Appendix F: Preliminary Hydrology Report

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Stantec

Preliminary Hydrology Report

Copart Auto Facility
APN: 3170-015-007
Pre-Application No. 18-025
City of Palmdale, California

March 22, 2019

Prepared for:

Copart, Inc.
14185 Dallas Pkwy
Dallas, TX 75254

Prepared by:

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CIVIL
STATE OF CALIFORNIA

File No. 2042546200.200

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1.0 PURPOSE

This report is provided to Copart, Inc. to address the City of Palmdale Public Works Memorandum dated November 14, 2018 for Pre-Application 18-025. The memo describes the minimum mitigation for a new drainage system "shall operate such that no more than 85% of the predeveloped peak flow rates for the 25 year storm event will be discharged".

The purpose of this report is to provide preliminary hydrologic calculations and recommendations for Copart's Auto Auction Facility. The proposed project site is in the City of Palmdale, County of Los Angeles, California.

This report analyzes the drainage watershed associated with the site and incorporates offsite tributary areas which directly impact the site. The analysis is preliminary in nature and includes the following; hydrologic analysis of pre-project conditions, hydrologic analysis of post-project conditions, review of the City of Palmdale design policies, and preliminary sizing of proposed mitigation measures. The hydrological analyses are for the 25-yr and 50-yr storm events.

The analysis includes a comparison of pre- and post- project storm water run-off and addresses preliminary sizing for Infiltration Basins.

2.0 PROJECT DESCRIPTION

Located north of the Palmdale Regional Airport, the proposed project consists 82 acres and is situated in the northern portion of the City of Palmdale. The Site is bounded to the east by 40th Street East and to the north by East Avenue L-4. Copart is proposing to construct a vehicle/vessel storage yard for operations related to its Online Auction business. The project proposes a single office building, a customer service loading/unloading area, and a securely fenced vehicle storage yard. The office building and customer service area totals 2 acres and the Storage Yard totals 61 acres. The remaining 19 acres is comprised of Street Dedications, Landscaping, and Infiltration Basins. Figure 1 shows the general vicinity of the project and Figure 2 shows the proposed Site Plan for the project.

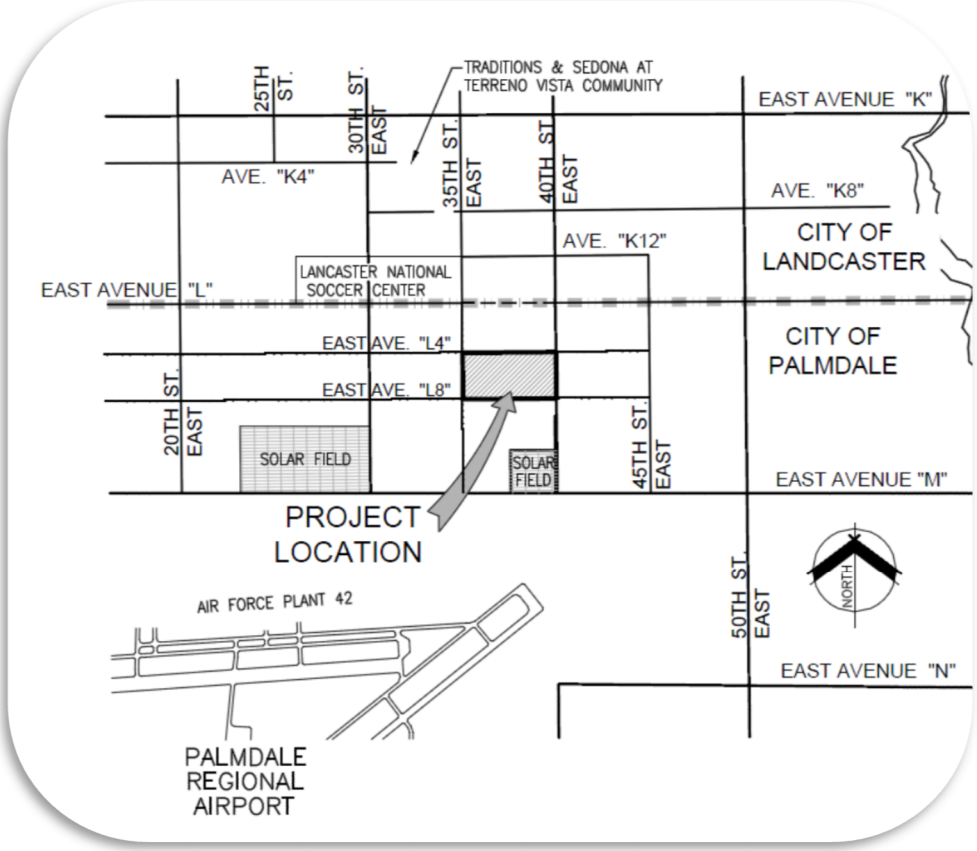


Figure 1 Vicinity Map

The Site is currently vacant, and, per the General Plan, the Land Use is designated as General Industrial. Equally, all parcels surrounding the Site are currently vacant with the General Industrial designation.

To provide a stable surface for parking and retrieving vehicles, the On-site storage yard will be surfaced with cement treated base and gravel, covered with a bituminous chip seal. This will have the effect of providing impervious surface for most of the site. Flexible pavement in the form of Asphaltic Concrete (AC) is proposed for both Staging and Office parking areas.

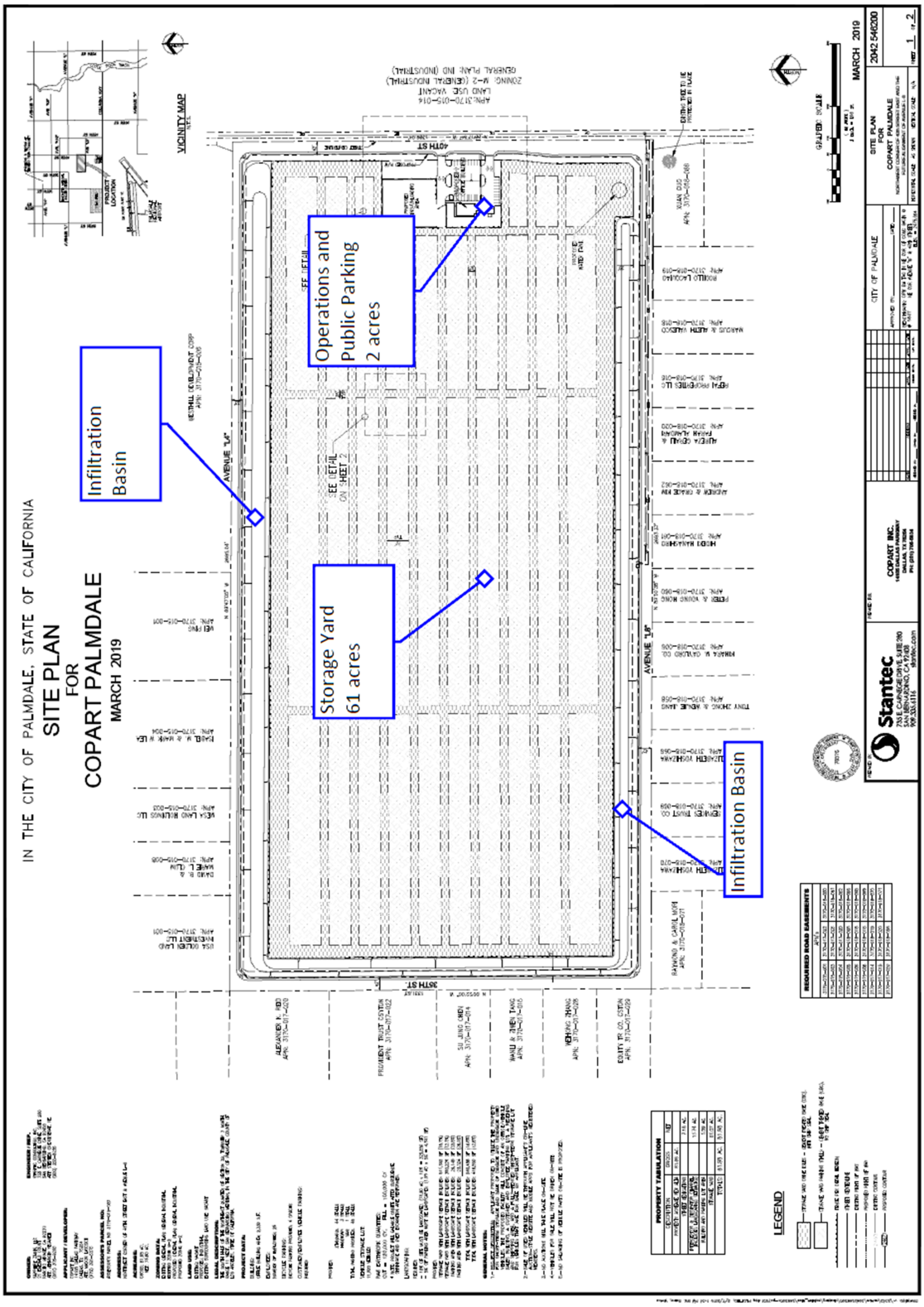


Figure 2- Site Plan

WATERSHED:

The On-site and Off-site drainage areas combine to form a total watershed of 299 acres. With flat natural slopes and gradients less than one percent, the watershed gently flows south to north. Consistent with the Master Plan of Drainage (MPD), the Off-site watershed is bounded on the south by the Palmdale Regional Airport and East Avenue M. From a review of the MPD it is concluded that the vast majority of the 299-acres, is within Subarea PNSA-1 of the Pearland Watershed. Per the MPD, peak flow mitigation from Subarea PNSA-1 is planned to be managed with Basin L-37, a future detention facility.

