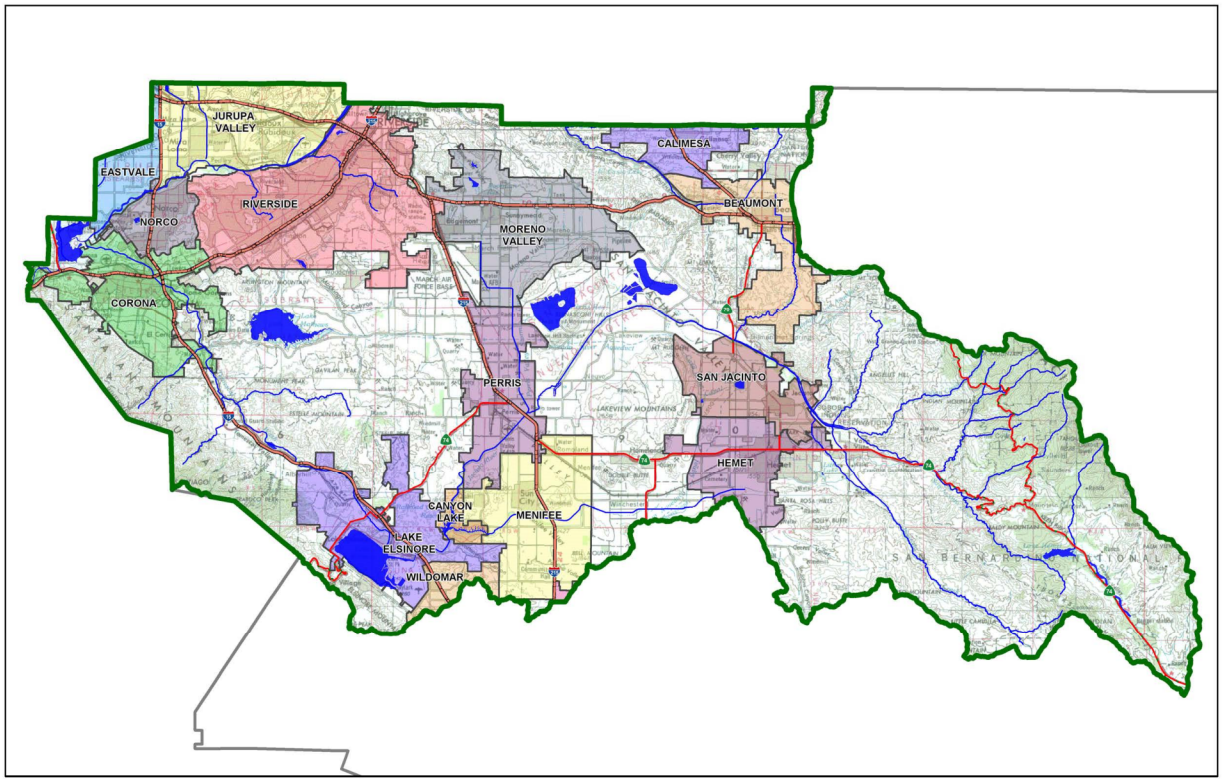
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: New Light Industrial Building/Retail Facility Jurupa Valley

Development No:

Design Review/Case No: MA22123, SDP22038



☒ **Preliminary**
☐ **Final**

Original Date Prepared: May 2018

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Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**

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OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for Industrial Outdoor Adventures by adkan Engineers for the New Light Industrial Building/Retail Facility Jurupa Valley project.

This WQMP is intended to comply with the requirements of the City of Jurupa Valley for Ordinance No. 2012-07 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 and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under the City of Jurupa Valley Water Quality Ordinance (City Ordinance No. 2012-07 and Resolution 2012-32).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature	Date
Richard Dail Reaves Preparer's Printed Name	Senior Project Manager Preparer's Title/Position

Preparer's Licensure:

Table of Contents

List of Tables

List of Appendices

Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Light Industrial
Planning Area:	Jurupa Valley
Community Name:	N/A
Development Name:	Industrial Outdoor Solutions
PROJECT LOCATION	
Latitude & Longitude (DMS): 34.019226, -117.54638	
Project Watershed and Sub-Watershed: Santa Ana River	
APN(s): 156-030-016, 017, 042	
Map Book and Page No.: Pg 643, Grid F6	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Light Industrial
Proposed or Potential SIC Code(s)	
Area of Impervious Project Footprint (SF)	206,910.03 SF (4.98AC)
Total Area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement	206,910.03 SF (4.98AC)
Does the project consist of offsite road improvements?	☒ Y ☐ N
Does the project propose to construct unpaved roads?	☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y ☒ N
EXISTING SITE CHARACTERISTICS	
Total area of existing Impervious Surfaces within the project limits (SF)	0
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	
Are there any natural hydrologic features on the project site?	☐ Y ☒ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	N/A
What is the Water Quality Design Storm Depth for the project?	0.85

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Santa Ana River, Reach 3	**Pathogens**	**AGR, GWR, REC1, REC2, WAR, WILD, SPWN**	**7.5 MILES**
Prado Basin Management Zone	N/A	REC1, REC2, WARM, WILD, RARE	22.5 MILES
Santa Ana River, Reach 2	N/A	AGR, GWR, REC1, REC2, WILD, WARM, RARE	24.5 MILES
Santa Ana River, Reach 1	N/A	REC1, REC2, WILD, WARM	Not a Warm Body Classified as Rare
Tidal Prism of Santa Ana River (to within 1000' of Victoria St. and Newport Slough)	N/A	REC1, REC2, COMM, WILD, RARE, MAR	48 MILES
Pacific Ocean Nearshore Zone	N/A	IND, NAV, REC1, REC2, COMM, WILD, RARE, SPWN, MAR, SHEL	52 MILES
Pacific Ocean Offshore Zone	N/A	IND, NAV, REC1, REC2, COMM, WILD, RARE, SPWN, MAR	55 MILES

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ 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
Statewide Construction General Permit Coverage (SWPPP.)	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* Grading Permit, Building Permit, Retaining Wall Permit	☒ Y	☐ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

Yes, the natural drainage pattern will be preserved. Three quarters of the site drains to the east of the site and the remainder drains to the west of the site

Did you identify and protect existing vegetation? If so, how? If not, why?

No, the majority of the site will be paved, only a portion of the east side of the site will remain natural due to concentrated offsite flows draining to this area.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

Yes, infiltration trenches will be implemented to infiltrate the water before discharge to street and infiltration basin. A portion of natural land on the east site will also be reserved

Did you identify and minimize impervious area? If so, how? If not, why?

No, due to limit space available about 80 percent are paved; however, about 10 percent of the site is use for water treatment and another 10 percent left undisturbed.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

The west site is HCOC exempt. The eastern side is not HCOC exempt. The eastern site, the water will go through infiltration trench and infiltration basin and then discharged to existing storm drain pipe.

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1]	Area (Sq. Ft.)	DMA Type
DMA 1A	Asphalt	67,335.54	D
DMA 1B	Landscape	17,841.03	D
DMA 1C	Concrete	6,528.92	D
DMA 1D	Roof	21,358.68	D
DMA 2A	Asphalt	77,011.87	D
DMA 2B	Landscape	11,265.53	D
DMA 2C	Concrete	2,626.77	D
DMA 3A	Asphalt	29,406.51	D
DMA 3B	Landscape	25,273.19	D
DMA 3C	Concrete	3,794.78	D
DMA 3D	Roof	9,366.85	D

[1]*Reference Table 2-1 in the WQMP Guidance Document to populate this column*

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
N/A			

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]
N/A						

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Runoff factor	Product		Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]	DMA name /ID	[D]	[C]/[D]
N/A							

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA 1A	INFILTRATION TRENCH (1)
DMA 1B	INFILTRATION TRENCH (1)
DMA 1C	INFILTRATION TRENCH (1)
DMA 1D	INFILTRATION TRENCH (1)
DMA 2A	INFILTRATION TRENCH (2)
DMA 2B	INFILTRATION TRENCH (2)
DMA 2C	INFILTRATION TRENCH (2)
DMA 2D	INFILTRATION TRENCH (2)
DMA 3A	INFILTRATION BASIN (3)
DMA 3B	INFILTRATION BASIN (3)
DMA 3C	INFILTRATION BASIN (3)

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site. If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		X
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?		X
If Yes, list affected DMAs:		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

D.2 Harvest and Use Assessment

Please check what applies*:*

☐ Reclaimed water will be used for the non-potable water demands for the project.

☐Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☒The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If neither of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: 49,000 SF

Type of Landscaping (Conservation Design or Active Turf): Conservation Design

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: 206,910.03 SF

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: 1.05

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: 25,001

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
25,001	49,000

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: N/A

Project Type: N/A

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: N/A

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-1 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: N/A

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: N/A

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	Projected number of toilet users (Step 1)
N/A	N/A

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

N/A

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: N/A

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: N/A

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-3 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-3: N/A

Step 4: Multiply the unit value obtained from Step 4 by the total of impervious areas from Step 3 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: N/A

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**
N/A	*N/A*

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment, unless a site-specific analysis has been completed that demonstrates technical infeasibility as noted in D.3 below.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☐ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

☒ None of the above.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA 1	☒	☐	☐	☐	☐
DMA 2	☒	☐	☐	☐	☐
DMA 3	☒	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

D.5 LID BMP Sizing

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Infiltration Trench BMP 1*		
	[A]		[B]	[C]	[A] x [C]			
A	*67,335.54*	*Asphalt*	*1.0*	*0.89*	*60,063.3*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
B	*17,841.03*	*Landscaping/Gravel*	*0.1*	*0.11*	*1,970.7*			
C	*6,528.92*	*Concrete*	*1.0*	*0.89*	*5,823.8*			
D	*21357.68*	*Roof*	*1.0*	*0.89*	*19,051.9*			
	113064.17				86,909.7	0.85	6,156.1	6,798

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Table D.4 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Infiltration Trench BMP 2*		
	[A]		[B]	[C]	[A] x [C]			
A	*77,011.87*	*Asphalt*	*1.0*	*0.89*	*68,694.6*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
B	*11,265.53*	*Landscaping*	*0.1*	*0.11*	*1,244.4*			
C	*2,626.77*	*Concrete*	*1.0*	*0.89*	*2,343,.1*			
	90,904.17				72,282.1	0.85	5,120	5751.22

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Table D.5 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Infiltration Basin BMP 3*		
	[A]		[B]	[C]	[A] x [C]			
A	*29,406.51*	*Asphalt*	*1.0*	*0.89*	*26,230.6*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
B	*25,273.19*	*Landscaping*	*0.1*	*0.11*	*2,791.6*			
C	*3,794.78*	*Concrete*	*1.0*	*0.89*	*3,384.9*			
D	*9,366.85*	*Roof*	*1.0*	*0.89*	*8,355.2*			
	67,841.33				40,762.3	0.85	2,887.3	19,865

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☒ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☐ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P(2)
☒ Commercial/Industrial Development	P(3)	P	P(1)	P(1)	P(5)	P(1)	P	P
☐ Automotive Repair Shops	N	P	N	N	P(4, 5)	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☒ Parking Lots (>5,000 ft^2)	P(6)	P	P(1)	P(1)	P(4)	P(1)	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☒	☐	☐	☐	☐	☐	☐	☐

P = Potential

N = Not Potential

(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

(3) A potential Pollutant is land use involving animal waste

(4) Specifically petroleum hydrocarbons

(5) Specifically solvents

(6) Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
Total Credit Percentage[1]	

[1]Cannot Exceed 50%

[2]Obtain corresponding data from Table 3-8 in the WQMP Guidance Document

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	**DMA Area (square feet)**	**Post-Project Surface Type**	**Effective Impervious Fraction, I_f**	**DMA Runoff Factor**	**DMA Area x Runoff Factor**		***Enter BMP Name / Identifier Here***		
	[A]		[B]	[C]	[A] x [C]				
						Design Storm Depth (in)	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	A_T = Σ[A]				Σ= [D]	[E]	$[F] = \frac{[D]x[E]}{[G]}$	[F] X (1-[H])	[I]

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12

[H] is from the Total Credit Percentage as Calculated from Table E.2 above

[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]
Infiltration Trench	Metals, Nutrients, Bacterial Indicators, Toxic Organic Compound, Sediment, Trash & Debris, Oil & Grease	
Infiltration Basin	Metals, Nutrients, Bacterial Indicators, Toxic Organic Compound, Sediment, Trash & Debris, Oil & Grease	

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.
[2] Cross Reference Table E.1 above to populate this column.
[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration	5 minutes	5 minutes	0
Volume (Cubic Feet)	2,976.6	24,408.0	157

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Sensitivity Maps.

Does the project qualify for this HCOC Exemption? ☒ Y ☒ N

Per the HCOC Applicability Map, provided in Appendix 1, the western half of the site falls within an HCOC exemption zone. The eastern half does not.

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

☒

Case C condition will be met.

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

Section G: Source Control BMPs

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
On-site storm drain inlets		• Provide stormwater pollution prevention information to new site owners, lessees, or operators • See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com • Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."
Landscape / Outdoor Pesticide Use	• Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. • Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. • Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. • Consider using pest-resistant plants, especially adjacent to hardscape. • To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun,	• Maintain landscaping using minimum or no pesticides • See applicable operational BMPs in "What you should know for ….. Landscape and Gardening" on http://rcflood.org • Provide IPM information to new owners, lessees and operators

	wind, rain, land use, air movement, ecological consistency, and plant interactions.	
Refuse areas	• Signs will be posted on or near dumpsters with the words “Do not dump hazardous materials here” or similar.	• Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptables covered. Prohibit / prevent dumping of liquid or hazardous wastes. Post “no hazardous materials” signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, “Waste Handling and Disposal” in the CASQA Stormwater Quality Handbooks or in Appendix 10 of this report.
Outdoor storage of equipment or materials	• Heavy equipment shall be stored outdoors which may present the risk of various mechanical oils/fluids entering runoff • Above-ground gasoline tank shall be stored outdoors which presents the risk of runoff contamination	• See the Fact Sheets SC-31, SC-32, SC-43 in the CASQA Stormwater Quality Handbooks or in Appendix 10 of this report.
Vehicle and Equipment Cleaning	• Management/Owners shall be responsible for enforcing for prohibiting on-site car/equipment washing	• Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain • Cars and equipment may be rinsed with water only
Vehicle / Equipment Repair and Maintenance	• No vehicle repair or maintenance will be done outdoors.	• No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains. • No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or

		drained from the vehicle immediately. • No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment
Fuel Dispensing Areas		• The property owner shall dry sweep the fueling area routinely. • See the Fact Sheet SD-30, "Fueling Areas" in the CASQA Stormwater Quality Handbooks, or in Appendix 10 of this report.
Fire Sprinkler Test Water	• Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	• See the note in Fact Sheet SC-41, "Building and Grounds Maintenance" in the CASQA Stormwater Quality Handbooks, or in Appendix 10 of this report.
Plazas, sidewalks, and parking lots.		• Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)
DMA 1D	Infiltration Trench (1)	Conceptual Grading Sh. 2
DMA 2D	Infiltration Trench (2)	Conceptual Grading Sh. 2&3
DMA 3D	Infiltration Basin (3)	Conceptual Grading Sh. 3

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Section I: Operation, Maintenance and Funding

Maintenance Mechanism:	INDUSTRIAL OUTDOOR VENTURES ATTN: ROB CHASE 10 N. MARTINGALE ROAD #560 SCHAUMBURG, IL 60173

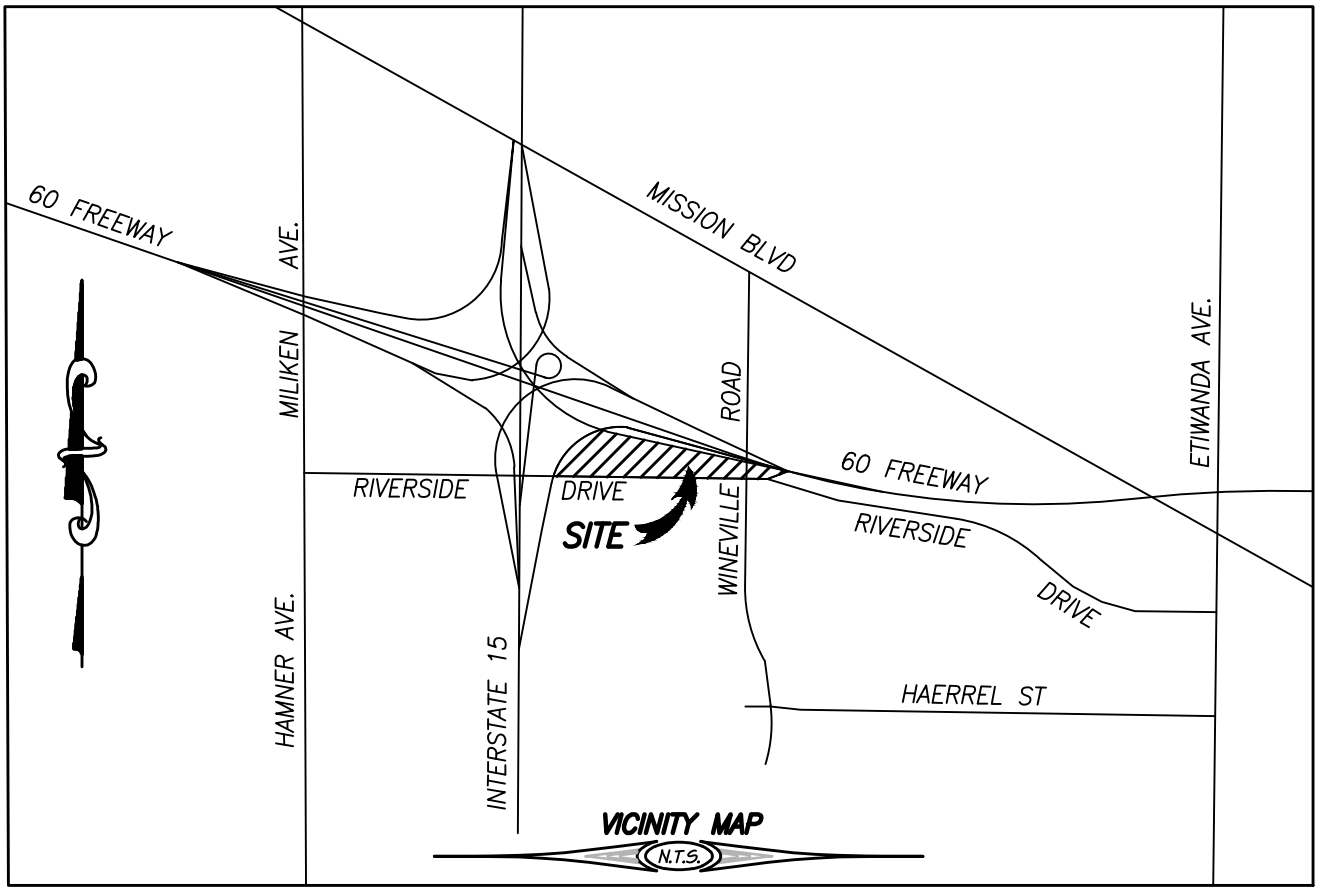
Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

☐ Y ☒ N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map



NEW LIGHT INDUSTRIAL BUILDING & RETAIL FACILITY

PREPARED BY:
adkan ENGINEERS
Civil Engineering·Surveying Planning
6879 Airport Drive, Riverside, CA 92504
Tel:(951) 688-0241 Fax:(951) 688-0599

R 07 W | R 06 W | R 05 W | R 04 W | R 03 W | R 02 W | R 01 W | R 01 E | R 02 E | R 03 E | R 04 E | R 05 E

T 01 S | T 02 S | T 03 S | T 04 S | T 05 S | T 06 S | T 07 S | T 08 S

Project Site
D85 = 0.85

0.85 MiraLoma
0.61 RiversideNorth
0.54 RiversideSouth
0.68 PigeonPass
0.66 MorenoEast
0.85 Beaumont
0.88 PradoDam
0.51 Woodcrest
0.50 LakeMathews
0.68 PerrisReservoir
0.87 VistaGrandeGS
0.70 SanJacintoNWS
1.18 Idyllwild
0.58 SunCity
0.68 Winchester
0.70 ElsinoreNWS
1.11 ElCarisoStation
0.90 HurkeyCreek
0.77 WildomarLaCresta
0.52 SkinnerLake
0.65 Anza
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley

Santa Ana River Watershed
Santa Margarita Watershed

JURUPA VALLEY | EASTVALE | NORCO | CORONA | RIVERSIDE | MORENO VALLEY | CALIMESA | BEAUMONT | SAN JACINTO | PERRIS | CANYON LAKE | LAKE ELSINORE | WILDOMAR | MENIFEE | HEMET | MURRIETA | TEMECULA

06	05	04	03	02	01
07	08	09	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

N

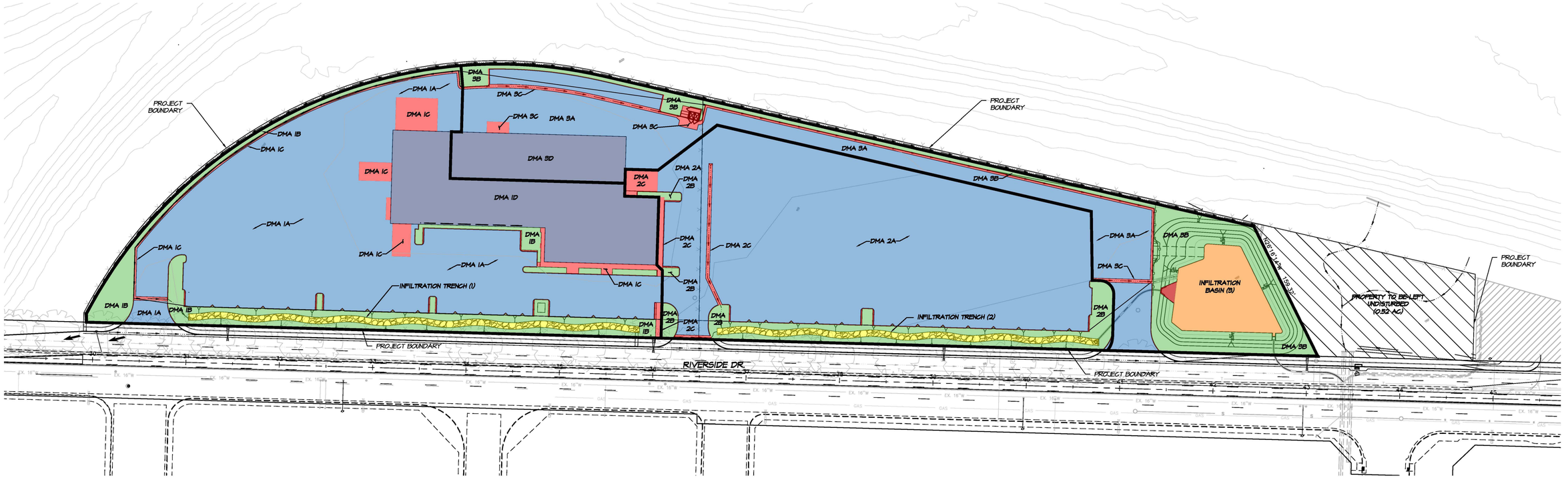
Rain Gage Locations

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Isohyetal Map for the 85th Percentile 24 hour Storm Event

July 2011

NEW LIGHT INDUSTRIAL BUILDING/RETAIL FACILITY JURUPA VALLEY
BMP MAP CASE NO. MA22123



OWNER

INDUSTRIAL OUTDOOR VENTURES
ATTN: ROB CHASE
10 N. MARTINGALE ROAD #560
SCHAUMBURG, IL 60173
TEL (224) 369 - 4341
FAX (260) 760 - 1221

ENGINEER

adkan ENGINEERS
6879 AIRPORT DRIVE
RIVERSIDE, CA 92504

SITE STATISTICS

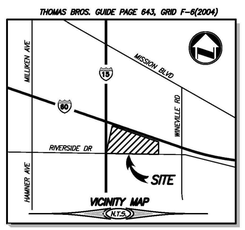
PROJECT AREA:	6.88 AC
TOTAL LOTS:	2 LOTS
TOTAL PROPOSED LOTS:	1 LOT

LEGEND

- INFILTRATION TRENCH
- INFILTRATION BASIN
- LANDSCAPE
- ASPHALT
- CONCRETE
- ROOF
- N.A.P. *
- DMA BOUNDARY LINE

FT - FEET
SF - SQUARE FEET
PERF - PERFORATED
NTS - NOT TO SCALE
DA - DRAINAGE AREA
BMP - BEST MANAGEMENT PRACTICE
DMA - DRAINAGE MANAGEMENT AREA
*NOTE: THIS AREA TO REMAIN NATURAL GROUND

THOMAS BROS. GUIDE PAGE 643, GRID F-6(2004)



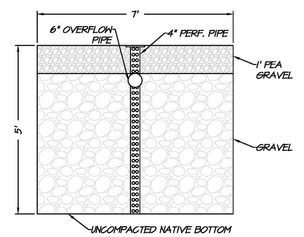
SEC.6 T.2.S. R.6.W

DMA DATA

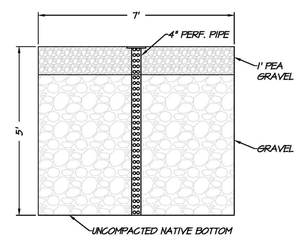
BMP	DMA	SURFACE TYPE	AREA (SF)
INFILTRATION TRENCH (1)	1A	ASPHALT	61,335.54
	1B	LANDSCAPE	17,841.03
	1C	CONCRETE	6,528.92
	1D	ROOF	21,358.66
INFILTRATION TRENCH (2)	2A	ASPHALT	71,011.87
	2B	LANDSCAPE	11,265.53
	2C	CONCRETE	2,626.77
INFILTRATION BASIN (3)	3A	ASPHALT	29,406.51
	3B	LANDSCAPE	25,213.19
	3C	CONCRETE	3,744.78
	3D	ROOF	9,366.85

BMP DATA

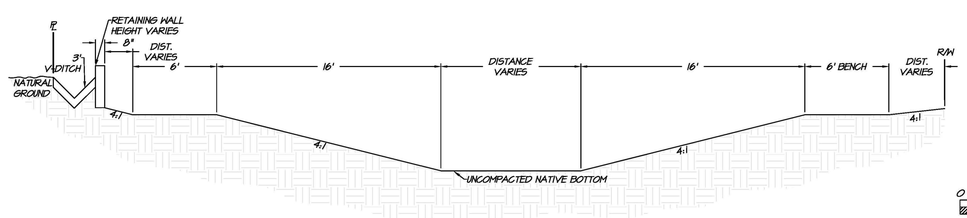
BMP	DEPTH (FT)	DA AREA (SF)
INFILTRATION TRENCH (1)	5	3349.08
INFILTRATION TRENCH (2)	5	2,875.61
INFILTRATION BASIN (3)	0.5	7,946.13



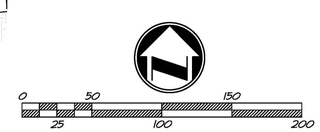
TRENCH DETAIL BMP 1E
NTS



TRENCH DETAIL BMP 2D
NTS



BASIN DETAIL BMP 3D
NTS



SCALE: 1" = 50'

NEW WAREHOUSE/RETAIL FACILITY
JURUPA VALLEY BMP MAP
PREPARATION DATE : FEBRUARY 2023

PLAN PREPARED BY:
adkan ENGINEERS
Civil Engineering · Surveying · Planning
6879 Airport Drive, Riverside, CA 92504
Tel:(951) 688-0241 Fax:(951) 688-0599

SHEET 1 OF 1

PLOT DATE: 2/10/2023 3:04 PM

PLOT LOCATION: U:\PROJECTS\IOV\10288\ENGINEERING\WQMP\PRELIMINARY\9405 BMP MAP.DWG

Appendix 2: Construction Plans

Grading and Drainage Plans

IN THE CITY OF JURUPA VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

NEW LIGHT INDUSTRIAL BUILDING/RETAIL FACILITY
CONCEPTUAL GRADING PLANS
CASE NO. MA22123

GENERAL NOTES

1. APPROVAL OF THESE PLANS BY THE CITY ENGINEER DOES NOT AUTHORIZE ANY WORK TO BE PERFORMED UNTIL A PERMIT HAS BEEN ISSUED.
2. THE APPROVAL OF THIS PLAN OR ISSUANCE OF A PERMIT BY THE CITY DOES NOT AUTHORIZE THE SUBDIVIDER AND/OR OWNER TO VIOLATE ANY FEDERAL, STATE, COUNTY, OR CITY LAWS, ORDINANCES, REGULATIONS, OR POLICIES.
3. ALL GRADING SHALL CONFORM TO THE 2022 CALIFORNIA BUILDING CODE CHAPTER 17, 18, & APPENDIX J AS AMENDED BY ORDINANCE 457 AND CITY OF JURUPA VALLEY MUNICIPAL CODE (TITLE 8).
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SURVEY MONUMENTS AND/OR VERTICAL CONTROL BENCHMARKS WHICH ARE DISTURBED OR DESTROYED BY CONSTRUCTION. A LAND SURVEYOR SHALL REPLACE SUCH MONUMENTS WITH APPROPRIATE MONUMENTS. A CORNER RECORD OR RECORD OF SURVEY, AS APPROPRIATE, SHALL BE FILED AS REQUIRED BY THE PROFESSIONAL LAND SURVEYORS ACT, SECTION 8771 OF THE BUSINESS AND PROFESSIONS CODE OF THE STATE OF CALIFORNIA. IF ANY VERTICAL CONTROL IS TO BE DISTURBED OR DESTROYED, THE CITY OF JURUPA VALLEY MUST BE NOTIFIED, IN WRITING, AT LEAST THREE (3) DAYS PRIOR TO THE CONSTRUCTION. THE CONTRACTOR WILL BE RESPONSIBLE FOR THE COST OF REPLACING ANY VERTICAL CONTROL BENCHMARKS DESTROYED BY THE CONSTRUCTION.
5. ALL PROPERTY CORNERS, GRADING BOUNDARIES AND ALL CONSERVATION AREAS/LEAST SENSITIVE AREA (LSA) DETERMINED BY THE ENVIRONMENTAL PROGRAMS DEPARTMENT (EPD) SHALL BE CLEARLY DELINEATED AND STAKED IN THE FIELD PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION/GRADING.
6. ALL WORK UNDER THIS PERMIT SHALL BE LIMITED TO WORK WITHIN THE PROPERTY LINES. ALL WORK WITHIN THE ROAD RIGHT-OF-WAY WILL REQUIRE SEPARATE PLANS AND A SEPARATE REVIEW-APPROVAL (PERMIT) FROM THE TRANSPORTATION DEPARTMENT.
7. ALL GRADING SHALL BE DONE UNDER THE SUPERVISION OF A SOILS ENGINEER IN CONFORMANCE WITH THE RECOMMENDATIONS OF THE PRELIMINARY SOILS INVESTIGATION PREPARED BY SOILS EXPLORATION INC. DATED SEPTEMBER 12, 2019 AND SOILS REPORT & SEISMIC (CBC 2019) UPDATE BY RODRIGUEZ CONSULTING AND ENGINEERING DATED AUGUST 24, 2022.
8. COMPACTED FILL TO SUPPORT ANY STRUCTURES SHALL COMPLY WITH SECTION 1803.5.8. PROJECTS WITHOUT A PRELIMINARY SOILS REPORT SHALL INCLUDE DETAILED SPECIFICATIONS IN ACCORDANCE WITH SECTIONS 1803.2 AND 1803.5 PREPARED BY THE ENGINEER OF RECORD.
9. THE CONTRACTOR SHALL NOTIFY THE BUILDING AND SAFETY DEPARTMENT AT LEAST 24 HOURS IN ADVANCE TO REQUEST FINISH LOT GRADE AND DRAINAGE INSPECTION. THIS INSPECTION MUST BE APPROVED PRIOR TO BUILDING PERMIT FINAL INSPECTION FOR EACH LOT.
10. PER SECTION 4216 OF THE GOVERNMENT CODE, THE CONTRACTOR SHALL NOTIFY UNDERGROUND SERVICE ALERT, TWO (2) DAYS PRIOR TO DIGGING AT 1-800-422-4133.
11. PRIOR TO GRADING, A MEETING SHALL BE SCHEDULED WITH A RIVERSIDE COUNTY ENVIRONMENTAL COMPLIANCE INSPECTOR PRIOR TO COMMENCEMENT OF GRADING OPERATIONS.

CUT/FILL

1. MAXIMUM CUT AND FILL SLOPE SHALL BE 2:1, HORIZONTAL TO VERTICAL.
2. NO FILL SHALL BE PLACED ON EXISTING GROUND UNTIL THE GROUND HAS BEEN CLEARED OF WEEDS, TOPSOIL AND OTHER DELETERIOUS MATERIAL. FILLS SHOULD BE PLACED IN THIN LIFTS (8-INCH MAX OR AS RECOMMENCED IN THE SOILS REPORT), COMPACTED AND TESTED THROUGHOUT THE GRADING PROCESS UNTIL FINAL GRADES ARE ATTAINED. ALL FILLS ON SLOPES STEEPER THAN 5:1, HORIZONTAL TO VERTICAL, AND A HEIGHT GREATER THAN FIVE (5) FEET SHALL BE KEYED AND BENCHED INTO FIRM NATURAL SOIL FOR FULL SUPPORT. THE BENCH UNDER THE TOE MUST BE TEN (10) FEET WIDE MINIMUM.
3. THE SLOPE STABILITY FOR CUT AND FILL SLOPES OVER THIRTY (30) FEET IN VERTICAL HEIGHT, OR CUT SLOPES STEEPER THAN 2:1 HAVE BEEN VERIFIED WITH A FACTOR OF SAFETY OF AT LEAST 1.5.
4. NO ROCK OR SIMILAR IRREDUCIBLE MATERIAL WITH A MAXIMUM DIMENSION GREATER THAN TWELVE (12) INCHES SHALL BE BURIED OR PLACED IN FILLS CLOSER THAN TEN (10) FEET TO THE FINISHED GRADE.

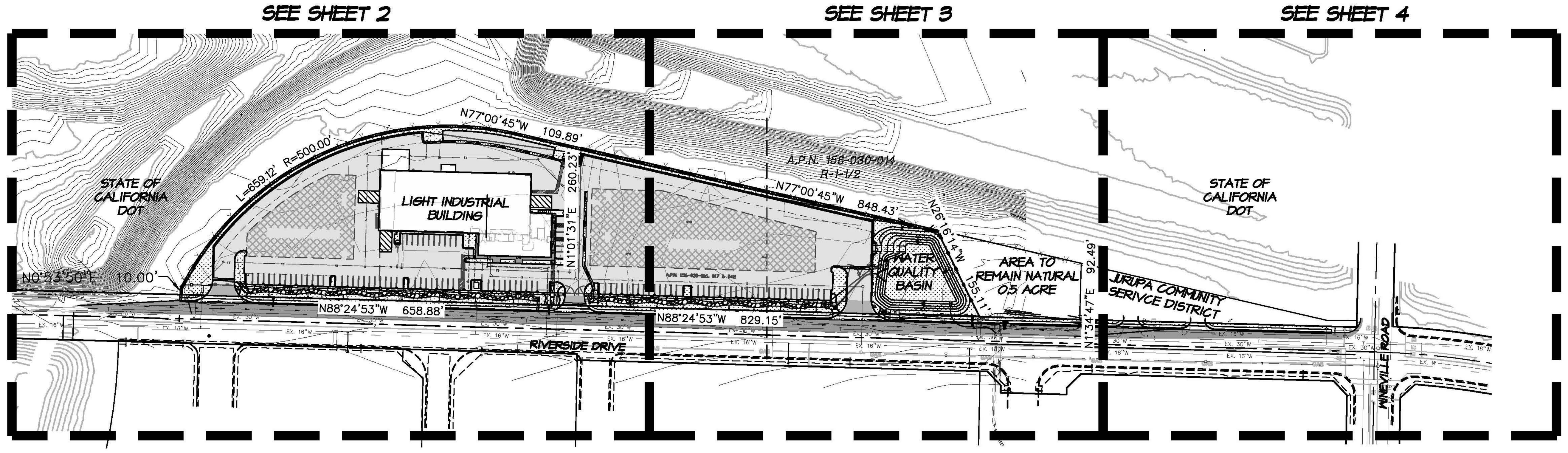
COMPLETION OF WORK NOTES

1. FOR ROUGH GRADING PLANS, A REGISTERED CIVIL ENGINEER SHALL PREPARE FINAL COMPACTION REPORT/GRADING REPORT AND IT SHALL BE SUBMITTED TO THE DEPARTMENT OF BUILDING AND SAFETY FOR REVIEW AND APPROVAL. THE REPORT SHALL INCLUDE BUILDING FOUNDATION DESIGN PARAMETERS, EXPANSION INDEX, DESIGN ALTERNATIVES (IF IE > 20), WATER SOLUBLE SULFATE CONTENT, CORROSIVITY AND REMEDIAL MEASURE IF NECESSARY.
2. FOR ROUGH GRADING PLANS, EXCEPT FOR NON-TRACT SINGLE RESIDENTIAL ROUGH GRADING, THE COMPACTION REPORT SHALL INCLUDE THE SPECIAL INSPECTION VERIFICATIONS LISTED ON TABLE 1705.6 OF 2019 CALIFORNIA BUILDING CODE.
3. FOR ROUGH GRADING, IN ADDITION TO OBTAINING ALL REQUIRED INSPECTIONS AND APPROVAL OF ALL FINAL REPORTS, ALL SITES PERMITTED FOR ROUGH GRADE ONLY SHALL PROVIDE VEGETATIVE COVERAGE (100%) OR OTHER MEANS OF SITE STABILIZATION APPROVED BY ENVIRONMENTAL COMPLIANCE DIVISION, PRIOR TO RECEIVING A ROUGH GRADE PERMIT FINAL SIGNATURE.
4. FOR PRECISE GRADING, A REGISTERED CIVIL ENGINEER SHALL SUBMIT TO THE BUILDING AND SAFETY DEPARTMENT WRITTEN FINAL CERTIFICATION OF COMPLETION OF GRADING IN ACCORDANCE WITH THE APPROVED GRADING PLAN PRIOR TO THE REQUEST OF PRECISE GRADING INSPECTION.

DRAINAGE, EROSION/DUST CONTROL

1. DRAINAGE ACROSS PROPERTY LINES SHALL NOT EXCEED THAT WHICH EXISTED PRIOR TO GRADING. EXCESS OR CONCENTRATED DRAINAGE SHALL BE CONTAINED ON SITE OR DIRECTED TO AN APPROVED DRAINAGE FACILITY. EROSION OF THE GROUND IN THE AREA OF DISCHARGE SHALL BE PREVENTED BY INSTALLATION OF NON-EROSIVE DOWN DRAINS OR OTHER DEVICES.
2. THE CONTRACTOR SHALL PROVIDE A PAVED SLOPE INTERCEPTOR DRAIN ALONG THE TOP OF CUT SLOPES WHERE THE DRAINAGE PATH IS GREATER THAN FORTY (40) FEET TOWARDS THE CUT SLOPE.
3. THE CONTRACTOR SHALL PROVIDE FIVE (5) FEET WIDE BY ONE (1) FOOT HIGH BERM ALONG THE TOP OF ALL FILL SLOPES STEEPER THAN 3:1, HORIZONTAL TO VERTICAL.
4. THE GROUND SURFACE IMMEDIATELY ADJACENT TO THE BUILDING FOUNDATION SHALL BE SLOPED AWAY FROM THE BUILDING AT A SLOPE OF NOT LESS THAN ONE UNIT VERTICAL IN 20 UNITS HORIZONTAL (5% SLOPE) FOR A MINIMUM DISTANCE OF TEN (10) FEET MEASURED PERPENDICULAR TO THE FACE OF THE FOUNDATION.
5. NO OBSTRUCTION OF NATURAL WATER COURSES SHALL BE PERMITTED.
6. DURING ROUGH GRADING OPERATIONS AND PRIOR TO CONSTRUCTION OF PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL (BEST MANAGEMENT PRACTICES, BMPs) SHALL BE PROVIDED TO PREVENT PONDING WATER AND DRAINAGE TO ADJACENT PROPERTIES.
7. DUST CONTROL SHALL BE CONTROLLED BY WATERING OR OTHER APPROVED METHODS.
8. CONSTRUCTION SITES SUBJECT TO PM10 FUGITIVE DUST MITIGATION SHALL COMPLY WITH AQMD RULE 403.1.
9. ALL EXISTING DRAINAGE COURSES AND STORM DRAIN FACILITIES SHALL CONTINUE TO FUNCTION. PROTECTIVE MEASURES AND TEMPORARY DRAINAGE PROVISIONS MUST BE USED TO PROTECT ADJOINING PROPERTIES DURING GRADING OPERATIONS.
10. FOR ALL SLOPES EQUAL TO OR GREATER THAN THREE (3) FEET IN VERTICAL HEIGHT ARE REQUIRED TO BE PLANTED WITH AN APPROVED DROUGHT-TOLERANT GROUND COVER AT A MINIMUM SPACING OF 12" ON CENTER OR AS APPROVED BY THE ENGINEER OF RECORD OR THE REGISTERED LANDSCAPE ARCHITECT AND DROUGHT-TOLERANT SHRUBS SPACED AT NO MORE THAN 10' ON CENTER, OR TREES SPACED NOT TO EXCEED 20' ON CENTER, OR A COMBINATION OF SHRUBS AND TREES NOT TO EXCEED 15' IN ADDITION TO THE GRASS OR GROUND COVER. SLOPES THAT REQUIRE PLANTING SHALL BE PROVIDED WITH AN IN-GROUND IRRIGATION SYSTEM EQUIPPED WITH AN APPROPRIATE BACKFLOW DEVICE PER C.P.C. CHAPTER 6. THE SLOPE PLANTING AND IRRIGATION SYSTEM SHALL BE INSTALLED AS SOON AS POSSIBLE UPON COMPLETION OF ROUGH GRADING. ALL PERMANENT SLOPE PLANTING SHALL BE ESTABLISHED AND IN GOOD CONDITION PRIOR TO SCHEDULING PRECISE GRADE INSPECTION.

SEE SHEET 2 SEE SHEET 3 SEE SHEET 4



0 75 150 300 450 600

SCALE: 1" = 150'

LEGEND

AC	ASPHALT CONCRETE	LS	LANDSCAPE
AP	ANGLE POINT	INV	INVERT
BW	BACK OF WALK	O.C.	OFF CENTER
CB	CATCH BASIN	PROP.	PROPOSED
CF	CURB FACE	R/W	RIGHT OF WAY
C&G	CURB & GUTTER	SD	STORM DRAIN
EG	EXISTING GRADE	TB	TOP OF AC BERM
FG	FINISHED GRADE	TC	TOP OF CURB
FL	FLOWLINE	TF	TOP OF FOOTING
FS	FINISHED SURFACE	TG	TOP OF GRATE
GB	GRADE BREAK	TW	TOP OF WALL
HP	HIGH POINT	TYP	TYPICAL

C/L
R/W
FLOWLINE
PROP. WATER LATERAL
PROP. FIRE SERVICE
PROP. SEWER
PROP. SEWER LATERAL
STORM DRAIN
CURB
TOPO MAJOR
TOPO MINOR
EX. E/P
EX. UGTL
EX. 16" WATER
EX. 30" WATER
PROPERTY LINE
BOUNDARY FENCE
RETAINING WALL
DEEPENED FOOTING
LANDSCAPE
CONCRETE
TRENCH
EARTH

CONSTRUCTION NOTES & QUANTITIES

THE QUANTITIES SHOWN BELOW ARE FOR BONDING PURPOSES ONLY. THE CONTRACTOR IS TO CONSTRUCT PROJECT PER THESE PLANS AND SUBMIT BID BASED ON THEIR OWN QUANTITY "TAKE-OFF."