Resulting from discussions with City Staff, the understanding is that, at present, the Basin L-37 property is privately owned and construction of Basin L-37 is not a high priority project of the Capital Improvement program.

The Pearland Watershed Facilities Map has two master plan facilities with potential impact from the Site. One storm drain line is a planned 42-inch RCP traversing the middle of the project, at the future alignment of 37th Street East, and the second is 36-inch RCP paralleling the Site within the right-of-way of 40th Street East. The planned storm drains are depicted on the Facilities Map as Lines 948B and 933B; respectively.

The proposed project is in the lower third of the analyzed watershed, with an upstream Off-site area of 217 acres impacting the site. The upstream watershed is mostly covered with natural soils. The lone exception is a 40-acre solar energy site at the northwest corner of East Avenue M and 40th Street East.

SOILS

Based on soils mapping available from the United States Department of Agriculture, Natural Resources Conservation Service (NRCS), the 82-acre project site has underlying soils types of loamy sand, loamy fines, fine sandy loam and loam. The loamy sand and loamy fine are categorized as Type A hydrologic soils. The fine sandy loam and loam are categorized as Type B hydrologic soils. Type A soil is characterized by low runoff potential and high infiltration. Characteristics of Type B soil is moderate water transmission and moderate infiltration. A NRCS soils report is included in Appendix VI. A preliminary project specific Geotechnical Investigation (prepared by Stantec Consulting Ltd.) is available under separate cover.

Design Infiltration Rates were obtained from the project Geotechnical Report.

3.0 METHODOLOGY

The hydrological analysis is based on the Modified Rational Method as outlined in the 2006 Hydrology Manual of the Los Angeles County Department of Public Works. The Modified Rational Method (MODRAT) calculates a watershed hydrograph based on input data from (a)

the runoff coefficient (the “C” value) and (b) the peak intensity from the Rational Method. The watershed was modeled with Soil Runoff Coefficient Curve 134 (Antelope Valley) and a 50-yr rainfall depth of 2.7 inches.

For the purposes of this preliminary report, the Site was analyzed as a single watershed. For undeveloped rural areas, 1% of the area was presumed to be impervious. For the post-project calculations, a weighted average was tabulated to determine the percent impervious. A copy of the computation sheet for Composite Impervious is included in Appendix III.

Research determined that the watershed is located outside of CAL FIRE’s designation of Very High Fire Hazard Severity Zone (VHFHSZ). Per the CAL FIRE models and their 30-50 year forecast, the site is NOT subject to potential native vegetation burn and therefore, a Fire Factor of zero was applied to storm run-off calculations. A copy of the Fire Hazard Map is included in Appendix VI.

The peak runoff flowrate (Q) and storm volumes were calculated for the 25-yr 24hr and 50-yr 24hr storm events. Results of post-project hydrology are used to address the on-site and off-site impacts of the project. Design recommendations are included in the post-project analysis.

4.0 PRE-PROJECT CONDITION

As previously mentioned, excepting the solar field, the 299-acre watershed is currently void of development. The watershed contains no known interceptor channels, storm drain conduits, or other engineered hardened and maintain structures and the present onsite ground slope is less than 1.0%.

There are two existing paved roadways within the tributary watershed. One is East Avenue M, which defines the upper Off-site drainage area, and the other is 40th Street East. Neither roadway is constructed with curb and gutter. 40th Street East parallels the directional flow of the watershed and intercepts storm water run-off, conveying the run-off from south to north.

Excepting the flows intercepted by 40th Street East, remaining Off-site storm water sheet flows over natural terrain across the south property line (at East Avenue L-8) and continues across the Site with linear flows until discharging along the north property line, at East Avenue L-4.

On-site there is formation of a slightly depressed, natural, irregular channel. It generally aligns with a future extension of 37th Street East.

For the purposes of this preliminary analysis, a single downstream confluence point was modeled. This confluence point coincides with the downstream extension of 37th Street East.

The calculated 25-yr peak flow for the watershed is 20 CFS and the 25-yr 24-hr volume is 6.3 AC-FT. For use in the preliminary sizing of Infiltration Basins, the 50-yr storm event was also

evaluated, resulting in a 50-yr peak flow rate of 22 CFS and a 50-yr 24-hr volume of 7.2 AC-FT. The peak flow analyses are included in Appendix III.

5.0 POST-PROJECT CONDITION

Hydrology calculations for the proposed project were based on the Site Plan included in Appendix I. The proposed drainage pattern is intended to maintain existing drainage patterns while meeting slope criteria for proper dewatering of the proposed surface covers. The storage yard is designed at a one percent minimum slope for chip seal cover. Similarly, the Operations Facility is designed at a one percent minimum slope for AC pavement. Consistent with the pre-project analysis, the post-project watershed is analyzed as a single subarea with a single discharge point.

In this Preliminary study, the length of post-project flow path is conservatively delineated to mimic the pre-project flow length. An ultimate drainage design may lengthen the pre-project flow path length, by routing flow into the infiltration basins and around the Site, resulting in a longer time of concentration value and potentially decreasing the post-project peak flow rate and volume. The corresponding Final Hydrology Study should consider the longer flow path within the post-project hydrologic analysis.

As analyzed in this study, the 299-acre watershed generates an unmitigated 25-year peak runoff of 55 CFS, which is an increase of 35 CFS over the existing condition. Concurrently, the post-project watershed generates a 25-year 24-hour storm volume of 17.8 AC-FT, which is an increase of 11.5 AC-FT over the pre-project condition.

It is the policy of the City of Palmdale that peak flow discharge shall not exceed 85 percent of existing pre-project rainfall (Q) for the 25-yr flood event.

For planning purposes, the Infiltration Basins are designed conservatively to exceed the City's minimum mitigation criteria. The conservative preliminary sizing is intended to provide Final Engineering flexibility as well as ultimate protection to both On-site improvements and downstream discharge.

Preliminarily, the Infiltration Basins are designed to infiltrate 100 percent of a 50-yr Capital Storm. Excepting the flows conveyed, south to north, via 40th Street East, all flows impacting the site are routed into the Infiltration Basins and total storm flow reaching the basins is calculated to form a post-project tributary area of 247-acres. Subarea Bypass flow not captured in the infiltration basins totals 52-acres. A Post Project Hydrology Map in Appendix II delineates the tributary areas.

The 299-acre watershed generates an unmitigated 50-year peak runoff of 63 CFS, and a 50-yr 24-hr storm volume 20.2 AC-FT, which is an increase 13.0 AC-FT over the pre-project condition.

Infiltration Basins

There are two planned basins, one paralleling East Avenue L-4 and the other paralleling East Avenue L-8. While it is planned that the L-8 infiltration basin will intercept both On-site flows together with upstream Off-site flows, it is planned that the L-4 infiltration basin will be limited only to On-site stormwater flows. The landscape setback paralleling 35th Street East is conceptually designed as potential discharge locations for basin overflow.

Infiltration Basins are sized per the guidelines of the Stormwater Best Management Practice – Design and Maintenance Manual as published by the County of Los Angeles Department of Public Works (August 2010).

As obtained from Appendix C of the project Geotechnical Investigation Report (February 28, 2019) the design infiltration rate is 1.30 in/hr. This rate includes an appropriate safety factor and is based on the most conservative pit testing location. Appendix IV contains a copy of the Test Data Sheet. From the calculations and examination of design criteria, the constraining parameter for the Infiltration Basin is determined to be the 72-hr draw down time.

Calculations based on a 72 hour draw down time set the maximum ponding depth at 3 feet. Consequentially, the minimum surface area required for proper infiltration is 850,000 square feet. At a depth of 3 feet, this surface area is adequate for 100 percent infiltration of the 50-yr 24-hr post-project storm event. Total surface area excludes infiltration of Bypass flow, as described above.

6.0 SUMMARY AND CONCLUSIONS

As stated previously, this is a preliminary report, and is intended for planning purposes in conjunction with a Site Plan Review. Subsequent work will be required to refine the size of the infiltration basins and design outlet works for the basins.

Following is a summary of hydrologic results from this report:

Table 1: Hydrology Summary

Storm Event	Pre-project Condition (CFS)	Post-project Unmitigated Runoff (CFS)	Pre-project Volume (AC-FT)	Post-project Unmitigated Volume (AC-FT)
25-yr 24hr	20	55	6.3	17.8
50-yr 24hr	22	63	7.2	20.2

Following are recommended sizes for On-site Infiltration Basins. Where total tributary area is 247-acres, design storm is 50-yr 24hr, and max. pond depth is 3 feet:

Table 2: Infiltration Basin Summary

Infiltration Basin	Minimum Surface Areas (SF)
L-4	150,000
L-8	120,000

Further study and Final Engineering may meet the design criteria and be less conservative than the results of this study.

In conclusion, this study presents a preliminary watershed analysis and recommendations for peak flow mitigation. The results are conservative and exceed the minimum design criteria as described in Section 1.0 of this report.

7.0 APPENDICES

I. SITE PLAN

II. HYDROLOGY MAP

III. HYDROLOGY CALCULATIONS

IV. INFILTRATION ANALYSIS

V. BASIN CROSS SECTIONS

VI. NRCS SOILS REPORT

APPENDIX I

SITE PLAN

OFF-SITE GRADING CONCEPT

IN THE CITY OF PALMDALE, STATE OF CALIFORNIA

SITE PLAN
FOR
COPART PALMDALE

MARCH 2019

OWNER:
SAPPHIRE ZAMIN, LLC
21 EMERALS COURT
RANCHO MIRAGE, CA 92270
ATT: JEHANGIR YEGANEH
(661) 305-9205

ENGINEER / REP.
STANTEC CONSULTING, INC.
735 E. CARNEGIE DRIVE, SUITE 280
SAN BERNARDINO, CA 92408
ATT: STEPHEN CREVOISERAT, PE.
(909) 255-8235

APPLICANT / DEVELOPER:
COPART INC
14185 DALLAS PARKWAY
DALLAS, TX 75254
ATT: MASON LAYCOCK
(972) 391-5375

ASSESSOR'S PARCEL NO:
ASSESSOR'S PARCEL NO: 3170-015-007

ADDRESS:
NORTHWEST CORNER OF 40TH. STREET EAST & AVENUE L-8

ACREAGE:
GROSS: 81.98 AC.
NET: 74.80 AC.

ZONING DATA:
EXISTING GENERAL PLAN: GENERAL INDUSTRIAL
EXISTING ZONE: M-2
PROPOSED GENERAL PLAN: GENERAL INDUSTRIAL
PROPOSED ZONE: M-2

LAND USE:
EXISTING: VACANT
PROPOSED: INDUSTRIAL
EXISTING SURROUNDING LAND USE: VACANT

LEGAL DESCRIPTION:
THE SOUTH HALF OF THE NORTHEAST QUARTER OF SECTION 32, TOWNSHIP 7 NORTH, RANGE 11 WEST, SAN BERNARDINO MERIDIAN, IN THE CITY OF PALMDALE, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA.

PROJECT DATA:

BUILDING:
OFFICE BUILDING AREA: 2,330 S.F.

EMPLOYEES:
NUMBER OF EMPLOYEES: 25

BICYCLE PARKING:
BICYCLE PARKING PROVIDED: 4 SPACES

CUSTOMER/EMPLOYEE VEHICLE PARKING:
REQUIRED:

PROVIDED:
STANDARD: 44 STALLS
HANDICAP: 3 STALLS
VAN: 1 STALL
TOTAL PARKING PROVIDED: 48 STALLS

VEHICLE STORAGE LOT:
11,000 VEHICLES

RAW EARTHWORK QUANTITIES:
CUT = 120,000 CY, FILL = 100,000 CY
* NOTE: PROJECT WILL BALANCE ONSITE AFTER SUBSIDENCE, SHRINKAGE AND OVER EXCAVATION ARE PERFORMED.

LANDSCAPING:
REQUIRED:
- 10% OF SITE MUST BE LANDSCAPED. (74.80 AC x 10% = 325,830 SF)
- 5% OF PARKING AREA MUST BE LANDSCAPED. (1.99 AC x 5% = 4,341 SF)

PROVIDED:
STORAGE YARD WITH LANDSCAPE SETBACK INCLUDED: 511,343 SF (15.7%)
STORAGE YARD WITH LANDSCAPE SETBACK EXCLUDED: 393,226 SF (12.1%)
PARKING AREA WITH LANDSCAPE SETBACK INCLUDED: 29,145 SF (33.6%)
PARKING AREA WITH LANDSCAPE SETBACK EXCLUDED: 23,324 SF (26.9%)
TOTAL WITH LANDSCAPE SETBACK INCLUDED: 540,488 SF (16.6%)
TOTAL WITH LANDSCAPE SETBACK EXCLUDED: 416,550 SF (12.8%)

GENERAL NOTES:

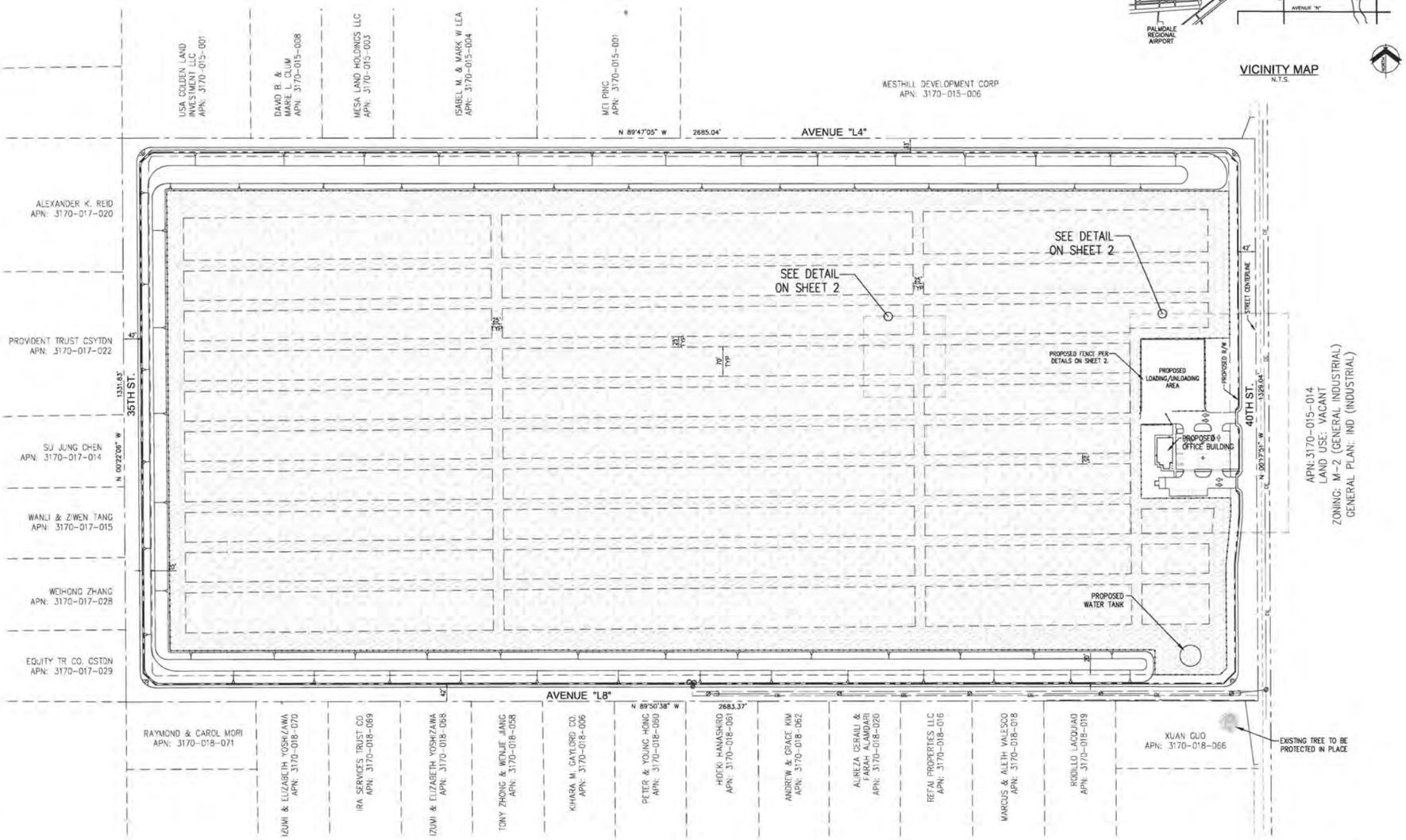
1.- PROJECT DESCRIPTION: APPLICANT PROPOSES TO UTILIZE THE PROPERTY FOR SHORT-TERM STORAGE AND SALE OF DAMAGE AND UNDAMAGE USED VEHICLES. THE PROPOSED FACILITY WILL CONSIST OF AN OFFICE/VEHICLE SALES BUILDING, A CUSTOMER AND EMPLOYEE PARKING LOT, A RECEIVING AND SHIPPING AREA, AND A FULLY-FENCED SHORT-TERM STORAGE LOT FOR VEHICLES THAT ARE FOR SALE BY APPLICANT.

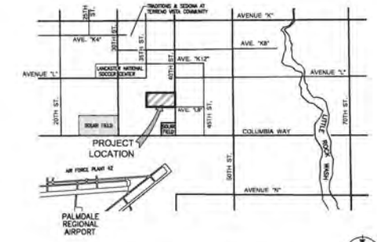
2.- SALE OF USED VEHICLES WILL BE THROUGH APPLICANT'S ON-LINE AUCTION-STYLE WEBSITE AND MOBILE APPS FOR APPLICANT'S REGISTERED MEMBERS.

3.- NO AUCTIONS WILL TAKE PLACE ON-SITE.

4.- VEHICLES FOR SALE WILL NOT BE DRIVEN ON-SITE.

5.- NO SALVAGING OF VEHICLE PARTS ON-SITE IS PROPOSED.





VICINITY MAP
N.T.S.

PROPERTY TABULATION		
DESCRIPTION	GROSS	NET
PROPERTY ACREAGE PER ALTA	81.98 AC.	
STREET DEDICATIONS		7.18 AC.
INTERCEPTOR & DISSIPATOR CHANNEL (INCLUDES LANDSCAPING SETBACKS)		11.74 AC.
BUILDING AND PARKING LOT AREA		1.99 AC.
STORAGE YARD		61.07 AC.
TOTALS:	81.98 AC.	81.98 AC.