1. INSTALL 3" AC PAVEMENT OVER 4" BASE PER SOILS REPORT ....173,754 SF
2. CONSTRUCT 0" CURB PER COUNTY OF RIVERSIDE STD. 204 ....725 LF
3. CONSTRUCT 6" CURB AND GUTTER PER COUNTY OF RIVERSIDE STD. 200 ....2,633 LF
4. CONSTRUCT 4' WIDE VALLEY GUTTER PER DETAIL ON SHEET 3 ....475 LF
5. CONSTRUCT CONCRETE SIDEWALK PER COUNTY OF RIVERSIDE STD. 401 - WIDTH PER PLAN ....9,237 SF
6. CONSTRUCT COMMERCIAL DRIVEWAY PER COUNTY OF RIVERSIDE STD. 207A ....5 EA
7. INSTALL ADA PARKING AND PATH STRIPING PER DETAILS ON SHEET 2 ....1,020 SF
8. INSTALL PARKING STRIPING ....1,800 LF
9. CONSTRUCT RETAINING WALL - HEIGHT PER PLAN ....1,535 LF
10. INSTALL WHEEL STOP PER DETAIL ON SHEET 3 ....92 EA
11. CONSTRUCT DEEPENED FOOTING - DEPTH PER PLAN ....82 LF
12. CONSTRUCT 3' WIDE CONCRETE V-DITCH ....1,385 LF
13. INSTALL UNDER SIDEWALK DRAIN PER COUNTY OF RIVERSIDE STD. 309 ....1 EA
14. INSTALL 4' CURB CUT ....3 EA
15. CONSTRUCT 7' WIDE INFILTRATION TRENCH - SEE WQMP FOR DETAILS ....6,273 SF
16. INSTALL 18" STORM DRAIN - SEE WQMP FOR DETAILS....193 LF
17. INSTALL 10" SEWER LINE ....843 LF
18. INSTALL SEWER MANHOLE ....6 EA
19. INSTALL 6" SEWER LATERAL ....953 LF
20. INSTALL 2" WATER LATERAL ....231 LF
21. INSTALL TRUNCATED DOMES....158 SF
22. INSTALL 6" CURB PER COUNTY OF RIVERSIDE STD. 200 ....1,490 LF
23. INSTAL 6" FIRE SERVICE LINE ....1,652 LF

OWNER/APPLICANT

INDUSTRIAL OUTDOOR VENTURES
ATTN: ROB CHASE
10 N. MARTINGALE ROAD #560
SCHAUMBURG, IL 60173
TEL (224) 369 - 4341
FAX (260) 760 - 1221

ENGINEER

adkan ENGINEERS
6879 AIRPORT DRIVE
RIVERSIDE, CA. 92504
951-688-0241

ZONING/LAND USE

EXISTING ZONING:	I-P
PROPOSED ZONING:	I-P
EXISTING LANDUSE:	VACANT
PROPOSED LANDUSE:	LIGHT INDUSTRIAL BUILDING

SITE STATISTICS

PROJECT AREA:	6.88 ACRES
DISTURBED AREA:	6.77 ACRES

ASSESSORS PARCEL NUMBERS

156-030-016, 017, 042

FEMA FLOODZONE DESIGNATION

ZONE X

UTILITY PURVEYORS

WATER:	JURUPA COMMUNITY SERVICES DISTRICT
SEWER:	JURUPA COMMUNITY SERVICES DISTRICT
GAS:	SOUTHERN CALIFORNIA GAS COMPANY
ELECTRICITY:	SOUTHERN CALIFORNIA EDISON
TELEPHONE:	VERIZON
CATV:	CHARTER COMMUNICATIONS
SCHOOL DISTRICT:	CORONA-NORCO UNIFIED SCHOOL DISTRICT

EARTHWORK QUANTITIES

CUT: 8,290 CY FILL: 6,228 CY
IMPORT/EXPORT: 2,062 CY EXPORT

THE QUANTITY SHOWN ABOVE IS FOR DISCUSSION PURPOSES ONLY. SHRINKAGE, SUBSIDENCE, AND SURFACE FACTORS ARE NOT INCLUDED. CONTRACTOR TO COMPLETE THEIR OWN TAKE OFF PRIOR RO CONSTRUCTION.

TOPOGRAPHY

TOPOGRAPHY SOURCE TAKEN FROM SURVEY CONDUCTED BY ADKAN ENGINEERS ON 3-20-2018

BASIS OF BEARING

THE BEARINGS SHOWN HEREON ARE BASED ON THE CENTERLINE OF RIVERSIDE AVE, N88°W PER PM NO. 35125, PMB 234/21-23

SOILS ENGINEER

SOILS EXPLORATION COMPANY, INC.
7535 JURUPA AVE., UNIT C
RIVERSIDE CA, 92504
PHONE (951) 688-7200
FAX (951) 688-7100

NOTE

1. NEW UTILITIES TO BE LOCATED UNDERGROUND
2. WALLS TO BE TREATED WITH ANTI-GRAFFITI COATING

SHEET INDEX

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

1. CONSTRUCTION SITE BMPs FOR THE MANAGEMENT OF STORM WATER AND NON-STORMWATER DISCHARGES SHALL BE DOCUMENTED ON THE GRADING PLAN. ARRANGEMENTS SHALL BE MADE BY THE DEVELOPER TO RETAIN THE SWPPP ON THE JOBSITE THROUGHOUT THE TIME OF CONSTRUCTION. THE IMPLEMENTATION AND MAINTENANCE OF THE SITE BMPs IS REQUIRED TO MINIMIZE JOBSITE EROSION AND SEDIMENTATION. ARRANGEMENTS SHALL BE MADE BY THE DEVELOPER TO MAINTAIN THOSE BMPs THROUGHOUT THE TIME OF CONSTRUCTION.
2. EROSION CONTROL BMPs SHALL BE IMPLEMENTED AND MAINTAINED TO PREVENT AND/OR MINIMIZE THE ENTRAINMENT OF SOIL IN RUBOFF FROM DISTURBED SOIL AREAS ON CONSTRUCTION SITES.
3. SEDIMENT CONTROL BMPs SHALL BE IMPLEMENTED AND MAINTAINED TO PREVENT AND/OR MINIMIZE THE TRANSPORT OF SOIL FROM THE CONSTRUCTION SITE.
4. GRADING SHALL BE PHASED TO LIMIT THE AMOUNT OF DISTURBED AREA EXPOSED TO THE EXTENT FEASIBLE.
5. AREAS THAT ARE CLEARED AND GRADED SHALL BE LIMITED TO OBLY THE PORTION OF THE SITE THAT IS NECESSARY FOR CONSTRUCTION. THE CONSTRUCTION SITE SHALL BE LIMITED TO ONLY THE PORTION OF THE SITE THAT IS NECESSARY FOR CONSTRUCTION. THE CONSTRUCTION SITE SHALL BE MANAGED TO MINIMIZE THE EXPOSURE TIME OF DISTURBED SOIL AREAS THROUGH PHASING AND SCHEDULING OF GRADING AND THE USE OF TEMPORARY AND PERMANENT SOIL STABILIZATION.
6. IF DISTURBED, SLOPES (TEMPORARY OR PERMANENT) SHALL BE STABILIZED IF THEY WILL NOT BE WORKED WITHIN 21 DAYS. DURING STORM SEASON, ALL SLOPES SHALL BE STABILIZED PRIOR TO PREDICTED STORM EVEN. CONSTRUCTION SITES SHALL BE REVEGETATED AS EARLY AS FEASIBLE AFTER SOIL DISTURBANCE.
7. STOCKPILES OF SOIL SHALL BE PROPERLY CONTAINED TO ELIMINATE OF REDUCE SEDIMENT TRANSPORT FROM THE SITE OR STREETS, DRAINAGE FACILITIES OR ADJACENT PROPERTIES VIA RUNOFF, VEHICLE TRACKING, OR WIND.
8. CONSTRUCTION SITES SHALL BE MAINTAINED IN SUCH A CONDITION THAT A STORM DOES NOT CARRY WASTES OR POLLUTANTS OFF THE SITE. DISCHARGES OTHER THAN STORMWATER (NON-STORMWATER DISCHARGES) ARE PROHIBITED, EXCEPT AS AUTHORIZED BY AN INDIVIDUAL NPDES PERMIT, THE STATEWIDE GENERAL PERMIT-CONSTRUCTION ACTIVITY. POTENTIAL POLLUTANTS INCLUDE BUT ARE NOT LIMITED TO: SOIL OR LIQUID CHEMICAL SPILLS; WASTES FROM PAINTS, STAINS, SEALANTS, SOLVENTS, DETERGENTS, GLUES, LIME, PESTICIDES, HERBICIDES, FERTILIZERS, WOOD PRESERVATIVES, AND ASBESTOS FIBERS, PAINT FLAKES OR STUCCO FRAGMENTS, FUEL, OILS, LUBRICANTS, AND HYDRAULIC, RADIATOR OR BATTERY FLUIDS, CONCRETE AND RELATED CUTTING OR CURING RESIDUES; FLOATABLE WASTES; WASTES FROM ENGINE/EQUIPMENT STEAM CLEANING OR CHEMICAL DEGREASING; WASTES FROM STREET CLEANING; AND SUPER-CHLORINATED POTABLE WATER FROM LINE FLUSING AND TESTING. DURING CONSTRUCTION, DISPOSAL OF SUCH MATERIALS SHOULD OCCUR IN A SPECIFIED AND CONTROLLED TEMPORARY AREA O-SITE PHYSICALLY SEPARATE FROM POTENTIAL STORMWATER RUNOFF, WITH ULTIMATE DISPOSAL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REQUIREMENTS.
9. RUNOFF FROM EQUIPMENT AND VEHICLE STASHING SHALL BE CONTAINED AT CONSTRUCTION SITE AND MUST NOT BE DISCHARGED TO RECEIVING WATERS OR LOCAL STORM DRAIN SYSTEM.
10. APPROPRIATE BMPs FOR CONSTRUCTION-RELATED MATERIALS, WASTES, SPILLS OR RESIDUES SHALL BE IMPLEMENTED TO ELIMINATE OR REDUCE TRANSPORT FRO THE SITE TO STREETS, DRAINAGE FACILITIES, OR ADJOINING PROPERTIES BY WIND OR RUNOFF.
11. ALL CONSTRUCTION CONTRACTORS AND SUBCONTRACTOR PERSONNEL ARE TO BE TRAINED IN THE IMPLEMENTATION AND USE OF THE REQUIRED BMPs AND GOOD HOUSEKEEPING MEASURE FOR THE PROJECT SITE AND ANY ASSOCIATED CONSTRUCTION STAGING AREAS AND ALL TRAINING DOCUMENTATION SHALL BE MAINTAINED IN THE SWPPP.
12. DISCHARGING CONTAMINATED GROUNDWATER PRODUCED BY DEWATERING GROUNDWATER THAT HAS INFILTRATED INTO THE CONSTRUCTION SITE IS PROHIBITED. DISCHARGING OF CONTAMINATED SOILS VIA SURFACE EROSION IS ALSO PROHIBITED. DISCHARGING NON-CONTAMINATED GROUNDWATER PRODUCED BY DEWATERING ACTIVITIES MAY REQUIRE A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FROM THE REGIONAL WATER QUALITY CONTROL BOARD.
13. BMPs SHALL BE MAINTAINED AT ALL TIMES. IN ADDITION, BMPs SHALL BE INSPECTED PRIOR TO PREDICTED STORM EVENTS AND FOLLOWING STORM EVENTS.
14. AT THE END OF EACH DAY OF CONSTRUCTION ACTIVITY, ALL CONSTRUCTION DEBRIS AND WASTE MATERIALS SHALL BE COLLECTED AND PROPERLY DISPOSED OF IN TRASH OR RECYCLE BINS.

DECLARATION OF ENGINEER OF RECORD

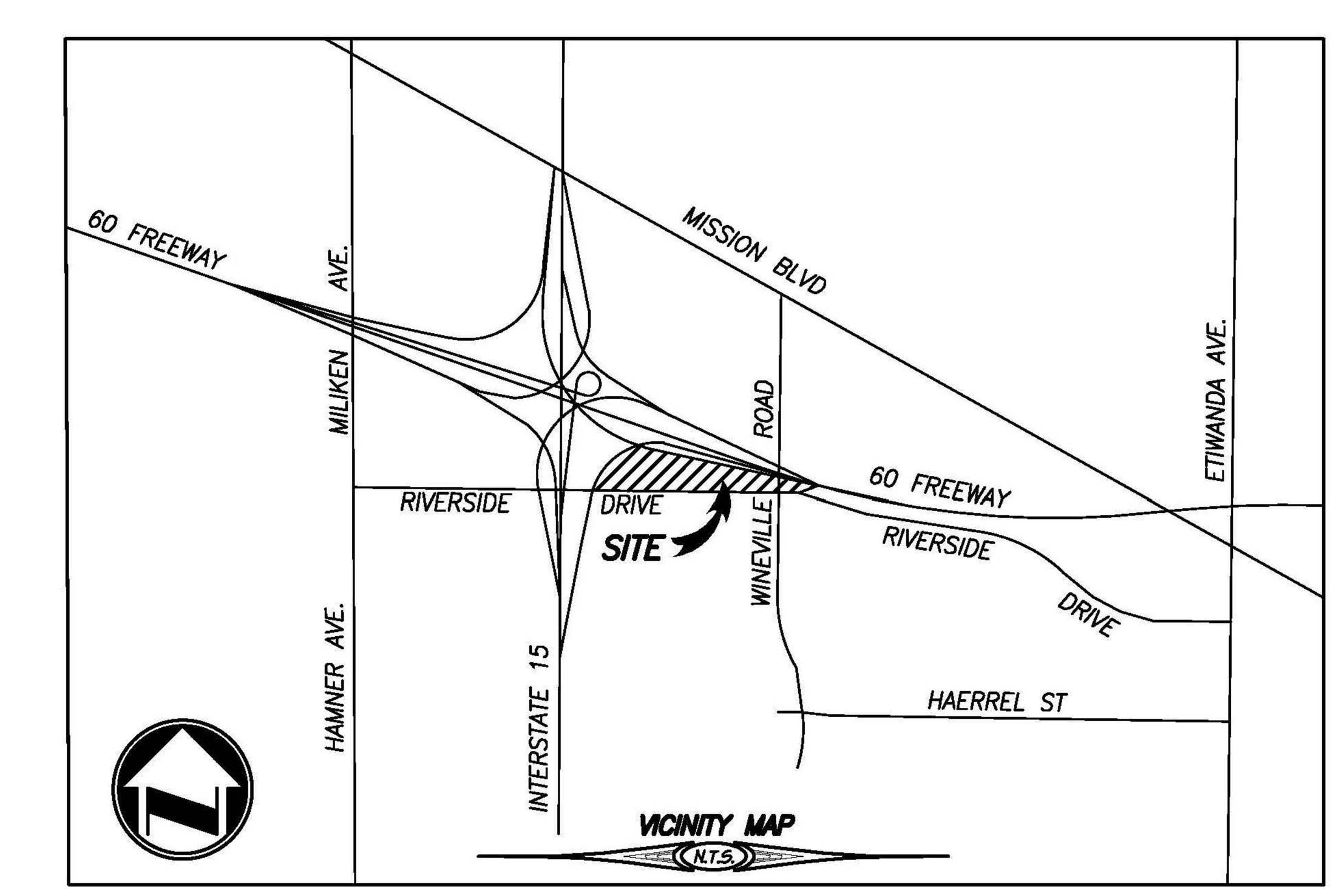
I HEREBY DECLARE THAT THE DESIGN OF THE IMPROVEMENTS AS SHOWN ON THESE PLANS COMPLIES WITH PROFESSIONAL ENGINEERING STANDARDS AND PRACTICES. AS THE ENGINEER IN RESPONSIBLE CHARGE OF DESIGN OF THESE IMPROVEMENTS, I ASSUME FULL RESPONSIBLE CHARGE FOR SUCH DESIGN.
I UNDERSTAND AND ACKNOWLEDGE THAT THE PLAN CHECK OF THESE PLANS BY THE CITY OF JURUPA VALLEY IS A REVIEW FOR THE LIMITED PURPOSE OF ENSURING THAT THE PLANS COMPLY WITH CITY PROCEDURES, APPLICABLE POLICIES AND ORDINANCES. THE PLAN CHECK IS NOT A DETERMINATION OF THE TECHNICAL ADEQUACY OF THE DESIGN OF THE IMPROVEMENTS. SUCK PLAN CHECK DOES NOT, THEREFORE, RELIEVE ME OF MY RESPONSIBILITY FOR THE DESIGN OF THESE IMPROVEMENTS. AS ENGINEER OF RECORD (EOR), I AGREE TO INDEMNIFY AND HOLD THE CITY OF JURUPA VALLEY, THE JURUPA VALLEY HOUSING AUTHORITY, AND THE JURUPA VALLEY COMMUNITY SERVICES DISTRICT (CSD), ITS OFFICERS, AGENTS AND EMPLOYEES HARMLESS FROM ANY AND ALL LIABILITY OF CLAIMS, DAMAGES OR INJURIES TO ANY PERSON OR PROPERTY WHICH MIGHT ARISE FROM THE NEGLIGENT ACTS, ERRORS OR MISSIONS OF THE ENGINEER OF RECORD. I HAVE READ AND INFORMED THE PROJECT APPLICANT/DEVELOPER THAT APPROVAL OF THESE PLANS DO NOT RELIEVE THEM FROM THE REQUIREMENTS OF THE CONDITIONS OF APPROVAL (ATTACHED HEREIN OR IN OTHER APPROVED IMPROVEMENT PLANS).

I ALSO HEREBY DECLARE THAT I HAVE COMPARED THESE PLANS WITH ALL APPLICABLE ADA TITLE II AND TITLE 24 REQUIREMENTS FOR DISABILITY ACCESS FOR THIS PROJECT, AND THESE PLANS ARE IN FULL COMPLIANCE WITH THOSE REQUIREMENTS.

RICHARD DAIL REAVES
R.C.E. 80614 (EXP. 3-31-25) DATE

ENGINEER'S NOTICE TO CONTRACTORS

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY THE SEARCH OF AVAILABLE RECORDS. THESE LOCATIONS ARE APPROXIMATE AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR, SO THAT ANY NECESSARY ADJUSTMENT CAN BE MADE IN ALIGNMENT AND/OR GRADE OF THE PROPOSED IMPROVEMENT. THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT ANY UTILITY FACILITIES SHOWN AND ANY OTHER FACILITIES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.
THE CONTRACTOR SHALL POSSESS THE CLASS (OR CLASSES) OF LICENSE AS SPECIFIED IN THE "NOTICE INVITING BIDS" OF THE BID DOCUMENTS



LEGAL DESCRIPTIONS

THE LAND REFERRED TO HEREIN IS SITUATED IN THE STATE OF CALIFORNIA, COUNTY OF RIVERSIDE, AND IS DESCRIBED AS FOLLOWS:

PARCEL 1 (APN: 156-030-042):

THAT PORTION OF THE SOUTHEAST QUARTER OF SECTION 6, TOWNSHIP 2 SOUTH, RANGE 6 WEST, SAN BERNARDINO MERIDIAN, IN THE CITY OF JURUPA VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION 6, SAID CORNER BEING THE INTERSECTION OF THE CENTERLINE OF RIVERSIDE DRIVE (40.00 FEET IN HALF WIDTH) WITH THE CENTERLINE OF WINEVILLE ROAD (30.00 FEET IN HALF WIDTH); THENCE NORTH 88° 24' 44" WEST ALONG SAID CENTERLINE OF RIVERSIDE DRIVE, A DISTANCE OF 488.80 FEET; THENCE NORTH 01° 35' 16" EAST, AT A RIGHT ANGLE, A DISTANCE OF 40.00 FEET TO THE TRUE POINT OF BEGINNING, SAID POINT BEING ON THE NORTHERLY RIGHT-OF-WAY LINE OF SAID RIVERSIDE DRIVE AS GRANTED TO THE COUNTY OF RIVERSIDE BY DEED RECORDED JUNE 20, 1950 AS INSTRUMENT NO. 2603, IN BOOK 1182, PAGE 304, OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA; THENCE NORTH 88° 24'44" WEST ALONG SAID RIGHT-OF-WAY LINE, A DISTANCE OF 829.15 FEET TO THE SOUTHEASTERLY CORNER OF THAT CERTAIN PARCEL OF LAND GRANTED TO DFA, LLC, A NEVADA LIMITED LIABILITY COMPANY, BY GRANT DEED RECORDED MARCH 26, 1999 AS INSTRUMENT NO. 127153, OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA; THENCE NORTH 01° 01' 44" EAST ALONG THE EASTERLY LINE OF SAID PARCEL, A DISTANCE OF 260.23 FEET TO THE NORTHEASTERLY CORNER THEREOF, SAID CORNER ALSO BEING THE SOUTHWESTERLY CORNER OF THAT CERTAIN PARCEL OF LAND AS DESCRIBED IN THE FINAL ORDER OF CONDEMNATION TO THE STATE OF CALIFORNIA, NO. 115212, RECORDED SEPTEMBER 23, 1977 AS INSTRUMENT NO. 188150, OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA; THENCE SOUTH 77° 00' 36" EAST ALONG THE SOUTHWESTERLY LINE OF SAID PARCEL OF LAND DESCRIBED IN DOCUMENT RECORDED SEPTEMBER 23, 1977 AS INSTRUMENT NO. 188150, OF OFFICIAL RECORDS, A DISTANCE OF 848.43 FEET TO A POINT THEREON; THENCE SOUTH 01° 35' 16" WEST, A DISTANCE OF 92.49 FEET TO THE TRUE POINT OF BEGINNING.

PARCEL 2 (APN: 156-030-016; APN: 156-030-017):

THAT PORTION OF THE EAST HALF OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 6, TOWNSHIP 2 SOUTH, RANGE 6 WEST, SAN BERNARDINO MERIDIAN, IN THE CITY OF JURUPA VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WEST LINE OF THE EAST HALF OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 6 DISTANT SOUTH 00° 04' 25" EAST, 203.46 FEET FROM THE INTERSECTION OF SAID WEST LINE WITH THE SOUTHEASTERLY LINE OF THE LAND CONVEYED TO THE STATE OF CALIFORNIA, BY DEED RECORDED NOVEMBER 25, 1968 AS INSTRUMENT NO. 113381, OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA, BEING A POINT ON THE SOUTHEASTERLY LINE OF THE LAND CONVEYED TO THE STATE OF CALIFORNIA, BY DEED RECORDED OCTOBER 31, 1973 AS INSTRUMENT NO. 142429, OF OFFICIAL RECORDS OF RIVERSIDE COUNTY, CALIFORNIA; THENCE NORTHEASTERLY ALONG THE SOUTHEASTERLY LINE OF SAID LAND CONVEYED TO THE STATE OF CALIFORNIA, BY DEED RECORDED OCTOBER 31, 1973 AND ALONG A NON-TANGENT CURVE TO THE RIGHT FROM A TANGENT BEARING NORTH 26° 29' 14" EAST, WITH A RADIUS OF 500 FEET, THROUGH AN ANGLE OF 75° 31' 46", A DISTANCE OF 659.12 FEET; THENCE SOUTH 77° 59' 00" EAST, ALONG THE SOUTHEASTERLY LINE OF SAID LAND CONVEYED TO THE STATE OF CALIFORNIA, BY DEED RECORDED OCTOBER 31, 1973 A DISTANCE OF 109.89 FEET TO THE EASTERLY LINE OF THE EAST HALF OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 6; THENCE SOUTHERLY ALONG THE EASTERLY LINE OF THE EAST HALF OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 6, A DISTANCE OF 260.25 FEET, BEING 40 FEET NORTHERLY OF THE SOUTHEASTERLY CORNER THEREOF; THENCE WESTERLY AND PARALLEL WITH THE SOUTHERLY LINE OF THE EAST HALF OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 6, A DISTANCE OF 658.88 FEET TO THE WEST LINE OF THE EAST HALF OF THE SOUTHWEST QUARTER OF THE SOUTHEAST QUARTER OF SAID SECTION 6; THENCE ALONG SAID WEST LINE NORTH 0° 04' 25" WEST 10.01 FEET, MORE OR LESS, TO THE POINT OF BEGINNING.

CITY OF JURUPA VALLEY BUSINESS TAX ACCT. No. 00094 EXP. 9-7-23

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.
Underground Service Alert
Call: TOLL FREE
1-800
227-2600
TWO WORKING DAYS BEFORE YOU DIG

CITY OF JURUPA VALLEY
8930 LIMONITE AVE
JURUPA VALLEY, CA 92509
TEL: (951) 332-6464
EMAIL: ENGINEERING@JURUPAVALLEY.ORG

IMPORTANT NOTE:

THE GRADING AND/OR IMPROVEMENT PLANS ARE APPROVED FOR A PERIOD OF TWO (2) YEARS FROM THE DATE SIGNED BY THE CITY ENGINEER. AFTER THE TWO (2) YEAR PERIOD HAS LAPSED, THE ENGINEER OF RECORD MAY BE REQUIRED TO SUBMIT AND PROCESS FOR CITY ENGINEER APPROVAL, UPDATED PLANS THAT COMPLY WITH THE MOST CURRENT CITY STANDARDS, PRACTICES, AND POLICIES.

MARK	DATE	INITIAL	DESCRIPTION	REC.	APPR	DATE
			REVISION			

REGISTERED PROFESSIONAL ENGINEER
RICHARD DAIL REAVES
NO. 80614
EXP. 03-31-25
CIVIL
STATE OF CALIFORNIA

PLANS PREPARED BY:
adkan ENGINEERS
Civil Engineering · Surveying · Planning
6879 Airport Drive, Riverside, CA 92504
Tel:(951) 688-0241 · Fax:(951) 688-0599

Under the Supervision of:
Richard Dail Reaves, R.C.E. 80614 Exp. 3.31.21 Date:

CITY OF JURUPA VALLEY

CONCEPTUAL GRADING PLANS
RIVERSIDE DRIVE & WINEVILLE ROAD
NEW LIGHT INDUSTRIAL BUILDING/RETAIL FACILITY

TITLE SHEET

ACCT. NO.

SHEET 1 OF 4

CITY I. D. NO.

FILE PATH: U:\PROJECTS\IOV\10288\PLANNING\CONCEPTUAL GRADING\10228 CG 01.DWG

PLOT TIME: 2/22/2023 9:32 AM

CONSTRUCTION NOTES

1. INSTALL 3" AC PAVEMENT OVER 4" BASE PER SOILS REPORT
2. CONSTRUCT 0" CURB PER COUNTY OF RIVERSIDE STD. 204
3. CONSTRUCT 6" CURB AND GUTTER PER COUNTY OF RIVERSIDE STD. 200
4. CONSTRUCT 4' WIDE VALLEY GUTTER PER DETAIL ON SHEET 3
5. CONSTRUCT CONCRETE SIDEWALK PER COUNTY OF RIVERSIDE STD. 401 - WIDTH PER PLAN
6. CONSTRUCT COMMERCIAL DRIVEWAY PER COUNTY OF RIVERSIDE STD. 207A.
7. INSTALL ADA PARKING STRIPING PER DETAILS ON SHEET 2
8. INSTALL PARKING STRIPING
9. CONSTRUCT RETAINING WALL - HEIGHT PER PLAN
10. INSTALL WHEEL STOP PER DETAIL ON SHEET 3
11. CONSTRUCT DEEPENED FOOTING - DEPTH PER PLAN
12. CONSTRUCT 3' WIDE CONCRETE V-DITCH
13. INSTALL UNDER SIDEWALK DRAIN PER COUNTY OF RIVERSIDE STD. 309
14. INSTALL 4' CURB CUT
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16. INSTALL 18" STORM DRAIN - SEE WQMP FOR DETAILS
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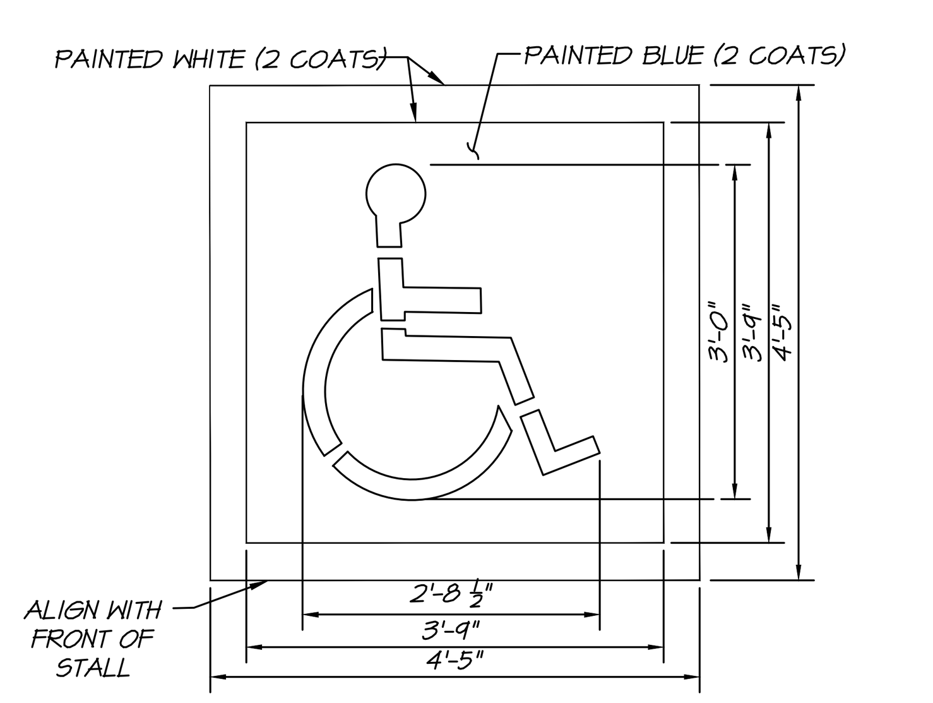
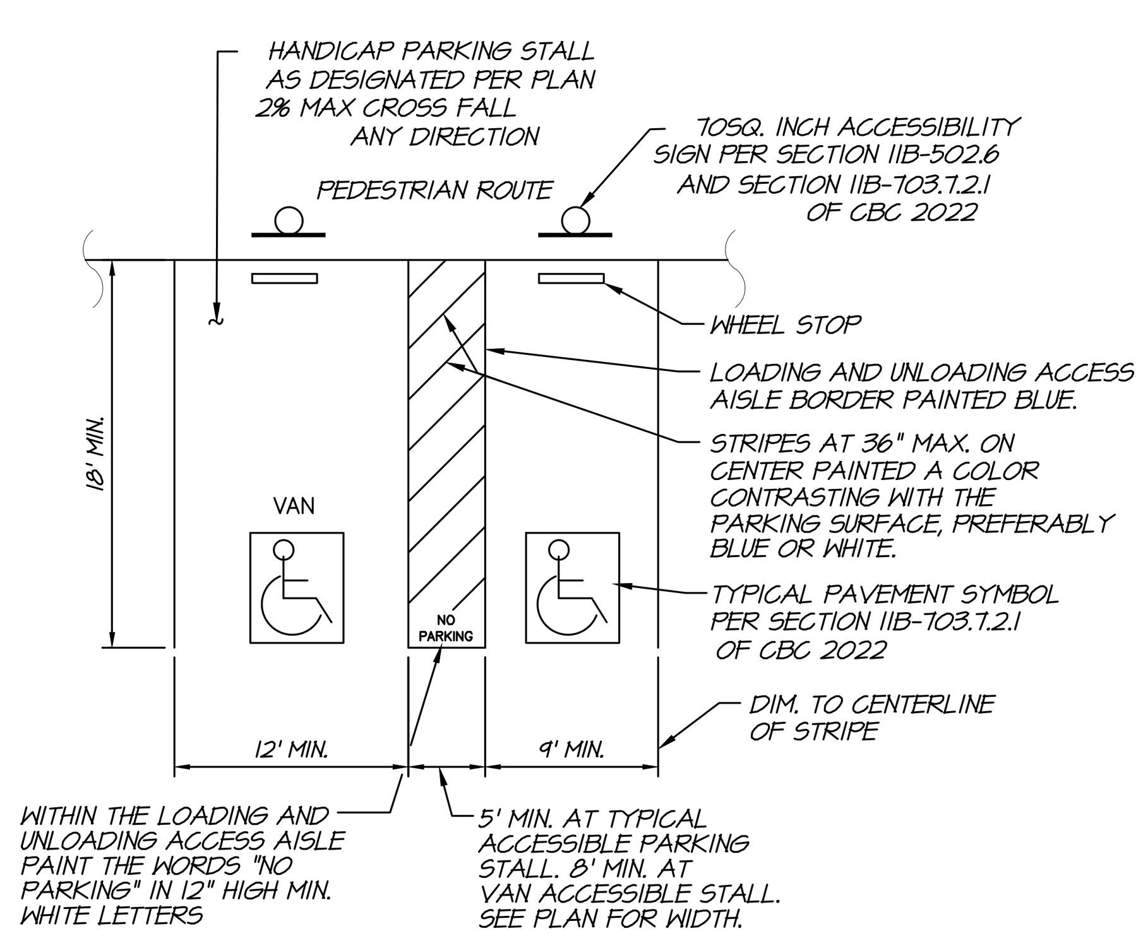
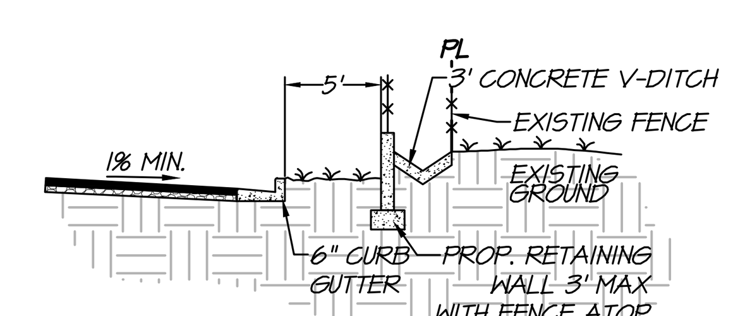
20. INSTALL 2" WATER LATERAL
21. INSTALL TRUNCATED DOMES
22. INSTALL 6" CURB PER COUNTY OF RIVERSIDE STD. 200
23. INSTALL 6" FIRE SERVICE LINE



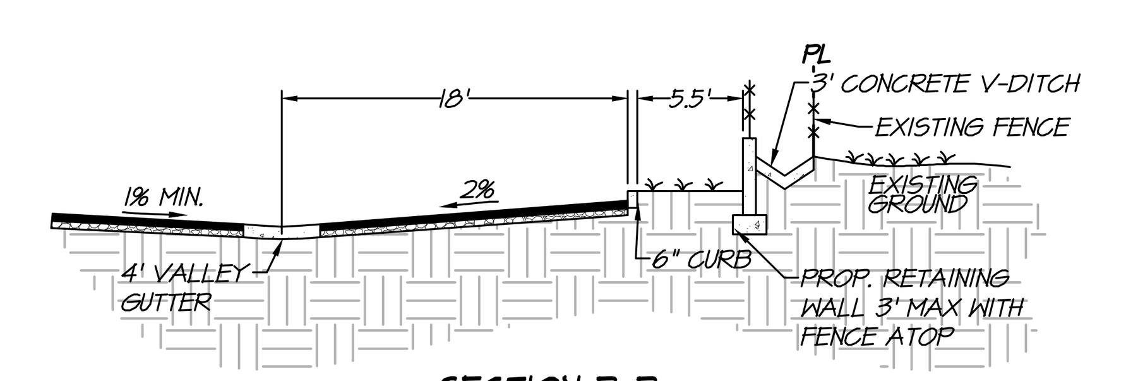
INTERNATIONAL SYMBOL OF ACCESSIBILITY MARKIN
NTS



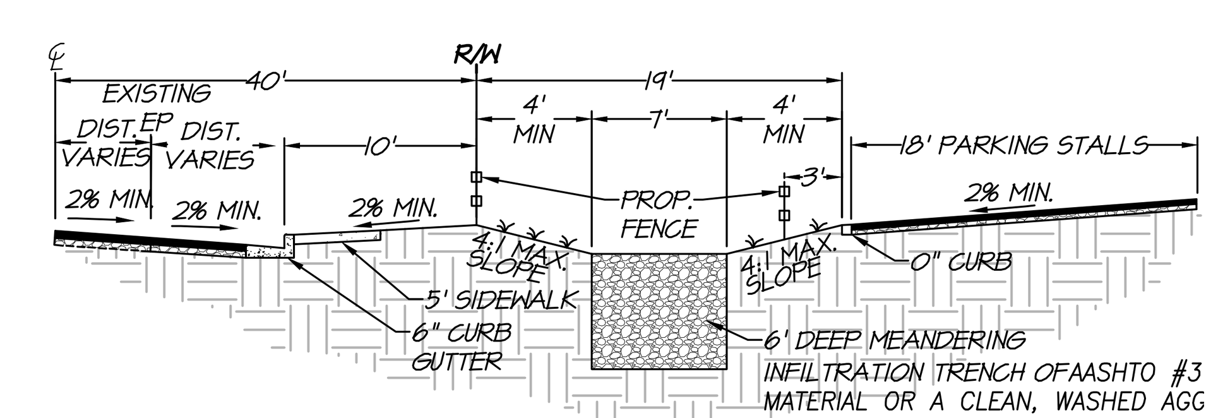
ADA PARKING STALL DETAIL
PER CBC 2022 SECTION 11B-502
NTS
7



SECTION A-A
SCALE: 1"=10'



SECTION B-B
SCALE: 1"=10'



SECTION H-H
SCALE: 1"=10'

CITY OF JURUPA VALLEY BUSINESS TAX ACCT. No. 00094 EXP. 9-7-23

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MARK	DATE	INITIAL	DESCRIPTION	REC.	APPR	DATE
			REVISION			

REGISTERED PROFESSIONAL ENGINEER RICHARD DAIL REAVES NO. 80614 EXP. 03-31-25 CIVIL STATE OF CALIFORNIA

PLANS PREPARED BY:
adkan ENGINEERS
Civil Engineering · Surveying · Planning
6879 Airport Drive, Riverside, CA 92504
Tel:(951) 688-0241 · Fax:(951) 688-0599
Under the Supervision of: Richard Dail Reaves, R.C.E. 80614 Exp. 3.31.21 Date:

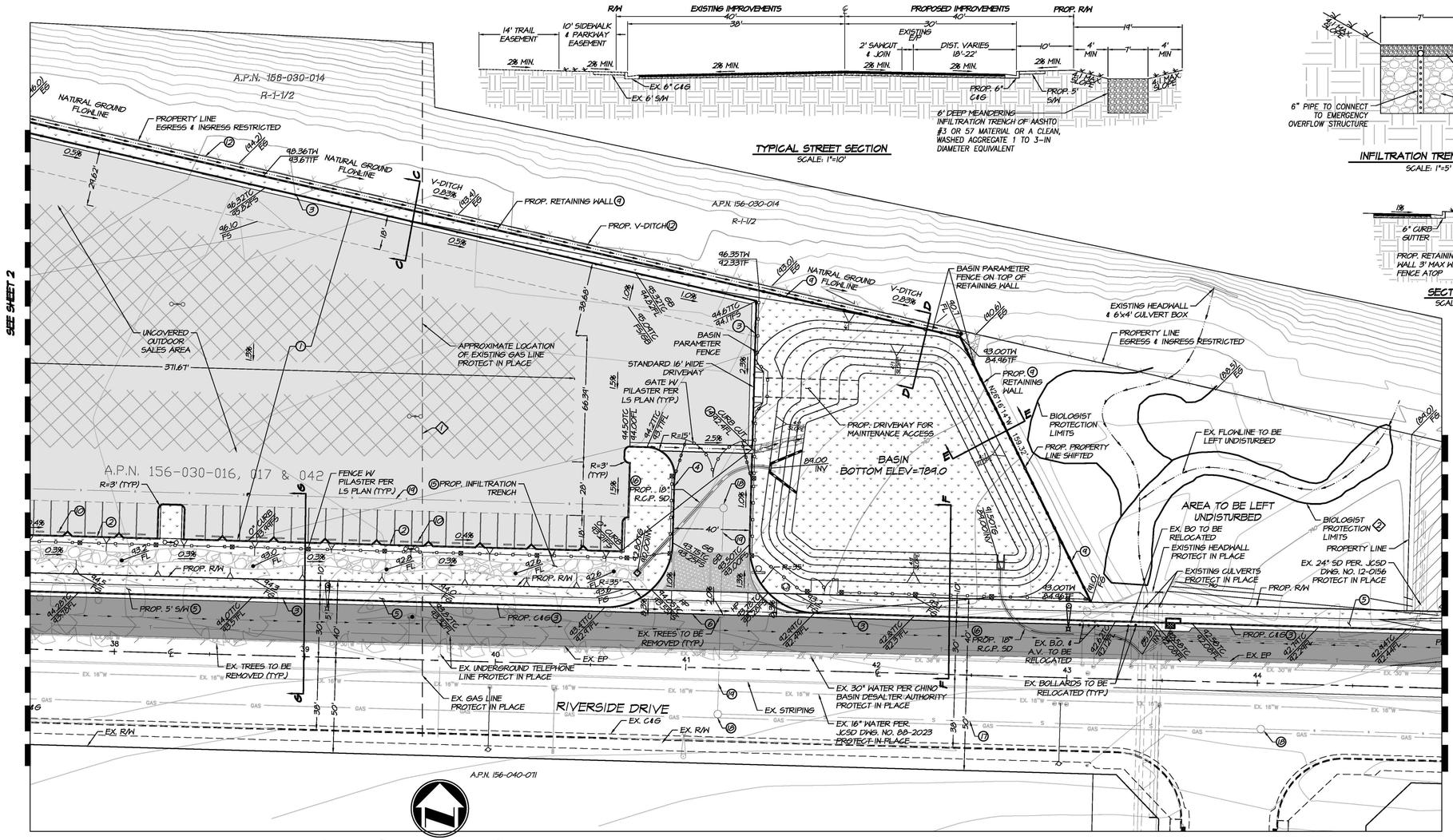
CITY OF JURUPA VALLEY

CONCEPTUAL GRADING PLANS
RIVERSIDE DRIVE & WINEVILLE ROAD
NEW LIGHT INDUSTRIAL BUILDING/RETAIL FACILITY

CONCEPTUAL GRADING

ACCT. NO.
SHEET 2 OF 4
CITY I. D. NO.

PLOT TIME: 2/22/2023 9:32 AM



TYPICAL STREET SECTION
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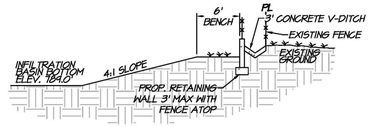
INFILTRATION TRENCH DETAIL
SCALE: 1"=5'



SECTION D-D
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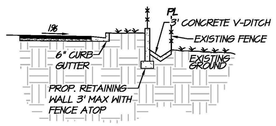

SECTION C-C
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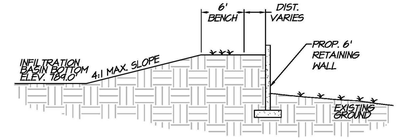

SECTION E-E
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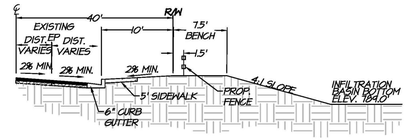

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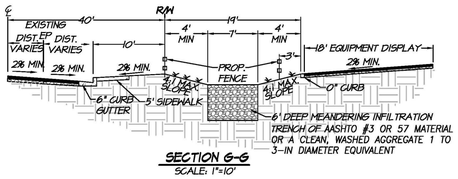


SECTION G-G
SCALE: 1"=10'

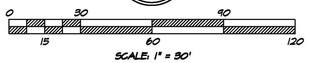
EASEMENT & BIOLOGICAL NOTES

(1) AN EASEMENT IN FAVOR OF STATE OF CALIFORNIA FOR INSTALLATION, REPLACEMENT, REPAIR, REMOVAL, AND MAINTENANCE OF A STEEL GAS LINE AS SHOWN BY DOCUMENT RECORDED SEPTEMBER 4, 1969 AS INSTRUMENT NUMBER 1969-90240.

(2) AREA PER WESTERN RIVERSIDE COUNTY MULTIPLE SPECIES HABITAT CONSERVATION PLAN CONSISTENCY ANALYSIS AND BIOLOGY RESOURCES ASSESSMENT REPORT BY LSA ASSOCIATES, INC. DATED OCTOBER 2022.

CONSTRUCTION NOTES & QUANTITIES

(1) INSTALL __" AC PAVEMENT OVER __" BASE PER SOILS REPORT
(2) CONSTRUCT 0" CURB PER COUNTY OF RIVERSIDE STD. 204
(3) CONSTRUCT 6" CURB AND GUTTER PER COUNTY OF RIVERSIDE STD. 200
(4) CONSTRUCT 4' WIDE VALLEY GUTTER PER DETAIL ON SHEET 3
(5) CONSTRUCT CONCRETE SIDEWALK PER COUNTY OF RIVERSIDE STD. 401 - WIDTH PER PLAN
(6) CONSTRUCT COMMERCIAL DRIVEWAY PER COUNTY OF RIVERSIDE STD. 207A.
(7) INSTALL ADA PARKING STRIPING PER DETAILS ON SHEET 2
(8) INSTALL PARKING STRIPING
(9) CONSTRUCT RETAINING WALL - HEIGHT PER PLAN
(10) INSTALL WHEEL STOP PER DETAIL ON SHEET 3
(11) CONSTRUCT DEEPENED FOOTING - DEPTH PER PLAN
(12) CONSTRUCT 3' WIDE V-DITCH
(13) INSTALL UNDER SIDEWALK DRAIN PER COUNTY OF RIVERSIDE STD. 309
(14) INSTALL 4' CURB CUT
(15) CONSTRUCT 1' WIDE INFILTRATION TRENCH - SEE WQMP FOR DETAILS
(16) INSTALL 18" STORM DRAIN - SEE WQMP FOR DETAILS
(17) INSTALL 10" SEWER LINE
(18) INSTALL SEWER MANHOLE
(19) INSTALL 6" SEWER LATERAL
(20) INSTALL 2" WATER LATERAL
(21) INSTALL TRUNCATED DOMES
(22) INSTALL 6" CURB PER COUNTY OF RIVERSIDE STD. 200
(23) INSTALL 6" FIRE SERVICE LINE



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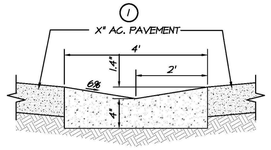
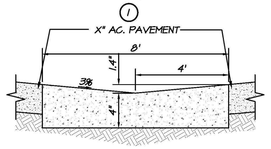
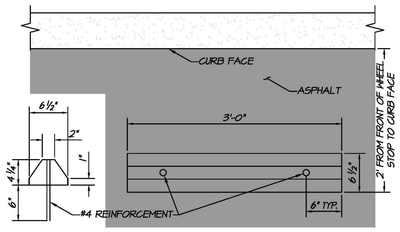


(4) VALLEY GUTTER DETAIL
NTS

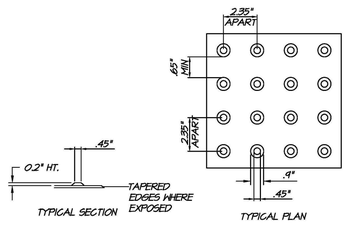


(4) FLARED VALLEY GUTTER DETAIL
NTS

NOTE: FLARED VALLEY GUTTER TO BE USED WHERE ADA PATH CROSSES GUTTER



(10) WHEEL STOP DETAIL
NTS



(21) TRUNCATED DOME DETAIL
NTS

PLEASE REFER TO SECTION 1118-705 AND SECTION 1118-705.1.2 OF CBC 2019 FOR DETECTABLE WARNING LOCATIONS

*NOTE: DETECTABLE WARNING SURFACES BY ARMOR TILE OR APPROVED EQUAL. CAST IN PLACE.

CITY OF JURUPA VALLEY BUSINESS TAX ACCT. No. 00094 EXP. 9-7-23

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.
Underground Service Alert
Call: TOLL FREE
1-800
227-2600
TWO WORKING DAYS BEFORE YOU DIG

CITY OF JURUPA VALLEY
8930 LIMONITE AVE
JURUPA VALLEY, CA 92509
TEL: (951) 332-6464
EMAIL: ENGINEERING@JURUPAVALLEY.ORG

IMPORTANT NOTE:
THE GRADING AND/OR IMPROVEMENT PLANS ARE APPROVED FOR A PERIOD OF TWO (2) YEARS FROM THE DATE SIGNED BY THE CITY ENGINEER. AFTER THE TWO (2) YEAR PERIOD HAS LAPSED, THE ENGINEER OF RECORD MAY BE REQUIRED TO SUBMIT AND PROCESS FOR CITY ENGINEER APPROVAL, UPDATED PLANS THAT COMPLY WITH THE MOST CURRENT CITY STANDARDS, PRACTICES, AND POLICIES.

MARK	DATE	INITIAL	DESCRIPTION	REC.	APPR	DATE
			REVISION			

REGISTERED PROFESSIONAL ENGINEER
RICHARD DAIL REAVES
NO. 80614
EXP. 03-31-25
CIVIL
STATE OF CALIFORNIA

PLANS PREPARED BY:
adkan ENGINEERS
Civil Engineering · Surveying · Planning
6879 Airport Drive, Riverside, CA 92504
Tel:(951) 688-0241 · Fax:(951) 688-0599

Under the Supervision of: Richard Dail Reaves, R.C.E. 80614 Exp. 3.31.21 Date:

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CONCEPTUAL GRADING PLANS
RIVERSIDE DRIVE & WINEVILLE ROAD
NEW LIGHT INDUSTRIAL BUILDING/RETAIL FACILITY

CONCEPTUAL GRADING

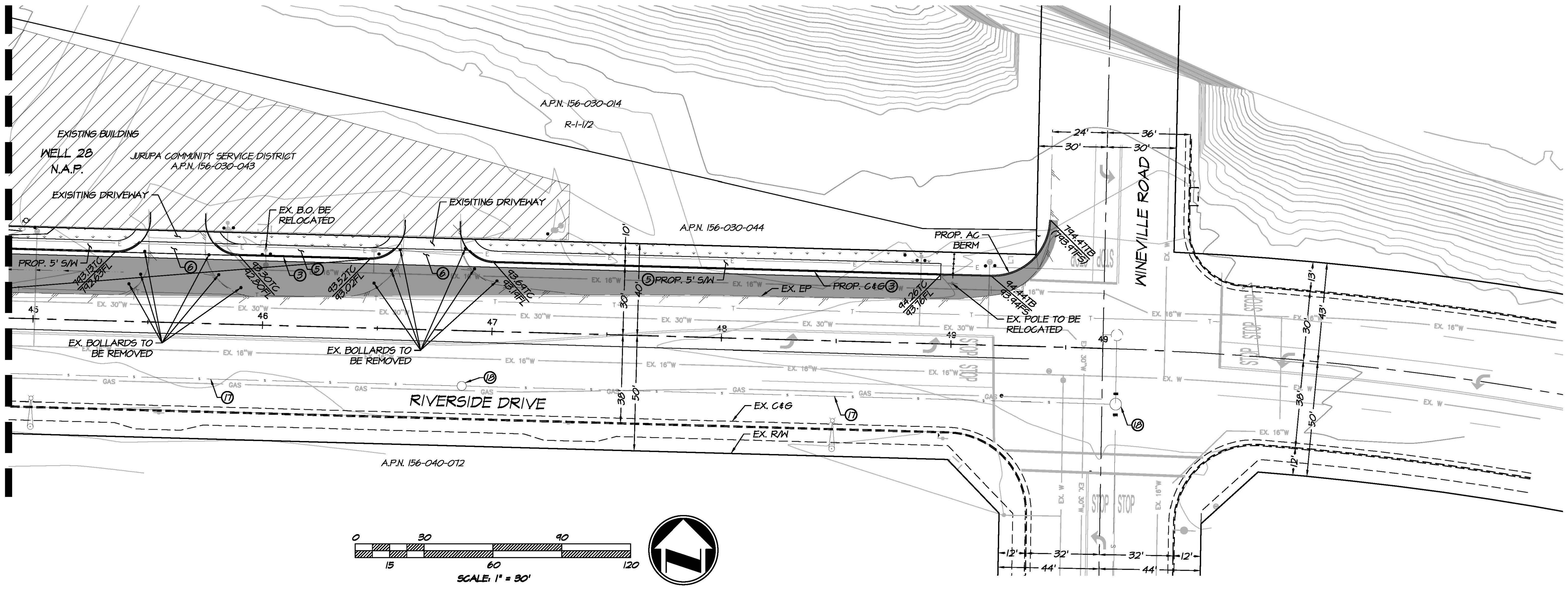
ACCT. NO.

SHEET 3 OF 4

CITY I. D. NO.

FILE PATH: U:\PROJECTS\10103\PLANNING\CONCEPTUAL GRADING\10228 CG 03.DWG

PLOT TIME: 2/22/2023 9:33 AM



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ACCT. NO.

SHEET 4 OF 4

CITY I. D. NO.

PLOT TIME: 2/22/2023 9:33 AM

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

SOIL
EXPLORATION
COMPANY, INC.

Soil Engineering, Environmental Engineering, Materials Testing, Geology

September 12, 2019

Project No. 1826-01

TO: Ahern Rentals, Inc.
8350 Eastgate Rd.
Henderson, NV 89015

ATTENTION: Cory Rosencranse

SUBJECT: Preliminary Soil Investigation, Liquefaction Evaluation and Infiltration Tests Report, Proposed Construction Equipment Rental Facility, Riverside Drive (APN 156-030-016, -017 and -042), City of Jurupa Valley, California

Introduction

In accordance with your authorization, Soil Exploration Co., Inc. has performed a preliminary soil investigation, liquefaction evaluation and infiltration tests for the subject site (see Figure 1, Site Location Map). The accompanying report presents a summary of our findings, conclusions, recommendations and limitations of our work for construction of the proposed facility, including warehouse, office and associated parking and driveways.

Scope of Work

- Review soils, seismic, geologic, groundwater data and maps in our files.
- Perform exploration of the site by means of three 8" diameter borings, 15 to 50 feet deep, at readily accessible locations.
- Field Engineer (California Registered RCE) for logging of the excavations, sampling of select soils, observation of excavation resistance, record SPT blow counts and water seepage (if any).
- Perform basic laboratory testing on select soil samples, expected to include moisture, density, sieve analysis, direct shear, consolidation, R-value, expansion index and corrosion potential (pH, chlorides, resistivity and water soluble sulfates).
- Perform digitized search of known faults within a 50-mile radius of the site.
- Determine California Building Code (CBC) 2016 seismic parameters for the site.
- Consult with project architect and design engineer.
- Perform four shallow infiltration tests at suggested locations.
- Prepare a report of our findings, conclusions and recommendations for site preparation, including overexcavation/removal depth, allowable bearing value, foundation/slab-on-grade depth/thickness recommendations, excavation characteristics, lateral earth pressures for retaining walls design, pavement thickness estimates for parking/driveways, liquefaction evaluation (factors of safety and total/differential settlement of saturated and unsaturated sands), general earthwork and grading specifications, California Building Code (2016) seismic design coefficients, Cal/OSHA soil classification and infiltration rate in inches/hour.

7535 Jurupa Ave., Unit C • Riverside, CA 92504 • Tel: (951) 688-7200 • Fax: (951) 688-7100
soilexploration@yahoo.com • www.soilexp.com

Existing Site Condition

The relatively flat, vacant site is located on the north side of Riverside Drive, west of Wineville Avenue, in the City of Jurupa Valley, Riverside County, California. Riverside Drive is a paved road with no curbs, gutter or sidewalks. A chain link fence borders the site on the north, south and west sides. Existing building is located on adjacent property to the east.

The locations of the above and other features are shown on Exploratory Boring and Infiltration Test Location Map, Plates 1A and 1B. The base maps are reduced copies of Conceptual Grading Plans (Sheets 2 and 3 of 3), prepared by Adkan Engineers of Riverside, California.

Proposed Development

We understand that a metal warehouse building and concrete tilt-up office building, both with concrete floor slabs supported on prepared subgrade, and associated parking/driveways are proposed at the site. Based on the relatively flat topography of the site, modest cut or fill grading and no significant cut or fill slopes are proposed.

Field Work

Three exploratory borings were drilled at the site on September 3 and September 6, 2019, utilizing a B-53 and a CME 75 mobile drill rig equipped with 8-inch diameter hollow stem auger. Refer to Plate 1 for boring locations. Standard Penetration Test (SPT) blow counts were recorded at regular intervals and utilized in determining the compactness/consistency of the earth materials.

In general, these borings revealed that the site is underlain by alluvial soils consisting of silty sand, sandy silt and sand with silt (USCS "SM", "ML" and "SP-SM"). In general, the alluvial soils are dry to slightly moist and generally medium dense to very dense. Loose soils were noted in the top 1 foot in Boring B-1 and to 5 feet in Boring B-3. More detailed descriptions of earth materials are presented in Geotechnical Boring Logs in Appendix B of this report.

Based on the USGS Geologic Map of the San Bernardino and Santa Ana Quadrangles, the site area is underlain with young eolian deposits (see Figure 2).

Laboratory Testing

Laboratory tests were performed for selected soil samples. The tests consisted primarily of natural moisture contents, dry density, sieve analysis, R-value, consolidation, direct shear and corrosion potential (pH, chlorides, resisitivity and water soluble sulfates). Laboratory test results are presented in Appendix C and with Geotechnical Boring Logs in Appendix B.

Groundwater

Groundwater was not encountered in our exploratory borings to maximum explored depth of 50 feet below ground surface at the time this work was performed. Please note that a groundwater study is not within the scope of this work. However referenced Carson and Matti map indicates groundwater in the vicinity of the site to be 150 to 200 feet below ground surface.

Liquefaction Evaluation

Soil liquefaction is a process by which loose, saturated, fine granular (poorly graded) deposits, such as fine sands, lose a significant portion of their shear strength due to pore water pressure buildup resulting from cyclic loading, such as that caused by an earthquake. In general, liquefaction potential is higher when the groundwater table is less than 30 feet below ground surface. Soil liquefaction can lead to foundation bearing failures and excessive settlements.

Based on Riverside County GIS map, the site is located in an area of moderate liquefaction potential (see Figure 3).

Summary of geotechnical conditions for the boring B-3 are as follows:

Depth (ft)	Class (USCS)	SPT Count (blows/foot)	Moisture (%)	Passing No. 200 Sieve (%)	Compactness/ Consistency
2.5	SM	9	3.0	18	Loose
5	SM	20	6.6	38	Medium dense
10	SM	20	-	-	Medium dense
15	SM	44	2.0	14	Dense
20	SM	68	-	-	Very dense
25	SM	12/50	-	-	Very dense
30	SM	50/2"	-	-	Very dense
35	SP-SM	40	6.0	8	Dense
40	SP-SM	50/5"	-	-	Very dense
45	SP-SM	40	-	-	Dense
50	SP-SM	33	-	-	Dense

Liquefaction Analysis/Seismic Settlement: LiquefyPro

Liquefaction susceptibility using Standard Penetration Test data and laboratory grain size test results were analyzed using LiquefyPro software (Version 5.5g). Liquefaction analysis performed for this evaluation included: [1] evaluation of soil consistency and compactness influencing liquefaction, [2] correction of penetration resistance data to convert measured SPT N-values to standard N_{60}-values, [3] calculating the earthquake induced stress ratio (CSR), [4] calculating cyclic resistance ratio (CRR), [5] assume water table at 175 feet below the ground surface, and [6] evaluation of liquefaction potential by calculating a factor of safety against liquefaction (FS), by dividing CRR by CSR. The software output is presented in Appendix F.

The main observations of the results are as follows:

- Onsite soils at the site in general have a Safety Factor of 5.0 against liquefaction. Indicated total settlement of saturated and unsaturated sands is 0.00 and 0.18 inches, respectively, with total settlement of saturated and unsaturated sands of 0.18 in., with differential settlement of 0.091 to 0.120 inch.

- Liquefaction also involves lateral or horizontal displacement (lateral spreading) of essentially intact blocks of surficial soils on slopes or toward a free-face slope such as river or canal bank. The potential for and magnitude of lateral spreading is dependent upon many conditions, including the presence of a relatively thick, continuous, potentially liquefiable sand layer and high slopes. Subsurface information obtained for this study indicates that loose sands are not present and high slopes are not anticipated. Based on currently available procedures, the site does not appear to be susceptible to (lateral spread) ground surface disruption during a moderate seismic event.

Seismicity/Faulting

The site is not located within a currently designated Alquist-Priolo Earthquake Fault Zone or County of Riverside fault zone.

A computer search of all known Quarternary major faults within 50 miles of the site from USGS National Seismic Hazard Maps is presented in Appendix D. Please note that it is probable that not all-active or potentially active faults in the region have been identified. Furthermore, seismic potential of the smaller and less notable faults is not sufficiently developed for assignment of maximum magnitudes and associated levels of ground shaking that might occur at the site due to these faults.

Conclusions

- All debris, vegetation, weeds, existing old foundations, buried abandoned structures, buried utility/irrigation lines, undocumented fills, deleterious materials, etc. would require clearance from the proposed building/grading areas.

- The onsite soils, exclusive of oversize materials (larger than 6 inches, if any), debris and deleterious materials, etc., can be used as compacted fill.

- Overexcavation and recompaction of surficial soils should be anticipated to provide adequate and uniform support for the proposed structures.

- Subsequent to site preparation, use of shallow spread footing foundation appears feasible for the proposed construction.

- Near surface earth materials encountered during our subsurface exploration can be excavated with normal grading equipment in good working condition.

- Based on observation and classification, the expansion potential of the near-surface sandy soils at the site is expected to be very low (EI<20).

- The site is located approximately 9.46 miles from the Chino fault. The site is located in a region of generally high seismicity, as is all of Southern California. During its design life, the site is expected to experience moderate to strong ground motions from earthquakes on regional and/or nearby causative faults.

- There is a 2 percent probability in 50 years (2475 year return period) that peak ground acceleration at the site will exceed 0.5g (see Appendix D).

- Based on Riverside County RCIT GIS map, the site is located within a zone of moderate liquefaction. However no groundwater, seepage, wet or loose soil conditions were encountered in our exploratory boring locations drilled to a maximum depth of 50 feet. Based on our findings, the liquefaction potential at the site is very low.

- The flooding potential of the site should be verified by the design civil engineer and considered in planning, design and construction.

Recommendations

Site Preparation and Grading

Site Clearance

All grading should be performed in accordance with the City of Jurupa Valley Grading Ordinance and our General Earthwork and Grading Specifications presented in Appendix E, except as modified within the text of this report.

The grading/building area should be cleared of all debris, abandoned utility lines, underground structures, weeds, vegetable matter, undocumented fills, deleterious materials, etc. Cavities created during site clearance should be backfilled in a controlled manner.

Overexcavation/Grading

Subsequent to site clearance and debris removal, building areas extending at least 5 feet beyond the building lines in plan (including canopies, exterior walls, etc.) where practical should be overexcavated to remove near surface loose soils. Based on our exploration, we anticipate removals to extend to at least 5 feet below existing ground surface. Any loose, porous soils, etc. should be completely removed and recompacted if encountered in bottom of the grading areas. After the required removals, the bottom of the overexcavation should be scarified to a depth of at least 12 inches, watered to near optimum moisture and recompacted by utilizing heavy rubber tired equipment to at least 90 percent of the maximum dry density as determined by ASTM D1557-12, prior to placement of engineered fills.

New Pavement Areas

New pavement, ramps and driveway areas should be scarified to a depth of at least 12 inches, watered as necessary, and compacted to at least 95 percent relative compaction. The areas of pylon/sign foundations should be cleared form all vegetation and roots prior to construction. If loose soils are encountered in bottom of footing excavations, these soils should be removed and replaced with lean concrete or the footings deepened as necessary.

Compacted Fills/Imported Soils

Any soil to be placed as fill, whether presently onsite or import, should be approved by the soil engineer or his representative prior to their placement. All onsite soils to be used as fill should be cleansed of any roots or other deleterious materials. Cobbles larger than 6 inches in diameter should not be placed in the vicinity of foundations and utility lines. All fills should be placed in 6 to 8 inch loose lifts, watered or aerated to near optimum moisture content, mixed and compacted to at least 90 percent relative compaction. This is relative to the maximum dry density determined by ASTM D1557-12 Test Method.

Any imported soils should be sandy (preferably (USCS "SM" or "SW" and very low in expansion potential, EI<20) and approved by the soil engineer. The soil engineer or his representative should observe the placement of fill and take sufficient tests to verify the moisture content and the uniformity and degree of compaction obtained.

Foundation Design/Allowable Bearing Value

Based on the above site preparation recommendations, very low expansion potential of soils and anticipated loads, an allowable bearing pressure of 2000 psf is recommended for the design of footings. This bearing pressure has been established based on the assumption that the footings will be embedded at least 24-inches below lowest adjacent firm grade and into the compacted fill mat, and measure at least 18-inches in width. This bearing value may be increased by 400 psf for each additional foot of width and/or depth to a maximum of 3000 psf. A further one-third increase in bearing value may be used when considering short term wind or seismic loads.

Continuous footings should be reinforced with at least two No. 5 bars at the top and two at the bottom. Please note foundation design is under the purview of structural design engineer and structural considerations may have other more stringent requirements, which would govern.

Concrete Slabs-On-Grade

Concrete floor slabs supported on prepared subgrade should be at least 4 inches thick. Slabs to receive flooring should be underlain by at least 10-mil thick Visqueen moisture barrier underlain by 2 inches of clean rolled sand. Appropriate recommendations should be made by the project architect if crack sensitive floor covering is placed directly on the concrete slab.

All floor slabs should be reinforced with at least No. 3 rebar at 18-inches on center each way. Care should be taken by the contractor to insure that reinforcement is placed at slab mid-height. The use of concrete spacers to raise reinforcement of slabs is highly recommended. However, floor slab thickness and reinforcement should be evaluated by the structural engineer and designed in compliance with applicable codes for the proposed loading. Thicker slabs (6 inches or thicker) should be considered for warehouse/storage and use of forklift, etc.

All concrete flatwork, including slabs subgrade, should be verified to contain 1.2 times the soil optimum moisture content to a depth of 12 inches prior to placement of slab building materials. Moisture content should be tested in the field by the soil engineer.

Special Considerations

Excess soils generated from foundation excavations should not be placed on slabs subgrade without proper moisture and compaction. Slab subgrade should be verified to contain 1.2 times the soil optimum moisture content to a depth of 12 inches prior to placement of slab building materials. The addition of fiber mesh in the concrete and careful control of water/cement ratios may lessen the potential for slab cracking. In hot or windy weather, the contractor must take appropriate curing precautions after the placement of concrete. The use of mechanically compacted low slump concrete (not exceeding 4 inches at the time of placement) is recommended.

Concrete Joints

The joints spacing for concrete slabs should be determined by the project architect. Joints should be laid out top form approximately square panels (equal transverse and longitudinal joint spacing). Rectangular panels, with the long dimension no more than one-and-one-half times the short, may be used when square panels are not feasible. The depth of longitudinal and transverse joints should be one-fourth the depth of the slab thickness.

Joint layout should be adjusted so that the joints will line up with the corners of structures, small foundations and other built-in structures. Acute angles or small pieces of slab curves as a result of joints layout should not be permitted.

Concrete Curing

Fresh concrete should be cured by protecting it against loss of moisture, rapid temperature change and mechanical injury for at least 3 days after placement. Moist curing, waterproof paper, white polyethylene sheeting, white liquid membrane compound, or a combination thereof may be used. After finishing operations have been completed, the entire surface of the newly place concrete should be covered by whatever curing medium is applicable to local conditions and approved by the engineer. The edges of concrete slabs exposed by the removal of forms should be protected immediately to provide these surfaces with continuous curing treatment equal to the method selected for curing the slab surfaces. The contractor should have at hand, and ready to install before actual placement begins, the equipment needed for adequate curing of the concrete.

Lateral Earth Pressures/Retaining Walls

The following lateral equivalent fluid earth pressures and soil parameters in conjunction with the allowable bearing value of 2000 psf may be used for design of retaining walls with free draining level compacted backfills. Wall backfills should be compacted to at least 90 percent relative compaction. We recommend that drainage for retaining walls should be provided in accordance with Plate 2 of this report.

Active Earth Pressure (P_a)	35 pcf (EFP), drained, unbraced yielding walls
At Rest Pressure (P_0)	60 pcf (EFP), drained, braced non-yielding (part of building walls)
Allowable Lateral Bearing Value	300 pcf (EFP), drained, maximum of 3000 psf (fill or firm native soil)
Horizontal Coefficient of Friction (μ)	0.35
Unit Soil Weight (γ_t)	120 pcf

Soil resistance developed against lateral structural movement can be obtained from the passive pressure and friction coefficient indicated above. For the calculation of passive resistance to lateral loads, the upper 12 inches of material in areas not protected by concrete flatwork or pavement should not be considered. These values may be increased by one-third when considering loads of short duration, including wind or seismic loads. The total resistance may be taken as the sum of the friction and passive resistance provided that the passive portion does not exceed two-thirds of the total resistance.

Expansion Index and Corrosion/Soluble Sulfates

Based on observation and soil classification, the expansion potential of the near surface sandy soils is anticipated to be very low (EI<20). Since soils will be mixed during grading, expansion index at select locations should be verified subsequent to completion of grading.

Results of tests performed by Cal Land Engineering, Inc. of Brea, California on a select soil sample indicate negligible soluble sulfate exposure (less than 0.1 percent water soluble sulfates by weight), pH of 7.95, chlorides of 196 ppm and resistivity of 4,900 ohm-cm (see Appendix C). Based on resistivity test results, soil is corrosive to ferrous metals/pipes. Concrete, mix, placement and curing for concrete should comply with ACI guidelines. Tentatively we recommend Type II cement and concrete slump not exceeding 4 inches at the time of placement. If critical, these should be further verified by your structural or a corrosion engineer.

Seismic Consideration

The site is located approximately 9.46 miles from the Chino fault. Moderate to strong ground shaking can be expected at the site and there is a 2 percent probability in 50 years (2475 year return period) that the peak ground acceleration at the site will exceed 0.5g. The site soil profile is Class D. The structural engineer should consider City/County local codes, California Building Code (CBC) 2016 seismic data presented in this report (Appendix D), the latest requirements of the Structural Engineers Association of Southern California and any other pertinent data in selecting design parameters.

Groundwater

No groundwater and/or seepage were encountered during our subsurface work. The potential for rain or irrigation water perched on soil or locally seeping through from adjacent areas cannot be precluded. Our experience indicates that surface or near-surface groundwater conditions can develop in areas where groundwater conditions did not exist prior to site development, especially in areas where a substantial increase in surface water infiltration results from landscape irrigation. In addition, changes in local or regional water and management patterns, or both, can significantly raise the water table or create zones of perched water. We therefore recommend that landscape irrigation be kept to the minimum necessary to maintain plant vigor and any leaking pipes/sprinklers, etc. should be promptly repaired. The depth to the groundwater may fluctuate with seasonal changes and from one year to the next. We have no way of predicting future groundwater levels or perched water due to increase in surface water infiltration from rainfall or from landscape irrigation. Subdrains, horizontal drains, toe drains, French drains, heel drains or other devices may be recommended in future for graded areas that exhibit nuisance water seepage or perched water conditions.

Tentative Pavement Design

On the basis of laboratory classification and testing, we are of the opinion that the tentative new pavement design may be based on an R-value on the order of 70 corresponding to near surface soils (see Appendix C). Considering this and based on typical traffic indices, the recommended pavement sections are outlined as follows:

AREA	TRAFFIC INDEX	PAVEMENT THICKNESS (AC over AB)
Parking	4	3" AC/4" AB
Driveways	5.5 to 6	3" AC/6" AB or 4" AC/4" AB

Final pavement design shall be based on R-value testing of the subgrade soils at the completion of rough grading.

The upper at least 12 inches of the subgrade soils below new pavements should be compacted to at least 90 percent relative compaction. Imported Class 2 base should conform to Caltrans Standard Specifications and should be compacted to at least 95 percent of the maximum dry density. Maximum dry densities should be determined by the Standard Test Method designated ASTM D1557-12.

Erosion Control/Drainage/Planter Areas

The near surface sandy soils are subject to erosion. Positive drainage should be provided around the perimeter of all structures and all foundations toward streets or approved drainage devices. In addition, finish subgrade adjacent to exterior footings should be sloped down and away to facilitate surface drainage. Roof drainage should be collected and directed away from foundations via non-erosive devices. Water, either natural or by irrigation, should not be permitted to pond or saturate the foundation soils.

The developer should be made aware of the potential problems, which may develop when drainage is altered. Ponded water, leaking irrigation systems, over-watering or other conditions which could lead to ground saturation should be avoided. Area drainage collection should be directed toward the existing street or approved drainage devices.

Cal/OSHA Classification/Trench Excavations/Backfills

In general Cal/OSHA classification of onsite soils appears to be Type C.

Temporary trench excavations deeper than 5 feet should be shored or sloped at 1:1 or flatter in compliance with Cal/OSHA requirements:

a.) The shoring should be designed by a qualified engineer experienced in the shoring design.

b.) The tops of any temporary unshored excavations should be barricaded to prevent vehicle and storage loads within a 1:1 line projected upward from the bottom of the excavation or a minimum of 5 feet, whichever is greater. If the temporary construction embankments, including shored excavations, are to be maintained during the rainy season, berms are suggested along the tops of the excavations where necessary to prevent runoff from entering the excavation and eroding the slope faces.

c.) The soils exposed in the excavations should be inspected during excavation by the soils engineer so that modifications can be made if variations in the soil conditions occur.

d.) All unshored excavations should be stabilized within 30 days of initial excavation.

Backfills in the utility trenches should be compacted to at least 90 percent relative compaction. Onsite earth materials will be suitable for backfills. Clean sandy materials with sand equivalent value of at least 30 must be utilized for the pipe bedding and shading zone. Placement of the trench backfill in lifts and compaction by mechanical effort should be anticipated.

Foundation Plans Review/Additional Observations and Testing/Quality Control

Soil Exploration Company, Inc. should review the foundation plans and observe and/or test during the following stages of construction:

- During site clearance and removal of any obstructions.
- During all overexcavations, in-place processing of soils and all fill placement and compaction.
- During preparation, moisture conditioning, and compaction of subgrades/base for slabs-on-grade and pavement.
- Following footing excavations and prior to placement of footings materials.
- During all trench backfills and compaction.
- When any unusual conditions are encountered.

Final Report

A final grading control report, including geotechnical data gathered, should be prepared when rough grading is completed. The report should include all laboratory test results, a map showing all removal depths, location and depth/elevation of field density tests, test methods and final foundation and pavement design recommendations.

Limitation of Investigation

Our investigation was performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable Geotechnical Engineers practicing in this or similar locations. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

The field and laboratory test data are believed representative of the project site; however, soil conditions can vary significantly. As in most projects, conditions revealed during grading may be at variance with preliminary findings. If this condition occurs, the possible variations must be evaluated by the Project Geotechnical Engineer and adjusted as required or alternate design recommended.

This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractor carry out such recommendations in the field.

This firm does not practice or consult in the field of safety engineering. We do not direct the contractor's operations, and we cannot be responsible for other than our own personnel on the site; therefore, the safety of others is the responsibility of the contractor. The contractor should notify the owner if he considers any of the recommended actions presented herein to be unsafe.

The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge.

This report was prepared for the client based on client's needs, directions and requirements at the time. This report is not authorized for use by and is not to be relied upon by any party except the client with whom Soil Exploration Co., Inc. contracted for the work. Use of, or reliance on, this report by any other party is at that party's risk. Unauthorized use of or reliance on this report constitutes an agreement to defend and indemnify Soil Exploration Co., Inc. from and against any liability which may arise as a result of such use or reliance, regardless of any fault, negligence, or strict liability of Soil Exploration Co., Inc.

Closure

If you should have any questions regarding this report, please do not hesitate to call our office. We appreciate this opportunity to be of service.

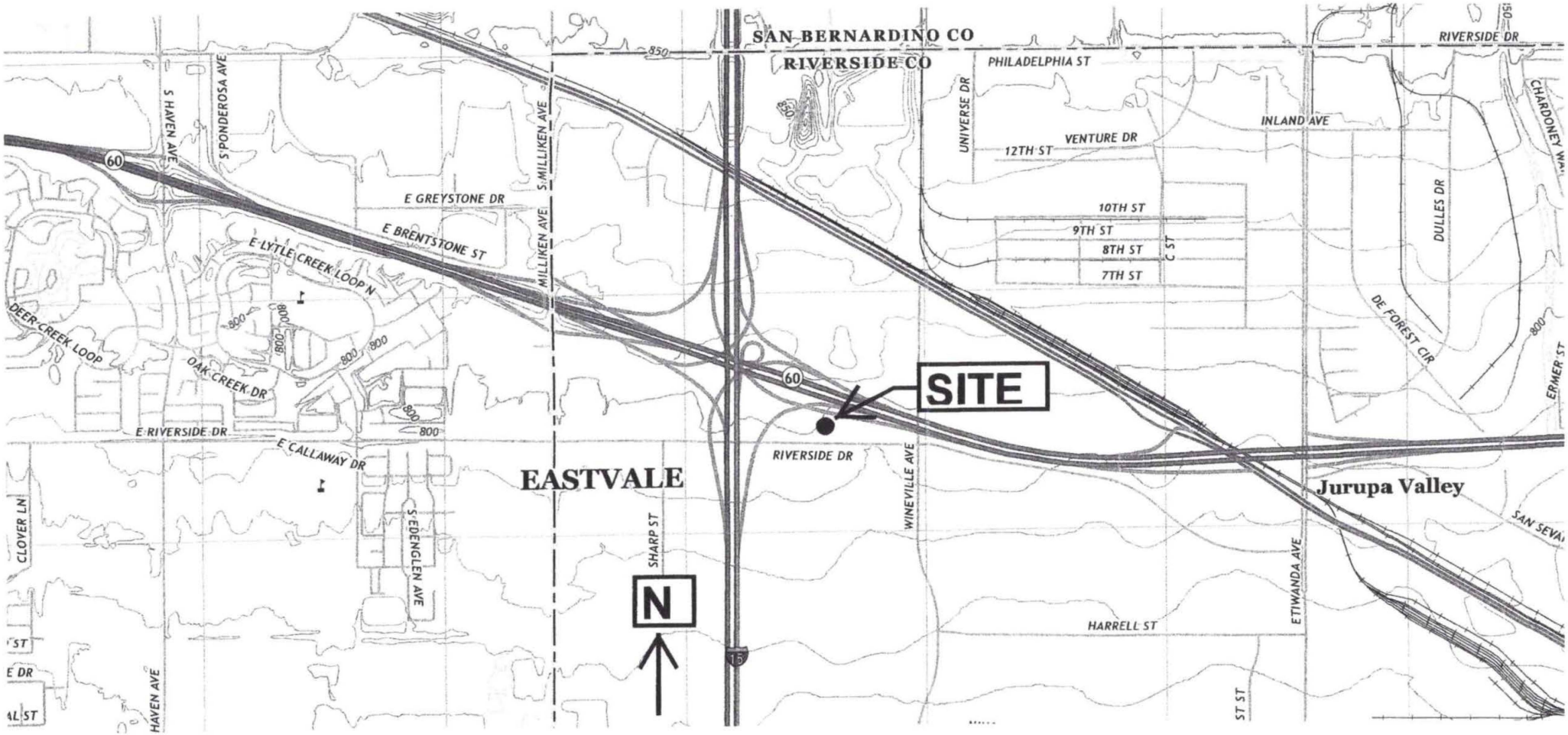
Very truly yours,
Soil Exploration Co., Inc.

Gene K. Luu, PE 53417
Project Engineer

Distribution: [1] Addressee (coryr@ahern.com)
[1] Adkan Engineers, Attn: Mitch Adkison (madkison@adkan.com)

Attachments:

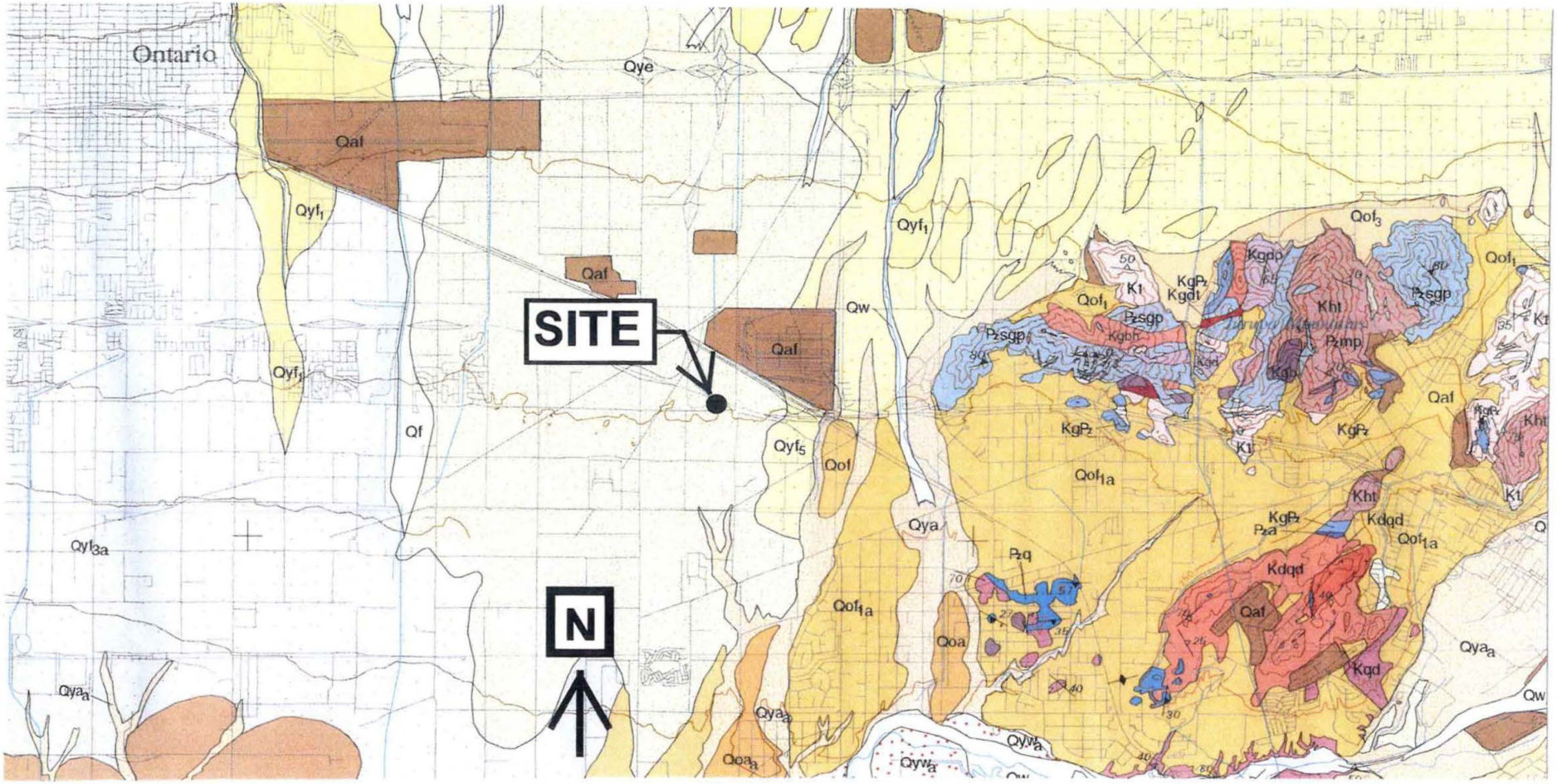
Figure 1	Site Location Map
Figure 2	USGS Geologic Map
Figure 3	Riverside County GIS Map
Figure 3	U.S. Geological Survey Faults Map
Plates 1A & 1B	Exploratory Boring and Infiltration Test Location Maps
Plate 2	Retaining Wall Backfill and Subdrain Detail
Appendix A	References
Appendix B	Geotechnical Boring Logs
Appendix C	Laboratory Test Results
Appendix D	USGS National Seismic Hazard Maps-Source Parameters and CBC (2016) Seismic Parameters
Appendix E	General Earthwork and Grading Specifications
Appendix F	Liquefaction Analysis Summary
Appendix G	Infiltration Test Procedure and Results



USGS/U.S. Topo/Guasti Quadrangle, Riverside County, California, 2018.

1 0 1 MILE

Figure 1



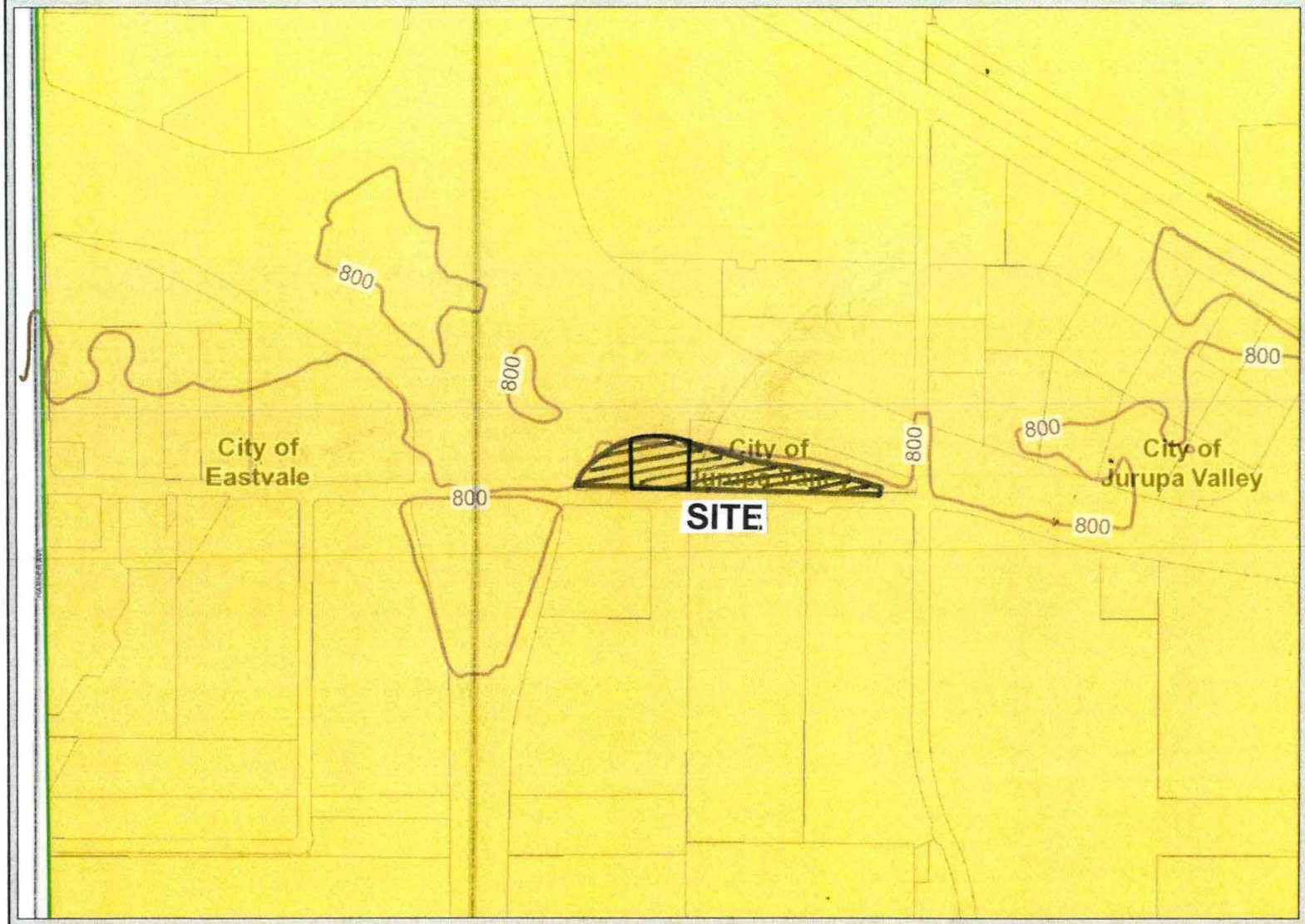
Base Map: USGS Geologic Map of the San Bernardino and Santa Ana 30'x60' Quadrangles, California, 2006.