LEGEND

- STORAGE YARD DRIVE ISLES - CEMENT TREATED BASE (CBC), WITH CHIP SEAL.
- STORAGE YARD PARKING STALLS - CEMENT TREATED BASE (CBC), NO CHIP SEAL
- FENCE PER DETAIL HEREON
- STREET CENTERLINE
- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- EXISTING CONTOUR
- (2467) PROPOSED CONTOUR

REQUIRED ROAD EASEMENTS		
APN's		
3170-015-001	3170-017-022	3170-018-060
3170-015-003	3170-017-028	3170-018-061
3170-015-004	3170-017-029	3170-018-062
3170-015-005	3170-018-006	3170-018-066
3170-015-006	3170-018-016	3170-018-068
3170-015-008	3170-018-018	3170-018-069
3170-017-014	3170-018-019	3170-018-070
3170-017-015	3170-018-020	3170-018-071
3170-017-020	3170-018-058	

REGISTERED PROFESSIONAL ENGINEER STEPHEN J. CREVOISERAT 78576 CIVIL STATE OF CALIFORNIA

GRAPHIC SCALE
(IN FEET)
1 inch = 100 ft.

MARCH 2019

PREPARED BY:
Stantec
735 E. CARNEGIE DRIVE, SUITE 280
SAN BERNARDINO, CA 92408
909.335.6116 stantec.com

PREPARED FOR:
COPART INC.
14185 DALLAS PARKWAY
DALLAS, TX 75254
PH: (281) 705-6634

MARK	REVISIONS	APPR.	DATE	APPR.	DATE
DESIGNED BY: ____ DRAWN BY: ____ CHECKED BY: ____		DESIGN CHK'D.		CITY CHK'D.	

CITY OF PALMDALE
APPROVED BY: _____ DATE: _____
BENCHMARK: DPW BM TAG IN NE COR OF CONC BASIN @ # 5537 NE COR AVENUE "M" & 40th STREET. ELEV. = 2475.664

SITE PLAN FOR COPART PALMDALE
NORTHWEST CORNER OF 40th STREET EAST AND THE FUTURE ALIGNMENT OF AVENUE L-8
HORIZONTAL SCALE: AS SHOWN VERTICAL SCALE: N/A

2042 546200
SHEET 1 OF 2

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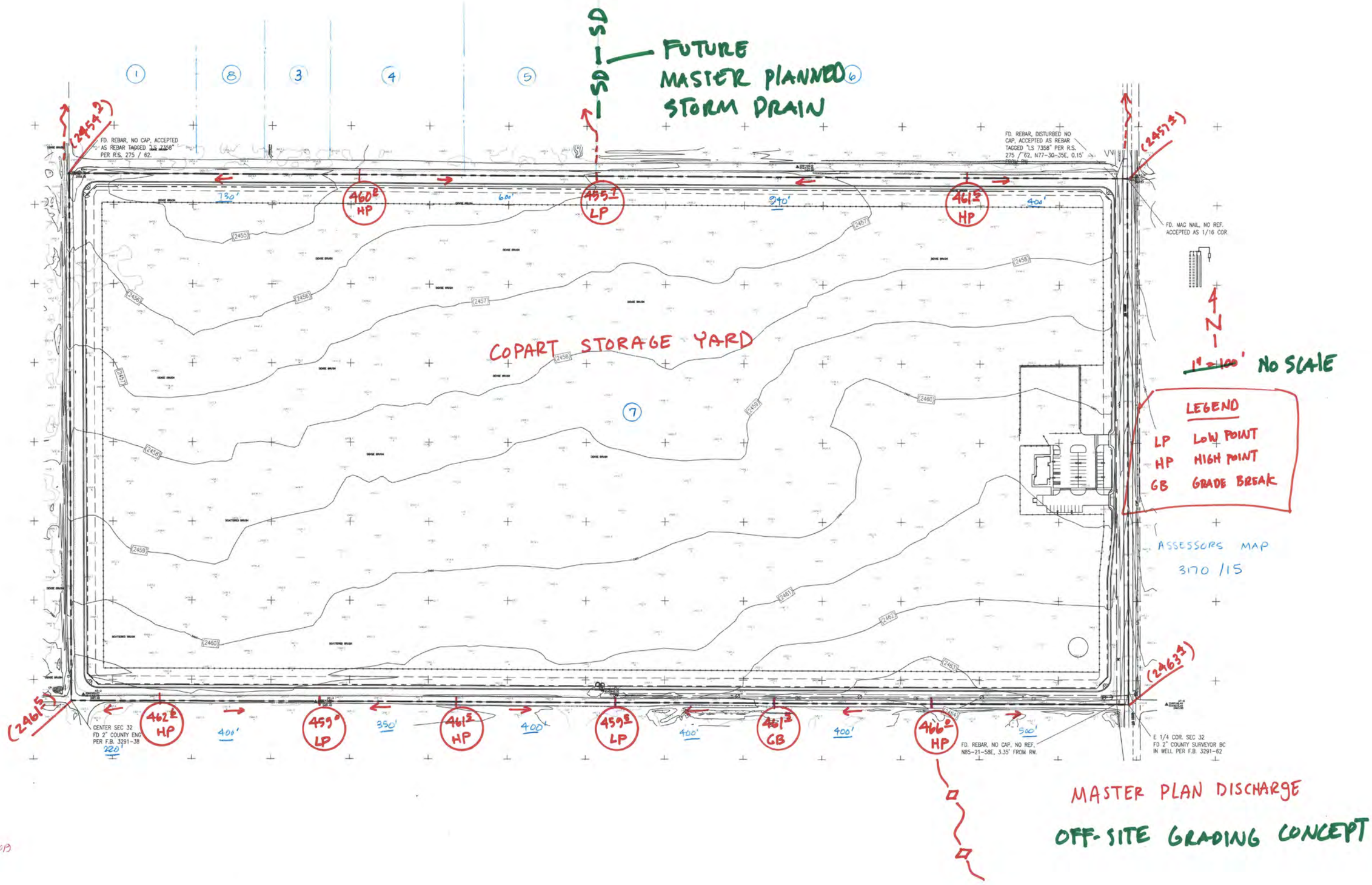
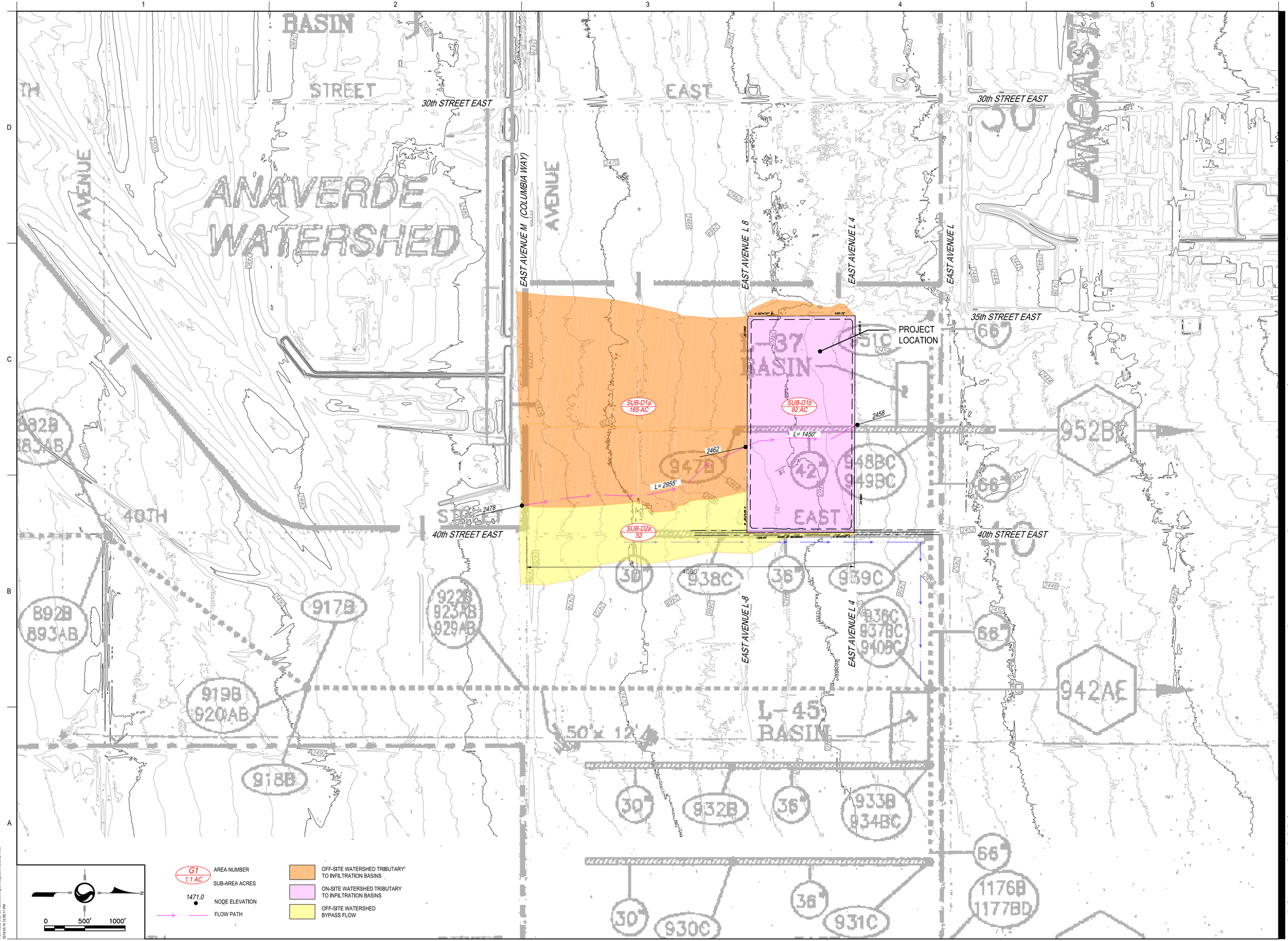


OFF-SITE GRADING CONCEPT

2/12/2013

APPENDIX II

HYDROLOGY MAPS



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Revision	By	Appd	YYYY.MM.DD

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Client/Project
Copart
Vehicle Storage Facility
City of Palmdale, CA

Project No.: 2042546200

File Name: 546200C-PX7005

Scale: 500

VAD	VAD	RC	2019.03.14
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Title
EXISTING
CONDITIONS
HYDROLOGY MAP

Revision:0 Sheet: 1 of 1

EXHIBIT
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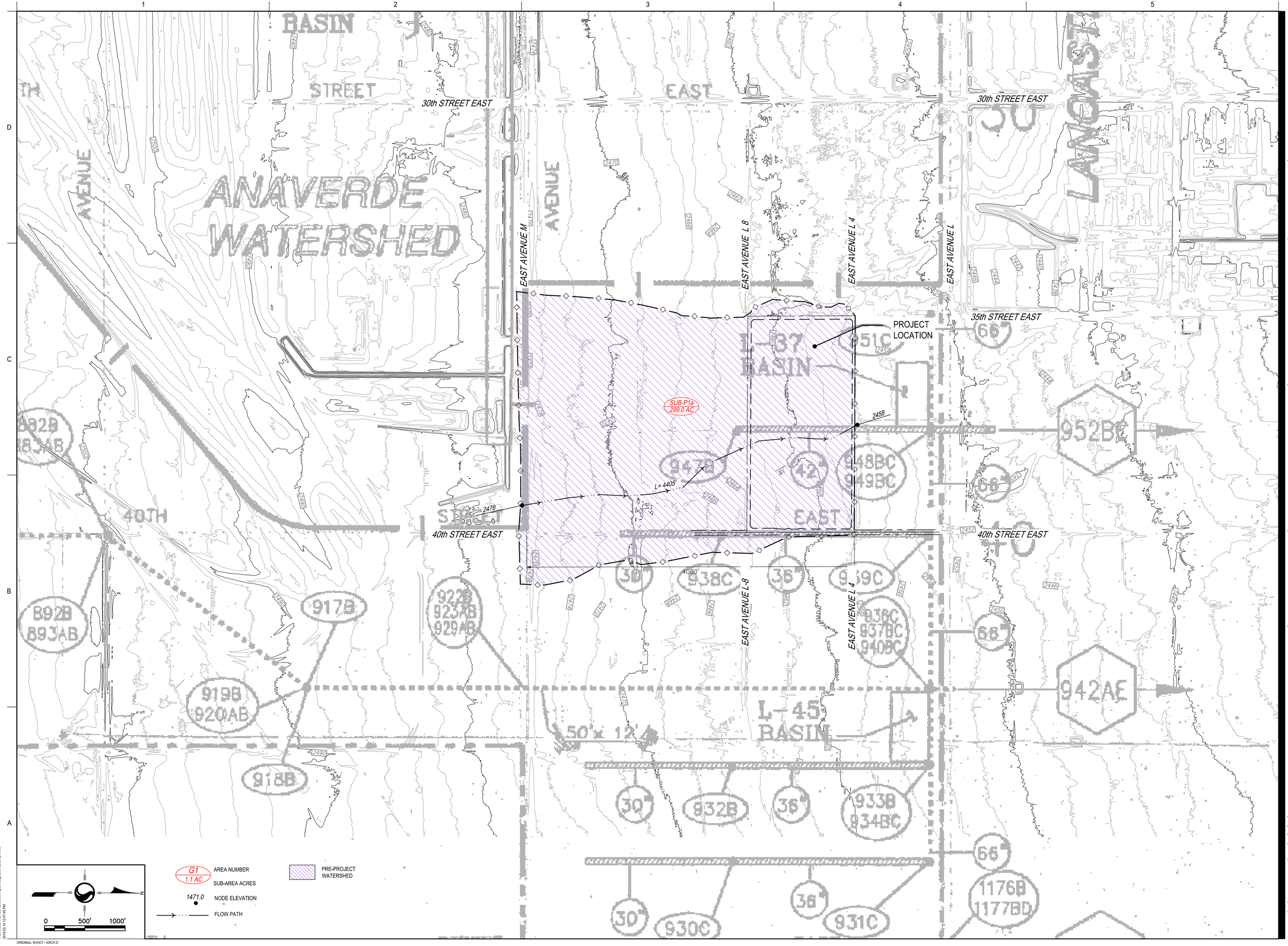

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Permit/Seal

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Client/Project
Copart
Vehicle Storage Facility
City of Palmdale, CA

Project No.: 2042546200
File Name: 546200C-PX7005

Scale: 500

VAD	VAD	RC	2019.03.14
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Title
PRE-PROJECT
CONDITIONS
HYDROLOGY MAP

Revision:0 Sheet: 1 of 1

EXHIBIT
A

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APPENDIX III

HYDROLOGIC CALCULATIONS

Peak Flow Hydrologic Analysis

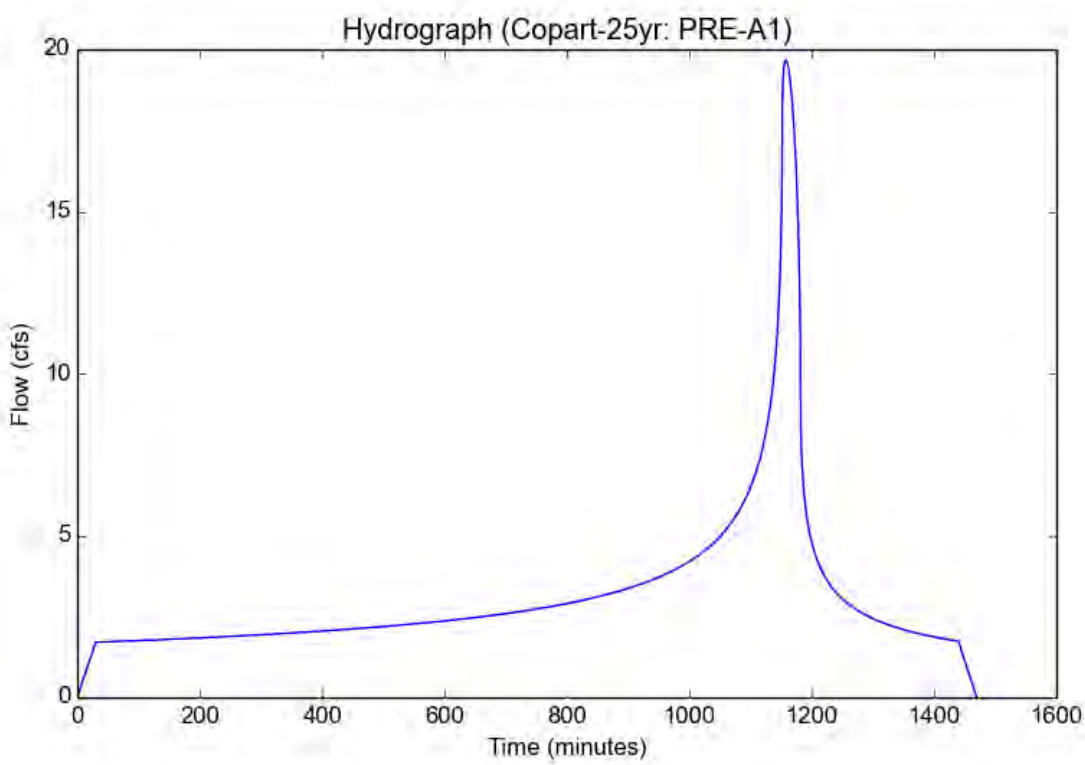
File location: //us1328-f02/workgroup/2042/active/2042546200/design/drain/hydro/parts/Copart-25yr - PRE-A1.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Copart-25yr
Subarea ID	PRE-A1
Area (ac)	299.0
Flow Path Length (ft)	4405.0
Flow Path Slope (vft/hft)	0.0045
50-yr Rainfall Depth (in)	2.7
Percent Impervious	0.01
Soil Type	134
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	2.3706
Peak Intensity (in/hr)	0.6093
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	19.6755
Burned Peak Flow Rate (cfs)	19.6755
24-Hr Clear Runoff Volume (ac-ft)	6.3266
24-Hr Clear Runoff Volume (cu-ft)	275588.2588