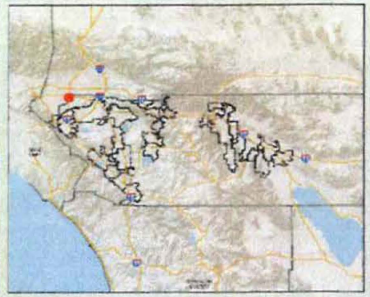
LEGEND:

Qye: Young eolian deposits (Holocene and Pleistocene) – Very fine- to medium-grained sand, unconsolidated, dune morphology apparent.

Riverside Drive **City of Jurupa Valley, California**	**Soil Exploration Co., Inc.** **Project No.: 1826-01** **Date: September 12, 2019** **Figure: 2**

My Map





Legend

- Display Parcels
- City Boundaries
- Cities
- Contours100 ft interval (with 1(
- Liquefaction
  - <all other values>
  - High
  - Low
  - Moderate
  - Very High
  - Very low
- roadsanno
- highways
  - HWY
  - INTERCHANGE
  - INTERSTATE
  - OFFRAMP
  - ONRAMP
  - USHWY
- counties
- cities
- hydrographylines
- waterbodies
  - Lakes
  - Rivers

RCIT

0 1,038 2,077 Feet

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.

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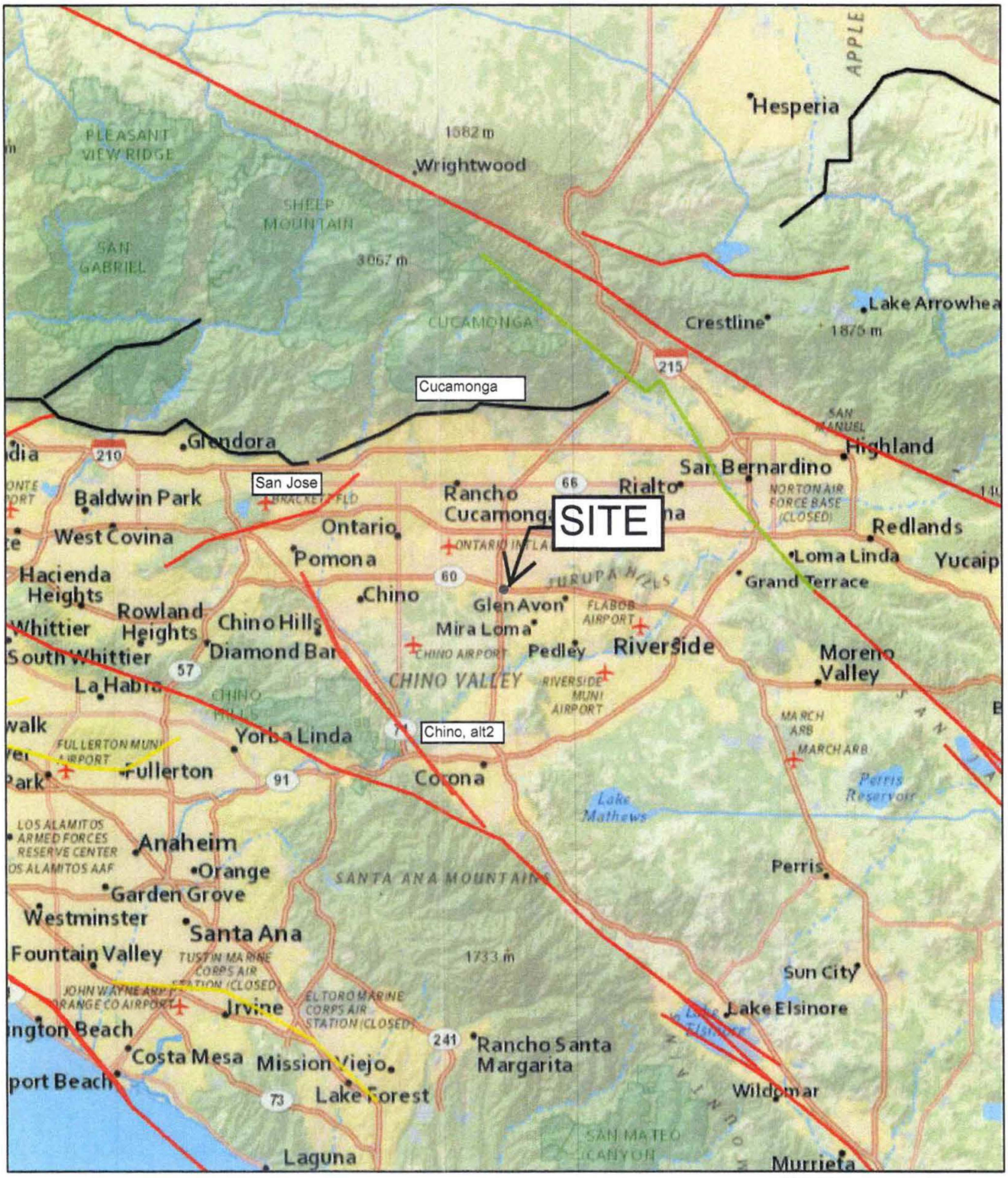
Notes

Figure 3

U.S. Geological Survey 2008 Faults



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0 4 8 16 mi

0 5 10 20 km

NSHM 2008 Fault Sources

- Strike slip
- Normal
- Thrust
- Reverse
- Unassigned

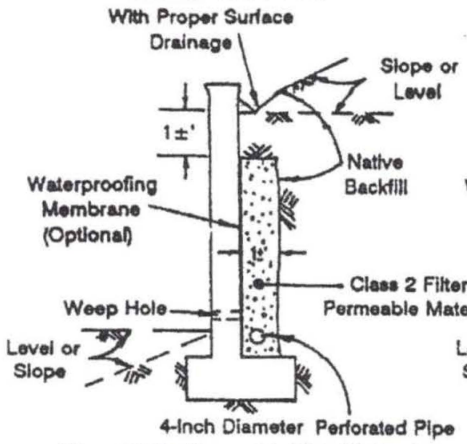
N

Figure 4

USGS, National Geographic, Esri, Garmin, HERE, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, increment P Corp.

SUBDRAIN OPTIONS FOR NATIVE MATERIAL BACKFILL

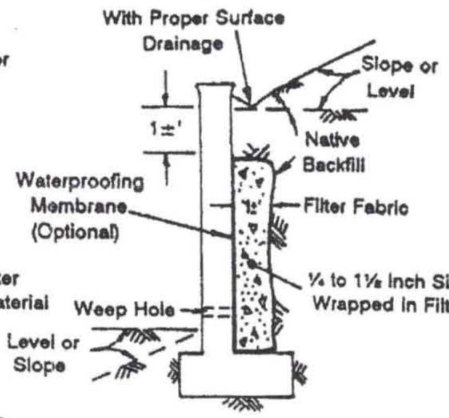
OPTION N2: Pipe Surrounded with Class 2 Material



Class 2 Filter Permeable Material Grading Per Caltrans Specifications

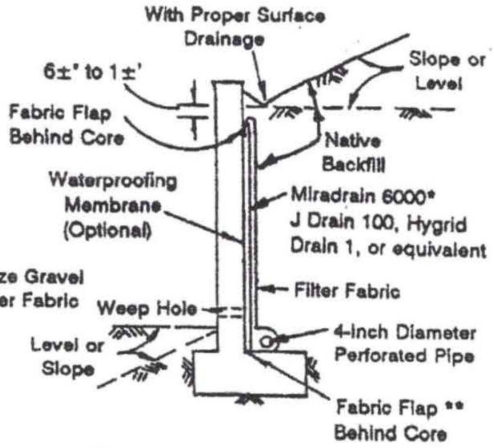
Sieve Size	Percent Passing
1"	100
3/4"	90-100
3/8"	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

OPTION N1: Gravel Wrapped in Filter Fabric



Proper Outlet Should be Provided for Gravel Subdrain (See Notes)

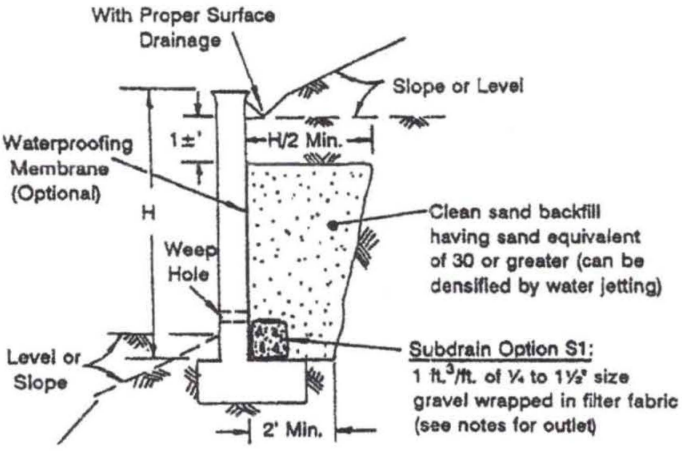
OPTION N3: Geotextile Drain

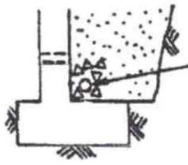


*Miradrain 6000 or J Drain 100 for non-waterproofed walls; Miradrain 6200 or J Drain 200 for completed waterproofed walls

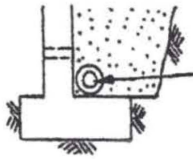
**Peel back the bottom fabric flap, place pipe next to core, wrap fabric around pipe and tuck behind core.

SUBDRAIN OPTIONS FOR CLEAN SAND BACKFILL





Subdrain Option S2:
4" diameter perforated pipe surrounded with 1 ft.³/ft. of Class 2 filter material per Caltrans specifications as above



Subdrain Option S3:
4" diameter perforated pipe wrapped in filter fabric

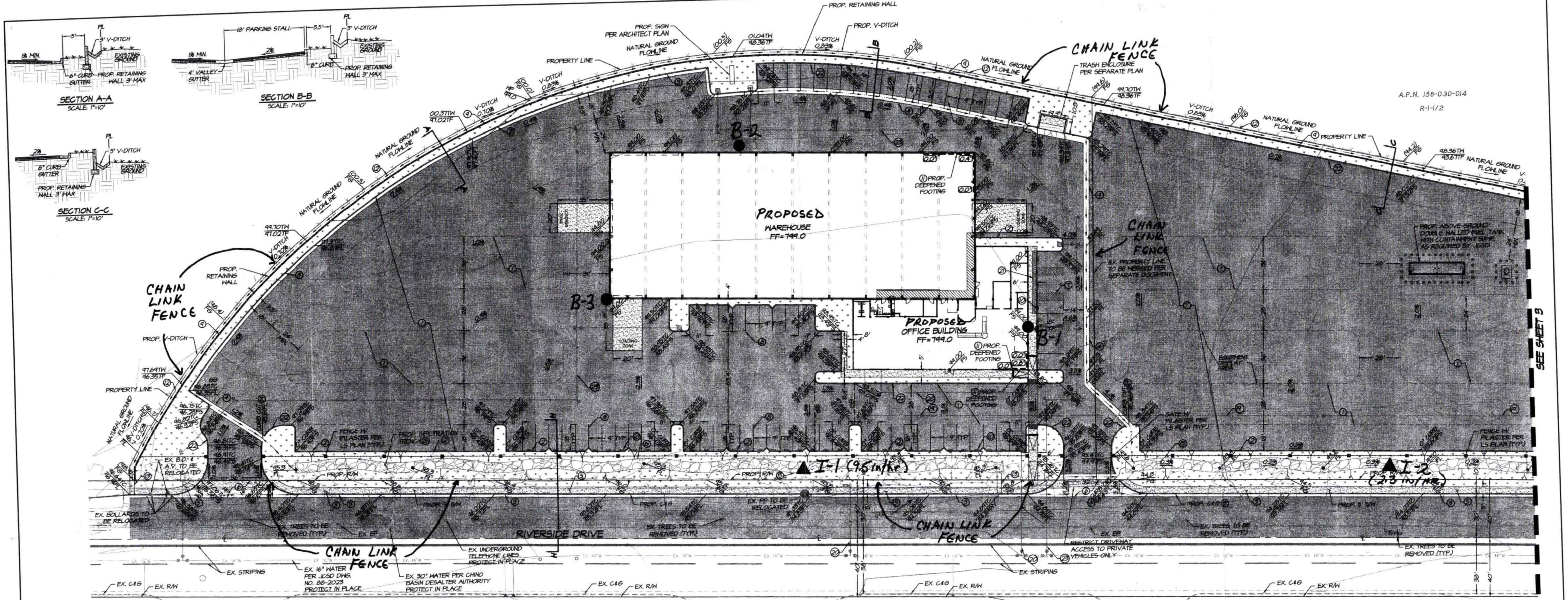
Notes:

- Pipe type should be ASTM D1527 Acrylonitrile Butediene Styrene (ABS) SDR35 or ASTM D1785 Polyvinyl Chloride plastic (PVC), Schedule 40, Armco A2000 PVC, or approved equivalent. Pipe should be installed with perforations down.
- Filter fabric should be Mirafi 140N, 140NS, Supac 4NP, Amoco 4545, Trevira 1114, or approved equivalent.
- All drains should have a gradient of 1 percent minimum.
- Outlet portion for gravel subdrain should have a 4"-diameter pipe with the perforated portion inserted into the gravel approximately 2' minimum and the nonperforated portion extending approximately 1' outside the gravel. Proper sealing should be provided at the pipe insertion enabling water to run from the gravel portion into rather than outside the pipe.
- Waterproofing membrane may be required for a specific retaining wall such as a stucco or basement wall.
- Weephole should be 2" minimum diameter and provided at 25' minimum in length of wall. If exposure is permitted, weephole should be located at 3±" above finished grade. If exposure is not permitted such as for a wall adjacent to a sidewalk/curb, a pipe under the sidewalk to discharge through the curb face or equivalent should be provided, or for a basement-type wall, a proper subdrain outlet system should be provided. Open vertical masonry joints (i.e., omit mortar from joints of first course above finished grade) at 32" maximum intervals may be substituted for weepholes. Screening such as with a filter fabric should be provided for weepholes/open joints to prevent earth materials from entering the holes/joints.

RETAINING WALL BACKFILL AND SUBDRAIN DETAIL

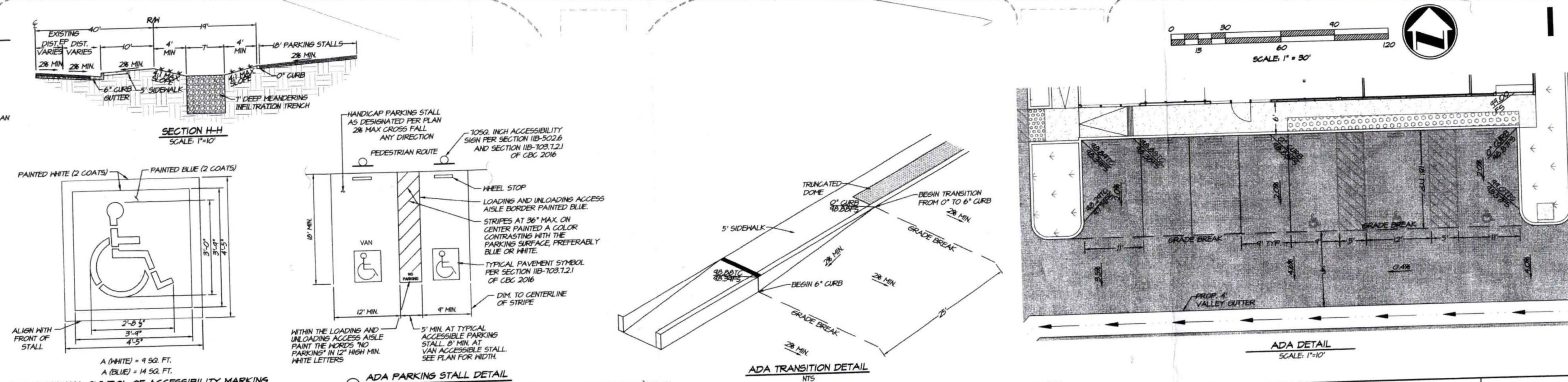
Soil Exploration Co. Inc.

Plate: 2



CONSTRUCTION NOTES

1. INSTALL X" AC PAVEMENT OVER X" BASE PER SOILS REPORT
2. CONSTRUCT 0" CURB PER COUNTY OF RIVERSIDE STD. 204
3. CONSTRUCT 6" CURB AND GUTTER PER COUNTY OF RIVERSIDE STD. 200
4. CONSTRUCT 4' WIDE VALLEY GUTTER PER DETAIL ON SHEET 3
5. CONSTRUCT CONCRETE SIDEWALK PER COUNTY OF RIVERSIDE STD. 401 - WIDTH PER PLAN
6. CONSTRUCT COMMERCIAL DRIVEWAY PER COUNTY OF RIVERSIDE STD. 207A.
7. INSTALL ADA PARKING STRIPING PER DETAILS ON SHEET 3
8. INSTALL PARKING STRIPING
9. CONSTRUCT RETAINING WALL - HEIGHT PER PLAN
10. INSTALL WHEEL STOP PER DETAIL ON SHEET 3
11. CONSTRUCT DEEPENED FOOTING - DEPTH PER PLAN
12. CONSTRUCT 3' WIDE V-DITCH
13. INSTALL UNDER SIDEWALK DRAIN PER COUNTY OF RIVERSIDE STD. 309
14. INSTALL 4' CURB CUT
15. CONSTRUCT 7' WIDE INFILTRATION TRENCH - SEE WQMP FOR DETAILS
16. INSTALL 18" STORM DRAIN - SEE WQMP FOR DETAILS
17. INSTALL 10" SEWER LINE
18. INSTALL SEWER MANHOLE
19. INSTALL 6" SEWER LATERAL
20. INSTALL 2" WATER LATERAL
21. INSTALL TRUNCATED DOMES
22. INSTALL 6" CURB PER COUNTY OF RIVERSIDE STD. 200
23. INSTALL 6" FIRE SERVICE LINE



NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.
Underground Service Alert
Call: TOLL FREE
1-800
227-2600
TWO WORKING DAYS BEFORE YOU DIG

CITY OF JURUPA VALLEY
8930 LIMONITE AVE
JURUPA VALLEY, CA 92509
TEL: (951) 332-6464
EMAIL: ENGINEERING@JURUPAVALLEY.ORG

IMPORTANT NOTE:
THE GRADING AND/OR IMPROVEMENT PLANS ARE APPROVED FOR A PERIOD OF TWO (2) YEARS FROM THE DATE SIGNED BY THE CITY ENGINEER. AFTER THE TWO (2) YEAR PERIOD HAS LAPSED, THE ENGINEER OF RECORD MAY BE REQUIRED TO SUBMIT AND PROCESS FOR CITY ENGINEER APPROVAL, UPDATED PLANS THAT COMPLY WITH THE MOST CURRENT CITY STANDARDS, PRACTICES, AND POLICIES.

MARK	DATE	INITIAL

EXPLORATORY BORING & INFILTRATION TEST LOCATION MAP
PLATE 1A

LEGEND
B-3 ● Approximate Location of Boring
I-4 ▲ Approximate Location of Infiltration Test

Soil Exploration Co., Inc.
Project No. 1826-01 | September 12, 2019

REC.	APPR	DATE

REGISTERED PROFESSIONAL ENGINEER
MITCHELL JAY ADKISON
NO. 75731
EXP. 6-30-20
CIVIL
STATE OF CALIFORNIA

CITY OF JURUPA VALLEY BUSINESS TAX ACCT. No. 00094 EXP. 9/7/19

PLANS PREPARED BY:
adkan ENGINEERS
Civil Engineering · Surveying · Planning
6879 Airport Drive, Riverside, CA 92504
Tel:(951) 688-0241 · Fax:(951) 688-0599

Under the Supervision of: Mitchell Jay Adkison, R.C.E. 75731 Exp. 6.30.20 Date:

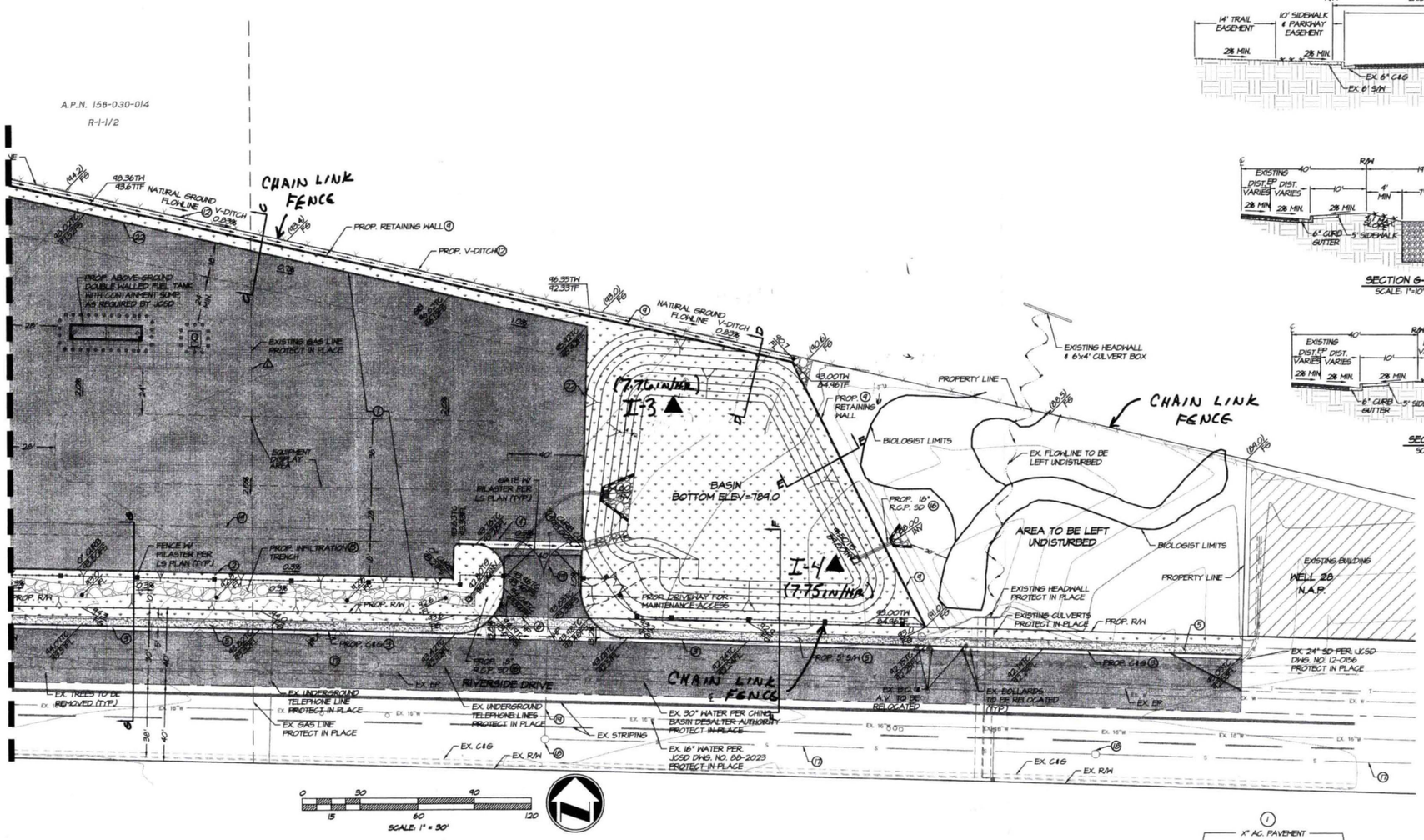
CITY OF JURUPA VALLEY
CONCEPTUAL GRADING PLANS
RIVERSIDE DRIVE & WINEVILLE ROAD
AHERN RENTALS
CONCEPTUAL GRADING

ACCT. NO.
SHEET 2 OF 3
CITY I. D. NO.

A.P.N. 158-030-014

R-1-1/2

SEE SHEET 2



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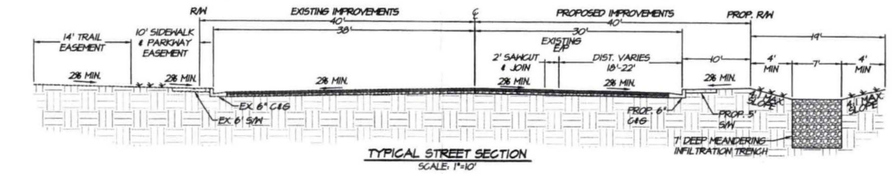
15 60 120

SCALE: 1" = 50'

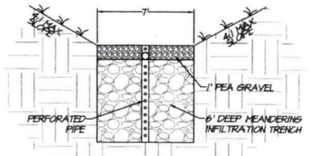


TYPICAL STREET SECTION

SCALE: 1"=10'

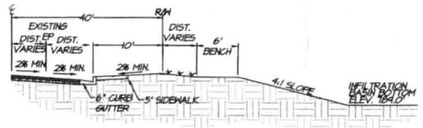
SECTION G-G

SCALE: 1"=10'



INFILTRATION TRENCH DETAIL

SCALE: 1"=5'



SECTION F-F

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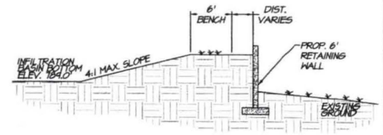

SECTION E-E

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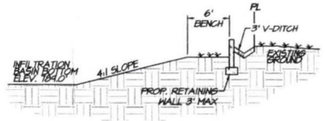

SECTION D-D

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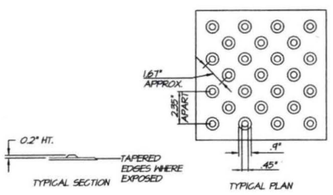
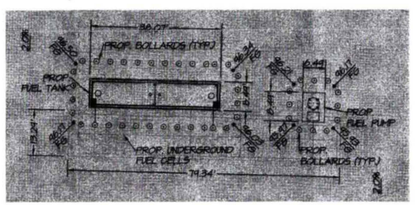


② TRUNCATED DOME DETAIL

NTS

PLEASE REFER TO SECTION 11B-705 AND SECTION 11B-705.1.2 OF CBC 2016 FOR DETECTABLE WARNING LOCATIONS

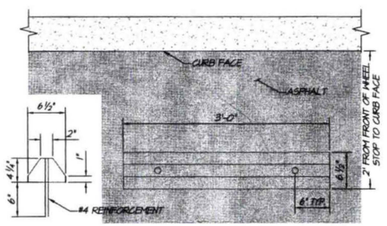
*NOTE: DETECTABLE WARNING SURFACES BY ARMOR TILE OR APPROVED EQUAL. CAST IN PLACE.



FUEL & MAINTENANCE AREA DETAIL

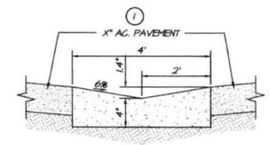
SCALE: 1"=20'

ABOVE-GROUND FUEL TANK SHALL BE DOUBLE WALLED AND UTILIZE A CONTAINMENT SUMP, AS REQUIRED BY JURUPA VALLEY SERVICES DISTRICT



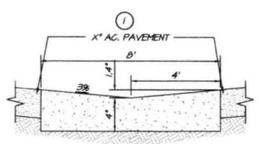
⑩ WHEEL STOP DETAIL

NTS



④ VALLEY GUTTER DETAIL

NTS



④ FLARED VALLEY GUTTER DETAIL

NTS

NOTE: FLARED VALLEY GUTTER TO BE USED WHERE ADA PATH CROSSES GUTTER

EASEMENT NOTES

⚠ AN EASEMENT IN FAVOR OF STATE OF CALIFORNIA FOR INSTALLATION, REPLACEMENT, REPAIR, REMOVAL, AND MAINTENANCE OF A STEEL GAS LINE AS SHOWN BY DOCUMENT RECORDED SEPTEMBER 4, 1964 AS INSTRUMENT NUMBER 1964-90240.

CONSTRUCTION NOTES & QUANTITIES

1. INSTALL X" AC PAVEMENT OVER X" BASE PER SOILS REPORT
2. CONSTRUCT 0" CURB PER COUNTY OF RIVERSIDE STD. 204
3. CONSTRUCT 6" CURB AND GUTTER PER COUNTY OF RIVERSIDE STD. 200
4. CONSTRUCT 4' WIDE VALLEY GUTTER PER DETAIL ON SHEET 3
5. CONSTRUCT CONCRETE SIDEWALK PER COUNTY OF RIVERSIDE STD. 401 - WIDTH PER PLAN
6. CONSTRUCT COMMERCIAL DRIVEWAY PER COUNTY OF RIVERSIDE STD. 207A.
7. INSTALL ADA PARKING STRIPING PER DETAILS ON SHEET 3
8. INSTALL PARKING STRIPING
9. CONSTRUCT RETAINING WALL - HEIGHT PER PLAN
10. INSTALL WHEEL STOP PER DETAIL ON SHEET 3
11. CONSTRUCT DEEPENED FOOTING - DEPTH PER PLAN
12. CONSTRUCT 3' WIDE V-DITCH
13. INSTALL UNDER SIDEWALK DRAIN PER COUNTY OF RIVERSIDE STD. 304
14. INSTALL 4' CURB CUT
15. CONSTRUCT 7' WIDE INFILTRATION TRENCH - SEE WQMP FOR DETAILS
16. INSTALL 18" STORM DRAIN - SEE WQMP FOR DETAILS
17. INSTALL 10" SEWER LINE
18. INSTALL SEWER MANHOLE
19. INSTALL 6" SEWER LATERAL
20. INSTALL 2" WATER LATERAL
21. INSTALL TRUNCATED DOMES
22. INSTALL 6" CURB PER COUNTY OF RIVERSIDE STD. 200
23. INSTALL 6" FIRE SERVICE LINE

NO WORK SHALL BE DONE ON THIS SITE UNTIL BELOW AGENCY IS NOTIFIED OF INTENTION TO GRADE OR EXCAVATE.
Underground Service Alert
Call: TOLL FREE
1-800 227-2600
TWO WORKING DAYS BEFORE YOU DIG

CITY OF JURUPA VALLEY
8930 LIMONITE AVE.
JURUPA VALLEY, CA 92509
TEL: (951) 332-6464
EMAIL: ENGINEERING@JURUPAVALLEY.ORG

IMPORTANT NOTE:

THE GRADING AND/OR IMPROVEMENT PLANS ARE APPROVED FOR A PERIOD OF TWO (2) YEARS FROM THE DATE SIGNED BY THE CITY ENGINEER. AFTER THE TWO (2) YEAR PERIOD HAS LAPSED, THE ENGINEER OF RECORD MAY BE REQUIRED TO SUBMIT AND PROCESS FOR CITY ENGINEER APPROVAL, UPDATED PLANS THAT COMPLY WITH THE MOST CURRENT CITY STANDARDS, PRACTICES, AND POLICIES.

MARK	DATE	INITIAL

EXPLORATORY BORING & INFILTRATION TEST LOCATION MAP PLATE 1B

LEGEND

B-3 ● Approximate Location of Boring

I-4 ▲ Approximate Location of Infiltration Test

Soil Exploration Co., Inc.

Project No. 1826-01 | September 12, 2019

REC.	APPR	DATE

REGISTERED PROFESSIONAL ENGINEER MITCHELL JAY ADKISON NO. 75731 EXP. 6-30-20 CIVIL STATE OF CALIFORNIA

CITY OF JURUPA VALLEY BUSINESS TAX ACCT. No. 00094 EXP. 9/7/19

PLANS PREPARED BY:
adkan ENGINEERS
Civil Engineering · Surveying · Planning
6879 Airport Drive, Riverside, CA 92504
Tel:(951) 688-0241 · Fax:(951) 688-0599

Under the Supervision of: Mitchell Jay Adkison, R.C.E. 75731 Exp. 6.30.20 Date:

CITY OF JURUPA VALLEY

CONCEPTUAL GRADING PLANS
RIVERSIDE DRIVE & WINEVILLE ROAD
AHERN RENTALS

CONCEPTUAL GRADING

ACCT. NO.

SHEET 3 OF 3

CITY I. D. NO.

FILE PATH: I:\PROJECTS\AHERN\14425\PLANNING\CONCEPTUAL GRADING\14425 CG D1.DWG

PLOT TIME: 7/14/2019 9:17 AM

APPENDIX A

REFERENCES

- CDMG, Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada, Dated February 1998.
- USGS Geologic Map of the San Bernardino and Santa Ana 30'x60' Quadrangles, California, 2006.
- Riverside County GIS Map.
- U.S. Geological Survey Faults 2014.
- Riverside County Stormwater Quality Best Management Practice, Design Handbook for Low Impact Development, Dated June 2014.

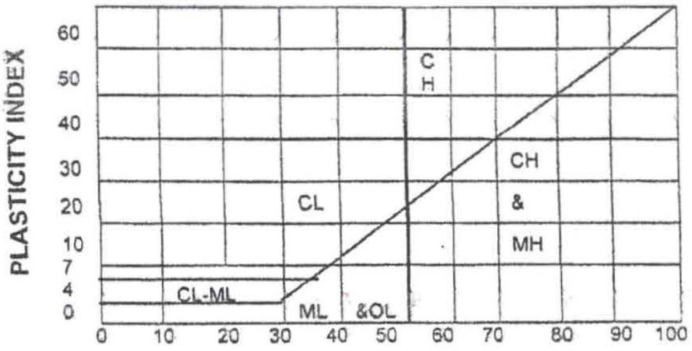
APPENDIX B

MAJOR DIVISIONS		SYMBOLS		TYPICAL NAMES
COARSE-GRAINED SOILS (More than ½ of soil < No. 200 sieve)	GRAVELS (More than ½ of coarse fraction > No. 4 sieve size)	GW		Well-graded gravels or gravel-sand mixtures, little or no fines
		GP		Poorly graded gravels or gravel-sand mixtures, little or no fines
		GM		Silty gravels, gravel-sand-silt mixtures
		GC		Clayey gravels, gravel-sand-clay mixtures
	SANDS (More than ½ of coarse fraction < No. 4 sieve size)	SW		Well-graded sands or gravely sands, little or no fines
		SP		Poorly graded sands or gravelly sands, little or no fines
		SM		Silty sands, sand-salt mixtures
		SC		Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (More than ½ of soil < No. 200 sieve)	SILTS & CLAYS LL < 50	ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
		CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
		OL		Organic silts and organic silty clays of low plasticity.
	SILTS & CLAYS LL > 50	MH		Inorganic silts, caceous or diatonaceous fine sandy or silty soils, elastic silts
		CH		Inorganic clays of medium to high plasticity, organic silty clays, organic silts
		OH		Organic clays of medium to high plasticity, organic silty clays, organic silts
	HIGHLY ORGANIC SOILS	Pt		Peat and other highly organic soils

CLASSIFICATION CHART

(UNIFIED SOIL CLASSIFICATION SYSTEM)

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDER	ABOVE 12"	ABOVE 305
COBBLES	3" to 12"	305 to 76.2
GRAVEL	3" to No. 4	762 to 4.76
COARSE	3" TO ¾"	76.2 to 19.1
FINE	¾"to No. 4	19.1 to 4.76
SAND	No. 4 to 200	4.76 to 0.074
COARSE	No. 4 to 10	4.76 to 2.00
MEDIUM	No. 10 to 40	2.00 to 0.420
FINE	No. 40 to 200	0.420 to 0.074
SILT & CLAY	BELOW No. 200	BELOW 0.074



GRAIN SIZE CHART

PLASTICITY CHART

Ring Sample	Bag Sample	NR No Recovery	Classification in accordance with ASTM D2487 Description and visual observation in accordance with ASTM D2488 All Sieve Sizes shown are US Standard SPT Refusal is defined as one of the following: 10 blows for no apparent displacement 50 blows for less than 6 inches advancement 100 blows for 6 to 18 inches advancement
SPT Sample	Seepage		

GEOTECHNICAL BORING LOGS

Drill Hole No. B-1

Date: Sept. 3, 2019
Drilling Company: Larry Harklerode
Hole Diameter: 8" **Drive Weight:** 140 lbs. **Drop:** 30"

Project No. 1826-01
Type of Rig: B-53
Elevation: Existing Ground

DEPTH (feet)	TYPE OF TEST	SAMPLE TEST	BLOWS PER 6 INCH	DRY DENSITY (%)	MOISTURE (%)	SOIL CLASSIFICATION USCS	GEOTECHNICAL DESCRIPTION LOGGED BY: GL SAMPLED BY: GL
1						SM	Qye: Young eolian deposits **SILTY SAND:** Light brown, fine to medium grained,
2							dry, top 1 foot loose
3		■	21/28/30	121.4	2.2		Dry, dense % Passing No. 200 Sieve = 10
4							
5							
6		■	8/12/15	-	-		Dry, medium dense
7							
8							
9							
10							
11		☒	8/12/16	-	4.7		Yellowish/light brown, fine grained, dry, medium dense % Passing No. 200 Sieve = 44
12							
13							
14							
15							
16		☒	7/11/14	-	-		Light gray/olive, dry, medium dense
17							
18							
19							
20							
21		☒	18/28/30	-	-		Dry, very dense, gravel
22							
23							
24							
25							TOTAL DEPTH = 25 FEET NO GROUNDWATER NO CAVING BORING BACKFILLED

Soil Exploration Co., Inc.

GEOTECHNICAL BORING LOGS

Drill Hole No. B-2

Date: Sept. 3, 2019
Drilling Company: Larry Harklerode
Hole Diameter: 8" **Drive Weight:** 140 lbs. **Drop:** 30"

Project No. 1826-01
Type of Rig: B-53
Elevation: Existing Ground

DEPTH (feet)	TYPE OF TEST	SAMPLE TEST	BLOWS PER 6 INCH	DRY DENSITY (%)	MOISTURE (%)	SOIL CLASSIFICATION USCS	GEOTECHNICAL DESCRIPTION LOGGED BY: GL SAMPLED BY: GL
1						ML	Qye: Young eloian deposits
2							**SANDY SILT:** Yellowish/light brown, dry, medium dense
3		X	6/10/17	-	9.1		Dry, medium dense
4							
5							
6		X	9/10/14	-	6.3		Yellow, dry, medium dense
7							
8							
9							
10							
11		X	7/16/25	-	-	SP-SM	**SAND WITH SILT:** Light gray, dry, dense, gravel
12							
13							
14							
15							
16							TOTAL DEPTH = 15 FEET NO GROUNDWATER NO CAVING BORING BACKFILLED
17							
18							
19							
20							
21							
22							
23							
24							
25							

GEOTECHNICAL BORING LOGS

Drill Hole No. B-3

Date: Sept. 6, 2019
Drilling Company: One Way Drilling
Hole Diameter: 8" **Drive Weight:** 140 lbs. **Drop:** 30"

Project No. 1826-01
Type of Rig: CME 75
Elevation: Existing Ground

DEPTH (feet)	TYPE OF TEST	SAMPLE TEST	BLOWS PER 6 INCH	DRY DENSITY (%)	MOISTURE (%)	SOIL CLASSIFICATION USCS	GEOTECHNICAL DESCRIPTION LOGGED BY: GL SAMPLED BY: GL
1						SM	Qye: Young eloian deposits
2							**SILTY SAND:** Light brown, fine to medium grained, dry, medium dense, loose
3		X	2/2/7	-	3.0		Dry, loose % Passing No. 200 Sieve = 18
4							
5							
6		X	6/8/12	-	6.6		Yellow, dry, medium dense % Passing No. 200 Sieve = 38
7							
8							
9							
10							
11		X	6/12/8	-	-		Gray, fine to coarse grained, dry, medium dense, gravel
12							
13							
14							
15							
16		X	16/23/21	-	2.0		Dry, dense % Passing No. 200 Sieve = 14
17							
18							
19							
20							
21		X	16/26/42	-	-		Dry, very dense
22							
23							
24							
25							

Soil Exploration Co., Inc.

GEOTECHNICAL BORING LOGS

Drill Hole No. B-3

Date: Sept. 6, 2019
Drilling Company: One Way Drilling
Hole Diameter: 8" **Drive Weight:** 140 lbs. **Drop:** 30"

Project No. 1826-01
Type of Rig: CME 75
Elevation: Existing Ground

DEPTH (feet)	TYPE OF TEST	SAMPLE TEST	BLOWS PER 6 INCH	DRY DENSITY (%)	MOISTURE (%)	SOIL CLASSIFICATION USCS	GEOTECHNICAL DESCRIPTION LOGGED BY: GL SAMPLED BY: GL
26		X	12/50	-	-	SM	Dry, very dense
27							
28							
29							
30							
31		X	18/50/2"	-	-		Dry, very dense
32							
33							
34							
35							
36		X	8/16/24	-	6.0	SP-SM	**SAND WITH SILT:** Yellowish/light brown, fine to medium grained, slightly moist, dense
37							% Passing No. 200 Sieve = 8
38							
39							
40							
41		X	20/50/5"	-	-		Slightly moist, very dense
42							
43							
44							
45							
46		X	12/20/20	-	-		Slightly moist, dense
47							
48							Slightly moist, dense
49							TOTAL DEPTH = 50 FEET
50		X	18/12/21	-	-		NO GROUNDWATER NO CAVING BORING BACKFILLED

Soil Exploration Co., Inc.

APPENDIX C

Riverside Drive
City of Jurupa Valley,California

LABORATORY TEST RESULTS

SIEVE SIZE	B-1 @ 2' % PASSING	B-1 @ 10' % PASSING	B-3 @ 2' % PASSING	B-3 @ 5' % PASSING	B-3 @ 15' % PASSING	B-3 @ 35' % PASSING
3/4"	-	-	-	-	100	-
1/2"	-	-	-	-	90	-
3/8"	-	-	-	-	86	100
No. 4	-	100	100	100	72	98
No. 8	100	99.5	99	99	63	92
No. 16	96	98.5	95	95	55	80
No. 30	88	96	87	86	46	56
No. 50	72	91	72	71	35	35
No. 100	39	73	44	53	24	20
No. 200	10	44	18	38	14	8
SIEVE ANALYSIS TEST DATA						

Cal Land Engineering, Inc.
dba Quartech Consultants
Geotechnical, Environmental & Civil Engineering

September 13, 2019

Soil Exploration Company Inc.
7535 Jurupa Avenue, Unit C
Riverside, California 92504

Attn: Mr. Gene Luu

RE: LABORATORY TEST RESULTS/REPORT
Client: Ahern Rentals
Project: Corrosion Potential
Project No.: 1826-01
QCI Job No.: 19-183-009b

Gentlemen:

We have completed the testing program conducted on sample for above project. The tests were performed in accordance with testing procedures as follows:

TEST	METHOD
Corrosion Potential	CT- 417, CT- 422, CT- 532 (643)

Enclosed is Summary of Laboratory Test Results.

We appreciate the opportunity to provide testing services to Soil Exploration Company Inc. Should you have any questions, please call the undersigned.

Sincerely yours,
Cal Land Engineering, Inc. (CLE)
dba Quartech Consultants (QCI)

Giovani Valdivia
Project Engineer

Enclosure

Cal Land Engineering, Inc.
dba Quartech Consultants
Geotechnical, Environmental, and Civil Engineering

Soil Exploration Company Inc.
7535 Jurupa Avenue, Suite C
Riverside, California 92504

QCI Project No.: 19-183-009b
Date: September 13, 2019
Summarized by: GV

Client: Ahern Rentals
Project: Corrosion Potential
Project No.: 1826-01

Corrosivity Test Results

Sample ID	Sample Depth (ft)	pH CT-532 (643)	Chloride CT-422 (ppm)	Sulfate CT-417 % By Weight	Resistivity CT-532 (643) (ohm-cm)
B-1	0-2.5'	7.95	196	0.002	4,900

ANAHEIM TEST LAB, INC

196 Technology Drive, Unit D
Irvine, CA 92618
Phone (949)336-6544

TO:

Southwest Inspection & Testing, Inc.
441 Commercial Way
La Habra, CA 90631-6168

DATE: 09/09/2019

P.O. NO: Transmittal

LAB NO: C-3205

SPECIFICATION: CA 301

MATERIAL: Brown, F. Silty Sand

Client: Soil Exploration Company, Inc.
Client Project No.: 1826-01
Project Name: Ahern Rentals, Inc.
Date sampled: 09/03/2019

ANALYTICAL REPORT
"R" VALUE

BY EXUDATION	BY EXPANSION
71	N/A

RESPECTFULLY SUBMITTED

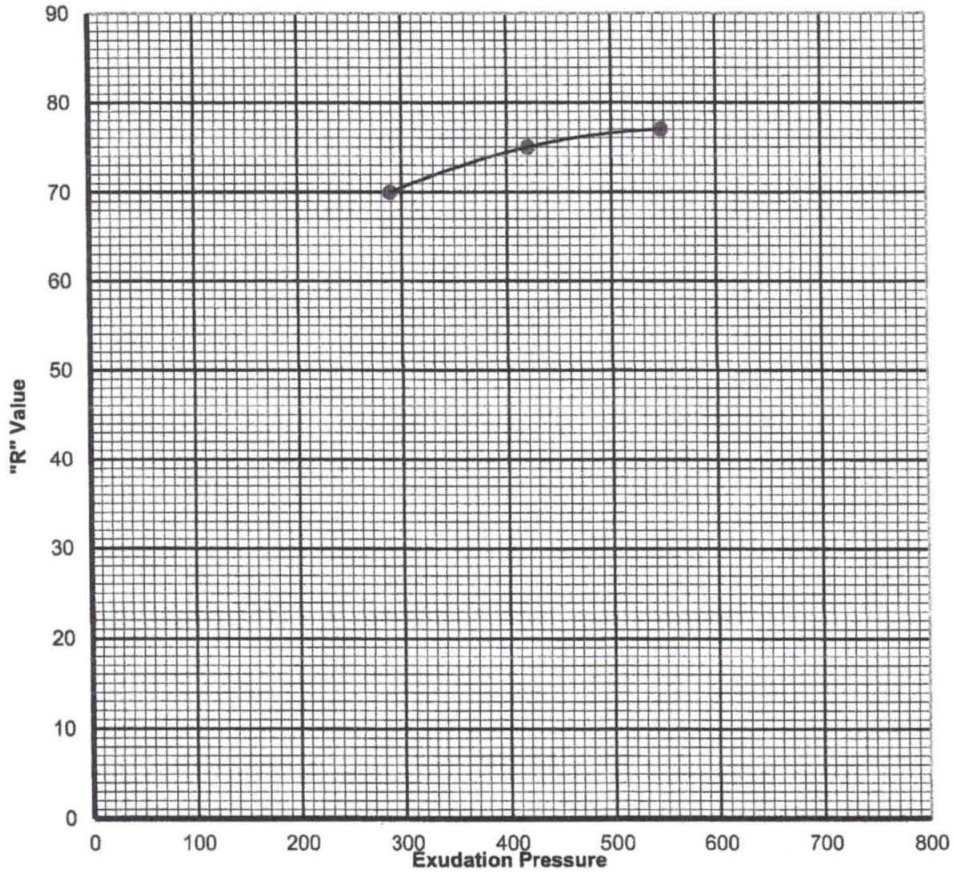
WES BRIDGER LAB MANAGER

"R" VALUE CA 301

Client: Southwest Inspection & Testing, Inc. **ATL No.:** C 3205 **Date:** 9/9/2019
Client Reference No.: 1826-01
Sample: Soil Exploration R Value **Soil Type:** Brown, F. Silty Sand

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	350	350	300	
Initial Moisture Content	%	0.4	0.4	0.4	
Moisture at Compaction	%	13.0	13.4	13.8	
Briquette Height	in.	2.47	2.46	2.49	
Dry Density	pcf	108.3	107.6	106.2	
EXUDATION PRESSURE	psi	547	420	288	
EXPANSION dial	(x .0001)	0	0	0	
Ph at 1000 pounds	psi	15	18	21	
Ph at 2000 pounds	psi	28	30	35	
Displacement	turns	3.45	3.69	3.89	
"R" Value		77	75	70	
CORRECTED "R" VALUE		77	75	70	

Final "R" Value	
BY EXUDATION: @ 300 psi	**71**
BY EXPANSION: TI = 5.0	**N/A**



Cal Land Engineering, Inc.
dba Quartech Consultants
Geotechnical, Environmental & Civil Engineering

September 18, 2019

Soil Exploration Company Inc.
7535 Jurupa Avenue, Unit C
Riverside, California 92504

Attn: Mr. Gene Luu

RE: LABORATORY TEST RESULTS/REPORT
Project Address: Ahem Rentals
Project No.: 1826-01
QCI Job No.: 19-183-009d

Ladies and Gentlemen:

We have completed the testing program conducted on sample for above project. The tests were performed in accordance with testing procedures as follows:

TEST	METHOD
Consolidation	ASTM D2435
Direct Shear	ASTM D3080

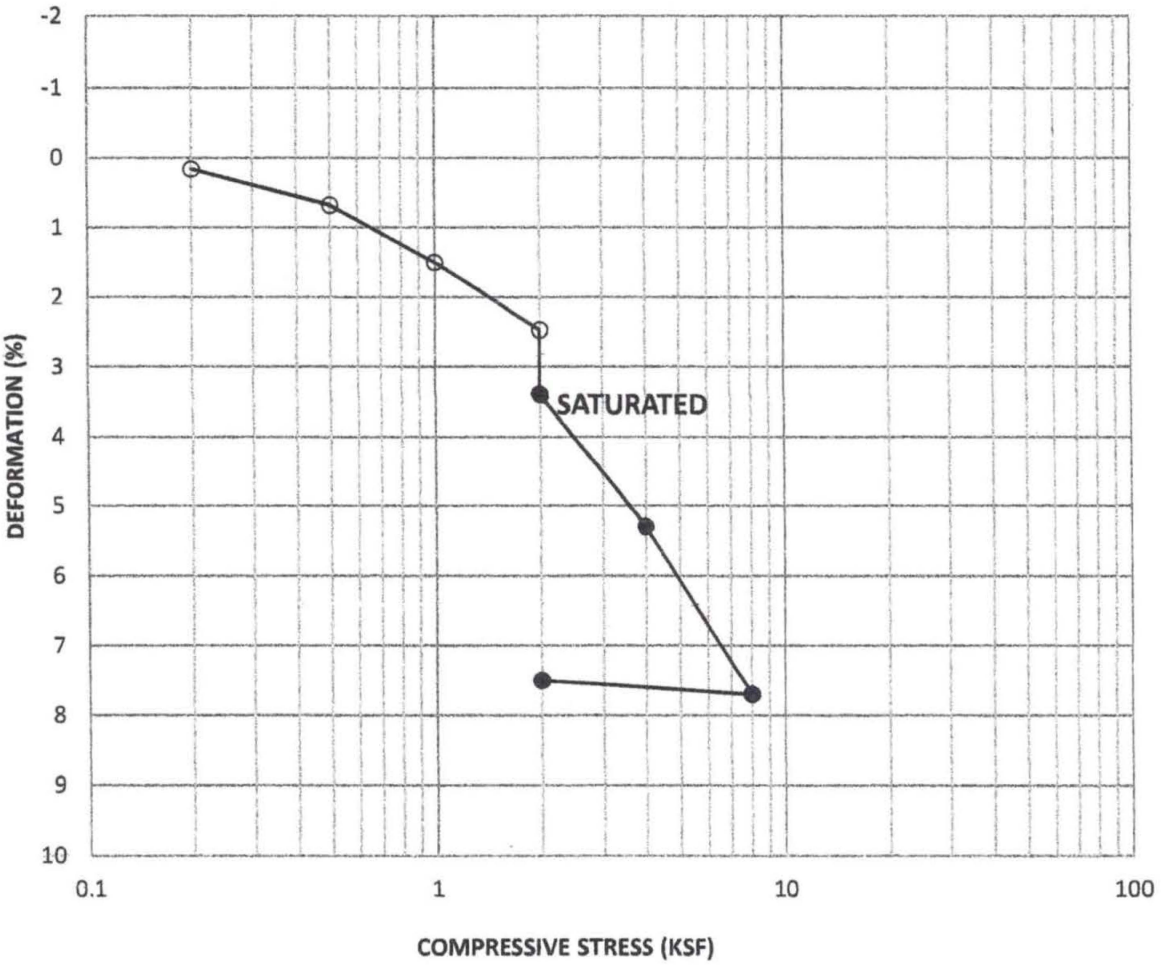
Enclosed is Summary of Laboratory Test Results.

We appreciate the opportunity to provide testing services to Soil Exploration Company Inc. Should you have any questions, please call the undersigned.

Sincerely yours,
Cal Land Engineering, Inc. (CLE)
dba Quartech Consultants (QCI)

Guillermo E Troncoso IV
Project Engineer

Enclosure



SYMBOL	BORING NO.	SAMPLE NO.	DEPTH (FT)	SOIL TYPE	INIT. MOISTURE CONTENT (%)	INIT. DRY DENSITY (PCF)	INIT. VOID RATIO
○	B-1	N/A	5	SM	3.0	107.2	0.572

CalLand Engineering, Inc
dba Quartech Consultants
Geotechnical, Environmental & Civil Engineering Services

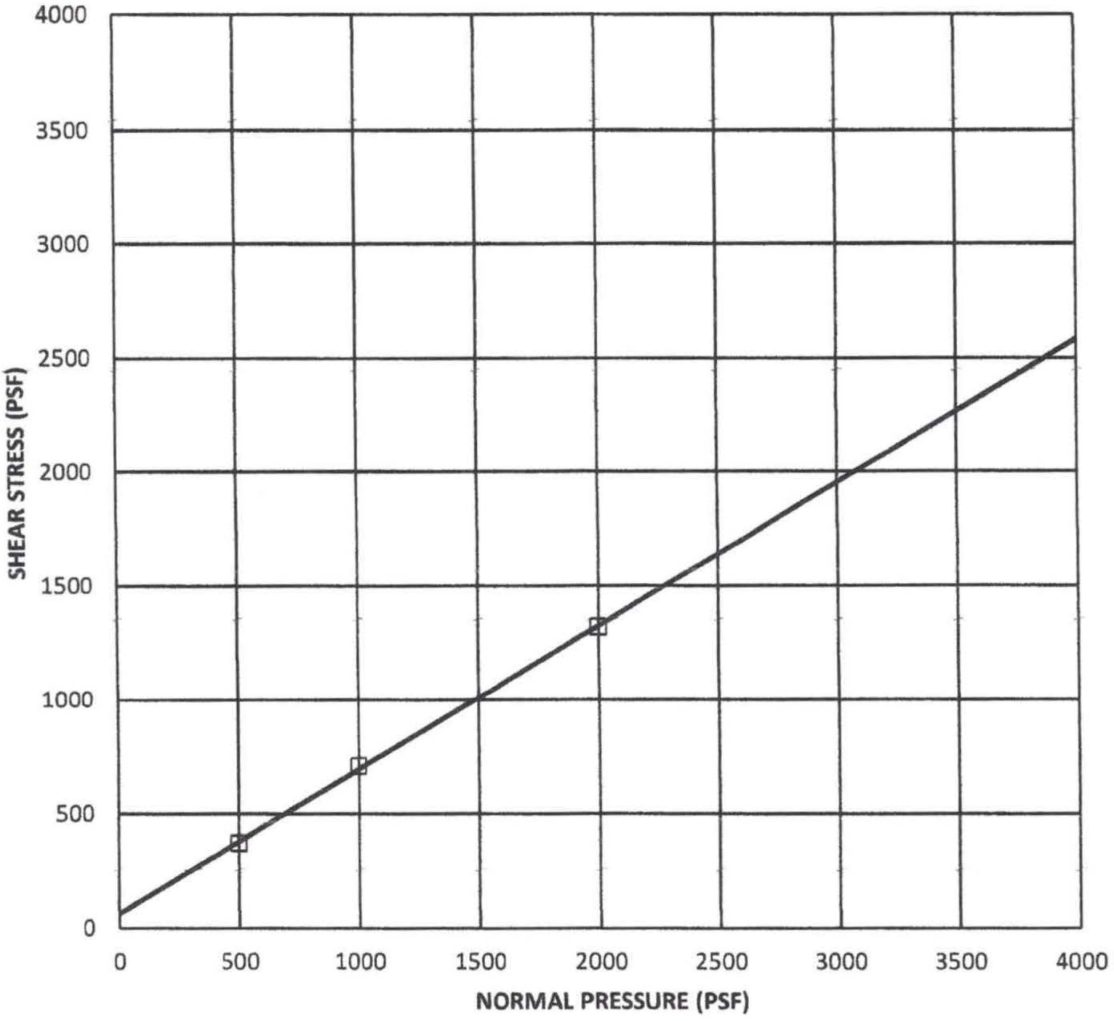
Project Address:
Ahem Rentals
Job Number:
1826-01

CONSOLIDATION

(ASTM D2435)

9/19

FIGURE 2



SYMBOL	BORING NO.	SAMPLE NO.	DEPTH (FT)	SAMPLE TYPE	SOIL TYPE	COHESION (PSF)	FRICTION ANGLE (DEG)
□	B-1	N/A	5.0	RING	SM	66	32

Vertical Loads (PSF)	Moisture Content Before Test (%)	Moisture Content After Test (%)
500	3	20.9
1000	3	20.7
2000	3	20.4

CalLand Engineering, Inc

dba Quartech Consultants

Geotechnical,

Project Address:
Ahem Rentals
Project Number:
1826-01

DIRECT SHEAR

(ASTM D3080)

9/19

FIGURE 3

APPENDIX D

U.S. Geological Survey - Earthquake Hazards Program

2008 National Seismic Hazard Maps - Source Parameters

New Search

Distance in Miles	Name	State	Pref Slip Rate (mm/yr)	Dip (degrees)	Dip Dir	Slip Sense	Rupture Top (km)	Rupture Bottom (km)
9.46	Chino, alt 2	CA	1	65	SW	strike slip	0	14
9.52	Chino, alt 1	CA	1	50	SW	strike slip	0	9
10.28	Cucamonga	CA	5	45	N	thrust	0	8
10.58	San Jose	CA	0.5	74	NW	strike slip	0	15
12.72	Elsinore;W	CA	2.5	75	NE	strike slip	0	14
12.72	Elsinore;W+GI	CA	n/a	81	NE	strike slip	0	14
12.72	Elsinore;W+GI+T	CA	n/a	84	NE	strike slip	0	14
12.72	Elsinore;W+GI+T+J+CM	CA	n/a	84	NE	strike slip	0	16
12.72	Elsinore;W+GI+T+J	CA	n/a	84	NE	strike slip	0	16
13.28	Sierra Madre Connected	CA	2	51		reverse	0	14
13.28	Sierra Madre	CA	2	53	N	reverse	0	14
13.37	Elsinore;GI+T	CA	5	90	V	strike slip	0	14
13.37	Elsinore;GI+T+J+CM	CA	n/a	86	NE	strike slip	0	16
13.37	Elsinore;GI	CA	5	90	V	strike slip	0	13
13.37	Elsinore;GI+T+J	CA	n/a	86	NE	strike slip	0	17
13.77	San Jacinto;SBV+SJV+A	CA	n/a	90	V	strike slip	0	16
13.77	San Jacinto;SBV	CA	6	90	V	strike slip	0	16
13.77	San Jacinto;SBV+SJV	CA	n/a	90	V	strike slip	0	16

13.77	San Jacinto;SBV+SJV+A+C	CA	n/a	90	V	strike slip	0	17
13.77	San Jacinto;SBV+SJV+A+CC	CA	n/a	90	V	strike slip	0	16
13.77	San Jacinto;SBV+SJV+A+CC+B	CA	n/a	90	V	strike slip	0.1	15
13.77	San Jacinto;SBV+SJV+A+CC+B+SM	CA	n/a	90	V	strike slip	0.1	15
17.24	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13
17.24	S. San Andreas;SM+NSB+SSB	CA	n/a	90	V	strike slip	0	13
17.24	S. San Andreas;SM+NSB+SSB+BG	CA	n/a	81		strike slip	0	13
17.24	S. San Andreas;SM+NSB+SSB+BG+CO	CA	n/a	83		strike slip	0.1	13
17.24	S. San Andreas;BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14
17.24	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0.1	13
17.24	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0.1	13
17.24	S. San Andreas;PK+CH+CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	86		strike slip	0.1	13
17.24	S. San Andreas;BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0	14
17.24	S. San Andreas;NSB+SSB+BG	CA	n/a	75		strike slip	0	14
17.24	S. San Andreas;NSB+SSB	CA	n/a	90	V	strike slip	0	13
17.24	S. San Andreas;NSB	CA	22	90	V	strike slip	0	13
17.24	S. San Andreas;NM+SM+NSB+SSB+BG+CO	CA	n/a	84		strike slip	0.1	13
17.24	S. San Andreas;NM+SM+NSB+SSB+BG	CA	n/a	83		strike slip	0	14
17.24	S. San Andreas;NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	13
17.24	S. San Andreas;NM+SM+NSB	CA	n/a	90	V	strike slip	0	13
17.24	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	86		strike slip	0	14

17.24	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14
17.24	S. San Andreas;CH+CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0	14
17.24	S. San Andreas;BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	85		strike slip	0.1	13
17.24	S. San Andreas;CH+CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13
17.24	S. San Andreas;BB+NM+SM+NSB+SSB+BG	CA	n/a	84		strike slip	0	14
17.24	S. San Andreas;CC+BB+NM+SM+NSB+SSB+BG+CO	CA	n/a	86		strike slip	0.1	13
17.24	S. San Andreas;NSB+SSB+BG+CO	CA	n/a	79		strike slip	0.2	12
17.24	S. San Andreas;CC+BB+NM+SM+NSB+SSB+BG	CA	n/a	85		strike slip	0	14
17.24	S. San Andreas;CC+BB+NM+SM+NSB+SSB	CA	n/a	90	V	strike slip	0	14
17.24	S. San Andreas;CC+BB+NM+SM+NSB	CA	n/a	90	V	strike slip	0	14
17.24	S. San Andreas;SM+NSB	CA	n/a	90	V	strike slip	0	13
17.68	San Jacinto;SJV+A+C	CA	n/a	90	V	strike slip	0	17
17.68	San Jacinto;SJV+A+CC+B+SM	CA	n/a	90	V	strike slip	0.1	15
17.68	San Jacinto;SJV+A	CA	n/a	90	V	strike slip	0	17
17.68	San Jacinto;SJV+A+CC	CA	n/a	90	V	strike slip	0	16
17.68	San Jacinto;SJV+A+CC+B	CA	n/a	90	V	strike slip	0.1	15
17.68	San Jacinto;SJV	CA	18	90	V	strike slip	0	16
20.32	Puente Hills (Coyote Hills)	CA	0.7	26	N	thrust	2.8	15
20.40	Cleghorn	CA	3	90	V	strike slip	0	16
20.47	S. San Andreas;NM+SM	CA	n/a	90	V	strike slip	0	14
20.47	S. San Andreas;CH+CC+BB+NM+SM	CA	n/a	90	V	strike slip	0	14
20.47	S. San Andreas;SM	CA	29	90	V		0	13

						strike slip		
20.47	S. San Andreas;CC+BB+NM+SM	CA	n/a	90	V	strike slip	0	14
20.47	S. San Andreas;BB+NM+SM	CA	n/a	90	V	strike slip	0	14
20.47	S. San Andreas;PK+CH+CC+BB+NM+SM	CA	n/a	90	V	strike slip	0.1	13
20.60	S. San Andreas;SSB+BG+CO	CA	n/a	77		strike slip	0.2	12
20.60	S. San Andreas;SSB+BG	CA	n/a	71		strike slip	0	13
20.60	S. San Andreas;SSB	CA	16	90	V	strike slip	0	13
23.00	Clamshell-Sawpit	CA	0.5	50	NW	reverse	0	14
25.84	Elsinore;T+J	CA	n/a	86	NE	strike slip	0	17
25.84	Elsinore;T+J+CM	CA	n/a	85	NE	strike slip	0	16
25.84	Elsinore;T	CA	5	90	V	strike slip	0	14
25.91	North Frontal (West)	CA	1	49	S	reverse	0	16
26.61	San Jacinto;A+CC+B+SM	CA	n/a	90	V	strike slip	0.1	15
26.61	San Jacinto;A+CC	CA	n/a	90	V	strike slip	0	16
26.61	San Jacinto;A+C	CA	n/a	90	V	strike slip	0	17
26.61	San Jacinto;A	CA	9	90	V	strike slip	0	17
26.61	San Jacinto;A+CC+B	CA	n/a	90	V	strike slip	0.1	15
27.37	Raymond	CA	1.5	79	N	strike slip	0	16
27.74	San Joaquin Hills	CA	0.5	23	SW	thrust	2	13
27.82	Puente Hills (Santa Fe Springs)	CA	0.7	29	N	thrust	2.8	15
32.01	Elysian Park (Upper)	CA	1.3	50	NE	reverse	3	15
33.53	Puente Hills (LA)	CA	0.7	27	N	thrust	2.1	15
34.96	Newport Inglewood Connected alt 2	CA	1.3	90	V	strike slip	0	11

35.05	Newport-Inglewood, alt 1	CA	1	88		strike slip	0	15
35.05	Newport Inglewood Connected alt 1	CA	1.3	89		strike slip	0	11
35.74	Verdugo	CA	0.5	55	NE	reverse	0	15
36.37	Newport-Inglewood (Offshore)	CA	1.5	90	V	strike slip	0	10
39.90	Hollywood	CA	1	70	N	strike slip	0	17
42.84	Santa Monica Connected alt 2	CA	2.4	44		strike slip	0.8	11
42.94	S. San Andreas;BG+CO	CA	n/a	72		strike slip	0.3	12
42.94	S. San Andreas;BG	CA	n/a	58		strike slip	0	13
44.84	Helendale-So Lockhart	CA	0.6	90	V	strike slip	0	13
44.86	Palos Verdes	CA	3	90	V	strike slip	0	14
44.86	Palos Verdes Connected	CA	3	90	V	strike slip	0	10
46.55	Sierra Madre (San Fernando)	CA	2	45	N	thrust	0	13
46.87	San Gabriel	CA	1	61	N	strike slip	0	15
47.38	Pinto Mtn	CA	2.5	90	V	strike slip	0	16
47.98	North Frontal (East)	CA	0.5	41	S	thrust	0	16
49.85	Santa Monica Connected alt 1	CA	2.6	51		strike slip	0	16
49.85	Santa Monica, alt 1	CA	1	75	N	strike slip	0	18

2016 CBC – SEISMIC PARAMETERS		
Site Coordinates	**Latitude**	**Longitude**
	34.0193	**-117.5459**
Mapped Spectral Response Acceleration	**S_S = 1.500**	**S_1 = 0.600**
Site Coefficients (Class "D")	**F_a = 1.00**	**F_v = 1.50**
Maximum Considered Earthquake (MCE) Spectral Response Acceleration	**S_{MS} = 1.500**	**S_{M1} = 0.900**
Design Spectral Response Acceleration Parameters	**S_{DS} = 1.000**	**S_{D1} = 0.600**
Seismic Design Category	**D**	
Peak Ground Acceleration (PGA)	**0.5g**	

References:

- Earthquake.usgs.gov/research/hazmaps/design
- 2016 California Building Code, California Code of Regulations, Title 24, Part 2, Volume 2 of 2, Section 1613, Earthquake Loads

APPENDIX E

GENERAL EARTHWORK AND GRADING SPECIFICATIONS

1.0 GENERAL INTENT

These specifications present general procedures and requirements for grading and earthwork as shown on the approved grading plans, including preparation of areas to be filled, placement of fill, installations of subdrains, and excavations. The recommendations contained in the geotechnical report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in the case of conflict. Evaluations performed by the consultant during the course of grading may result in new recommendations which could supersede these specifications or the recommendations of the geotechnical report.

2.0 EARTHWORK OBSERVATIONS AND TESTING

Prior to the commencement of grading, a qualified geotechnical consultant (soils engineer and engineering geologist, and their representatives) shall be employed for the purpose of observing earthwork procedures and testing the fills for conformance with the recommendations of the geotechnical report and these specifications. It will be necessary that the consultant provide adequate testing and observations so that he may determine that the work was accomplished as specified. It shall be the responsibility of the contractor to assist the consultant and keep him apprised of work schedules and changes so that he may schedule his personnel accordingly.

It shall be the sole responsibility of the contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and approved grading plans. If, in the opinion of the consultant, unsatisfactory conditions, such as questionable soil, poor moisture conditions, inadequate compaction, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the consultant will be empowered to reject the work and recommend that construction be stopped until the unsatisfactory conditions are rectified.

Maximum dry density tests used to determine the degree of compaction will be performed in accordance with the American Society of Testing and Materials, test method ASTM D1557-12.

3.0 PREPARATION OF AREAS TO BE FILLED

3.1 Clearing and Grubbing

All brush, vegetation, and debris shall be removed or piled and otherwise disposed of.

3.2 Processing

The existing ground which is determined to be satisfactory for support of fill shall be scarified to a minimum depth of 6 inches. Existing ground which is not satisfactory shall be overexcavated as specified in the following section. Scarification shall continue until the soils are broken down and free of large clay lumps or clods and until the working surface is reasonably uniform and free of uneven features which would inhibit uniform compaction.

3.3 Overexcavation

Soft, dry, spongy, highly fractured or otherwise unsuitable ground, extending to such depth that surface processing cannot adequately improve the condition, shall be overexcavated down to firm ground, approved by the consultant.

3.4 Moisture Conditioning

Overexcavated and processed soils shall be watered, dried-back, blended, and/or mixed, as required to attain a uniform moisture content near optimum.

3.5 Recompaction

Overexcavation and processed soils which have been properly mixed and moisture-conditioned shall be recompacted to a minimum relative compaction of 90 percent.

3.6 Benching

Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal : vertical), the ground shall be stepped or benched. The lowest bench shall be a minimum of 15 feet wide, shall be at least 2 feet deep, shall expose firm materials, and shall be approved by the consultant. Other benches shall be excavated in firm materials for a minimum width of 4 feet. Ground sloping flatter than 5:1 (horizontal : vertical) shall be benched or otherwise overexcavated when considered necessary by the consultant.

3.7 Approval

All areas to receive fill, including processed areas, removal areas and toe-of-fill benches shall be approved by the consultant prior to fill placement.

4.0 FILL MATERIAL

4.1 General

Material to be placed as fill shall be free of organic matter and other deleterious substances, and shall be approved by the consultant. Soils of poor gradation, expansion, or strength characteristics shall be placed in areas designated by consultant or shall be mixed with other soils to serve as satisfactory fill material.

4.2 Oversize

Oversize materials defined as rock, or other irreducible material with maximum dimension greater than 12 inches, shall not be buried or placed in fills, unless the location, materials, and disposal methods are specifically approved by the consultant. Oversize disposal operations shall be such that nesting of oversize material does not occur, and such that the oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 feet vertically of finish grade or within the range of future utilities or underground construction, unless specifically approved by the consultant.

4.3 Import

If importing of fill material is required for grading, the import material shall meet the requirements of Section 4.1.

5.0 FILL PLACEMENT and COMPACTION

5.1 Fill Lifts

Approved fill material shall be placed in areas prepared to receive fill in near-horizontal layers not exceeding 6 inches in compacted thickness. The consultant may approve thicker lifts if testing indicates the grading procedures are such that adequate compaction is being achieved with lifts of greater thickness. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to attain uniformity of material and moisture in each layer.

5.2 Fill Moisture

Fill layers at a moisture content less than optimum shall be watered and mixed, and wet fill layers shall be aerated by scarification or shall be blended with drier material. Moisture conditioning and mixing of fill layers shall continue until the fill material is at a uniform moisture content at or near optimum.

5.3 Compaction of Fill

After each layer has been evenly spread, moisture-conditioned, and mixed, it shall be uniformly compacted to not less than 90 percent of maximum dry density. Compaction equipment shall be adequately sized and shall be either specifically designed for soil compaction or of proven reliability, to efficiently achieve the specified degree of compaction.

5.4 Fill Slopes

Compacting of slopes shall be accomplished, in addition to normal compacting procedures, by backrolling of slopes with sheepsfoot rollers at frequent increments of 2 to 3 feet in fill elevation gain, or by other methods producing satisfactory results. At the completion of grading, the relative compaction of the slope out to the slope face shall be at least 90 percent.

5.5 Compaction Testing

Field-tests to check the fill moisture and degree of compaction will be performed by the consultant. The location and frequency of tests shall be at the consultant's discretion. In general, the tests will be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of embankment.

6.0 SUBDRAIN INSTALLATION

Subdrain systems, if required, shall be installed in approved ground to conform to the approximate alignment and details shown on the plans or herein. The subdrain location or materials shall not be changed or modified without the approval of the consultant. The consultant, however, may recommend and upon approval, direct changes in subdrain line, grade or material. All subdrains should be surveyed for line and grade after installation and sufficient time shall be allowed for the surveys, prior to commencement of filling over the subdrain.

7.0 EXCAVATION

Excavations and cut slopes will be examined during grading. If directed by the consultant, further excavation or overexcavation and refilling of cut areas shall be performed, and/or remedial grading of cut slopes shall be performed. Where fill-over-cut slopes are to be graded, unless otherwise approved, the cut portion of the slope shall be made and approved by the consultant prior to placement of materials for construction of the fill portion of the slope.

8.0 TRENCH BACKFILLS

Trench excavations for utility pipes shall be backfilled under engineering supervision.

After the utility pipe has been laid, the space under and around the pipe shall be backfilled with clean sand or approved granular soil to a depth of at least one foot over the top of the pipe. The sand backfill shall be uniformly jetted into place before the controlled backfill is placed over the sand.

The onsite materials, or other soils approved by the soil engineer, shall be watered and mixed as necessary prior to placement in lifts over the sand backfill.

The controlled backfill shall be compacted to at least 90 percent of the maximum dry density as determined by the ASTM D1557-12 test method.

Field density tests and inspection of the backfill procedures shall be made by the soil engineer during backfilling to see that proper moisture content and uniform compaction is being maintained. The contractor shall provide test holes and exploratory pits as required by the soil engineer to enable sampling and testing.

APPENDIX F

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LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: UNTITLED
Title: PROJECT NAME: Anhern Rentals Inc.
Subtitle: Proj No. 1826-01

Surface Elev.=Exisring Ground
Hole No.=B-3
Depth of Hole= 50.00 ft
Water Table during Earthquake= 175.00 ft
Water Table during In-Situ Testing= 175.00 ft
Max. Acceleration= 0.5 g
Earthquake Magnitude= 6.80

Input Data:

Surface Elev.=Exisring Ground
Hole No.=B-3
Depth of Hole=50.00 ft
Water Table during Earthquake= 175.00 ft
Water Table during In-Situ Testing= 175.00 ft
Max. Acceleration=0.5 g
Earthquake Magnitude=6.80

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Idriss/Seed
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1
8. Sampling Method, Cs= 1
9. User request factor of safety (apply to CSR) , User= 1
   Plot one CSR curve (fs1=1)
10. Use Curve Smoothing: Yes*

* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	9.00	120.00	28.00
5.00	20.00	120.00	38.00
10.00	20.00	120.00	14.00
15.00	44.00	120.00	14.00
20.00	68.00	120.00	14.00
25.00	100.00	120.00	14.00
30.00	100.00	120.00	14.00
35.00	40.00	120.00	8.00
40.00	100.00	120.00	8.00
45.00	40.00	120.00	8.00
50.00	33.00	120.00	8.00

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=0.18 in.
Total Settlement of Saturated and Unsaturated Sands=0.18 in.
Differential Settlement=0.091 to 0.120 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	0.29	0.32	5.00	0.00	0.18	0.18
5.00	2.57	0.32	5.00	0.00	0.17	0.17
10.00	2.57	0.32	5.00	0.00	0.16	0.16
15.00	2.57	0.31	5.00	0.00	0.14	0.14
20.00	2.57	0.31	5.00	0.00	0.13	0.13
25.00	2.57	0.31	5.00	0.00	0.12	0.12
30.00	2.52	0.30	5.00	0.00	0.11	0.11
35.00	2.44	0.29	5.00	0.00	0.09	0.09
40.00	2.38	0.28	5.00	0.00	0.07	0.07
45.00	2.31	0.26	5.00	0.00	0.05	0.05
50.00	0.31	0.25	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Depth = ft, Stress or Pressure = atm (tsf), Unit Weight = pcf, Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user

request factor of safety)

F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

APPENDIX G

Infiltration Test (Percolation Test Procedure)

The tests were performed in accordance with referenced Riverside County Stormwater Quality Best Management Practice Design Handbook for Low Impact Development, dated June 2014.

Four 8-inch diameter, 6-feet and 5-feet deep test holes (I-1, I-2, I-3 and I-4) were drilled at suggested locations. The soil at the test locations was visually classified as silty sand and sand with silt (USCS "SM" and "SP-SM"). To mitigate any possible caving or sloughing of the test holes, a 6-inch diameter perforated pipe was placed in the hole. The bottom of the hole was covered with 2 inches of gravel.

The testing was conducted after presoaking. Two consecutive measurements showed that 6 inches of water seeped away in less than 25 minutes. The test was therefore run an additional one hour with measurements taken at 10 minute intervals. Water level was adjusted to 20 inches above the bottom of the test hole after each measurement. The drop that occurred during the final reading was used for design rate purposes.

Infiltration Test/Tabulated Test Results

Test No.	Depth of Test (feet)	Earth Material	Infiltration Rate (in/hr)
I-1	6	Silty Sand (SM)	9.5
I-2	6	Silty Sand (SM)	2.3
I-3	5	Silty Sand (SM)	7.76
I-4	5	Sand with Silt (SP-SM)	7.75

We recommend that a suitable factor of safety should be applied to the rate in design of the system.

Conclusions

- Based on the test results, the site is suitable for stormwater infiltration.
- Because the stormwater infiltration is setback at least 60 feet from the adjacent foundations, the potential impact to the proposed structures is considered to be very low.
- Based on the consolidation test results, hydrocollapse potential of soils is very low.

INFILTRATION TEST DATA
(Boring Percolation Test Procedure)

Project: Ahern Rentals INC Project No.: 18269
Test Hole No.: T 1 Date Excavated: 9-6-19
Depth of Test Hole: 6 FEET Soil Classification: SM
Diameter: 8" Presoak: Yes
Tested By: BD Date: 9-6-19

SANDY SOIL CRITERIA TEST

Trial No.	Time	Time Interval (min)	Initial Water Level (inches)	Final Water Level (inches)	Δ in Water Level (inches)	Greater Than or Equal to 6" (Y/N)
1	1:45 50 2:10 50	25	52	72	20	Y
2	2:15:18 2:40 18	25	"	"	20	Y

Use Normal Sandy (Circle One) Soil Criteria

Trial No.	Start Time	Stop Time	Δt Time Interval (min.)	Do Initial Depth to Water(in.)	Df Final Depth to Water(in.)	ΔD Change in Water Level (in.)	Infiltration Rate (in./hr.)
1	3:22 22	3:32 22	10	52	64.5		
2	3:32 13	3:43 13	"	"	64.5		
3	3:45 15	3:55 15	"	"	"		
4	4:30 12	4:41 12	"	"	"	12.5	
5	4:13:24	4:23:24	"	"	"	12.5	
6	4:25:35	4:35:35	"	"	"	"	9.5
7							
8							
9							
10							
11							
12							

COMMENTS:
Infiltration Rate = $\frac{4 \times 60 \times 12.5}{10(4+(20+(20-12.5)))} = 9.5$ in/hr

INFILTRATION TEST DATA
(Boring Percolation Test Procedure)

Project: Stern Rentals inc. Project No.: 182601
Test Hole No.: T 2 Date Excavated: 9-6-19
Depth of Test Hole: 6 FEET. Soil Classification: SM
Diameter: 8" Presoak: Yes
Tested By: BD Date: 9-6-19

SANDY SOIL CRITERIA TEST

Trial No.	Time	Time Interval (min)	Initial Water Level (inches)	Final Water Level (inches)	Δ in Water Level (inches)	Greater Than or Equal to 6" (Y/N)
1	1:14 30 1:39 30	25	52	59	7	Y
2	1:46 35 2:11 35	25	"	58.5	6.5	Y

Use Normal Sandy (Circle One) Soil Criteria

Trial No.	Start Time	Stop Time	Δt Time Interval (min.)	Do Initial Depth to Water(in.)	Df Final Depth to Water(in.)	ΔD Change in Water Level (in.)	Infiltration Rate (in./hr.)
1	2:04 19	2:24 19	10	52	55.875	3.875	
2	2:25 30	2:35 30	10	"	"	"	
3	2:38 40	2:48 40	10	"	"	"	
4	2:49 14	2:59 14	10	"	"	"	
5	2:30:25	2:40:25	"	"	"	"	
6	2:43:36	2:53:36	"	"	"	3.875	2.3
7							
8							
9							
10							
11							
12							

COMMENTS:
Infiltration Rate: $\frac{4 \times 60 \times 3.875}{10(4+(20+(20-3.875)))} = 2.3$ in/hr

INFILTRATION TEST DATA
(Boring Percolation Test Procedure)

Project: Shern Rentals 2nd Project No.: 1826-01 Date: 9/6/19
Test Hole No.: I-5 Tested By: _____ Date: "
Depth of Test Hole, DT: 5' USCS Soil Classification: SM
Diameter: 8" Presoak: Yes

SANDY SOIL CRITERIA TEST

Trial No.	Time	Time Interval (min)	Initial Water Level (inches)	Final Water Level (inches)	Change in Water Level (inches)	Greater Than or Equal to 6" (Y/N)
1	8:10:09 8:35:09	25	40	60	20	Y
2	8:39:01 9:04:01	"	"	58.875	18.875	"

Use Normal Sandy (Circle One) Soil Criteria

Trial No.	Start Time	Stop Time	Δt Time Interval (min.)	Do Initial Depth to Water(in.)	Df Final Depth to Water(in.)	ΔD Change in Water Level (in.)	Infiltration Rate (in./hr.)
1	9:09:40	9:19:40	10	40	52.625	12.625	
2	9:20:49	9:30:49	"	"	51.875	11.875	
3	9:31:12	9:41:12	"	"	51.5	11.5	
4	9:43:32	9:53:32	"	"	50.75	10.75	
5	9:59:50	10:09:50	"	"	"	"	
6	10:11:12	10:21:12	"	"	"	"	7.76
7							
8							
9							
10							
11							
12							

COMMENTS:
Infiltration Rate = $\frac{4 \times 60 \times 10.75}{10(4+(20+(20-10.75)))} = 7.76$ in/hr

INFILTRATION TEST DATA
(Boring Percolation Test Procedure)

Project: Ahern Rentals Inc. Project No.: 18260l
Test Hole No.: I 4 Date Excavated: 9-9-19
Depth of Test Hole: 5 FEET Soil Classification: SP-SM
Diameter: 8" Presoak: Yes
Tested By: RD Date: 9/6/19

SANDY SOIL CRITERIA TEST

Trial No.	Time	Time Interval (min)	Initial Water Level (inches)	Final Water Level (inches)	Δ in Water Level (inches)	Greater Than or Equal to 6" (Y/N)
1	11:30:18 12:55:18	25	40	60	20	Y
2	12:10:37 12:35:37	25	"	39.6	19½	Y

Use Normal Sandy (Circle One) Soil Criteria

Trial No.	Start Time	Stop Time	Δt Time Interval (min.)	Do Initial Depth to Water(in.)	Df Final Depth to Water(in.)	ΔD Change in Water Level (in.)	Infiltration Rate (in./hr.)
1	12:36:58	12:46:58	10	40	52.0	12.0	
2	12:47:42	12:57:42	10	"	50.75	10.75	
3	12:57:58	1:07:37	10	"	"	"	
4	1:08:45	1:18:45	10	"	"	"	
5	1:19:01	1:29:01	10	"	"	"	
6	1:30:12	1:40:12	10	"	"	"	7.75
7							
8							
9							
10							
11							
12							

COMMENTS:
Infiltration Rate = $\frac{4 \times 60 \times 10.75}{10(4+(20+(20-10.75)))} = 7.75$ in/hr

RODRIGUEZ CONSULTING AND ENGINEERING

Land Planning and Soil Engineering

August 24, 2022

Project No. RCE-22136-01

TO: Industrial Outdoor Ventures
10 N. Martingale Rd., Suite 560
Schaumburg, IL 60173

ATTENTION: Rob Chase

SUBJECT: Soil Report & Seismic (CBC 2019) Update, Proposed New Warehouse/Retail Facility, Riverside Drive (APN 156-030-016, -017 and -042), City of Jurupa Valley, California

REFERENCE: Soil Exploration Co., Inc., "Preliminary Soil Investigation, Liquefaction Evaluation and Infiltration Tests Report, Proposed Construction Equipment Rental Facility, Riverside Drive (APN 156-030-016, -017 and -042), City of Jurupa Valley, California", Dated September 12, 2019 (Project No. 1826-01).

Introduction

Per your authorization, we have reviewed the referenced report and prepared this CBC (2019) seismic update for the subject site.

General

After reviewing the above referenced report, the updated site plan (dated 5/16/2022), and all pertinent geology maps for the area (including geologic hazard maps), we have come to the conclusion that the latest proposed development, the existing site condition, the scope of work and geologic hazards are remain the same. Conclusions and recommendations presented in the above referenced report, except as modified herein remain pertinent.

California Building Code (CBC) 2019 Update

2019 CBC – SEISMIC PARAMETERS		
SITE COORDINATES	**LATITUDE**	**LONGITUDE**
	34.0193	**-117.5459**
Mapped Spectral Response Acceleration	**S_s = 1.618**	**S_1 = 0.59**
Site Coefficients (Class "D")	**F_a = 1.0**	**F_v = 1.7**
Maximum Considered Earthquake (MCE) Spectral Response Acceleration	**S_{MS} = 1.618**	**S_{M1} = 1.00**
Design Spectral Response Acceleration Parameters	**S_{DS} = 1.079**	**S_{D1} = 0.669**
Seismic Design Category	**D**	
Peak Ground Acceleration (PGA)	**0.676g**	
Site Amplification factor at PGA (F_{PGA})	**1.1**	

17405 Tullock Street • Bloomington, CA 92316 • Tel: (909) 258-0358
rodriguezconsultingengineering@yahoo.com

Site Modified Peak Ground Acceleration (PGA_m)	0.743

References:

- Earthquake.usgs.gov/research/hazmaps/design
- 2019 California Building Code, California Code of Regulations, Title 24, Part 2, Volume 2 of 2, Section 1613, Earthquake Loads

Conclusions and Recommendations

General

Based on our review, conclusions and recommendations presented in the referenced report, except as modified herein, remain pertinent.