Peak Flow Hydrologic Analysis

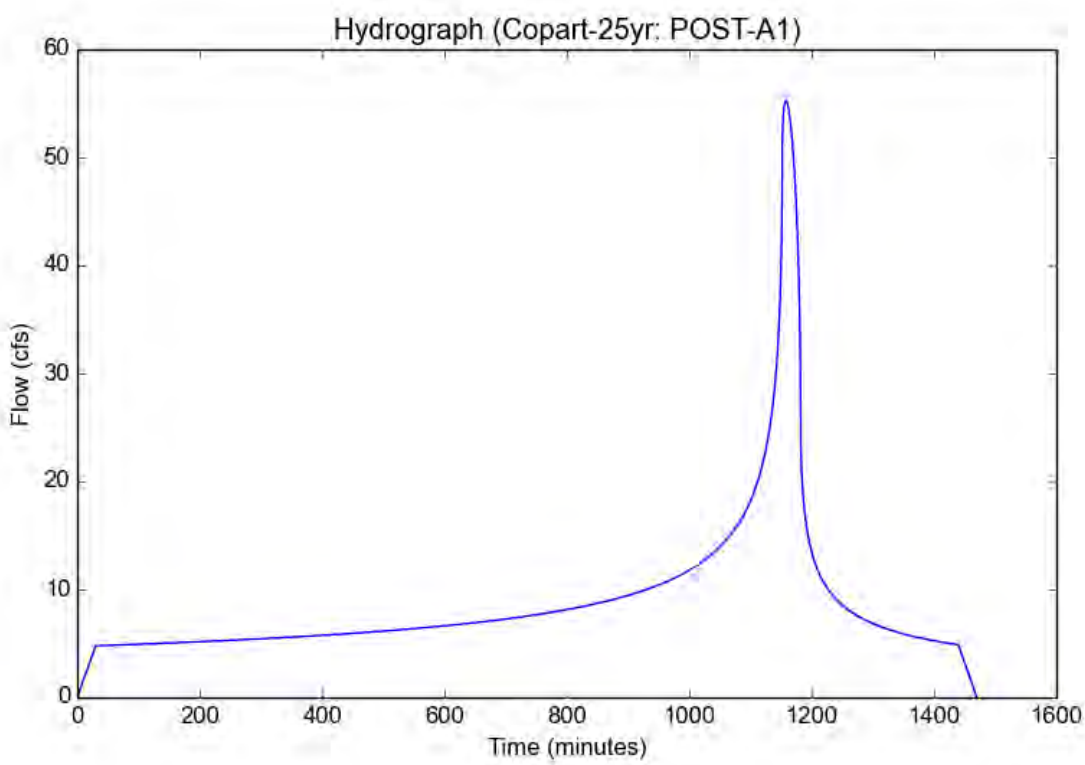
File location: //us1328-f02/workgroup/2042/active/2042546200/design/drain/hydro/parts/hydro-calcs/Copart-25yr - POST-A1.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Copart-25yr
Subarea ID	POST-A1
Area (ac)	299.0
Flow Path Length (ft)	4405.0
Flow Path Slope (vft/hft)	0.0045
50-yr Rainfall Depth (in)	2.7
Percent Impervious	0.254
Soil Type	134
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	2.3706
Peak Intensity (in/hr)	0.6093
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.3032
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	55.2371
Burned Peak Flow Rate (cfs)	55.2371
24-Hr Clear Runoff Volume (ac-ft)	17.7614
24-Hr Clear Runoff Volume (cu-ft)	773688.5192



Peak Flow Hydrologic Analysis

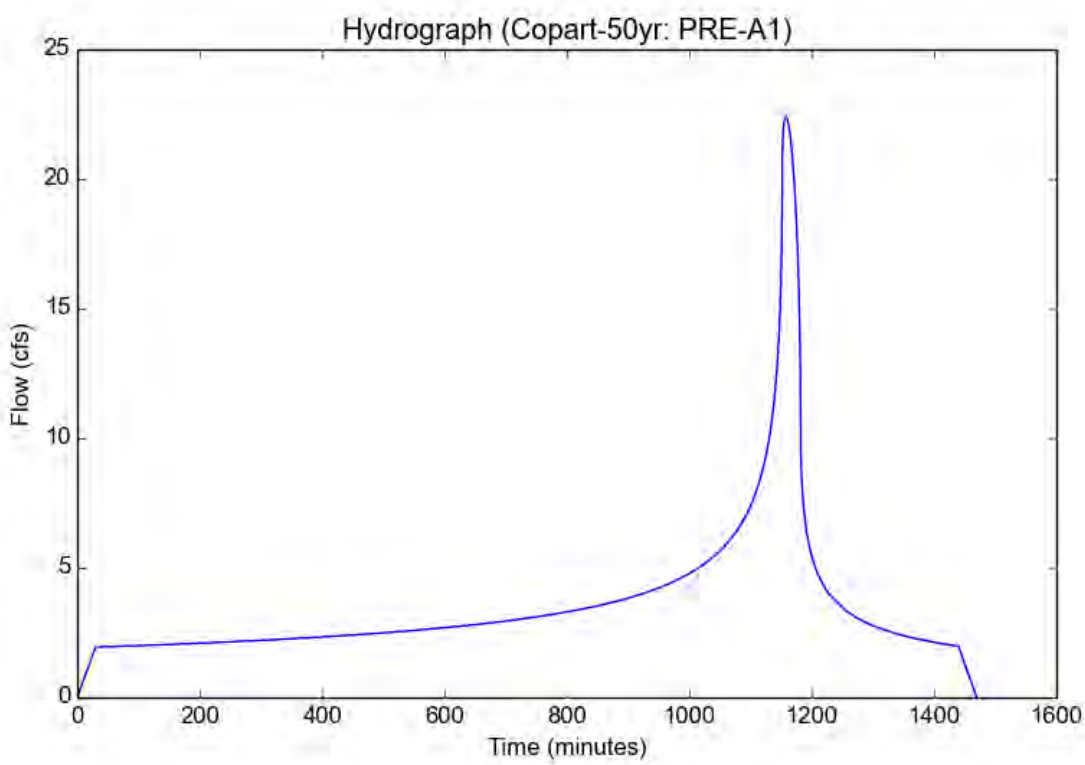
File location: //us1328-f02/workgroup/2042/active/2042546200/design/drain/hydro/parts/Copart-50yr - PRE-A1.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Copart-50yr
Subarea ID	PRE-A1
Area (ac)	299.0
Flow Path Length (ft)	4405.0
Flow Path Slope (vft/hft)	0.0045
50-yr Rainfall Depth (in)	2.7
Percent Impervious	0.01
Soil Type	134
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	2.7
Peak Intensity (in/hr)	0.694
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.108
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	22.4094
Burned Peak Flow Rate (cfs)	22.4094
24-Hr Clear Runoff Volume (ac-ft)	7.2057
24-Hr Clear Runoff Volume (cu-ft)	313881.8438



Peak Flow Hydrologic Analysis

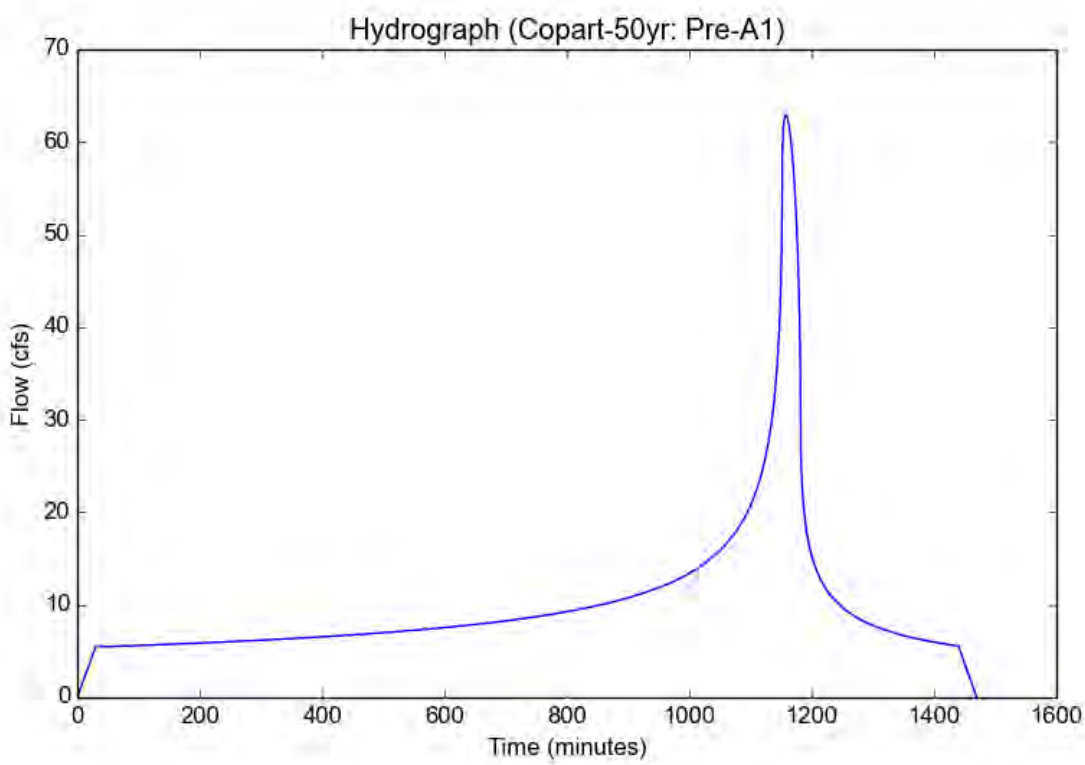
File location: //us1328-f02/workgroup/2042/active/2042546200/design/drain/hydro/parts/hydro-calcs/Copart-50yr - POST-A1.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	Copart-50yr
Subarea ID	Pre-A1
Area (ac)	299.0
Flow Path Length (ft)	4405.0
Flow Path Slope (vft/hft)	0.0045
50-yr Rainfall Depth (in)	2.7
Percent Impervious	0.254
Soil Type	134
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	2.7
Peak Intensity (in/hr)	0.694
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.3032
Time of Concentration (min)	30.0
Clear Peak Flow Rate (cfs)	62.9124
Burned Peak Flow Rate (cfs)	62.9124
24-Hr Clear Runoff Volume (ac-ft)	20.2294
24-Hr Clear Runoff Volume (cu-ft)	881194.2132



LOS ANGELES COUNTY COMPOSITE IMPERVIOUSNESS

INPUTS:

	DEVELOPMENT TYPE	AREA (acres)	PERCENT IMPERVIOUS
A1	INDUSTRIAL	82	0.90
A2	NATURAL	217	0.01
A3			
A4			
A5			
A6			
	SUM	299	