Seismic Considerations

The site is located in a region of generally high seismicity, as is all of Southern California. During its design life, the site is expected to experience moderate to strong ground motions from earthquakes on regional and/or nearby causative faults. The structural engineer should consider City/County local codes, California Building Code (CBC) 2019, seismic data presented herein, the latest requirements of the Structural Engineers Association, and any other pertinent data in selecting design parameters.

Limitation

Rodriguez Consulting and Engineering has striven to perform our services within the limits prescribed by our client. No other representation, express or implied, and no warranty or guarantee is included or intended by virtue of the services performed or reports, opinion, documents or otherwise supplied.

Closure

If you should have any questions regarding this report, please do not hesitate to call this office. We appreciate this opportunity to be of service.

Very truly yours,
Rodriguez Consulting and Engineering

Gene K. Luu, PE 53417
Project Engineer

Distribution: [1] Addressee

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

NOT APPLICABLE

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

NOT APPLICABLE

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

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: ADKAN ENGINEERS — Date: 2/6/2023

Designed by: Casanova Halliday — Case No:

Company Project Number/Name: Ahern Rentals

BMP Identification

BMP NAME / ID: BASIN

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E — D_{85}= 0.85 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
3A	29,406.51	Concrete or Asphalt	1	0.89	26230.6			
3B	25,273.19	Ornamental Landscaping	0.1	0.11	2791.6			
3C	3794.78	Concrete or Asphalt	1	0.89	3384.9			
3D	9,366.85	Roofs	1	0.89	8355.2			
	67841.33	**Total**			40762.3	0.85	2887.3	19865

Notes:

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

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: ADKAN ENGINEERS | Date: 2/6/2023

Designed by: Casanova Halliday | Case No:

Company Project Number/Name: Ahern Rentals

BMP Identification

BMP NAME / ID: TRENCH 1

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth,
from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.85 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
1A	67,335.54	Concrete or Asphalt	1	0.89	60063.3			
1B	17,841.03	Ornamental Landscaping	0.1	0.11	1970.7			
1C	6,528.92	Concrete or Asphalt	1	0.89	5823.8			
1D	21358.68	Roofs	1	0.89	19051.9			
	113064.17	**Total**			86909.7	0.85	6156.1	6798

Notes:

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

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: ADKAN ENGINEERS — Date: 2/6/2023

Designed by: Casanova Halliday — Case No:

Company Project Number/Name: Ahern Rentals

BMP Identification

BMP NAME / ID: TRENCH 2

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E — D_{85}= 0.85 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imprevious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
2A	77,011.87	Concrete or Asphalt	1	0.89	68694.6			
2B	11,265.53	Ornamental Landscaping	0.1	0.11	1244.4			
2C	2,626.77	Concrete or Asphalt	1	0.89	2343.1			
	90904.17	*Total*			72282.1	0.85	5120	5751.22

Notes:

Infiltration Basin - Design Procedure (Rev. 03-2012)	BMP ID: BASIN 1	Legend:	Required Entries / Calculated Cells
Company Name: Adkan Engineers		Date:	2/6/2023
Designed by: Casanova Halliday		County/City Case No.:	

Design Volume

a) Tributary area (BMP subarea)	A_T =	0.94	acres
b) Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	2,887	ft^3

Maximum Depth

a) Infiltration rate	I =	1.6	in/hr
b) Factor of Safety (See Table 1, Appendix A: "Infiltration Testing" from this BMP Handbook)	FS =	3	
c) Calculate D_1 $D_1 = \frac{I\ (in/hr) \times 72\ hrs}{12\ (in/ft) \times FS}$	D_1 =	3.2	ft
d) Enter the depth of freeboard (at least 1 ft)		1	ft
e) Enter depth to historic high ground water (measured from **top** of basin)		20	ft
f) Enter depth to top of bedrock or impermeable layer (measured from **top** of basin)		20	ft
g) D_2 is the smaller of: Depth to groundwater - (10 ft + freeboard) and Depth to impermeable layer - (5 ft + freeboard)	D_2 =	9.0	ft
h) D_{MAX} is the smaller value of D_1 and D_2 but shall not exceed 5 feet	D_{MAX} =	3.2	ft

Basin Geometry

a) Basin side slopes (no steeper than 4:1)	z =	4	:1
b) Proposed basin depth (excluding freeboard)	d_B =	2.5	ft
c) Minimum bottom surface area of basin ($A_S = V_{BMP}/d_B$)	A_S =	1155	ft^2
d) Proposed Design Surface Area	A_D =	7946.13	ft^2

Forebay

a) Forebay volume (minimum 0.5% V_{BMP})	Volume =	14	ft^3
b) Forebay depth (height of berm/splashwall. 1 foot min.)	Depth =	2	ft
c) Forebay surface area (minimum)	Area =	7	ft^2
d) Full height notch-type weir	Width (W) =	5.0	in

Notes:

Infiltration Trench - Design Procedure	BMP ID TRENCH 1	Legend:	Required Entries / Calculated Cells

Company Name:	Adkan Engineers	Date:	2/6/2023
Designed by:	Casanova Halliday	County/City Case No.:	

Design Volume

Enter the area tributary to this feature, Max = 10 acres	A_t=	2	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	6,156	ft^3

Calculate Maximum Depth of the Reservoir Layer

Enter Infiltration rate	I =	1.6	in/hr
Enter Factor of Safety, FS (unitless)	FS =	3	
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 =	8.00	ft
Enter depth to historic high groundwater mark (measured from finished grade)		20	ft
Enter depth to top of bedrock or impermeable layer (measured from finished grade)		20	ft
D_2 is the smaller of:			
Depth to groundwater - 11 ft; & Depth to impermeable layer - 6 ft	D_2 =	9.0	ft
D_{MAX} is the smaller value of D_1 and D_2, must be less than or equal to 8 feet.	D_{MAX}=	8.0	ft

Trench Sizing

Enter proposed reservoir layer depth D_R, must be ≤ D_{MAX}	D_R =	5.00	ft
Calculate the design depth of water, d_W			
Design d_W = (D_R) x (n/100)	Design d_W=	2.00	ft
Minimum Surface Area, A_S $A_S = \frac{V_{BMP}}{d_W}$	A_S =	3,078	ft^2
Proposed Design Surface Area	A_D =	3,399	ft^2
Minimum Width = D_R + 1 foot pea gravel		6.00	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.

Infiltration Trench - Design Procedure	BMP ID TRENCH 2	Legend:	Required Entries / Calculated Cells

Company Name:	Adkan Engineers	Date:	2/6/2023
Designed by:	Casanova Halliday	County/City Case No.:	

Design Volume

Enter the area tributary to this feature, Max = 10 acres	A_t=	2	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	5,120	ft^3

Calculate Maximum Depth of the Reservoir Layer

Enter Infiltration rate	I =	1.6	in/hr
Enter Factor of Safety, FS (unitless)	FS =	3	
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 =	8.00	ft
Enter depth to historic high groundwater mark (measured from finished grade)		20	ft
Enter depth to top of bedrock or impermeable layer (measured from finished grade)		20	ft
D_2 is the smaller of:			
Depth to groundwater - 11 ft; & Depth to impermeable layer - 6 ft	D_2 =	9.0	ft
D_{MAX} is the smaller value of D_1 and D_2, must be less than or equal to 8 feet.	D_{MAX}=	8.0	ft

Trench Sizing

Enter proposed reservoir layer depth D_R, must be ≤ D_{MAX}	D_R =	5.00	ft
Calculate the design depth of water, d_W			
Design $d_W = (D_R) \times (n/100)$	Design d_W=	2.00	ft
Minimum Surface Area, A_S $A_S = \frac{V_{BMP}}{d_W}$	A_S =	2,560	ft^2
Proposed Design Surface Area	A_D =	2,876	ft^2
Minimum Width = D_R + 1 foot pea gravel		6.00	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 7: Hydromodification

Supporting Detail Relating to Hydrologic 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 - 2008, Version 8.1
Study date 02/20/23 File: EX242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 5006

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

Drainage Area = 3.87(Ac.) = 0.006 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 3.87(Ac.) = 0.006 Sq. Mi.
Length along longest watercourse = 951.00(Ft.)
Length along longest watercourse measured to centroid = 476.00(Ft.)
Length along longest watercourse = 0.180 Mi.
Length along longest watercourse measured to centroid = 0.090 Mi.
Difference in elevation = 10.00(Ft.)
Slope along watercourse = 55.5205 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.058 Hr.
Lag time = 3.51 Min.
25% of lag time = 0.88 Min.
40% of lag time = 1.40 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]
3.87	2.50	9.68

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
3.87	6.00	23.22

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.500(In)
Area Averaged 100-Year Rainfall = 6.000(In)

Point rain (area averaged) = 2.500(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.500(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
3.870	50.00	0.000

Total Area Entered = 3.87(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
50.0	31.0	0.751	0.000	0.751	1.000	0.751
					Sum (F) =	0.751

Area averaged mean soil loss (F) (In/Hr) = 0.751
Minimum soil loss rate ((In/Hr)) = 0.376
(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	142.599	31.342	1.222
2	0.167	285.198	47.533	1.854
3	0.250	427.797	11.634	0.454
4	0.333	570.396	5.116	0.200
5	0.417	712.995	2.691	0.105
6	0.500	855.593	1.684	0.066
			Sum = 100.000 Sum=	3.900

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.020	(1.331)	0.018	0.002
2	0.17	0.07	0.020	(1.326)	0.018	0.002
3	0.25	0.07	0.020	(1.321)	0.018	0.002
4	0.33	0.10	0.030	(1.316)	0.027	0.003
5	0.42	0.10	0.030	(1.311)	0.027	0.003
6	0.50	0.10	0.030	(1.306)	0.027	0.003
7	0.58	0.10	0.030	(1.301)	0.027	0.003
8	0.67	0.10	0.030	(1.295)	0.027	0.003
9	0.75	0.10	0.030	(1.290)	0.027	0.003
10	0.83	0.13	0.040	(1.285)	0.036	0.004
11	0.92	0.13	0.040	(1.280)	0.036	0.004
12	1.00	0.13	0.040	(1.275)	0.036	0.004
13	1.08	0.10	0.030	(1.270)	0.027	0.003
14	1.17	0.10	0.030	(1.265)	0.027	0.003
15	1.25	0.10	0.030	(1.260)	0.027	0.003
16	1.33	0.10	0.030	(1.255)	0.027	0.003
17	1.42	0.10	0.030	(1.250)	0.027	0.003
18	1.50	0.10	0.030	(1.245)	0.027	0.003
19	1.58	0.10	0.030	(1.240)	0.027	0.003
20	1.67	0.10	0.030	(1.235)	0.027	0.003
21	1.75	0.10	0.030	(1.230)	0.027	0.003
22	1.83	0.13	0.040	(1.225)	0.036	0.004
23	1.92	0.13	0.040	(1.220)	0.036	0.004
24	2.00	0.13	0.040	(1.215)	0.036	0.004
25	2.08	0.13	0.040	(1.211)	0.036	0.004
26	2.17	0.13	0.040	(1.206)	0.036	0.004
27	2.25	0.13	0.040	(1.201)	0.036	0.004
28	2.33	0.13	0.040	(1.196)	0.036	0.004
29	2.42	0.13	0.040	(1.191)	0.036	0.004
30	2.50	0.13	0.040	(1.186)	0.036	0.004
31	2.58	0.17	0.050	(1.181)	0.045	0.005
32	2.67	0.17	0.050	(1.176)	0.045	0.005
33	2.75	0.17	0.050	(1.172)	0.045	0.005
34	2.83	0.17	0.050	(1.167)	0.045	0.005
35	2.92	0.17	0.050	(1.162)	0.045	0.005
36	3.00	0.17	0.050	(1.157)	0.045	0.005
37	3.08	0.17	0.050	(1.152)	0.045	0.005
38	3.17	0.17	0.050	(1.148)	0.045	0.005
39	3.25	0.17	0.050	(1.143)	0.045	0.005
40	3.33	0.17	0.050	(1.138)	0.045	0.005
41	3.42	0.17	0.050	(1.133)	0.045	0.005
42	3.50	0.17	0.050	(1.129)	0.045	0.005
43	3.58	0.17	0.050	(1.124)	0.045	0.005
44	3.67	0.17	0.050	(1.119)	0.045	0.005
45	3.75	0.17	0.050	(1.114)	0.045	0.005
46	3.83	0.20	0.060	(1.110)	0.054	0.006
47	3.92	0.20	0.060	(1.105)	0.054	0.006
48	4.00	0.20	0.060	(1.100)	0.054	0.006
49	4.08	0.20	0.060	(1.096)	0.054	0.006
50	4.17	0.20	0.060	(1.091)	0.054	0.006
51	4.25	0.20	0.060	(1.086)	0.054	0.006
52	4.33	0.23	0.070	(1.082)	0.063	0.007
53	4.42	0.23	0.070	(1.077)	0.063	0.007
54	4.50	0.23	0.070	(1.072)	0.063	0.007
55	4.58	0.23	0.070	(1.068)	0.063	0.007
56	4.67	0.23	0.070	(1.063)	0.063	0.007
57	4.75	0.23	0.070	(1.059)	0.063	0.007
58	4.83	0.27	0.080	(1.054)	0.072	0.008
59	4.92	0.27	0.080	(1.050)	0.072	0.008
60	5.00	0.27	0.080	(1.045)	0.072	0.008

61	5.08	0.20	0.060	(1.040)	0.054	0.006
62	5.17	0.20	0.060	(1.036)	0.054	0.006
63	5.25	0.20	0.060	(1.031)	0.054	0.006
64	5.33	0.23	0.070	(1.027)	0.063	0.007
65	5.42	0.23	0.070	(1.022)	0.063	0.007
66	5.50	0.23	0.070	(1.018)	0.063	0.007
67	5.58	0.27	0.080	(1.013)	0.072	0.008
68	5.67	0.27	0.080	(1.009)	0.072	0.008
69	5.75	0.27	0.080	(1.005)	0.072	0.008
70	5.83	0.27	0.080	(1.000)	0.072	0.008
71	5.92	0.27	0.080	(0.996)	0.072	0.008
72	6.00	0.27	0.080	(0.991)	0.072	0.008
73	6.08	0.30	0.090	(0.987)	0.081	0.009
74	6.17	0.30	0.090	(0.983)	0.081	0.009
75	6.25	0.30	0.090	(0.978)	0.081	0.009
76	6.33	0.30	0.090	(0.974)	0.081	0.009
77	6.42	0.30	0.090	(0.969)	0.081	0.009
78	6.50	0.30	0.090	(0.965)	0.081	0.009
79	6.58	0.33	0.100	(0.961)	0.090	0.010
80	6.67	0.33	0.100	(0.956)	0.090	0.010
81	6.75	0.33	0.100	(0.952)	0.090	0.010
82	6.83	0.33	0.100	(0.948)	0.090	0.010
83	6.92	0.33	0.100	(0.943)	0.090	0.010
84	7.00	0.33	0.100	(0.939)	0.090	0.010
85	7.08	0.33	0.100	(0.935)	0.090	0.010
86	7.17	0.33	0.100	(0.931)	0.090	0.010
87	7.25	0.33	0.100	(0.926)	0.090	0.010
88	7.33	0.37	0.110	(0.922)	0.099	0.011
89	7.42	0.37	0.110	(0.918)	0.099	0.011
90	7.50	0.37	0.110	(0.914)	0.099	0.011
91	7.58	0.40	0.120	(0.910)	0.108	0.012
92	7.67	0.40	0.120	(0.905)	0.108	0.012
93	7.75	0.40	0.120	(0.901)	0.108	0.012
94	7.83	0.43	0.130	(0.897)	0.117	0.013
95	7.92	0.43	0.130	(0.893)	0.117	0.013
96	8.00	0.43	0.130	(0.889)	0.117	0.013
97	8.08	0.50	0.150	(0.885)	0.135	0.015
98	8.17	0.50	0.150	(0.881)	0.135	0.015
99	8.25	0.50	0.150	(0.876)	0.135	0.015
100	8.33	0.50	0.150	(0.872)	0.135	0.015
101	8.42	0.50	0.150	(0.868)	0.135	0.015
102	8.50	0.50	0.150	(0.864)	0.135	0.015
103	8.58	0.53	0.160	(0.860)	0.144	0.016
104	8.67	0.53	0.160	(0.856)	0.144	0.016
105	8.75	0.53	0.160	(0.852)	0.144	0.016
106	8.83	0.57	0.170	(0.848)	0.153	0.017
107	8.92	0.57	0.170	(0.844)	0.153	0.017
108	9.00	0.57	0.170	(0.840)	0.153	0.017
109	9.08	0.63	0.190	(0.836)	0.171	0.019
110	9.17	0.63	0.190	(0.832)	0.171	0.019
111	9.25	0.63	0.190	(0.828)	0.171	0.019
112	9.33	0.67	0.200	(0.824)	0.180	0.020
113	9.42	0.67	0.200	(0.820)	0.180	0.020
114	9.50	0.67	0.200	(0.816)	0.180	0.020
115	9.58	0.70	0.210	(0.812)	0.189	0.021
116	9.67	0.70	0.210	(0.809)	0.189	0.021
117	9.75	0.70	0.210	(0.805)	0.189	0.021
118	9.83	0.73	0.220	(0.801)	0.198	0.022
119	9.92	0.73	0.220	(0.797)	0.198	0.022
120	10.00	0.73	0.220	(0.793)	0.198	0.022
121	10.08	0.50	0.150	(0.789)	0.135	0.015
122	10.17	0.50	0.150	(0.785)	0.135	0.015
123	10.25	0.50	0.150	(0.782)	0.135	0.015
124	10.33	0.50	0.150	(0.778)	0.135	0.015
125	10.42	0.50	0.150	(0.774)	0.135	0.015
126	10.50	0.50	0.150	(0.770)	0.135	0.015
127	10.58	0.67	0.200	(0.766)	0.180	0.020
128	10.67	0.67	0.200	(0.763)	0.180	0.020
129	10.75	0.67	0.200	(0.759)	0.180	0.020
130	10.83	0.67	0.200	(0.755)	0.180	0.020
131	10.92	0.67	0.200	(0.752)	0.180	0.020
132	11.00	0.67	0.200	(0.748)	0.180	0.020
133	11.08	0.63	0.190	(0.744)	0.171	0.019
134	11.17	0.63	0.190	(0.741)	0.171	0.019
135	11.25	0.63	0.190	(0.737)	0.171	0.019
136	11.33	0.63	0.190	(0.733)	0.171	0.019
137	11.42	0.63	0.190	(0.730)	0.171	0.019
138	11.50	0.63	0.190	(0.726)	0.171	0.019
139	11.58	0.57	0.170	(0.722)	0.153	0.017
140	11.67	0.57	0.170	(0.719)	0.153	0.017
141	11.75	0.57	0.170	(0.715)	0.153	0.017

142	11.83	0.60	0.180	(0.712)	0.162	0.018
143	11.92	0.60	0.180	(0.708)	0.162	0.018
144	12.00	0.60	0.180	(0.705)	0.162	0.018
145	12.08	0.83	0.250	(0.701)	0.225	0.025
146	12.17	0.83	0.250	(0.698)	0.225	0.025
147	12.25	0.83	0.250	(0.694)	0.225	0.025
148	12.33	0.87	0.260	(0.691)	0.234	0.026
149	12.42	0.87	0.260	(0.687)	0.234	0.026
150	12.50	0.87	0.260	(0.684)	0.234	0.026
151	12.58	0.93	0.280	(0.680)	0.252	0.028
152	12.67	0.93	0.280	(0.677)	0.252	0.028
153	12.75	0.93	0.280	(0.673)	0.252	0.028
154	12.83	0.97	0.290	(0.670)	0.261	0.029
155	12.92	0.97	0.290	(0.667)	0.261	0.029
156	13.00	0.97	0.290	(0.663)	0.261	0.029
157	13.08	1.13	0.340	(0.660)	0.306	0.034
158	13.17	1.13	0.340	(0.656)	0.306	0.034
159	13.25	1.13	0.340	(0.653)	0.306	0.034
160	13.33	1.13	0.340	(0.650)	0.306	0.034
161	13.42	1.13	0.340	(0.647)	0.306	0.034
162	13.50	1.13	0.340	(0.643)	0.306	0.034
163	13.58	0.77	0.230	(0.640)	0.207	0.023
164	13.67	0.77	0.230	(0.637)	0.207	0.023
165	13.75	0.77	0.230	(0.633)	0.207	0.023
166	13.83	0.77	0.230	(0.630)	0.207	0.023
167	13.92	0.77	0.230	(0.627)	0.207	0.023
168	14.00	0.77	0.230	(0.624)	0.207	0.023
169	14.08	0.90	0.270	(0.621)	0.243	0.027
170	14.17	0.90	0.270	(0.617)	0.243	0.027
171	14.25	0.90	0.270	(0.614)	0.243	0.027
172	14.33	0.87	0.260	(0.611)	0.234	0.026
173	14.42	0.87	0.260	(0.608)	0.234	0.026
174	14.50	0.87	0.260	(0.605)	0.234	0.026
175	14.58	0.87	0.260	(0.602)	0.234	0.026
176	14.67	0.87	0.260	(0.599)	0.234	0.026
177	14.75	0.87	0.260	(0.596)	0.234	0.026
178	14.83	0.83	0.250	(0.593)	0.225	0.025
179	14.92	0.83	0.250	(0.590)	0.225	0.025
180	15.00	0.83	0.250	(0.587)	0.225	0.025
181	15.08	0.80	0.240	(0.584)	0.216	0.024
182	15.17	0.80	0.240	(0.581)	0.216	0.024
183	15.25	0.80	0.240	(0.578)	0.216	0.024
184	15.33	0.77	0.230	(0.575)	0.207	0.023
185	15.42	0.77	0.230	(0.572)	0.207	0.023
186	15.50	0.77	0.230	(0.569)	0.207	0.023
187	15.58	0.63	0.190	(0.566)	0.171	0.019
188	15.67	0.63	0.190	(0.563)	0.171	0.019
189	15.75	0.63	0.190	(0.560)	0.171	0.019
190	15.83	0.63	0.190	(0.557)	0.171	0.019
191	15.92	0.63	0.190	(0.554)	0.171	0.019
192	16.00	0.63	0.190	(0.551)	0.171	0.019
193	16.08	0.13	0.040	(0.549)	0.036	0.004
194	16.17	0.13	0.040	(0.546)	0.036	0.004
195	16.25	0.13	0.040	(0.543)	0.036	0.004
196	16.33	0.13	0.040	(0.540)	0.036	0.004
197	16.42	0.13	0.040	(0.538)	0.036	0.004
198	16.50	0.13	0.040	(0.535)	0.036	0.004
199	16.58	0.10	0.030	(0.532)	0.027	0.003
200	16.67	0.10	0.030	(0.529)	0.027	0.003
201	16.75	0.10	0.030	(0.527)	0.027	0.003
202	16.83	0.10	0.030	(0.524)	0.027	0.003
203	16.92	0.10	0.030	(0.521)	0.027	0.003
204	17.00	0.10	0.030	(0.519)	0.027	0.003
205	17.08	0.17	0.050	(0.516)	0.045	0.005
206	17.17	0.17	0.050	(0.514)	0.045	0.005
207	17.25	0.17	0.050	(0.511)	0.045	0.005
208	17.33	0.17	0.050	(0.508)	0.045	0.005
209	17.42	0.17	0.050	(0.506)	0.045	0.005
210	17.50	0.17	0.050	(0.503)	0.045	0.005
211	17.58	0.17	0.050	(0.501)	0.045	0.005
212	17.67	0.17	0.050	(0.498)	0.045	0.005
213	17.75	0.17	0.050	(0.496)	0.045	0.005
214	17.83	0.13	0.040	(0.493)	0.036	0.004
215	17.92	0.13	0.040	(0.491)	0.036	0.004
216	18.00	0.13	0.040	(0.488)	0.036	0.004
217	18.08	0.13	0.040	(0.486)	0.036	0.004
218	18.17	0.13	0.040	(0.484)	0.036	0.004
219	18.25	0.13	0.040	(0.481)	0.036	0.004
220	18.33	0.13	0.040	(0.479)	0.036	0.004
221	18.42	0.13	0.040	(0.477)	0.036	0.004
222	18.50	0.13	0.040	(0.474)	0.036	0.004

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223  18.58     0.10      0.030       (  0.472)       0.027        0.003
224  18.67     0.10      0.030       (  0.470)       0.027        0.003
225  18.75     0.10      0.030       (  0.467)       0.027        0.003
226  18.83     0.07      0.020       (  0.465)       0.018        0.002
227  18.92     0.07      0.020       (  0.463)       0.018        0.002
228  19.00     0.07      0.020       (  0.461)       0.018        0.002
229  19.08     0.10      0.030       (  0.459)       0.027        0.003
230  19.17     0.10      0.030       (  0.457)       0.027        0.003
231  19.25     0.10      0.030       (  0.454)       0.027        0.003
232  19.33     0.13      0.040       (  0.452)       0.036        0.004
233  19.42     0.13      0.040       (  0.450)       0.036        0.004
234  19.50     0.13      0.040       (  0.448)       0.036        0.004
235  19.58     0.10      0.030       (  0.446)       0.027        0.003
236  19.67     0.10      0.030       (  0.444)       0.027        0.003
237  19.75     0.10      0.030       (  0.442)       0.027        0.003
238  19.83     0.07      0.020       (  0.440)       0.018        0.002
239  19.92     0.07      0.020       (  0.438)       0.018        0.002
240  20.00     0.07      0.020       (  0.436)       0.018        0.002
241  20.08     0.10      0.030       (  0.434)       0.027        0.003
242  20.17     0.10      0.030       (  0.432)       0.027        0.003
243  20.25     0.10      0.030       (  0.430)       0.027        0.003
244  20.33     0.10      0.030       (  0.429)       0.027        0.003
245  20.42     0.10      0.030       (  0.427)       0.027        0.003
246  20.50     0.10      0.030       (  0.425)       0.027        0.003
247  20.58     0.10      0.030       (  0.423)       0.027        0.003
248  20.67     0.10      0.030       (  0.421)       0.027        0.003
249  20.75     0.10      0.030       (  0.420)       0.027        0.003
250  20.83     0.07      0.020       (  0.418)       0.018        0.002
251  20.92     0.07      0.020       (  0.416)       0.018        0.002
252  21.00     0.07      0.020       (  0.414)       0.018        0.002
253  21.08     0.10      0.030       (  0.413)       0.027        0.003
254  21.17     0.10      0.030       (  0.411)       0.027        0.003
255  21.25     0.10      0.030       (  0.410)       0.027        0.003
256  21.33     0.07      0.020       (  0.408)       0.018        0.002
257  21.42     0.07      0.020       (  0.407)       0.018        0.002
258  21.50     0.07      0.020       (  0.405)       0.018        0.002
259  21.58     0.10      0.030       (  0.404)       0.027        0.003
260  21.67     0.10      0.030       (  0.402)       0.027        0.003
261  21.75     0.10      0.030       (  0.401)       0.027        0.003
262  21.83     0.07      0.020       (  0.399)       0.018        0.002
263  21.92     0.07      0.020       (  0.398)       0.018        0.002
264  22.00     0.07      0.020       (  0.397)       0.018        0.002
265  22.08     0.10      0.030       (  0.395)       0.027        0.003
266  22.17     0.10      0.030       (  0.394)       0.027        0.003
267  22.25     0.10      0.030       (  0.393)       0.027        0.003
268  22.33     0.07      0.020       (  0.391)       0.018        0.002
269  22.42     0.07      0.020       (  0.390)       0.018        0.002
270  22.50     0.07      0.020       (  0.389)       0.018        0.002
271  22.58     0.07      0.020       (  0.388)       0.018        0.002
272  22.67     0.07      0.020       (  0.387)       0.018        0.002
273  22.75     0.07      0.020       (  0.386)       0.018        0.002
274  22.83     0.07      0.020       (  0.385)       0.018        0.002
275  22.92     0.07      0.020       (  0.384)       0.018        0.002
276  23.00     0.07      0.020       (  0.383)       0.018        0.002
277  23.08     0.07      0.020       (  0.382)       0.018        0.002
278  23.17     0.07      0.020       (  0.381)       0.018        0.002
279  23.25     0.07      0.020       (  0.380)       0.018        0.002
280  23.33     0.07      0.020       (  0.380)       0.018        0.002
281  23.42     0.07      0.020       (  0.379)       0.018        0.002
282  23.50     0.07      0.020       (  0.378)       0.018        0.002
283  23.58     0.07      0.020       (  0.378)       0.018        0.002
284  23.67     0.07      0.020       (  0.377)       0.018        0.002
285  23.75     0.07      0.020       (  0.377)       0.018        0.002
286  23.83     0.07      0.020       (  0.376)       0.018        0.002
287  23.92     0.07      0.020       (  0.376)       0.018        0.002
288  24.00     0.07      0.020       (  0.376)       0.018        0.002
               (Loss Rate Not Used)
    Sum =     100.0                                  Sum =     3.0
      Flood volume = Effective rainfall      0.25(In)
       times area       3.9(Ac.)/[(In)/(Ft.)] =       0.1(Ac.Ft)
      Total soil loss =      2.25(In)
      Total soil loss =     0.726(Ac.Ft)
      Total rainfall =      2.50(In)
      Flood volume =        3512.0 Cubic Feet
      Total soil loss =       31608.0 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      0.133(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
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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	0.0002	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	0.0006	0.01	Q				
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	QV				
2+15	0.0022	0.02	QV				
2+20	0.0023	0.02	QV				
2+25	0.0024	0.02	QV				
2+30	0.0025	0.02	QV				
2+35	0.0027	0.02	QV				
2+40	0.0028	0.02	QV				
2+45	0.0029	0.02	QV				
2+50	0.0031	0.02	QV				
2+55	0.0032	0.02	QV				
3+ 0	0.0033	0.02	QV				
3+ 5	0.0035	0.02	QV				
3+10	0.0036	0.02	QV				
3+15	0.0037	0.02	QV				
3+20	0.0039	0.02	QV				
3+25	0.0040	0.02	QV				
3+30	0.0041	0.02	Q V				
3+35	0.0043	0.02	Q V				
3+40	0.0044	0.02	Q V				
3+45	0.0045	0.02	Q V				
3+50	0.0047	0.02	Q V				
3+55	0.0048	0.02	Q V				
4+ 0	0.0050	0.02	Q V				
4+ 5	0.0052	0.02	Q V				
4+10	0.0053	0.02	Q V				
4+15	0.0055	0.02	Q V				
4+20	0.0056	0.02	Q V				
4+25	0.0058	0.03	Q V				
4+30	0.0060	0.03	Q V				
4+35	0.0062	0.03	Q V				
4+40	0.0064	0.03	Q V				
4+45	0.0066	0.03	Q V				
4+50	0.0068	0.03	Q V				
4+55	0.0070	0.03	Q V				
5+ 0	0.0072	0.03	Q V				
5+ 5	0.0074	0.03	Q V				
5+10	0.0076	0.02	Q V				
5+15	0.0077	0.02	Q V				
5+20	0.0079	0.02	Q V				
5+25	0.0081	0.03	Q V				
5+30	0.0083	0.03	Q V				
5+35	0.0085	0.03	Q V				
5+40	0.0087	0.03	Q V				
5+45	0.0089	0.03	Q V				
5+50	0.0091	0.03	Q V				
5+55	0.0093	0.03	Q V				
6+ 0	0.0095	0.03	Q V				
6+ 5	0.0098	0.03	Q V				
6+10	0.0100	0.03	Q V				
6+15	0.0102	0.03	Q V				

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 6+20       0.0105      0.03  Q    V    |          |          |          |
 6+25       0.0107      0.04  Q    V    |          |          |          |
 6+30       0.0110      0.04  Q    V    |          |          |          |
 6+35       0.0112      0.04  Q    V    |          |          |          |
 6+40       0.0115      0.04  Q    V    |          |          |          |
 6+45       0.0117      0.04  Q    V    |          |          |          |
 6+50       0.0120      0.04  Q    V    |          |          |          |
 6+55       0.0123      0.04  Q     V   |          |          |          |
 7+ 0       0.0125      0.04  Q     V   |          |          |          |
 7+ 5       0.0128      0.04  Q     V   |          |          |          |
 7+10       0.0131      0.04  Q     V   |          |          |          |
 7+15       0.0133      0.04  Q     V   |          |          |          |
 7+20       0.0136      0.04  Q     V   |          |          |          |
 7+25       0.0139      0.04  Q     V   |          |          |          |
 7+30       0.0142      0.04  Q      V  |          |          |          |
 7+35       0.0145      0.04  Q      V  |          |          |          |
 7+40       0.0148      0.05  Q      V  |          |          |          |
 7+45       0.0151      0.05  Q      V  |          |          |          |
 7+50       0.0155      0.05  Q      V  |          |          |          |
 7+55       0.0158      0.05  Q      V  |          |          |          |
 8+ 0       0.0162      0.05  Q       V |          |          |          |
 8+ 5       0.0165      0.05  Q       V |          |          |          |
 8+10       0.0169      0.06  Q       V |          |          |          |
 8+15       0.0173      0.06  Q       V |          |          |          |
 8+20       0.0177      0.06  Q       V |          |          |          |
 8+25       0.0181      0.06  Q       V |          |          |          |
 8+30       0.0185      0.06  Q        V|          |          |          |
 8+35       0.0189      0.06  Q        V|          |          |          |
 8+40       0.0194      0.06  Q        V|          |          |          |
 8+45       0.0198      0.06  Q        V|          |          |          |
 8+50       0.0202      0.06  Q         V          |          |          |
 8+55       0.0207      0.07  Q         V          |          |          |
 9+ 0       0.0211      0.07  Q         V          |          |          |
 9+ 5       0.0216      0.07  Q         V          |          |          |
 9+10       0.0221      0.07  Q         V          |          |          |
 9+15       0.0226      0.07  Q         |V         |          |          |
 9+20       0.0231      0.08  Q         |V         |          |          |
 9+25       0.0237      0.08  Q         |V         |          |          |
 9+30       0.0242      0.08  Q         |V         |          |          |
 9+35       0.0247      0.08  Q          V         |          |          |
 9+40       0.0253      0.08  Q          V         |          |          |
 9+45       0.0259      0.08  Q          V         |          |          |
 9+50       0.0264      0.08  Q           V        |          |          |
 9+55       0.0270      0.08  Q           V        |          |          |
10+ 0       0.0276      0.09  Q           V        |          |          |
10+ 5       0.0281      0.08  Q           V        |          |          |
10+10       0.0286      0.06  Q            V       |          |          |
10+15       0.0290      0.06  Q            V       |          |          |
10+20       0.0294      0.06  Q            V       |          |          |
10+25       0.0298      0.06  Q            V       |          |          |
10+30       0.0302      0.06  Q            V       |          |          |
10+35       0.0307      0.06  Q             V      |          |          |
10+40       0.0312      0.07  Q             V      |          |          |
10+45       0.0317      0.08  Q             V      |          |          |
10+50       0.0322      0.08  Q             V      |          |          |
10+55       0.0328      0.08  Q              V     |          |          |
11+ 0       0.0333      0.08  Q              V     |          |          |
11+ 5       0.0338      0.08  Q              V     |          |          |
11+10       0.0343      0.07  Q               V    |          |          |
11+15       0.0349      0.07  Q               V    |          |          |
11+20       0.0354      0.07  Q               V    |          |          |
11+25       0.0359      0.07  Q               V    |          |          |
11+30       0.0364      0.07  Q                V   |          |          |
11+35       0.0369      0.07  Q                V   |          |          |
11+40       0.0374      0.07  Q                V   |          |          |
11+45       0.0378      0.07  Q                V   |          |          |
11+50       0.0383      0.07  Q                V   |          |          |
11+55       0.0388      0.07  Q                 V  |          |          |
12+ 0       0.0392      0.07  Q                 V  |          |          |
12+ 5       0.0398      0.08  Q                 V  |          |          |
12+10       0.0404      0.09  Q                  V |          |          |
12+15       0.0411      0.09  Q                  V |          |          |
12+20       0.0417      0.10  Q                  V |          |          |
12+25       0.0424      0.10  Q                  |V|          |          |
12+30       0.0431      0.10  Q                  |V|          |          |
12+35       0.0438      0.10  Q                  |V|          |          |
12+40       0.0446      0.11  Q                  | V          |          |
12+45       0.0453      0.11  Q                  | V          |          |
12+50       0.0461      0.11  Q                  | V          |          |
12+55       0.0469      0.11  Q                  |  V         |          |
13+ 0       0.0476      0.11  Q                  |  V         |          |
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13+ 5       0.0485      0.12  Q        |          |   V      |          |
13+10       0.0493      0.13  Q        |          |   V      |          |
13+15       0.0502      0.13  Q        |          |   V      |          |
13+20       0.0512      0.13  Q        |          |    V     |          |
13+25       0.0521      0.13  Q        |          |    V     |          |
13+30       0.0530      0.13  Q        |          |     V    |          |
13+35       0.0538      0.12  Q        |          |     V    |          |
13+40       0.0545      0.10  Q        |          |      V   |          |
13+45       0.0551      0.09  Q        |          |      V   |          |
13+50       0.0558      0.09  Q        |          |      V   |          |
13+55       0.0564      0.09  Q        |          |      V   |          |
14+ 0       0.0570      0.09  Q        |          |       V  |          |
14+ 5       0.0576      0.09  Q        |          |       V  |          |
14+10       0.0584      0.10  Q        |          |       V  |          |
14+15       0.0591      0.10  Q        |          |        V |          |
14+20       0.0598      0.10  Q        |          |        V |          |
14+25       0.0605      0.10  Q        |          |         V|          |
14+30       0.0612      0.10  Q        |          |         V|          |
14+35       0.0619      0.10  Q        |          |         V|          |
14+40       0.0626      0.10  Q        |          |          |V         |
14+45       0.0633      0.10  Q        |          |          |V         |
14+50       0.0640      0.10  Q        |          |          |V         |
14+55       0.0646      0.10  Q        |          |          | V        |
15+ 0       0.0653      0.10  Q        |          |          | V        |
15+ 5       0.0660      0.10  Q        |          |          | V        |
15+10       0.0666      0.09  Q        |          |          |  V       |
15+15       0.0673      0.09  Q        |          |          |  V       |
15+20       0.0679      0.09  Q        |          |          |  V       |
15+25       0.0685      0.09  Q        |          |          |   V      |
15+30       0.0692      0.09  Q        |          |          |   V      |
15+35       0.0698      0.09  Q        |          |          |   V      |
15+40       0.0703      0.08  Q        |          |          |   V      |
15+45       0.0708      0.08  Q        |          |          |    V     |
15+50       0.0713      0.07  Q        |          |          |    V     |
15+55       0.0718      0.07  Q        |          |          |    V     |
16+ 0       0.0723      0.07  Q        |          |          |    V     |
16+ 5       0.0727      0.06  Q        |          |          |     V    |
16+10       0.0729      0.03  Q        |          |          |     V    |
16+15       0.0731      0.02  Q        |          |          |     V    |
16+20       0.0732      0.02  Q        |          |          |     V    |
16+25       0.0733      0.02  Q        |          |          |     V    |
16+30       0.0734      0.02  Q        |          |          |     V    |
16+35       0.0735      0.01  Q        |          |          |     V    |
16+40       0.0736      0.01  Q        |          |          |     V    |
16+45       0.0737      0.01  Q        |          |          |     V    |
16+50       0.0738      0.01  Q        |          |          |     V    |
16+55       0.0738      0.01  Q        |          |          |     V    |
17+ 0       0.0739      0.01  Q        |          |          |     V    |
17+ 5       0.0740      0.01  Q        |          |          |     V    |
17+10       0.0741      0.02  Q        |          |          |     V    |
17+15       0.0743      0.02  Q        |          |          |     V    |
17+20       0.0744      0.02  Q        |          |          |     V    |
17+25       0.0745      0.02  Q        |          |          |     V    |
17+30       0.0747      0.02  Q        |          |          |      V   |
17+35       0.0748      0.02  Q        |          |          |      V   |
17+40       0.0749      0.02  Q        |          |          |      V   |
17+45       0.0751      0.02  Q        |          |          |      V   |
17+50       0.0752      0.02  Q        |          |          |      V   |
17+55       0.0753      0.02  Q        |          |          |      V   |
18+ 0       0.0754      0.02  Q        |          |          |      V   |
18+ 5       0.0755      0.02  Q        |          |          |      V   |
18+10       0.0756      0.02  Q        |          |          |      V   |
18+15       0.0758      0.02  Q        |          |          |      V   |
18+20       0.0759      0.02  Q        |          |          |      V   |
18+25       0.0760      0.02  Q        |          |          |      V   |
18+30       0.0761      0.02  Q        |          |          |      V   |
18+35       0.0762      0.01  Q        |          |          |      V   |
18+40       0.0763      0.01  Q        |          |          |      V   |
18+45       0.0763      0.01  Q        |          |          |      V   |
18+50       0.0764      0.01  Q        |          |          |      V   |
18+55       0.0765      0.01  Q        |          |          |      V   |
19+ 0       0.0765      0.01  Q        |          |          |      V   |
19+ 5       0.0766      0.01  Q        |          |          |       V  |
19+10       0.0767      0.01  Q        |          |          |       V  |
19+15       0.0768      0.01  Q        |          |          |       V  |
19+20       0.0768      0.01  Q        |          |          |       V  |
19+25       0.0769      0.01  Q        |          |          |       V  |
19+30       0.0770      0.02  Q        |          |          |       V  |
19+35       0.0771      0.01  Q        |          |          |       V  |
19+40       0.0772      0.01  Q        |          |          |       V  |
19+45       0.0773      0.01  Q        |          |          |       V  |
```

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   19+50       0.0774      0.01  Q          |          |          |        V |
   19+55       0.0774      0.01  Q          |          |          |        V |
   20+ 0       0.0775      0.01  Q          |          |          |        V |
   20+ 5       0.0776      0.01  Q          |          |          |        V |
   20+10       0.0776      0.01  Q          |          |          |        V |
   20+15       0.0777      0.01  Q          |          |          |        V |
   20+20       0.0778      0.01  Q          |          |          |        V |
   20+25       0.0779      0.01  Q          |          |          |        V |
   20+30       0.0780      0.01  Q          |          |          |        V |
   20+35       0.0780      0.01  Q          |          |          |        V |
   20+40       0.0781      0.01  Q          |          |          |        V |
   20+45       0.0782      0.01  Q          |          |          |        V |
   20+50       0.0783      0.01  Q          |          |          |        V |
   20+55       0.0783      0.01  Q          |          |          |        V |
   21+ 0       0.0784      0.01  Q          |          |          |        V |
   21+ 5       0.0785      0.01  Q          |          |          |        V |
   21+10       0.0785      0.01  Q          |          |          |        V |
   21+15       0.0786      0.01  Q          |          |          |        V |
   21+20       0.0787      0.01  Q          |          |          |         V|
   21+25       0.0787      0.01  Q          |          |          |         V|
   21+30       0.0788      0.01  Q          |          |          |         V|
   21+35       0.0789      0.01  Q          |          |          |         V|
   21+40       0.0789      0.01  Q          |          |          |         V|
   21+45       0.0790      0.01  Q          |          |          |         V|
   21+50       0.0791      0.01  Q          |          |          |         V|
   21+55       0.0791      0.01  Q          |          |          |         V|
   22+ 0       0.0792      0.01  Q          |          |          |         V|
   22+ 5       0.0793      0.01  Q          |          |          |         V|
   22+10       0.0793      0.01  Q          |          |          |         V|
   22+15       0.0794      0.01  Q          |          |          |         V|
   22+20       0.0795      0.01  Q          |          |          |         V|
   22+25       0.0795      0.01  Q          |          |          |         V|
   22+30       0.0796      0.01  Q          |          |          |         V|
   22+35       0.0797      0.01  Q          |          |          |         V|
   22+40       0.0797      0.01  Q          |          |          |         V|
   22+45       0.0798      0.01  Q          |          |          |         V|
   22+50       0.0798      0.01  Q          |          |          |         V|
   22+55       0.0799      0.01  Q          |          |          |         V|
   23+ 0       0.0799      0.01  Q          |          |          |         V|
   23+ 5       0.0800      0.01  Q          |          |          |         V|
   23+10       0.0800      0.01  Q          |          |          |         V|
   23+15       0.0801      0.01  Q          |          |          |         V|
   23+20       0.0801      0.01  Q          |          |          |         V|
   23+25       0.0802      0.01  Q          |          |          |         V|
   23+30       0.0802      0.01  Q          |          |          |         V|
   23+35       0.0803      0.01  Q          |          |          |         V|
   23+40       0.0804      0.01  Q          |          |          |         V|
   23+45       0.0804      0.01  Q          |          |          |         V|
   23+50       0.0805      0.01  Q          |          |          |         V|
   23+55       0.0805      0.01  Q          |          |          |         V|
   24+ 0       0.0806      0.01  Q          |          |          |         V|
   24+ 5       0.0806      0.01  Q          |          |          |         V|
   24+10       0.0806      0.00  Q          |          |          |         V|
   24+15       0.0806      0.00  Q          |          |          |         V|
   24+20       0.0806      0.00  Q          |          |          |         V|
   24+25       0.0806      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  02/20/23 File: pro242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978


Program License Serial Number 5006

------------------------------------------------------------------------
 English (in-lb) Input Units Used
 English Rainfall Data (Inches) Input Values Used

 English Units used in output format



------------------------------------------------------------------------
------------------------------------------------------------------------
Drainage Area =       3.87(Ac.)  =      0.006 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment =       3.87(Ac.)  =      0.006 Sq. Mi.
Length along longest watercourse =    1041.00(Ft.)
Length along longest watercourse measured to centroid =     520.00(Ft.)
Length along longest watercourse =      0.197 Mi.
Length along longest watercourse measured to centroid =      0.098 Mi.
Difference in elevation =      10.00(Ft.)
Slope along watercourse =     50.7205 Ft./Mi.
Average Manning's 'N' = 0.020
Lag time =    0.051 Hr.
Lag time =     3.05 Min.
25% of lag time =     0.76 Min.
40% of lag time =     1.22 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]
        3.87            2.50                 9.68

100 YEAR Area rainfall data:


Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
        3.87            6.00                23.22

STORM EVENT (YEAR) =    2.00
Area Averaged 2-Year Rainfall =    2.500(In)
Area Averaged 100-Year Rainfall =    6.000(In)

Point rain (area averaged) =    2.500(In)
Areal adjustment factor =  100.00 %
Adjusted average point rain =    2.500(In)

Sub-Area Data:
Area(Ac.)         Runoff Index   Impervious %
     3.870           32.00          0.900
 Total Area Entered =      3.87(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
32.0  16.2      0.870     0.900        0.165       1.000      0.165
                                                 Sum (F) =   0.165
Area averaged mean soil loss (F) (In/Hr) =  0.165
Minimum soil loss rate ((In/Hr)) =  0.083
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.180
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                      VALLEY S-Curve
------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %           (CFS)
```

1	0.083	163.701	36.334	1.417
2	0.167	327.402	45.989	1.794
3	0.250	491.103	10.445	0.407
4	0.333	654.804	4.464	0.174
5	0.417	818.505	2.768	0.108
			Sum = 100.000 Sum=	3.900

The following loss rate calculations reflect use of the minimum calculated loss rate subtracted from the Storm Rain to produce the maximum Effective Rain value

Unit	Time (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.020	(0.293)	0.004	0.016
2	0.17	0.07	0.020	(0.292)	0.004	0.016
3	0.25	0.07	0.020	(0.291)	0.004	0.016
4	0.33	0.10	0.030	(0.290)	0.005	0.025
5	0.42	0.10	0.030	(0.289)	0.005	0.025
6	0.50	0.10	0.030	(0.288)	0.005	0.025
7	0.58	0.10	0.030	(0.286)	0.005	0.025
8	0.67	0.10	0.030	(0.285)	0.005	0.025
9	0.75	0.10	0.030	(0.284)	0.005	0.025
10	0.83	0.13	0.040	(0.283)	0.007	0.033
11	0.92	0.13	0.040	(0.282)	0.007	0.033
12	1.00	0.13	0.040	(0.281)	0.007	0.033
13	1.08	0.10	0.030	(0.280)	0.005	0.025
14	1.17	0.10	0.030	(0.279)	0.005	0.025
15	1.25	0.10	0.030	(0.277)	0.005	0.025
16	1.33	0.10	0.030	(0.276)	0.005	0.025
17	1.42	0.10	0.030	(0.275)	0.005	0.025
18	1.50	0.10	0.030	(0.274)	0.005	0.025
19	1.58	0.10	0.030	(0.273)	0.005	0.025
20	1.67	0.10	0.030	(0.272)	0.005	0.025
21	1.75	0.10	0.030	(0.271)	0.005	0.025
22	1.83	0.13	0.040	(0.270)	0.007	0.033
23	1.92	0.13	0.040	(0.269)	0.007	0.033
24	2.00	0.13	0.040	(0.268)	0.007	0.033
25	2.08	0.13	0.040	(0.267)	0.007	0.033
26	2.17	0.13	0.040	(0.265)	0.007	0.033
27	2.25	0.13	0.040	(0.264)	0.007	0.033
28	2.33	0.13	0.040	(0.263)	0.007	0.033
29	2.42	0.13	0.040	(0.262)	0.007	0.033
30	2.50	0.13	0.040	(0.261)	0.007	0.033
31	2.58	0.17	0.050	(0.260)	0.009	0.041
32	2.67	0.17	0.050	(0.259)	0.009	0.041
33	2.75	0.17	0.050	(0.258)	0.009	0.041
34	2.83	0.17	0.050	(0.257)	0.009	0.041
35	2.92	0.17	0.050	(0.256)	0.009	0.041
36	3.00	0.17	0.050	(0.255)	0.009	0.041
37	3.08	0.17	0.050	(0.254)	0.009	0.041
38	3.17	0.17	0.050	(0.253)	0.009	0.041
39	3.25	0.17	0.050	(0.252)	0.009	0.041
40	3.33	0.17	0.050	(0.251)	0.009	0.041
41	3.42	0.17	0.050	(0.250)	0.009	0.041
42	3.50	0.17	0.050	(0.249)	0.009	0.041
43	3.58	0.17	0.050	(0.247)	0.009	0.041
44	3.67	0.17	0.050	(0.246)	0.009	0.041
45	3.75	0.17	0.050	(0.245)	0.009	0.041
46	3.83	0.20	0.060	(0.244)	0.011	0.049
47	3.92	0.20	0.060	(0.243)	0.011	0.049
48	4.00	0.20	0.060	(0.242)	0.011	0.049
49	4.08	0.20	0.060	(0.241)	0.011	0.049
50	4.17	0.20	0.060	(0.240)	0.011	0.049
51	4.25	0.20	0.060	(0.239)	0.011	0.049
52	4.33	0.23	0.070	(0.238)	0.013	0.057
53	4.42	0.23	0.070	(0.237)	0.013	0.057
54	4.50	0.23	0.070	(0.236)	0.013	0.057
55	4.58	0.23	0.070	(0.235)	0.013	0.057
56	4.67	0.23	0.070	(0.234)	0.013	0.057
57	4.75	0.23	0.070	(0.233)	0.013	0.057
58	4.83	0.27	0.080	(0.232)	0.014	0.066
59	4.92	0.27	0.080	(0.231)	0.014	0.066
60	5.00	0.27	0.080	(0.230)	0.014	0.066
61	5.08	0.20	0.060	(0.229)	0.011	0.049
62	5.17	0.20	0.060	(0.228)	0.011	0.049
63	5.25	0.20	0.060	(0.227)	0.011	0.049
64	5.33	0.23	0.070	(0.226)	0.013	0.057
65	5.42	0.23	0.070	(0.225)	0.013	0.057
66	5.50	0.23	0.070	(0.224)	0.013	0.057
67	5.58	0.27	0.080	(0.223)	0.014	0.066
68	5.67	0.27	0.080	(0.222)	0.014	0.066
69	5.75	0.27	0.080	(0.221)	0.014	0.066
70	5.83	0.27	0.080	(0.220)	0.014	0.066
71	5.92	0.27	0.080	(0.219)	0.014	0.066

72	6.00	0.27	0.080	(0.218)	0.014	0.066
73	6.08	0.30	0.090	(0.217)	0.016	0.074
74	6.17	0.30	0.090	(0.216)	0.016	0.074
75	6.25	0.30	0.090	(0.215)	0.016	0.074
76	6.33	0.30	0.090	(0.214)	0.016	0.074
77	6.42	0.30	0.090	(0.213)	0.016	0.074
78	6.50	0.30	0.090	(0.213)	0.016	0.074
79	6.58	0.33	0.100	(0.212)	0.018	0.082
80	6.67	0.33	0.100	(0.211)	0.018	0.082
81	6.75	0.33	0.100	(0.210)	0.018	0.082
82	6.83	0.33	0.100	(0.209)	0.018	0.082
83	6.92	0.33	0.100	(0.208)	0.018	0.082
84	7.00	0.33	0.100	(0.207)	0.018	0.082
85	7.08	0.33	0.100	(0.206)	0.018	0.082
86	7.17	0.33	0.100	(0.205)	0.018	0.082
87	7.25	0.33	0.100	(0.204)	0.018	0.082
88	7.33	0.37	0.110	(0.203)	0.020	0.090
89	7.42	0.37	0.110	(0.202)	0.020	0.090
90	7.50	0.37	0.110	(0.201)	0.020	0.090
91	7.58	0.40	0.120	(0.200)	0.022	0.098
92	7.67	0.40	0.120	(0.199)	0.022	0.098
93	7.75	0.40	0.120	(0.198)	0.022	0.098
94	7.83	0.43	0.130	(0.198)	0.023	0.107
95	7.92	0.43	0.130	(0.197)	0.023	0.107
96	8.00	0.43	0.130	(0.196)	0.023	0.107
97	8.08	0.50	0.150	(0.195)	0.027	0.123
98	8.17	0.50	0.150	(0.194)	0.027	0.123
99	8.25	0.50	0.150	(0.193)	0.027	0.123
100	8.33	0.50	0.150	(0.192)	0.027	0.123
101	8.42	0.50	0.150	(0.191)	0.027	0.123
102	8.50	0.50	0.150	(0.190)	0.027	0.123
103	8.58	0.53	0.160	(0.189)	0.029	0.131
104	8.67	0.53	0.160	(0.189)	0.029	0.131
105	8.75	0.53	0.160	(0.188)	0.029	0.131
106	8.83	0.57	0.170	(0.187)	0.031	0.139
107	8.92	0.57	0.170	(0.186)	0.031	0.139
108	9.00	0.57	0.170	(0.185)	0.031	0.139
109	9.08	0.63	0.190	(0.184)	0.034	0.156
110	9.17	0.63	0.190	(0.183)	0.034	0.156
111	9.25	0.63	0.190	(0.182)	0.034	0.156
112	9.33	0.67	0.200	(0.181)	0.036	0.164
113	9.42	0.67	0.200	(0.181)	0.036	0.164
114	9.50	0.67	0.200	(0.180)	0.036	0.164
115	9.58	0.70	0.210	(0.179)	0.038	0.172
116	9.67	0.70	0.210	(0.178)	0.038	0.172
117	9.75	0.70	0.210	(0.177)	0.038	0.172
118	9.83	0.73	0.220	(0.176)	0.040	0.180
119	9.92	0.73	0.220	(0.175)	0.040	0.180
120	10.00	0.73	0.220	(0.175)	0.040	0.180
121	10.08	0.50	0.150	(0.174)	0.027	0.123
122	10.17	0.50	0.150	(0.173)	0.027	0.123
123	10.25	0.50	0.150	(0.172)	0.027	0.123
124	10.33	0.50	0.150	(0.171)	0.027	0.123
125	10.42	0.50	0.150	(0.170)	0.027	0.123
126	10.50	0.50	0.150	(0.170)	0.027	0.123
127	10.58	0.67	0.200	(0.169)	0.036	0.164
128	10.67	0.67	0.200	(0.168)	0.036	0.164
129	10.75	0.67	0.200	(0.167)	0.036	0.164
130	10.83	0.67	0.200	(0.166)	0.036	0.164
131	10.92	0.67	0.200	(0.166)	0.036	0.164
132	11.00	0.67	0.200	(0.165)	0.036	0.164
133	11.08	0.63	0.190	(0.164)	0.034	0.156
134	11.17	0.63	0.190	(0.163)	0.034	0.156
135	11.25	0.63	0.190	(0.162)	0.034	0.156
136	11.33	0.63	0.190	(0.161)	0.034	0.156
137	11.42	0.63	0.190	(0.161)	0.034	0.156
138	11.50	0.63	0.190	(0.160)	0.034	0.156
139	11.58	0.57	0.170	(0.159)	0.031	0.139
140	11.67	0.57	0.170	(0.158)	0.031	0.139
141	11.75	0.57	0.170	(0.157)	0.031	0.139
142	11.83	0.60	0.180	(0.157)	0.032	0.148
143	11.92	0.60	0.180	(0.156)	0.032	0.148
144	12.00	0.60	0.180	(0.155)	0.032	0.148
145	12.08	0.83	0.250	(0.154)	0.045	0.205
146	12.17	0.83	0.250	(0.154)	0.045	0.205
147	12.25	0.83	0.250	(0.153)	0.045	0.205
148	12.33	0.87	0.260	(0.152)	0.047	0.213
149	12.42	0.87	0.260	(0.151)	0.047	0.213
150	12.50	0.87	0.260	(0.151)	0.047	0.213
151	12.58	0.93	0.280	(0.150)	0.050	0.230
152	12.67	0.93	0.280	(0.149)	0.050	0.230
153	12.75	0.93	0.280	(0.148)	0.050	0.230
154	12.83	0.97	0.290	(0.148)	0.052	0.238
155	12.92	0.97	0.290	(0.147)	0.052	0.238
156	13.00	0.97	0.290	(0.146)	0.052	0.238
157	13.08	1.13	0.340	(0.145)	0.061	0.279

158	13.17	1.13	0.340	(0.145)	0.061	0.279
159	13.25	1.13	0.340	(0.144)	0.061	0.279
160	13.33	1.13	0.340	(0.143)	0.061	0.279
161	13.42	1.13	0.340	(0.142)	0.061	0.279
162	13.50	1.13	0.340	(0.142)	0.061	0.279
163	13.58	0.77	0.230	(0.141)	0.041	0.189
164	13.67	0.77	0.230	(0.140)	0.041	0.189
165	13.75	0.77	0.230	(0.139)	0.041	0.189
166	13.83	0.77	0.230	(0.139)	0.041	0.189
167	13.92	0.77	0.230	(0.138)	0.041	0.189
168	14.00	0.77	0.230	(0.137)	0.041	0.189
169	14.08	0.90	0.270	(0.137)	0.049	0.221
170	14.17	0.90	0.270	(0.136)	0.049	0.221
171	14.25	0.90	0.270	(0.135)	0.049	0.221
172	14.33	0.87	0.260	(0.135)	0.047	0.213
173	14.42	0.87	0.260	(0.134)	0.047	0.213
174	14.50	0.87	0.260	(0.133)	0.047	0.213
175	14.58	0.87	0.260	(0.133)	0.047	0.213
176	14.67	0.87	0.260	(0.132)	0.047	0.213
177	14.75	0.87	0.260	(0.131)	0.047	0.213
178	14.83	0.83	0.250	(0.130)	0.045	0.205
179	14.92	0.83	0.250	(0.130)	0.045	0.205
180	15.00	0.83	0.250	(0.129)	0.045	0.205
181	15.08	0.80	0.240	(0.129)	0.043	0.197
182	15.17	0.80	0.240	(0.128)	0.043	0.197
183	15.25	0.80	0.240	(0.127)	0.043	0.197
184	15.33	0.77	0.230	(0.127)	0.041	0.189
185	15.42	0.77	0.230	(0.126)	0.041	0.189
186	15.50	0.77	0.230	(0.125)	0.041	0.189
187	15.58	0.63	0.190	(0.125)	0.034	0.156
188	15.67	0.63	0.190	(0.124)	0.034	0.156
189	15.75	0.63	0.190	(0.123)	0.034	0.156
190	15.83	0.63	0.190	(0.123)	0.034	0.156
191	15.92	0.63	0.190	(0.122)	0.034	0.156
192	16.00	0.63	0.190	(0.121)	0.034	0.156
193	16.08	0.13	0.040	(0.121)	0.007	0.033
194	16.17	0.13	0.040	(0.120)	0.007	0.033
195	16.25	0.13	0.040	(0.120)	0.007	0.033
196	16.33	0.13	0.040	(0.119)	0.007	0.033
197	16.42	0.13	0.040	(0.118)	0.007	0.033
198	16.50	0.13	0.040	(0.118)	0.007	0.033
199	16.58	0.10	0.030	(0.117)	0.005	0.025
200	16.67	0.10	0.030	(0.117)	0.005	0.025
201	16.75	0.10	0.030	(0.116)	0.005	0.025
202	16.83	0.10	0.030	(0.115)	0.005	0.025
203	16.92	0.10	0.030	(0.115)	0.005	0.025
204	17.00	0.10	0.030	(0.114)	0.005	0.025
205	17.08	0.17	0.050	(0.114)	0.009	0.041
206	17.17	0.17	0.050	(0.113)	0.009	0.041
207	17.25	0.17	0.050	(0.113)	0.009	0.041
208	17.33	0.17	0.050	(0.112)	0.009	0.041
209	17.42	0.17	0.050	(0.111)	0.009	0.041
210	17.50	0.17	0.050	(0.111)	0.009	0.041
211	17.58	0.17	0.050	(0.110)	0.009	0.041
212	17.67	0.17	0.050	(0.110)	0.009	0.041
213	17.75	0.17	0.050	(0.109)	0.009	0.041
214	17.83	0.13	0.040	(0.109)	0.007	0.033
215	17.92	0.13	0.040	(0.108)	0.007	0.033
216	18.00	0.13	0.040	(0.108)	0.007	0.033
217	18.08	0.13	0.040	(0.107)	0.007	0.033
218	18.17	0.13	0.040	(0.107)	0.007	0.033
219	18.25	0.13	0.040	(0.106)	0.007	0.033
220	18.33	0.13	0.040	(0.105)	0.007	0.033
221	18.42	0.13	0.040	(0.105)	0.007	0.033
222	18.50	0.13	0.040	(0.104)	0.007	0.033
223	18.58	0.10	0.030	(0.104)	0.005	0.025
224	18.67	0.10	0.030	(0.103)	0.005	0.025
225	18.75	0.10	0.030	(0.103)	0.005	0.025
226	18.83	0.07	0.020	(0.102)	0.004	0.016
227	18.92	0.07	0.020	(0.102)	0.004	0.016
228	19.00	0.07	0.020	(0.101)	0.004	0.016
229	19.08	0.10	0.030	(0.101)	0.005	0.025
230	19.17	0.10	0.030	(0.101)	0.005	0.025
231	19.25	0.10	0.030	(0.100)	0.005	0.025
232	19.33	0.13	0.040	(0.100)	0.007	0.033
233	19.42	0.13	0.040	(0.099)	0.007	0.033
234	19.50	0.13	0.040	(0.099)	0.007	0.033
235	19.58	0.10	0.030	(0.098)	0.005	0.025
236	19.67	0.10	0.030	(0.098)	0.005	0.025
237	19.75	0.10	0.030	(0.097)	0.005	0.025
238	19.83	0.07	0.020	(0.097)	0.004	0.016
239	19.92	0.07	0.020	(0.096)	0.004	0.016
240	20.00	0.07	0.020	(0.096)	0.004	0.016
241	20.08	0.10	0.030	(0.096)	0.005	0.025
242	20.17	0.10	0.030	(0.095)	0.005	0.025
243	20.25	0.10	0.030	(0.095)	0.005	0.025