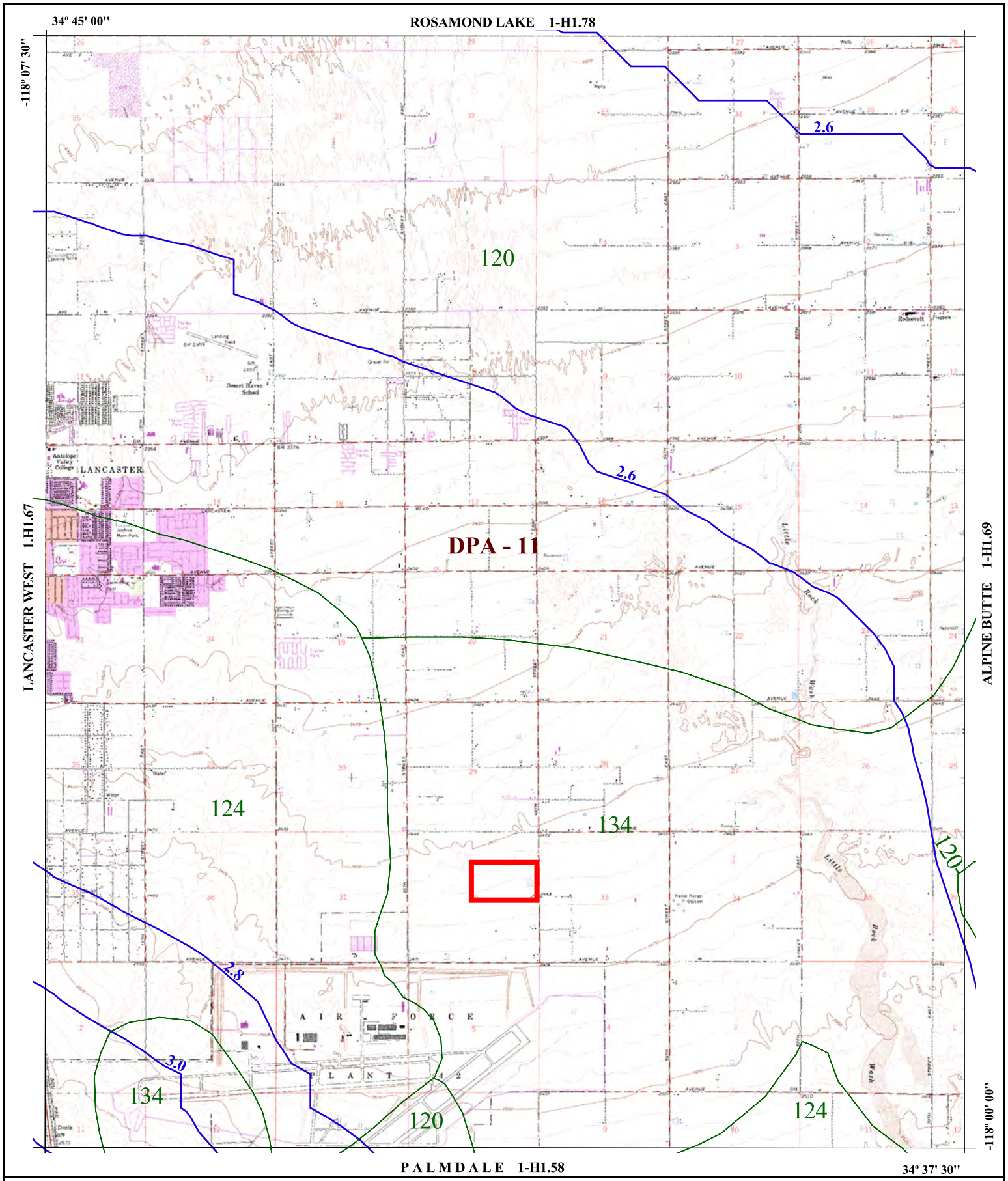
	PERCENT impervious	AREA (ac)	IMPERVIOUS * AREA
A1	0.90	82	73.8
A2	0.01	217	2.17
A3	0.00	0	0
A4	0.00	0	0
A5	0.00	0	0
A6	0.00	0	0
	SUM	299	75.97

Composite Impervious Percent	0.2541

Representative proportion impervious values have been developed by measuring sample areas for each land use type. Appendix D has a table of these values. For undeveloped rural areas, 1% of the area is assumed impervious. Table 6.3.2 shows the standard range of percent impervious values for different development types.

Type of Development	Percent Impervious
Single-Family	21% to 45%
Multi-Family	40% to 80%
Commercial	48% to 92%
Industrial	60% to 92%
Institutional	70% to 90%

SOURCE: TABLE 6.3.2 LA COUNTY DEPT OF PUBLIC WORKS, JANUARY 2006



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

N W E S

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

LANCASTER EAST
50-YEAR 24-HOUR ISOHYET

1-H1.68

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

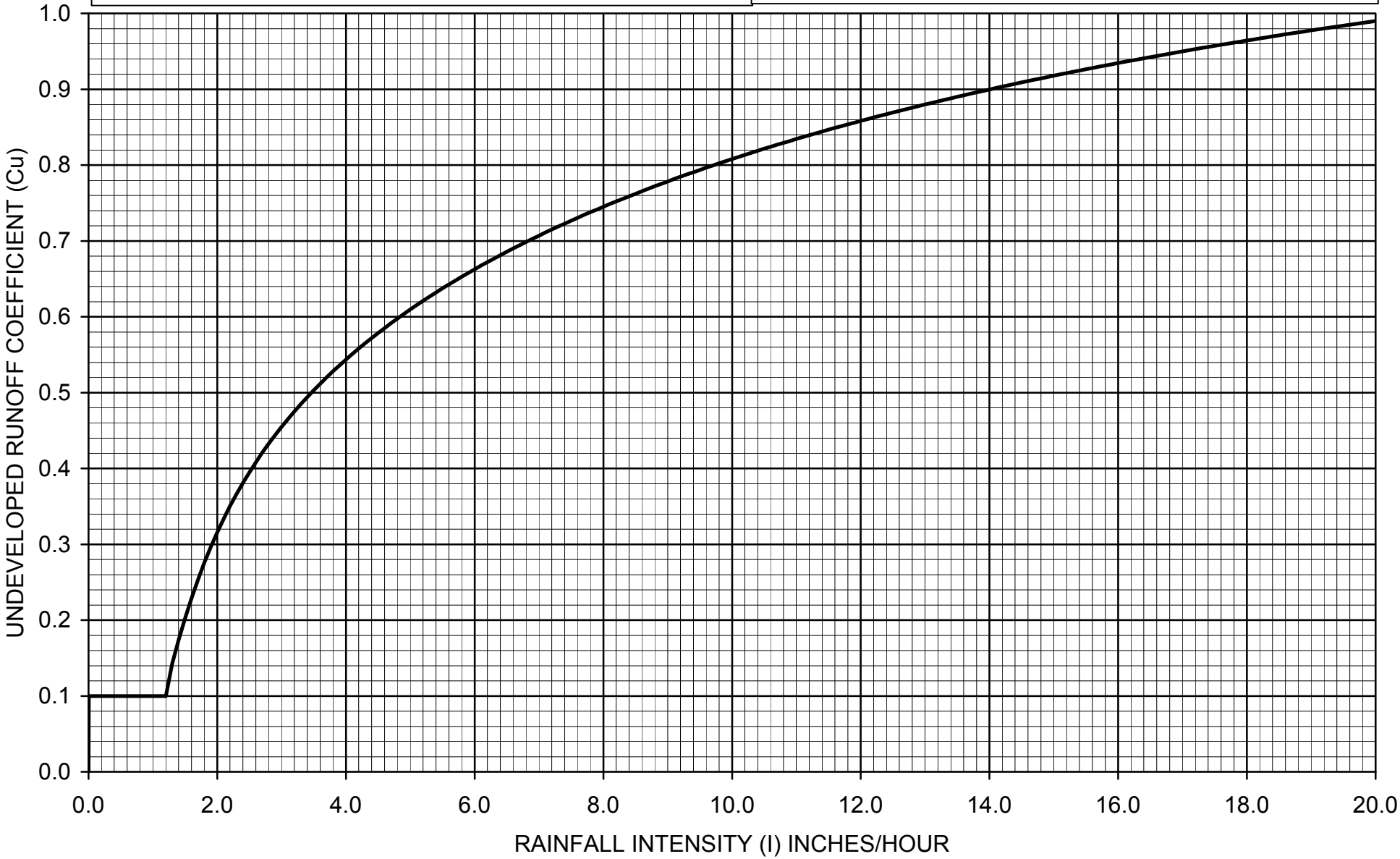
Number	Name	Original Name
115	ANTELOPE VALLEY	AV-4
116	ANTELOPE VALLEY	AV-5
117	ANTELOPE VALLEY	AV-6
118	ANTELOPE VALLEY	AV-7
119	ANTELOPE VALLEY	AV-8
120	ANTELOPE VALLEY	AV-9
121	ANTELOPE VALLEY	AV-10
122	ANTELOPE VALLEY	AV-12
123	ANTELOPE VALLEY	AV-12
124	ANTELOPE VALLEY	AV-13
125	ANTELOPE VALLEY	AV-14
126	ANTELOPE VALLEY	AV-15
127	ANTELOPE VALLEY	AV-16
128	ANTELOPE VALLEY	AV-17
129	ANTELOPE VALLEY	AV-18
130	ANTELOPE VALLEY	AV-19
131	ANTELOPE VALLEY	AV-20
132	ANTELOPE VALLEY	AV-21
133	ANTELOPE VALLEY	AV-22
134	ANTELOPE VALLEY	AV-23
135	LITTLE ROCK CREEK	LR-1
136	LITTLE ROCK CREEK	LR-2
137	LITTLE ROCK CREEK	LR-3-7
138	LITTLE ROCK CREEK	LR-4
139	LITTLE ROCK CREEK	LR-5
140	LITTLE ROCK CREEK	LR-6
141	LITTLE ROCK CREEK	LR-8-9
142	LITTLE ROCK CREEK	LR-10
143	LITTLE ROCK CREEK	LR-11
144	LITTLE ROCK CREEK	LR-12
145	LITTLE ROCK CREEK	LR-13
146	LITTLE ROCK CREEK	LR-14
147	LITTLE ROCK CREEK	LR-15
148	LITTLE ROCK CREEK	LR-16
149	LITTLE ROCK CREEK	LR-17
150	LITTLE ROCK CREEK	LR-18
151	LITTLE ROCK CREEK	LR-19
152	LITTLE ROCK CREEK	LR-20