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244  20.33     0.10      0.030       (  0.094)       0.005        0.025
245  20.42     0.10      0.030       (  0.094)       0.005        0.025
246  20.50     0.10      0.030       (  0.094)       0.005        0.025
247  20.58     0.10      0.030       (  0.093)       0.005        0.025
248  20.67     0.10      0.030       (  0.093)       0.005        0.025
249  20.75     0.10      0.030       (  0.092)       0.005        0.025
250  20.83     0.07      0.020       (  0.092)       0.004        0.016
251  20.92     0.07      0.020       (  0.092)       0.004        0.016
252  21.00     0.07      0.020       (  0.091)       0.004        0.016
253  21.08     0.10      0.030       (  0.091)       0.005        0.025
254  21.17     0.10      0.030       (  0.091)       0.005        0.025
255  21.25     0.10      0.030       (  0.090)       0.005        0.025
256  21.33     0.07      0.020       (  0.090)       0.004        0.016
257  21.42     0.07      0.020       (  0.090)       0.004        0.016
258  21.50     0.07      0.020       (  0.089)       0.004        0.016
259  21.58     0.10      0.030       (  0.089)       0.005        0.025
260  21.67     0.10      0.030       (  0.089)       0.005        0.025
261  21.75     0.10      0.030       (  0.088)       0.005        0.025
262  21.83     0.07      0.020       (  0.088)       0.004        0.016
263  21.92     0.07      0.020       (  0.088)       0.004        0.016
264  22.00     0.07      0.020       (  0.087)       0.004        0.016
265  22.08     0.10      0.030       (  0.087)       0.005        0.025
266  22.17     0.10      0.030       (  0.087)       0.005        0.025
267  22.25     0.10      0.030       (  0.086)       0.005        0.025
268  22.33     0.07      0.020       (  0.086)       0.004        0.016
269  22.42     0.07      0.020       (  0.086)       0.004        0.016
270  22.50     0.07      0.020       (  0.086)       0.004        0.016
271  22.58     0.07      0.020       (  0.085)       0.004        0.016
272  22.67     0.07      0.020       (  0.085)       0.004        0.016
273  22.75     0.07      0.020       (  0.085)       0.004        0.016
274  22.83     0.07      0.020       (  0.085)       0.004        0.016
275  22.92     0.07      0.020       (  0.085)       0.004        0.016
276  23.00     0.07      0.020       (  0.084)       0.004        0.016
277  23.08     0.07      0.020       (  0.084)       0.004        0.016
278  23.17     0.07      0.020       (  0.084)       0.004        0.016
279  23.25     0.07      0.020       (  0.084)       0.004        0.016
280  23.33     0.07      0.020       (  0.084)       0.004        0.016
281  23.42     0.07      0.020       (  0.083)       0.004        0.016
282  23.50     0.07      0.020       (  0.083)       0.004        0.016
283  23.58     0.07      0.020       (  0.083)       0.004        0.016
284  23.67     0.07      0.020       (  0.083)       0.004        0.016
285  23.75     0.07      0.020       (  0.083)       0.004        0.016
286  23.83     0.07      0.020       (  0.083)       0.004        0.016
287  23.92     0.07      0.020       (  0.083)       0.004        0.016
288  24.00     0.07      0.020       (  0.083)       0.004        0.016
              (Loss Rate Not Used)
    Sum =     100.0                                  Sum =    24.6
      Flood volume = Effective rainfall      2.05(In)
       times area       3.9(Ac.)/[(In)/(Ft.)] =       0.7(Ac.Ft)
      Total soil loss =      0.45(In)
      Total soil loss =     0.145(Ac.Ft)
      Total rainfall =      2.50(In)
      Flood volume =       28798.4 Cubic Feet
      Total soil loss =        6321.6 Cubic Feet
      ---------------------------------------------------------------------
       Peak flow rate of this hydrograph =      1.088(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      0.05  Q          |         |         |         |
  0+15       0.0009      0.06  Q          |         |         |         |
  0+20       0.0014      0.07  Q          |         |         |         |
  0+25       0.0021      0.09  Q          |         |         |         |
  0+30       0.0027      0.09  Q          |         |         |         |
  0+35       0.0034      0.10  Q          |         |         |         |
  0+40       0.0040      0.10  Q          |         |         |         |
  0+45       0.0047      0.10  Q          |         |         |         |
  0+50       0.0054      0.11  Q          |         |         |         |
  0+55       0.0063      0.12  Q          |         |         |         |
  1+ 0       0.0071      0.13  Q          |         |         |         |
  1+ 5       0.0079      0.12  Q          |         |         |         |
  1+10       0.0086      0.10  Q          |         |         |         |
  1+15       0.0093      0.10  Q          |         |         |         |
  1+20       0.0100      0.10  Q          |         |         |         |
  1+25       0.0106      0.10  Q          |         |         |         |
  1+30       0.0113      0.10  Q          |         |         |         |
  1+35       0.0120      0.10  Q          |         |         |         |
  1+40       0.0126      0.10  Q          |         |         |         |
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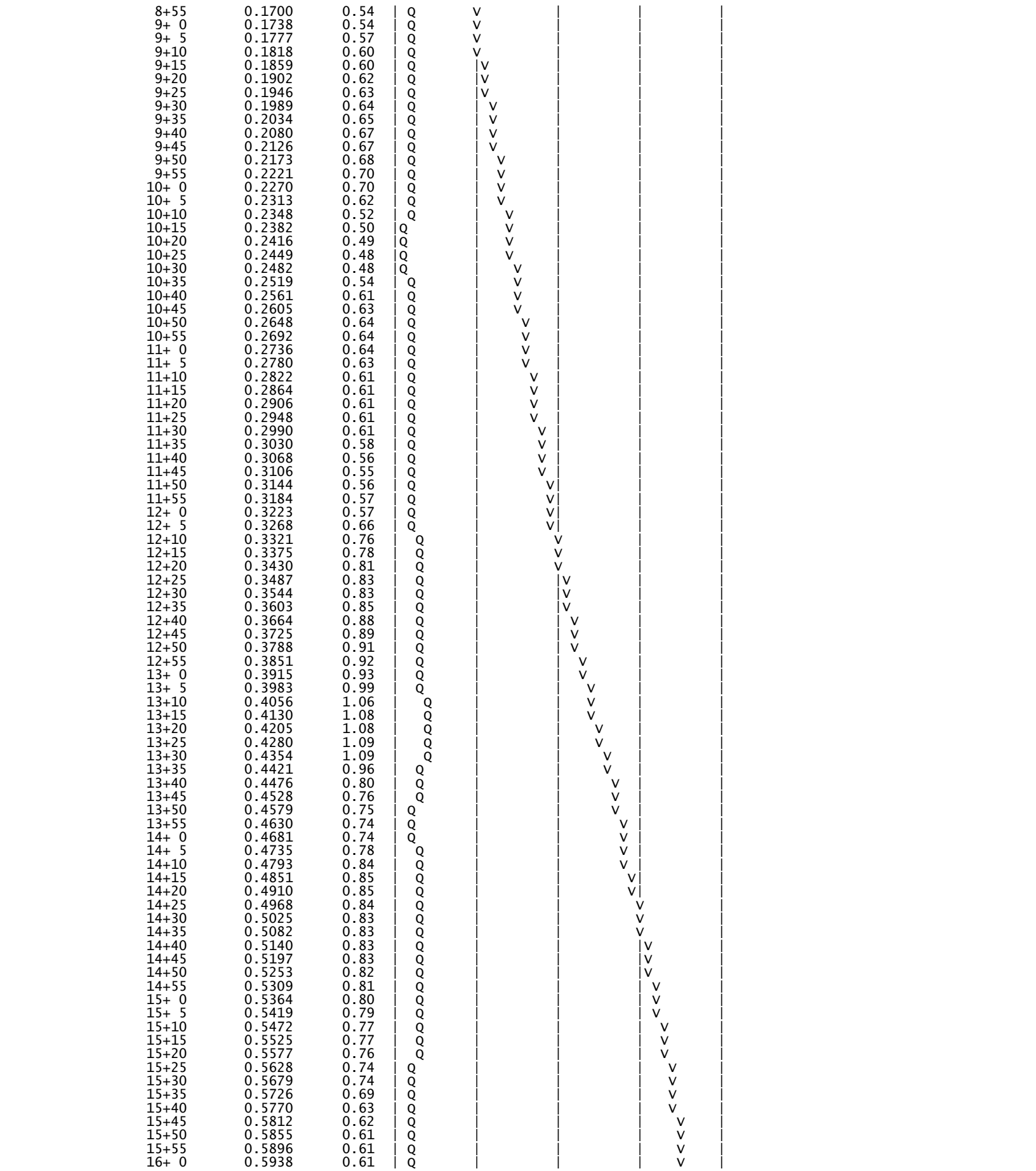
1+45       0.0133      0.10  Q          |          |          |          |
1+50       0.0140      0.11  Q          |          |          |          |
1+55       0.0149      0.12  Q          |          |          |          |
2+ 0       0.0157      0.13  Q          |          |          |          |
2+ 5       0.0166      0.13  QV         |          |          |          |
2+10       0.0175      0.13  QV         |          |          |          |
2+15       0.0184      0.13  QV         |          |          |          |
2+20       0.0192      0.13  QV         |          |          |          |
2+25       0.0201      0.13  QV         |          |          |          |
2+30       0.0210      0.13  QV         |          |          |          |
2+35       0.0220      0.14  QV         |          |          |          |
2+40       0.0230      0.15  QV         |          |          |          |
2+45       0.0241      0.16  QV         |          |          |          |
2+50       0.0252      0.16  QV         |          |          |          |
2+55       0.0263      0.16  QV         |          |          |          |
3+ 0       0.0274      0.16  QV         |          |          |          |
3+ 5       0.0285      0.16  QV         |          |          |          |
3+10       0.0296      0.16  QV         |          |          |          |
3+15       0.0307      0.16  QV         |          |          |          |
3+20       0.0318      0.16  QV         |          |          |          |
3+25       0.0329      0.16  QV         |          |          |          |
3+30       0.0340      0.16  Q V        |          |          |          |
3+35       0.0351      0.16  Q V        |          |          |          |
3+40       0.0362      0.16  Q V        |          |          |          |
3+45       0.0373      0.16  Q V        |          |          |          |
3+50       0.0385      0.17  Q V        |          |          |          |
3+55       0.0398      0.19  Q V        |          |          |          |
4+ 0       0.0411      0.19  Q V        |          |          |          |
4+ 5       0.0424      0.19  Q V        |          |          |          |
4+10       0.0437      0.19  Q V        |          |          |          |
4+15       0.0451      0.19  Q V        |          |          |          |
4+20       0.0465      0.20  Q V        |          |          |          |
4+25       0.0480      0.22  Q V        |          |          |          |
4+30       0.0495      0.22  Q V        |          |          |          |
4+35       0.0510      0.22  Q  V       |          |          |          |
4+40       0.0526      0.22  Q  V       |          |          |          |
4+45       0.0541      0.22  Q  V       |          |          |          |
4+50       0.0557      0.24  Q  V       |          |          |          |
4+55       0.0575      0.25  |Q V       |          |          |          |
5+ 0       0.0592      0.25  |Q V       |          |          |          |
5+ 5       0.0608      0.23  Q  V       |          |          |          |
5+10       0.0622      0.20  Q  V       |          |          |          |
5+15       0.0636      0.20  Q  V       |          |          |          |
5+20       0.0650      0.21  Q  V       |          |          |          |
5+25       0.0665      0.22  Q   V      |          |          |          |
5+30       0.0680      0.22  Q   V      |          |          |          |
5+35       0.0696      0.23  Q   V      |          |          |          |
5+40       0.0714      0.25  |Q  V      |          |          |          |
5+45       0.0731      0.25  |Q  V      |          |          |          |
5+50       0.0749      0.26  |Q  V      |          |          |          |
5+55       0.0766      0.26  |Q  V      |          |          |          |
6+ 0       0.0784      0.26  |Q  V      |          |          |          |
6+ 5       0.0802      0.27  |Q  V      |          |          |          |
6+10       0.0822      0.28  |Q  V      |          |          |          |
6+15       0.0841      0.29  |Q   V     |          |          |          |
6+20       0.0861      0.29  |Q   V     |          |          |          |
6+25       0.0881      0.29  |Q   V     |          |          |          |
6+30       0.0901      0.29  |Q   V     |          |          |          |
6+35       0.0921      0.30  |Q   V     |          |          |          |
6+40       0.0943      0.31  |Q   V     |          |          |          |
6+45       0.0965      0.32  |Q   V     |          |          |          |
6+50       0.0987      0.32  |Q   V     |          |          |          |
6+55       0.1009      0.32  |Q    V    |          |          |          |
7+ 0       0.1031      0.32  |Q    V    |          |          |          |
7+ 5       0.1053      0.32  |Q    V    |          |          |          |
7+10       0.1075      0.32  |Q    V    |          |          |          |
7+15       0.1097      0.32  |Q    V    |          |          |          |
7+20       0.1120      0.33  |Q    V    |          |          |          |
7+25       0.1144      0.35  |Q    V    |          |          |          |
7+30       0.1168      0.35  |Q     V   |          |          |          |
7+35       0.1193      0.36  |Q     V   |          |          |          |
7+40       0.1219      0.38  |Q     V   |          |          |          |
7+45       0.1245      0.38  |Q     V   |          |          |          |
7+50       0.1272      0.39  |Q     V   |          |          |          |
7+55       0.1301      0.41  |Q     V   |          |          |          |
8+ 0       0.1329      0.41  |Q      V  |          |          |          |
8+ 5       0.1359      0.44  |Q      V  |          |          |          |
8+10       0.1392      0.47  |Q      V  |          |          |          |
8+15       0.1424      0.48  |Q      V  |          |          |          |
8+20       0.1457      0.48  |Q      V  |          |          |          |
8+25       0.1490      0.48  |Q       V |          |          |          |
8+30       0.1523      0.48  |Q       V |          |          |          |
8+35       0.1557      0.49  |Q       V |          |          |          |
8+40       0.1592      0.51  | Q       V|          |          |          |
8+45       0.1627      0.51  | Q       V|          |          |          |
8+50       0.1663      0.52  | Q        V          |          |          |
```



8+55	0.1700	0.54	
9+ 0	0.1738	0.54	
9+ 5	0.1777	0.57	
9+10	0.1818	0.60	
9+15	0.1859	0.60	
9+20	0.1902	0.62	
9+25	0.1946	0.63	
9+30	0.1989	0.64	
9+35	0.2034	0.65	
9+40	0.2080	0.67	
9+45	0.2126	0.67	
9+50	0.2173	0.68	
9+55	0.2221	0.70	
10+ 0	0.2270	0.70	
10+ 5	0.2313	0.62	
10+10	0.2348	0.52	
10+15	0.2382	0.50	
10+20	0.2416	0.49	
10+25	0.2449	0.48	
10+30	0.2482	0.48	
10+35	0.2519	0.54	
10+40	0.2561	0.61	
10+45	0.2605	0.63	
10+50	0.2648	0.64	
10+55	0.2692	0.64	
11+ 0	0.2736	0.64	
11+ 5	0.2780	0.63	
11+10	0.2822	0.61	
11+15	0.2864	0.61	
11+20	0.2906	0.61	
11+25	0.2948	0.61	
11+30	0.2990	0.61	
11+35	0.3030	0.58	
11+40	0.3068	0.56	
11+45	0.3106	0.55	
11+50	0.3144	0.56	
11+55	0.3184	0.57	
12+ 0	0.3223	0.57	
12+ 5	0.3268	0.66	
12+10	0.3321	0.76	
12+15	0.3375	0.78	
12+20	0.3430	0.81	
12+25	0.3487	0.83	
12+30	0.3544	0.83	
12+35	0.3603	0.85	
12+40	0.3664	0.88	
12+45	0.3725	0.89	
12+50	0.3788	0.91	
12+55	0.3851	0.92	
13+ 0	0.3915	0.93	
13+ 5	0.3983	0.99	
13+10	0.4056	1.06	
13+15	0.4130	1.08	
13+20	0.4205	1.08	
13+25	0.4280	1.09	
13+30	0.4354	1.09	
13+35	0.4421	0.96	
13+40	0.4476	0.80	
13+45	0.4528	0.76	
13+50	0.4579	0.75	
13+55	0.4630	0.74	
14+ 0	0.4681	0.74	
14+ 5	0.4735	0.78	
14+10	0.4793	0.84	
14+15	0.4851	0.85	
14+20	0.4910	0.85	
14+25	0.4968	0.84	
14+30	0.5025	0.83	
14+35	0.5082	0.83	
14+40	0.5140	0.83	
14+45	0.5197	0.83	
14+50	0.5253	0.82	
14+55	0.5309	0.81	
15+ 0	0.5364	0.80	
15+ 5	0.5419	0.79	
15+10	0.5472	0.77	
15+15	0.5525	0.77	
15+20	0.5577	0.76	
15+25	0.5628	0.74	
15+30	0.5679	0.74	
15+35	0.5726	0.69	
15+40	0.5770	0.63	
15+45	0.5812	0.62	
15+50	0.5855	0.61	
15+55	0.5896	0.61	
16+ 0	0.5938	0.61	

16+ 5	0.5968	0.43	|Q	|	|	|	V |
16+10	0.5983	0.21	Q	|	|	|	V |
16+15	0.5994	0.16	Q	|	|	|	V |
16+20	0.6004	0.14	Q	|	|	|	V |
16+25	0.6013	0.13	Q	|	|	|	V |
16+30	0.6021	0.13	Q	|	|	|	V |
16+35	0.6029	0.12	Q	|	|	|	V |
16+40	0.6036	0.10	Q	|	|	|	V |
16+45	0.6043	0.10	Q	|	|	|	V |
16+50	0.6050	0.10	Q	|	|	|	V |
16+55	0.6056	0.10	Q	|	|	|	V |
17+ 0	0.6063	0.10	Q	|	|	|	V |
17+ 5	0.6071	0.12	Q	|	|	|	V |
17+10	0.6081	0.15	Q	|	|	|	V |
17+15	0.6092	0.16	Q	|	|	|	V |
17+20	0.6103	0.16	Q	|	|	|	V |
17+25	0.6114	0.16	Q	|	|	|	V |
17+30	0.6125	0.16	Q	|	|	|	V |
17+35	0.6136	0.16	Q	|	|	|	V |
17+40	0.6147	0.16	Q	|	|	|	V |
17+45	0.6158	0.16	Q	|	|	|	V |
17+50	0.6168	0.15	Q	|	|	|	V |
17+55	0.6178	0.13	Q	|	|	|	V |
18+ 0	0.6187	0.13	Q	|	|	|	V |
18+ 5	0.6195	0.13	Q	|	|	|	V |
18+10	0.6204	0.13	Q	|	|	|	V |
18+15	0.6213	0.13	Q	|	|	|	V |
18+20	0.6222	0.13	Q	|	|	|	V |
18+25	0.6231	0.13	Q	|	|	|	V |
18+30	0.6240	0.13	Q	|	|	|	V |
18+35	0.6248	0.12	Q	|	|	|	V |
18+40	0.6255	0.10	Q	|	|	|	V |
18+45	0.6261	0.10	Q	|	|	|	V |
18+50	0.6267	0.09	Q	|	|	|	V |
18+55	0.6272	0.07	Q	|	|	|	V |
19+ 0	0.6277	0.07	Q	|	|	|	V |
19+ 5	0.6282	0.08	Q	|	|	|	V |
19+10	0.6288	0.09	Q	|	|	|	V |
19+15	0.6294	0.09	Q	|	|	|	V |
19+20	0.6302	0.11	Q	|	|	|	V |
19+25	0.6310	0.12	Q	|	|	|	V |
19+30	0.6319	0.13	Q	|	|	|	V |
19+35	0.6327	0.12	Q	|	|	|	V |
19+40	0.6334	0.10	Q	|	|	|	V |
19+45	0.6341	0.10	Q	|	|	|	V |
19+50	0.6347	0.09	Q	|	|	|	V |
19+55	0.6351	0.07	Q	|	|	|	V |
20+ 0	0.6356	0.07	Q	|	|	|	V |
20+ 5	0.6361	0.08	Q	|	|	|	V |
20+10	0.6367	0.09	Q	|	|	|	V |
20+15	0.6374	0.09	Q	|	|	|	V |
20+20	0.6380	0.10	Q	|	|	|	V |
20+25	0.6387	0.10	Q	|	|	|	V |
20+30	0.6394	0.10	Q	|	|	|	V |
20+35	0.6400	0.10	Q	|	|	|	V |
20+40	0.6407	0.10	Q	|	|	|	V |
20+45	0.6413	0.10	Q	|	|	|	V |
20+50	0.6419	0.08	Q	|	|	|	V |
20+55	0.6424	0.07	Q	|	|	|	V |
21+ 0	0.6429	0.07	Q	|	|	|	V |
21+ 5	0.6434	0.08	Q	|	|	|	V |
21+10	0.6440	0.09	Q	|	|	|	V |
21+15	0.6447	0.09	Q	|	|	|	V|
21+20	0.6452	0.08	Q	|	|	|	V|
21+25	0.6457	0.07	Q	|	|	|	V|
21+30	0.6462	0.07	Q	|	|	|	V|
21+35	0.6467	0.08	Q	|	|	|	V|
21+40	0.6473	0.09	Q	|	|	|	V|
21+45	0.6480	0.09	Q	|	|	|	V|
21+50	0.6485	0.08	Q	|	|	|	V|
21+55	0.6490	0.07	Q	|	|	|	V|
22+ 0	0.6495	0.07	Q	|	|	|	V|
22+ 5	0.6500	0.08	Q	|	|	|	V|
22+10	0.6506	0.09	Q	|	|	|	V|
22+15	0.6513	0.09	Q	|	|	|	V|
22+20	0.6518	0.08	Q	|	|	|	V|
22+25	0.6523	0.07	Q	|	|	|	V|
22+30	0.6528	0.07	Q	|	|	|	V|
22+35	0.6532	0.06	Q	|	|	|	V|
22+40	0.6537	0.06	Q	|	|	|	V|
22+45	0.6541	0.06	Q	|	|	|	V|
22+50	0.6545	0.06	Q	|	|	|	V|
22+55	0.6550	0.06	Q	|	|	|	V|
23+ 0	0.6554	0.06	Q	|	|	|	V|
23+ 5	0.6559	0.06	Q	|	|	|	V|
23+10	0.6563	0.06	Q	|	|	|	V|

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   23+15       0.6568      0.06  Q          |          |          |         v|
   23+20       0.6572      0.06  Q          |          |          |         v|
   23+25       0.6576      0.06  Q          |          |          |         v|
   23+30       0.6581      0.06  Q          |          |          |         v|
   23+35       0.6585      0.06  Q          |          |          |         v|
   23+40       0.6590      0.06  Q          |          |          |         v|
   23+45       0.6594      0.06  Q          |          |          |         v|
   23+50       0.6598      0.06  Q          |          |          |         v|
   23+55       0.6603      0.06  Q          |          |          |         v|
   24+ 0       0.6607      0.06  Q          |          |          |         v|
   24+ 5       0.6610      0.04  Q          |          |          |         v|
   24+10       0.6611      0.01  Q          |          |          |         v|
   24+15       0.6611      0.00  Q          |          |          |         v|
   24+20       0.6611      0.00  Q          |          |          |          v
-------------------------------------------------------------------------------
```

```
                    FLOOD HYDROGRAPH ROUTING PROGRAM
                Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2004
                            Study date: 02/21/23

      ---------------------------------------------------------------------



      Program License Serial Number 5006

      ---------------------------------------------------------------------
      ********************* HYDROGRAPH INFORMATION **********************

                  From study/file name: PRO242.rte
      ****************************HYDROGRAPH DATA****************************
                  Number of intervals =   292
                  Time interval =    5.0 (Min.)
                  Maximum/Peak flow rate =        1.088 (CFS)
                  Total volume =       0.661 (Ac.Ft)
            Status of hydrographs being held in storage
                     Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
            Peak (CFS)      0.000     0.000     0.000     0.000     0.000
            Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
      ************************************************************************



      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
      Process from Point/Station        1.000 to Point/Station        2.000
      **** RETARDING BASIN ROUTING ****
      ________________________________________________________________________

      User entry of depth-outflow-storage data
      ---------------------------------------------------------------------
      Total number of inflow hydrograph intervals = 292
      Hydrograph time unit =  5.000 (Min.)
      Initial depth in storage basin =   0.00(Ft.)
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Initial basin depth =   0.00 (Ft.)
      Initial basin storage =      0.00 (Ac.Ft)
      Initial basin outflow =   0.00 (CFS)
      ---------------------------------------------------------------------
      ---------------------------------------------------------------------
      Depth vs. Storage and Depth vs. Discharge data:
       Basin Depth  Storage    Outflow   (S-O*dt/2)   (S+O*dt/2)
            (Ft.)    (Ac.Ft)    (CFS)     (Ac.Ft)    (Ac.Ft)
      ---------------------------------------------------------------------
         0.000      0.000      0.000      0.000        0.000
         0.500      0.096      0.046      0.096        0.096
         1.000      0.201      0.075      0.201        0.201
         1.500      0.316      0.095      0.316        0.316
         2.000      0.442      0.112      0.442        0.442
         2.500      0.579      0.127      0.579        0.579
         3.000      0.728     14.268      0.679        0.777
         3.500      0.890     40.112      0.752        1.028
         4.000      1.064     73.574      0.811        1.317
      ---------------------------------------------------------------------
                     Hydrograph Detention Basin Routing
      ---------------------------------------------------------------------

      Graph values: 'I'= unit inflow; 'O'=outflow at time shown
      ---------------------------------------------------------------------
       Time   Inflow  Outflow    Storage                                  Depth
      (Hours)  (CFS)   (CFS)     (Ac.Ft) .0       0.3    0.54    0.82    1.09 (Ft.)
       0.083    0.02    0.00      0.000  O       |       |       |       |     0.00
       0.167    0.05    0.00      0.000  OI      |       |       |       |     0.00
       0.250    0.06    0.00      0.001  OI      |       |       |       |     0.00
       0.333    0.07    0.00      0.001  O I     |       |       |       |     0.01
       0.417    0.09    0.00      0.002  O I     |       |       |       |     0.01
       0.500    0.09    0.00      0.002  O I     |       |       |       |     0.01
       0.583    0.10    0.00      0.003  O I     |       |       |       |     0.02
       0.667    0.10    0.00      0.004  O I     |       |       |       |     0.02
       0.750    0.10    0.00      0.004  O I     |       |       |       |     0.02
       0.833    0.11    0.00      0.005  O  I    |       |       |       |     0.03
       0.917    0.12    0.00      0.006  O  I    |       |       |       |     0.03
       1.000    0.13    0.00      0.007  O  I    |       |       |       |     0.03
       1.083    0.12    0.00      0.007  O  I    |       |       |       |     0.04
       1.167    0.10    0.00      0.008  O I     |       |       |       |     0.04
       1.250    0.10    0.00      0.009  O I     |       |       |       |     0.05
       1.333    0.10    0.00      0.009  O I     |       |       |       |     0.05
       1.417    0.10    0.00      0.010  O I     |       |       |       |     0.05
       1.500    0.10    0.01      0.011  O I     |       |       |       |     0.06
```

```
1.583   0.10    0.01     0.011  o I     |       |       |       |     0.06
1.667   0.10    0.01     0.012  o I     |       |       |       |     0.06
1.750   0.10    0.01     0.013  o I     |       |       |       |     0.07
1.833   0.11    0.01     0.013  o  I    |       |       |       |     0.07
1.917   0.12    0.01     0.014  o  I    |       |       |       |     0.07
2.000   0.13    0.01     0.015  o  I    |       |       |       |     0.08
2.083   0.13    0.01     0.016  o  I    |       |       |       |     0.08
2.167   0.13    0.01     0.016  o  I    |       |       |       |     0.09
2.250   0.13    0.01     0.017  o  I    |       |       |       |     0.09
2.333   0.13    0.01     0.018  o  I    |       |       |       |     0.09
2.417   0.13    0.01     0.019  o  I    |       |       |       |     0.10
2.500   0.13    0.01     0.020  o  I    |       |       |       |     0.10
2.583   0.14    0.01     0.021  o   I   |       |       |       |     0.11
2.667   0.15    0.01     0.022  o   I   |       |       |       |     0.11
2.750   0.16    0.01     0.023  o   I   |       |       |       |     0.12
2.833   0.16    0.01     0.024  o   I   |       |       |       |     0.12
2.917   0.16    0.01     0.025  o   I   |       |       |       |     0.13
3.000   0.16    0.01     0.026  o   I   |       |       |       |     0.13
3.083   0.16    0.01     0.027  o   I   |       |       |       |     0.14
3.167   0.16    0.01     0.028  o   I   |       |       |       |     0.14
3.250   0.16    0.01     0.029  o   I   |       |       |       |     0.15
3.333   0.16    0.01     0.030  o   I   |       |       |       |     0.15
3.417   0.16    0.01     0.031  o   I   |       |       |       |     0.16
3.500   0.16    0.02     0.032  o   I   |       |       |       |     0.16
3.583   0.16    0.02     0.033  o   I   |       |       |       |     0.17
3.667   0.16    0.02     0.034  o   I   |       |       |       |     0.17
3.750   0.16    0.02     0.035  o   I   |       |       |       |     0.18
3.833   0.17    0.02     0.036  o    I  |       |       |       |     0.19
3.917   0.19    0.02     0.037  o    I  |       |       |       |     0.19
4.000   0.19    0.02     0.038  o    I  |       |       |       |     0.20
4.083   0.19    0.02     0.039  o    I  |       |       |       |     0.20
4.167   0.19    0.02     0.040  o    I  |       |       |       |     0.21
4.250   0.19    0.02     0.041  o    I  |       |       |       |     0.22
4.333   0.20    0.02     0.043  o    I  |       |       |       |     0.22
4.417   0.22    0.02     0.044  o     I |       |       |       |     0.23
4.500   0.22    0.02     0.045  o     I |       |       |       |     0.24
4.583   0.22    0.02     0.047  o     I |       |       |       |     0.24
4.667   0.22    0.02     0.048  o     I |       |       |       |     0.25
4.750   0.22    0.02     0.049  o     I |       |       |       |     0.26
4.833   0.24    0.02     0.051  o     I |       |       |       |     0.27
4.917   0.25    0.03     0.052  o      I|       |       |       |     0.27
5.000   0.25    0.03     0.054  o      I|       |       |       |     0.28
5.083   0.23    0.03     0.055  o     I |       |       |       |     0.29
5.167   0.20    0.03     0.057  o    I  |       |       |       |     0.30
5.250   0.20    0.03     0.058  o    I  |       |       |       |     0.30
5.333   0.21    0.03     0.059  o     I |       |       |       |     0.31
5.417   0.22    0.03     0.060  o     I |       |       |       |     0.31
5.500   0.22    0.03     0.062  o     I |       |       |       |     0.32
5.583   0.23    0.03     0.063  o     I |       |       |       |     0.33
5.667   0.25    0.03     0.065  o      I|       |       |       |     0.34
5.750   0.25    0.03     0.066  o      I|       |       |       |     0.34
5.833   0.26    0.03     0.068  o      I|       |       |       |     0.35
5.917   0.26    0.03     0.069  o      I|       |       |       |     0.36
6.000   0.26    0.03     0.071  o      I|       |       |       |     0.37
6.083   0.27    0.03     0.072  |o     I|       |       |       |     0.38
6.167   0.28    0.04     0.074  |o      I       |       |       |     0.38
6.250   0.29    0.04     0.076  |o      I       |       |       |     0.39
6.333   0.29    0.04     0.077  |o      I       |       |       |     0.40
6.417   0.29    0.04     0.079  |o      I       |       |       |     0.41
6.500   0.29    0.04     0.081  |o      I       |       |       |     0.42
6.583   0.30    0.04     0.083  |o      I       |       |       |     0.43
6.667   0.31    0.04     0.084  |o      |I      |       |       |     0.44
6.750   0.32    0.04     0.086  |o      |I      |       |       |     0.45
6.833   0.32    0.04     0.088  |o      |I      |       |       |     0.46
6.917   0.32    0.04     0.090  |o      |I      |       |       |     0.47
7.000   0.32    0.04     0.092  |o      |I      |       |       |     0.48
7.083   0.32    0.04     0.094  |o      |I      |       |       |     0.49
7.167   0.32    0.05     0.096  |o      |I      |       |       |     0.50
7.250   0.32    0.05     0.098  |o      |I      |       |       |     0.51
7.333   0.33    0.05     0.100  |o      |I      |       |       |     0.52
7.417   0.35    0.05     0.102  |o      | I     |       |       |     0.53
7.500   0.35    0.05     0.104  |o      | I     |       |       |     0.54
7.583   0.36    0.05     0.106  |o      | I     |       |       |     0.55
7.667   0.38    0.05     0.108  |o      |  I    |       |       |     0.56
7.750   0.38    0.05     0.110  |o      |  I    |       |       |     0.57
7.833   0.39    0.05     0.113  |o      |  I    |       |       |     0.58
7.917   0.41    0.05     0.115  |o      |   I   |       |       |     0.59
8.000   0.41    0.05     0.117  |o      |   I   |       |       |     0.60
8.083   0.44    0.05     0.120  |o      |   I   |       |       |     0.61
8.167   0.47    0.05     0.123  |o      |    I  |       |       |     0.63
8.250   0.48    0.05     0.126  |o      |    I  |       |       |     0.64
8.333   0.48    0.06     0.129  |o      |     I |       |       |     0.66
8.417   0.48    0.06     0.132  |o      |     I |       |       |     0.67
8.500   0.48    0.06     0.134  |o      |     I |       |       |     0.68
8.583   0.49    0.06     0.137  |o      |     I |       |       |     0.70
8.667   0.51    0.06     0.140  |o      |     I |       |       |     0.71
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 8.750    0.51    0.06      0.144  |O       |      I |        |        |      0.73
 8.833    0.52    0.06      0.147  |O       |       I|        |        |      0.74
 8.917    0.54    0.06      0.150  |O       |       I|        |        |      0.76
 9.000    0.54    0.06      0.153  |O       |       I|        |        |      0.77
 9.083    0.57    0.06      0.157  |O       |        I        |        |      0.79
 9.167    0.60    0.06      0.160  |O       |        |I       |        |      0.81
 9.250    0.60    0.06      0.164  |O       |        |I       |        |      0.82
 9.333    0.62    0.07      0.168  |O       |        | I      |        |      0.84
 9.417    0.63    0.07      0.171  |O       |        | I      |        |      0.86
 9.500    0.64    0.07      0.175  |O       |        | I      |        |      0.88
 9.583    0.65    0.07      0.179  | O      |        |  I     |        |      0.90
 9.667    0.67    0.07      0.183  | O      |        |  I     |        |      0.92
 9.750    0.67    0.07      0.188  | O      |        |  I     |        |      0.94
 9.833    0.68    0.07      0.192  | O      |        |   I    |        |      0.96
 9.917    0.70    0.07      0.196  | O      |        |   I    |        |      0.98
10.000    0.70    0.07      0.200  | O      |        |   I    |        |      1.00
10.083    0.62    0.08      0.204  | O      |        | I      |        |      1.01
10.167    0.52    0.08      0.208  | O      |       I|        |        |      1.03
10.250    0.50    0.08      0.211  | O      |      I |        |        |      1.04
10.333    0.49    0.08      0.214  | O      |      I |        |        |      1.05
10.417    0.48    0.08      0.216  | O      |      I |        |        |      1.07
10.500    0.48    0.08      0.219  | O      |      I |        |        |      1.08
10.583    0.54    0.08      0.222  | O      |       I|        |        |      1.09
10.667    0.61    0.08      0.225  | O      |        |I       |        |      1.11
10.750    0.63    0.08      0.229  | O      |        | I      |        |      1.12
10.833    0.64    0.08      0.233  | O      |        | I      |        |      1.14
10.917    0.64    0.08      0.237  | O      |        | I      |        |      1.16
11.000    0.64    0.08      0.241  | O      |        | I      |        |      1.17
11.083    0.63    0.08      0.244  | O      |        | I      |        |      1.19
11.167    0.61    0.08      0.248  | O      |        | I      |        |      1.21
11.250    0.61    0.08      0.252  | O      |        |I       |        |      1.22
11.333    0.61    0.08      0.255  | O      |        |I       |        |      1.24
11.417    0.61    0.09      0.259  | O      |        |I       |        |      1.25
11.500    0.61    0.09      0.263  | O      |        |I       |        |      1.27
11.583    0.58    0.09      0.266  | O      |        |I       |        |      1.28
11.667    0.56    0.09      0.269  | O      |        I       |        |      1.30
11.750    0.55    0.09      0.273  | O      |        I       |        |      1.31
11.833    0.56    0.09      0.276  | O      |        I       |        |      1.33
11.917    0.57    0.09      0.279  | O      |        I       |        |      1.34
12.000    0.57    0.09      0.282  | O      |        I       |        |      1.35
12.083    0.66    0.09      0.286  | O      |        |  I     |        |      1.37
12.167    0.76    0.09      0.290  | O      |        |     I  |        |      1.39
12.250    0.78    0.09      0.295  | O      |        |      I|        |      1.41
12.333    0.81    0.09      0.300  | O      |        |      I|        |      1.43
12.417    0.83    0.09      0.305  | O      |        |       I        |      1.45
12.500    0.83    0.09      0.310  | O      |        |       I        |      1.47
12.583    0.85    0.09      0.315  | O      |        |        |I      |      1.50
12.667    0.88    0.10      0.320  | O      |        |        | I     |      1.52
12.750    0.89    0.10      0.326  | O      |        |        | I     |      1.54
12.833    0.91    0.10      0.331  | O      |        |        | I     |      1.56
12.917    0.92    0.10      0.337  | O      |        |        |  I    |      1.58
13.000    0.93    0.10      0.343  | O      |        |        |  I    |      1.61
13.083    0.99    0.10      0.349  | O      |        |        |   I   |      1.63
13.167    1.06    0.10      0.355  | O      |        |        |      I|      1.65
13.250    1.08    0.10      0.362  | O      |        |        |      I|      1.68
13.333    1.08    0.10      0.368  |  O     |        |        |      I|      1.71
13.417    1.09    0.10      0.375  |  O     |        |        |       I      1.73
13.500    1.09    0.10      0.382  |  O     |        |        |       I      1.76
13.583    0.96    0.10      0.388  |  O     |        |        |   I   |      1.79
13.667    0.80    0.11      0.394  |  O     |        |      I|       |      1.81
13.750    0.76    0.11      0.398  |  O     |        |     I |       |      1.83
13.833    0.75    0.11      0.403  |  O     |        |    I  |       |      1.84
13.917    0.74    0.11      0.407  |  O     |        |    I  |       |      1.86
14.000    0.74    0.11      0.411  |  O     |        |    I  |       |      1.88
14.083    0.78    0.11      0.416  |  O     |        |      I|       |      1.90
14.167    0.84    0.11      0.421  |  O     |        |       I       |      1.92
14.250    0.85    0.11      0.426  |  O     |        |       |I      |      1.94
14.333    0.85    0.11      0.431  |  O     |        |       I       |      1.96
14.417    0.84    0.11      0.436  |  O     |        |       I       |      1.98
14.500    0.83    0.11      0.441  |  O     |        |       I       |      2.00
14.583    0.83    0.11      0.446  |  O     |        |       I       |      2.01
14.667    0.83    0.11      0.451  |  O     |        |       I       |      2.03
14.750    0.83    0.11      0.456  |  O     |        |       I       |      2.05
14.833    0.82    0.11      0.461  |  O     |        |       I       |      2.07
14.917    0.81    0.11      0.465  |  O     |        |      I|       |      2.09
15.000    0.80    0.12      0.470  |  O     |        |      I|       |      2.10
15.083    0.79    0.12      0.475  |  O     |        |      I|       |      2.12
15.167    0.77    0.12      0.480  |  O     |        |     I |       |      2.14
15.250    0.77    0.12      0.484  |  O     |        |     I |       |      2.15
15.333    0.76    0.12      0.488  |  O     |        |     I |       |      2.17
15.417    0.74    0.12      0.493  |  O     |        |    I  |       |      2.19
15.500    0.74    0.12      0.497  |  O     |        |    I  |       |      2.20
15.583    0.69    0.12      0.501  |  O     |        |   I   |       |      2.22
15.667    0.63    0.12      0.505  |  O     |        | I     |       |      2.23
15.750    0.62    0.12      0.508  |  O     |        | I     |       |      2.24
15.833    0.61    0.12      0.512  |  O     |        |I      |       |      2.25
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15.917	0.61	0.12	0.515	O		I			2.27
16.000	0.61	0.12	0.519	O		I			2.28
16.083	0.43	0.12	0.521	O	I				2.29
16.167	0.21	0.12	0.523	O I					2.29
16.250	0.16	0.12	0.523	OI					2.30
16.333	0.14	0.12	0.523	OI					2.30
16.417	0.13	0.12	0.523	O					2.30
16.500	0.13	0.12	0.524	O					2.30
16.583	0.12	0.12	0.524	O					2.30
16.667	0.10	0.12	0.523	IO					2.30
16.750	0.10	0.12	0.523	IO					2.30
16.833	0.10	0.12	0.523	IO					2.30
16.917	0.10	0.12	0.523	IO					2.30
17.000	0.10	0.12	0.523	IO					2.29
17.083	0.12	0.12	0.523	O					2.29
17.167	0.15	0.12	0.523	OI					2.29
17.250	0.16	0.12	0.523	OI					2.30
17.333	0.16	0.12	0.523	OI					2.30
17.417	0.16	0.12	0.524	OI					2.30
17.500	0.16	0.12	0.524	OI					2.30
17.583	0.16	0.12	0.524	OI					2.30
17.667	0.16	0.12	0.524	OI					2.30
17.750	0.16	0.12	0.525	OI					2.30
17.833	0.15	0.12	0.525	OI					2.30
17.917	0.13	0.12	0.525	O					2.30
18.000	0.13	0.12	0.525	O					2.30
18.083	0.13	0.12	0.525	O					2.30
18.167	0.13	0.12	0.525	O					2.30
18.250	0.13	0.12	0.525	O					2.30
18.333	0.13	0.12	0.525	O					2.30
18.417	0.13	0.12	0.525	O					2.30
18.500	0.13	0.12	0.525	O					2.30
18.583	0.12	0.12	0.525	O					2.30
18.667	0.10	0.12	0.525	IO					2.30
18.750	0.10	0.12	0.525	IO					2.30
18.833	0.09	0.12	0.525	IO					2.30
18.917	0.07	0.12	0.525	IO					2.30
19.000	0.07	0.12	0.524	I O					2.30
19.083	0.08	0.12	0.524	IO					2.30
19.167	0.09	0.12	0.524	IO					2.30
19.250	0.09	0.12	0.523	IO					2.30
19.333	0.11	0.12	0.523	O					2.30
19.417	0.12	0.12	0.523	O					2.30
19.500	0.13	0.12	0.523	O					2.30
19.583	0.12	0.12	0.523	O					2.30
19.667	0.10	0.12	0.523	IO					2.30
19.750	0.10	0.12	0.523	IO					2.30
19.833	0.09	0.12	0.523	IO					2.30
19.917	0.07	0.12	0.523	IO					2.29
20.000	0.07	0.12	0.522	I O					2.29
20.083	0.08	0.12	0.522	IO					2.29
20.167	0.09	0.12	0.522	IO					2.29
20.250	0.09	0.12	0.521	IO					2.29
20.333	0.10	0.12	0.521	IO					2.29
20.417	0.10	0.12	0.521	IO					2.29
20.500	0.10	0.12	0.521	IO					2.29
20.583	0.10	0.12	0.521	IO					2.29
20.667	0.10	0.12	0.521	IO					2.29
20.750	0.10	0.12	0.520	IO					2.29
20.833	0.08	0.12	0.520	IO					2.29
20.917	0.07	0.12	0.520	IO					2.28
21.000	0.07	0.12	0.520	I O					2.28
21.083	0.08	0.12	0.519	IO					2.28
21.167	0.09	0.12	0.519	IO					2.28
21.250	0.09	0.12	0.519	IO					2.28
21.333	0.08	0.12	0.519	IO					2.28
21.417	0.07	0.12	0.518	IO					2.28
21.500	0.07	0.12	0.518	I O					2.28
21.583	0.08	0.12	0.518	IO					2.28
21.667	0.09	0.12	0.517	IO					2.27
21.750	0.09	0.12	0.517	IO					2.27
21.833	0.08	0.12	0.517	IO					2.27
21.917	0.07	0.12	0.517	IO					2.27
22.000	0.07	0.12	0.516	I O					2.27
22.083	0.08	0.12	0.516	IO					2.27
22.167	0.09	0.12	0.516	IO					2.27
22.250	0.09	0.12	0.515	IO					2.27
22.333	0.08	0.12	0.515	IO					2.27
22.417	0.07	0.12	0.515	IO					2.27
22.500	0.07	0.12	0.515	I O					2.26
22.583	0.06	0.12	0.514	I O					2.26
22.667	0.06	0.12	0.514	I O					2.26
22.750	0.06	0.12	0.513	I O					2.26
22.833	0.06	0.12	0.513	I O					2.26
22.917	0.06	0.12	0.513	I O					2.26
23.000	0.06	0.12	0.512	I O					2.26

23.083	0.06	0.12	0.512	I O				2.25
23.167	0.06	0.12	0.511	I O				2.25
23.250	0.06	0.12	0.511	I O				2.25
23.333	0.06	0.12	0.511	I O				2.25
23.417	0.06	0.12	0.510	I O				2.25
23.500	0.06	0.12	0.510	I O				2.25
23.583	0.06	0.12	0.510	I O				2.25
23.667	0.06	0.12	0.509	I O				2.25
23.750	0.06	0.12	0.509	I O				2.24
23.833	0.06	0.12	0.508	I O				2.24
23.917	0.06	0.12	0.508	I O				2.24
24.000	0.06	0.12	0.508	I O				2.24
24.083	0.04	0.12	0.507	I O				2.24
24.167	0.01	0.12	0.507	I O				2.24
24.250	0.00	0.12	0.506	I O				2.23
24.333	0.00	0.12	0.505	I O				2.23
24.417	0.00	0.12	0.504	I O				2.23
24.500	0.00	0.12	0.503	I O				2.22
24.583	0.00	0.12	0.503	I O				2.22
24.667	0.00	0.12	0.502	I O				2.22
24.750	0.00	0.12	0.501	I O				2.22
24.833	0.00	0.12	0.500	I O				2.21
24.917	0.00	0.12	0.499	I O				2.21
25.000	0.00	0.12	0.498	I O				2.21
25.083	0.00	0.12	0.498	I O				2.20
25.167	0.00	0.12	0.497	I O				2.20
25.250	0.00	0.12	0.496	I O				2.20
25.333	0.00	0.12	0.495	I O				2.19
25.417	0.00	0.12	0.494	I O				2.19
25.500	0.00	0.12	0.494	I O				2.19
25.583	0.00	0.12	0.493	I O				2.19
25.667	0.00	0.12	0.492	I O				2.18
25.750	0.00	0.12	0.491	I O				2.18
25.833	0.00	0.12	0.490	I O				2.18
25.917	0.00	0.12	0.490	I O				2.17
26.000	0.00	0.12	0.489	I O				2.17
26.083	0.00	0.12	0.488	I O				2.17
26.167	0.00	0.12	0.487	I O				2.16
26.250	0.00	0.12	0.486	I O				2.16
26.333	0.00	0.12	0.486	I O				2.16
26.417	0.00	0.12	0.485	I O				2.16
26.500	0.00	0.12	0.484	I O				2.15
26.583	0.00	0.12	0.483	I O				2.15
26.667	0.00	0.12	0.482	I O				2.15
26.750	0.00	0.12	0.482	I O				2.14
26.833	0.00	0.12	0.481	I O				2.14
26.917	0.00	0.12	0.480	I O				2.14
27.000	0.00	0.12	0.479	I O				2.14
27.083	0.00	0.12	0.478	I O				2.13
27.167	0.00	0.12	0.478	I O				2.13
27.250	0.00	0.12	0.477	I O				2.13
27.333	0.00	0.12	0.476	I O				2.12
27.417	0.00	0.12	0.475	I O				2.12
27.500	0.00	0.12	0.474	I O				2.12
27.583	0.00	0.12	0.474	I O				2.12
27.667	0.00	0.12	0.473	I O				2.11
27.750	0.00	0.12	0.472	I O				2.11
27.833	0.00	0.12	0.471	I O				2.11
27.917	0.00	0.12	0.470	I O				2.10
28.000	0.00	0.12	0.470	I O				2.10
28.083	0.00	0.11	0.469	I O				2.10
28.167	0.00	0.11	0.468	I O				2.09
28.250	0.00	0.11	0.467	I O				2.09
28.333	0.00	0.11	0.466	I O				2.09
28.417	0.00	0.11	0.466	I O				2.09
28.500	0.00	0.11	0.465	I O				2.08
28.583	0.00	0.11	0.464	I O				2.08
28.667	0.00	0.11	0.463	I O				2.08
28.750	0.00	0.11	0.462	I O				2.07
28.833	0.00	0.11	0.462	I O				2.07
28.917	0.00	0.11	0.461	I O				2.07
29.000	0.00	0.11	0.460	I O				2.07
29.083	0.00	0.11	0.459	I O				2.06
29.167	0.00	0.11	0.459	I O				2.06
29.250	0.00	0.11	0.458	I O				2.06
29.333	0.00	0.11	0.457	I O				2.05
29.417	0.00	0.11	0.456	I O				2.05
29.500	0.00	0.11	0.455	I O				2.05
29.583	0.00	0.11	0.455	I O				2.05
29.667	0.00	0.11	0.454	I O				2.04
29.750	0.00	0.11	0.453	I O				2.04
29.833	0.00	0.11	0.452	I O				2.04
29.917	0.00	0.11	0.451	I O				2.03
30.000	0.00	0.11	0.451	I O				2.03
30.083	0.00	0.11	0.450	I O				2.03
30.167	0.00	0.11	0.449	I O				2.03

30.250	0.00	0.11	0.448	I	O	|	|	|	2.02
30.333	0.00	0.11	0.448	I	O	|	|	|	2.02
30.417	0.00	0.11	0.447	I	O	|	|	|	2.02
30.500	0.00	0.11	0.446	I	O	|	|	|	2.01
30.583	0.00	0.11	0.445	I	O	|	|	|	2.01
30.667	0.00	0.11	0.445	I	O	|	|	|	2.01
30.750	0.00	0.11	0.444	I	O	|	|	|	2.01
30.833	0.00	0.11	0.443	I	O	|	|	|	2.00
30.917	0.00	0.11	0.442	I	O	|	|	|	2.00
31.000	0.00	0.11	0.441	I	O	|	|	|	2.00
31.083	0.00	0.11	0.441	I	O	|	|	|	1.99
31.167	0.00	0.11	0.440	I	O	|	|	|	1.99
31.250	0.00	0.11	0.439	I	O	|	|	|	1.99
31.333	0.00	0.11	0.438	I	O	|	|	|	1.99
31.417	0.00	0.11	0.438	I	O	|	|	|	1.98
31.500	0.00	0.11	0.437	I	O	|	|	|	1.98
31.583	0.00	0.11	0.436	I	O	|	|	|	1.98
31.667	0.00	0.11	0.435	I	O	|	|	|	1.97
31.750	0.00	0.11	0.435	I	O	|	|	|	1.97
31.833	0.00	0.11	0.434	I	O	|	|	|	1.97
31.917	0.00	0.11	0.433	I	O	|	|	|	1.96
32.000	0.00	0.11	0.432	I	O	|	|	|	1.96
32.083	0.00	0.11	0.431	I	O	|	|	|	1.96
32.167	0.00	0.11	0.431	I	O	|	|	|	1.96
32.250	0.00	0.11	0.430	I	O	|	|	|	1.95
32.333	0.00	0.11	0.429	I	O	|	|	|	1.95
32.417	0.00	0.11	0.428	I	O	|	|	|	1.95
32.500	0.00	0.11	0.428	I	O	|	|	|	1.94
32.583	0.00	0.11	0.427	I	O	|	|	|	1.94
32.667	0.00	0.11	0.426	I	O	|	|	|	1.94
32.750	0.00	0.11	0.425	I	O	|	|	|	1.93
32.833	0.00	0.11	0.425	I	O	|	|	|	1.93
32.917	0.00	0.11	0.424	I	O	|	|	|	1.93
33.000	0.00	0.11	0.423	I	O	|	|	|	1.93
33.083	0.00	0.11	0.422	I	O	|	|	|	1.92
33.167	0.00	0.11	0.422	I	O	|	|	|	1.92
33.250	0.00	0.11	0.421	I	O	|	|	|	1.92
33.333	0.00	0.11	0.420	I	O	|	|	|	1.91
33.417	0.00	0.11	0.419	I	O	|	|	|	1.91
33.500	0.00	0.11	0.419	I	O	|	|	|	1.91
33.583	0.00	0.11	0.418	I	O	|	|	|	1.90
33.667	0.00	0.11	0.417	I	O	|	|	|	1.90
33.750	0.00	0.11	0.416	I	O	|	|	|	1.90
33.833	0.00	0.11	0.416	I	O	|	|	|	1.90
33.917	0.00	0.11	0.415	I	O	|	|	|	1.89
34.000	0.00	0.11	0.414	I	O	|	|	|	1.89
34.083	0.00	0.11	0.413	I	O	|	|	|	1.89
34.167	0.00	0.11	0.413	I	O	|	|	|	1.88
34.250	0.00	0.11	0.412	I	O	|	|	|	1.88
34.333	0.00	0.11	0.411	I	O	|	|	|	1.88
34.417	0.00	0.11	0.410	I	O	|	|	|	1.87
34.500	0.00	0.11	0.410	I	O	|	|	|	1.87
34.583	0.00	0.11	0.409	I	O	|	|	|	1.87
34.667	0.00	0.11	0.408	I	O	|	|	|	1.87
34.750	0.00	0.11	0.407	I	O	|	|	|	1.86
34.833	0.00	0.11	0.407	I	O	|	|	|	1.86
34.917	0.00	0.11	0.406	I	O	|	|	|	1.86
35.000	0.00	0.11	0.405	I	O	|	|	|	1.85
35.083	0.00	0.11	0.405	I	O	|	|	|	1.85
35.167	0.00	0.11	0.404	I	O	|	|	|	1.85
35.250	0.00	0.11	0.403	I	O	|	|	|	1.85
35.333	0.00	0.11	0.402	I	O	|	|	|	1.84
35.417	0.00	0.11	0.402	I	O	|	|	|	1.84
35.500	0.00	0.11	0.401	I	O	|	|	|	1.84
35.583	0.00	0.11	0.400	I	O	|	|	|	1.83
35.667	0.00	0.11	0.399	I	O	|	|	|	1.83
35.750	0.00	0.11	0.399	I	O	|	|	|	1.83
35.833	0.00	0.11	0.398	I	O	|	|	|	1.83
35.917	0.00	0.11	0.397	I	O	|	|	|	1.82
36.000	0.00	0.11	0.396	I	O	|	|	|	1.82
36.083	0.00	0.11	0.396	I	O	|	|	|	1.82
36.167	0.00	0.11	0.395	I	O	|	|	|	1.81
36.250	0.00	0.11	0.394	I	O	|	|	|	1.81
36.333	0.00	0.11	0.394	I	O	|	|	|	1.81
36.417	0.00	0.11	0.393	I	O	|	|	|	1.80
36.500	0.00	0.11	0.392	I	O	|	|	|	1.80
36.583	0.00	0.11	0.391	I	O	|	|	|	1.80
36.667	0.00	0.11	0.391	I	O	|	|	|	1.80
36.750	0.00	0.10	0.390	I	O	|	|	|	1.79
36.833	0.00	0.10	0.389	I	O	|	|	|	1.79
36.917	0.00	0.10	0.388	I	O	|	|	|	1.79
37.000	0.00	0.10	0.388	I	O	|	|	|	1.78
37.083	0.00	0.10	0.387	I	O	|	|	|	1.78
37.167	0.00	0.10	0.386	I	O	|	|	|	1.78
37.250	0.00	0.10	0.386	I	O	|	|	|	1.78
37.333	0.00	0.10	0.385	I	O	|	|	|	1.77

37.417	0.00	0.10	0.384	I	O	|	|	|	| 1.77
37.500	0.00	0.10	0.383	I	O	|	|	|	| 1.77
37.583	0.00	0.10	0.383	I	O	|	|	|	| 1.76
37.667	0.00	0.10	0.382	I	O	|	|	|	| 1.76
37.750	0.00	0.10	0.381	I	O	|	|	|	| 1.76
37.833	0.00	0.10	0.381	I	O	|	|	|	| 1.76
37.917	0.00	0.10	0.380	I	O	|	|	|	| 1.75
38.000	0.00	0.10	0.379	I	O	|	|	|	| 1.75
38.083	0.00	0.10	0.378	I	O	|	|	|	| 1.75
38.167	0.00	0.10	0.378	I	O	|	|	|	| 1.74
38.250	0.00	0.10	0.377	I	O	|	|	|	| 1.74
38.333	0.00	0.10	0.376	I	O	|	|	|	| 1.74
38.417	0.00	0.10	0.376	I	O	|	|	|	| 1.74
38.500	0.00	0.10	0.375	I	O	|	|	|	| 1.73
38.583	0.00	0.10	0.374	I	O	|	|	|	| 1.73
38.667	0.00	0.10	0.373	I	O	|	|	|	| 1.73
38.750	0.00	0.10	0.373	I	O	|	|	|	| 1.73
38.833	0.00	0.10	0.372	I	O	|	|	|	| 1.72
38.917	0.00	0.10	0.371	I	O	|	|	|	| 1.72
39.000	0.00	0.10	0.371	I	O	|	|	|	| 1.72
39.083	0.00	0.10	0.370	I	O	|	|	|	| 1.71
39.167	0.00	0.10	0.369	I	O	|	|	|	| 1.71
39.250	0.00	0.10	0.369	I	O	|	|	|	| 1.71
39.333	0.00	0.10	0.368	I	O	|	|	|	| 1.71
39.417	0.00	0.10	0.367	I	O	|	|	|	| 1.70
39.500	0.00	0.10	0.366	I	O	|	|	|	| 1.70
39.583	0.00	0.10	0.366	I	O	|	|	|	| 1.70
39.667	0.00	0.10	0.365	I	O	|	|	|	| 1.69
39.750	0.00	0.10	0.364	I	O	|	|	|	| 1.69
39.833	0.00	0.10	0.364	I	O	|	|	|	| 1.69
39.917	0.00	0.10	0.363	I	O	|	|	|	| 1.69
40.000	0.00	0.10	0.362	I	O	|	|	|	| 1.68
40.083	0.00	0.10	0.362	I	O	|	|	|	| 1.68
40.167	0.00	0.10	0.361	I	O	|	|	|	| 1.68
40.250	0.00	0.10	0.360	I	O	|	|	|	| 1.68
40.333	0.00	0.10	0.359	I	O	|	|	|	| 1.67
40.417	0.00	0.10	0.359	I	O	|	|	|	| 1.67
40.500	0.00	0.10	0.358	I	O	|	|	|	| 1.67
40.583	0.00	0.10	0.357	I	O	|	|	|	| 1.66
40.667	0.00	0.10	0.357	I	O	|	|	|	| 1.66
40.750	0.00	0.10	0.356	I	O	|	|	|	| 1.66
40.833	0.00	0.10	0.355	I	O	|	|	|	| 1.66
40.917	0.00	0.10	0.355	I	O	|	|	|	| 1.65
41.000	0.00	0.10	0.354	I	O	|	|	|	| 1.65
41.083	0.00	0.10	0.353	I	O	|	|	|	| 1.65
41.167	0.00	0.10	0.353	I	O	|	|	|	| 1.64

Remaining water in basin = 0.35 (Ac.Ft)

**********HYDROGRAPH DATA**********

Number of intervals = 494
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 0.121 (CFS)
Total volume = 0.309 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section G of the WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table G.1on page 23 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ A. **On-site storm drain inlets**	❑ **Locations of inlets.**	❑ **Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.**	❑ **Maintain and periodically repaint or replace inlet markings.** ❑ **Provide stormwater pollution prevention information to new site owners, lessees, or operators.** ❑ **See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** ❑ **Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."**
❑ B. **Interior floor drains and elevator shaft sump pumps**		❑ **State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.**	❑ **Inspect and maintain drains to prevent blockages and overflow.**
❑ C. **Interior parking garages**		❑ **State that parking garage floor drains will be plumbed to the sanitary sewer.**	❑ **Inspect and maintain drains to prevent blockages and overflow.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ D1. **Need for future indoor & structural pest control**		❑ **Note building design features that discourage entry of pests.**	❑ **Provide Integrated Pest Management information to owners, lessees, and operators.**
❑ D2. **Landscape/ Outdoor Pesticide Use**	❑ **Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained.** ❑ **Show self-retaining landscape areas, if any.** ❑ **Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)**	**State that final landscape plans will accomplish all of the following.** ❑ **Preserve existing native trees, shrubs, and ground cover to the maximum extent possible.** ❑ **Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.** ❑ **Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.** ❑ **Consider using pest-resistant plants, especially adjacent to hardscape.** **To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.**	❑ **Maintain landscaping using minimum or no pesticides.** ❑ **See applicable operational BMPs in "What you should know for…..Landscape and Gardening"** at http://rcflood.org/stormwater/**Error! Hyperlink reference not valid.** ❑ **Provide IPM information to new owners, lessees and operators.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ E. **Pools, spas, ponds, decorative fountains, and other water features.**	❑ **Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)**	**If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.**	❑ **See applicable operational BMPs in** "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/
❑ F. **Food service**	❑ **For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment.** ❑ **On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.**	❑ **Describe the location and features of the designated cleaning area.** ❑ **Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.**	❑ **See the brochure, "**The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ **Provide this brochure to new site owners, lessees, and operators.**
❑ G. **Refuse areas**	❑ **Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas.** ❑ **If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area.** ❑ **Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.**	❑ **State how site refuse will be handled and provide supporting detail to what is shown on plans.** ❑ **State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.**	❑ **State how the following will be implemented:** **Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ H. **Industrial processes.**	❑ **Show process area.**	❑ **If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."**	❑ **See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at http://rcflood.org/stormwater/

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ I. **Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)**	❑ **Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area.** ❑ **Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults.** ❑ **Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.**	**Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains.** **Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for:** ▪ **Hazardous Waste Generation** ▪ **Hazardous Materials Release Response and Inventory** ▪ **California Accidental Release (CalARP)** ▪ **Aboveground Storage Tank** ▪ **Uniform Fire Code Article 80 Section 103(b) & (c) 1991** ▪ **Underground Storage Tank** **www.cchealth.org/groups/hazmat/**	❑ **See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ J. **Vehicle and Equipment Cleaning**	❑ **Show on drawings as appropriate:** **(1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.** **(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).** **(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.** **(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.**	❑ **If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.**	**Describe operational measures to implement the following (if applicable):** ❑ **Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.** Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/ ❑ **Car dealerships and similar may rinse cars with water only.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ K. **Vehicle/Equipment Repair and Maintenance**	❑ **Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.** ❑ **Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.** ❑ **Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.**	❑ **State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.** ❑ **State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.** ❑ **State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.**	**In the Stormwater Control Plan, note that all of the following restrictions apply to use the site:** ❑ **No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.** ❑ **No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.** ❑ **No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.** Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/

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❑ L. **Fuel Dispensing Areas**	❑ **Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.** ❑ **Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.**		❑ **The property owner shall dry sweep the fueling area routinely.** ❑ **See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

[6] **The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.**

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❑ M. **Loading Docks**	❑ **Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer.** ❑ **Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation.** ❑ **Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.**		❑ **Move loaded and unloaded items indoors as soon as possible.** ❑ **See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

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❑ N. **Fire Sprinkler Test Water**		❑ **Provide a means to drain fire sprinkler test water to the sanitary sewer.**	❑ **See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**
O. **Miscellaneous Drain or Wash Water or Other Sources** ❑ **Boiler drain lines** ❑ **Condensate drain lines** ❑ **Rooftop equipment** ❑ **Drainage sumps** ❑ **Roofing, gutters, and trim.** ❑ **Other sources**		❑ **Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system.** ❑ **Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system.** ❑ **Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment.** ❑ **Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.** ❑ **Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.** **Include controls for other sources as specified by local reviewer.**	

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❑ P. **Plazas, sidewalks, and parking lots.**			❑ **Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.**

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

I. Inspection and Maintenance Log
II. Updates, Revisions, and Errata
III. Introduction
    A. The site is an area of 6.88 acres located at the corner of Riverside Drive and Wineville Road. Three quarters of the site drains to the east of the site and the remainder drains to the west of the site. Infiltration trenches will be implemented to infiltrate the water before discharge to street and infiltration basin. The west site is HCOC exempt. The rest of the water will go through infiltration trench and infiltration basin and then discharged to existing storm drain pipe.

IV. Responsibility for Maintenance
    A. General
        1. Name and contact information for responsible individuals.
        2. Organization chart or charts showing organization of the maintenance function and location within the overall organization.
        3. Reference to Operation and Maintenance Agreement. A copy of the agreement should be attached.
        4. Maintenance funding
            a. Sources of funds for maintenance
            b. Budget category or line item
            c. Description of procedure and process for ensuring adequate funding for maintenance.
    B. Staff Training Program
    C. Records
    D. Safety
V. Summary of Drainage Management Areas and Stormwater BMPs
    A. Drainage Areas

B. Structural Post-Construction BMPs
    1. Drawings showing location and type of each Structural Post-Construction BMP
    2. General Description of each facility (consider a table if more than two BMPs
        a. Drainage Management Area and routing of discharge
        b. Stormwater BMP type and size
C. Self-Retaining Areas or others (e.g. LID Principles)
    1. Drawings showing the location of self-retaining areas or areas addressed by LID principles that do not require specialized maintenance beyond that of typical landscape maintenance

VI. Stormwater BMP Design Documentation
    A. "As-Built" Drawings of each Stormwater BMP (design drawings in the draft plan)
    B. Manufacturer's data, manuals, and maintenance requirements for pumps, mechanical or electrical equipment and proprietary facilities (include a "placeholder" in the draft Operations and Maintenance Plan for information not yet available.)
    C. Specific Operation and maintenance concerns and troubleshooting

VII. Maintenance Schedule or Matrix
    A. Maintenance Schedule for each facility with specific requirements for:
        1. Routine inspection and maintenance
        2. Annual inspection and maintenance
        3. Inspection and maintenance after major storms
    B. Service Agreement Information

Assemble and make copies of the O&M Plan. One or more copies must be submitted to the Co-permitee, including one electronic copy, and at least one copy kept on-site.

*8.5X11 PLAN

*Revision date in footer

*Incorporate graphics with text.

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

INDEX

{Select all applicable BMP's}