$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 134

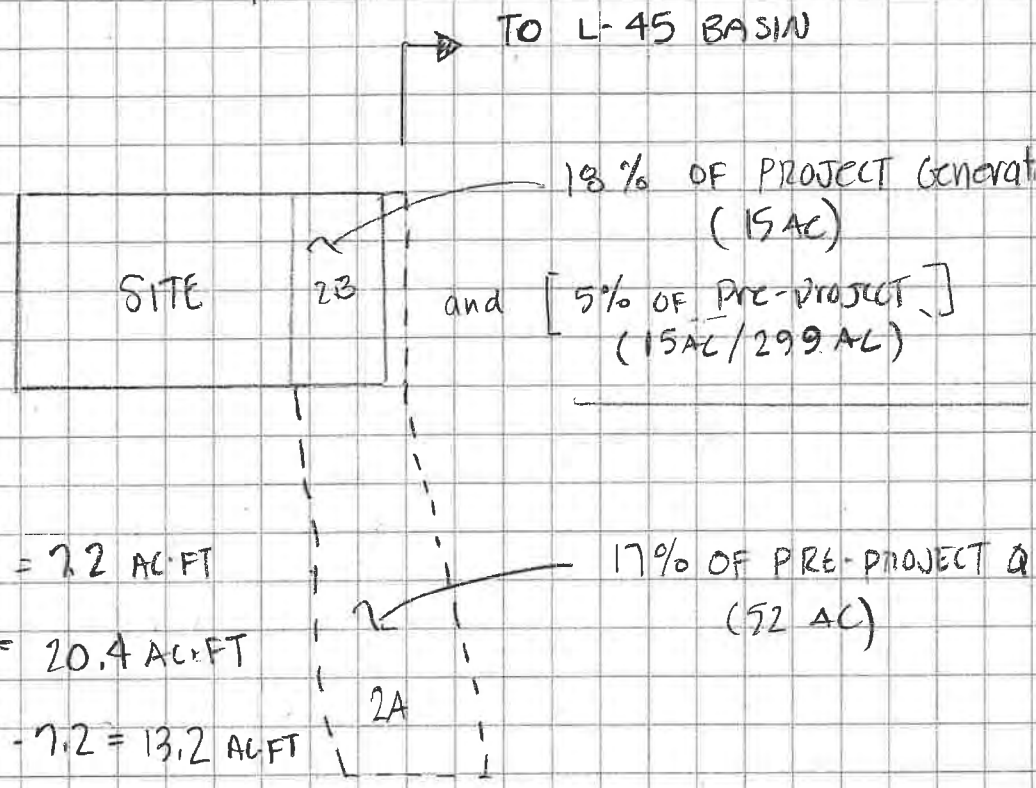


APPENDIX IV

INFILTRATION ANALYSIS

Stantec

50-YR. CALCULATIONS



WHERE:

PRE-PROJECT VOL = 7.2 AC·FT

Post Project Vol = 20.4 AC·FT

Project Vol = 20.4 - 7.2 = 13.2 AC·FT

50-Yr Volumes

Drainage Area 2A (17%)(Pre-Project Vol) = (0.17)(7.2 AC·FT) = **1.2 AC-FT**

→ 1.2 AC/FT IS BYPASS FLOW TO 40TH EAST

Drainage 2b: (18%)(Project Vol) + (5%)(PRE-PROJECT Vol) =
(0.18)(13.2 AC·FT) + (0.05)(7.2 AC·FT) = **2.7 AC-FT**

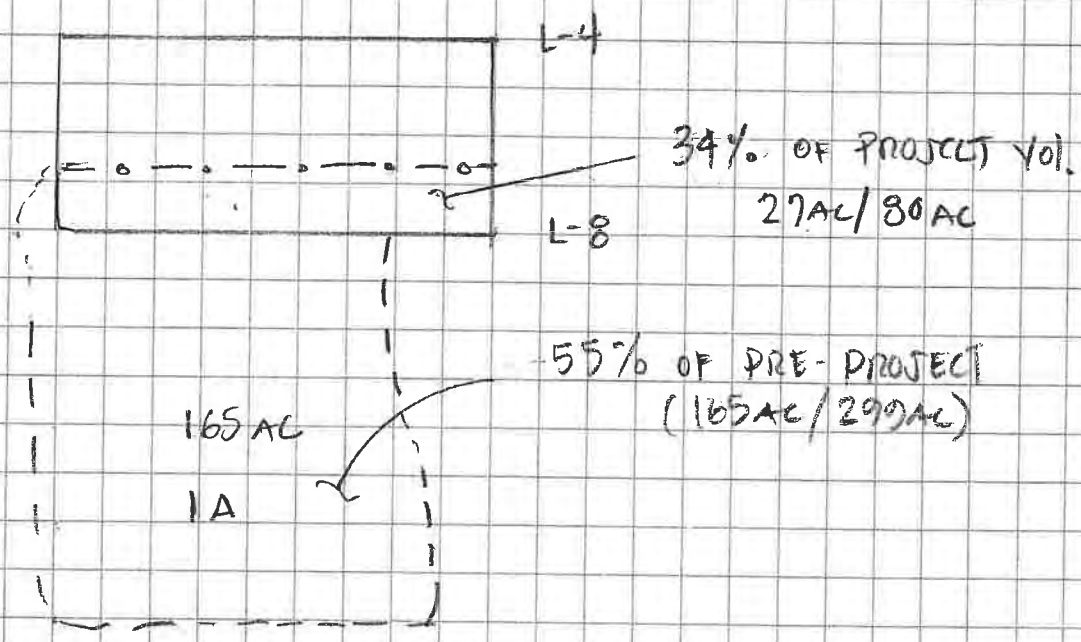
CALCULATION TO determine BY PASS FLOW

50 year Preliminary Calculations
Copart Palmdale

Designed by: 2/25/2019 Checked by:

Stantec

50 YEAR CALCULATIONS



preproject: 7.2 AC·FT

post project: 20.4 AC FT

Project Volume:

Δ Vol.

= 20.4 AC·FT − 7.2 AC·FT

13.2 AC·FT

50-YR FLOWS

Volume To L-8 BASIN:

(55%)(Pre-project) + (34%)(Project Vol)

(0.55)(7.2 AC·FT) + (0.34)(13.2 AC·FT) = 8.5 AC·FT

→ **8.5 AC·FT** TARGET Volume For L-8 BASIN

Volume to L-4 BASIN:

(POST-PROJECT) − (BASIN L-8) − BYPASS Flow

(20.4 AC·FT) − (8.5 AC·FT) − 1.2 AC·FT = 10.7 AC·FT

where BYPASS = (0.17)(7.2 AC·FT) = 1.2

→ **10.7 AC·FT** TARGET Volume For L-4 BASIN

CALCULATION TO DETERMINE INFILTRATION BASIN VOLUMES.

50 year preliminary estimates
copart palmdale
2/25/2010

Designed by: Checked by:

INFILTRATION FACILITIES

	Design Data	
Pmeasured	Measured Infiltration Rate	3.7
	Safety Factor	0.35
	Surface Area	105000
	Time Drawdown	72
	Time Fill (default 3 hrs)	3

	Output	
	Pdesign=Pmeasured * F (correction)	
Pdesign	P design (Infiltration Rate withSafety Factor) (In/hr)=	**1.30**
	Volume Retained (cu. ft.)	**849,844**
	Volume Retained (ac-ft)	**19.51**

Drawdown Time

$$d_{max} = \frac{p_{design}}{12} t$$

t= required draw down time (hrs) Use 72 hours for LA County

Pdesign= design infiltration rate (in/hr)

dmax= 1.295*72 /12

	7.77	3.00	MAX POND DEPTH
Dmax=	**3.00**		

Surface Area Required

$$SA_{\square} = \frac{WQv_{\square}}{\left(\frac{T_{fill} * Pdesign}{12}\right) + Dp}$$

Wq+design volume

Tfill= time to fill to max ponding depth

Dp= design pond depth

SA= 849843.75/ (3*1.295+3)

SA=	**255,688**

source: Storm Water Best Management Practice "Design and Maintenacnce Manual" , County of Los Angeles Department of Public Works (August 2010)

TARGET SURFACE AREA FOR BOTH BASINS

INFILTRATION FACILITIES

	Design Data	
Pmeasured	Measured Infiltration Rate	3.7
	Safety Factor	0.35
	Surface Area	48500
	Time Drawdown	72
	Time Fill (default 3 hrs)	3

	Output	
	Pdesign=Pmeasured * F (correction)	
Pdesign	P design (Infiltration Rate withSafety Factor) (In/hr)=	**1.30**
	Volume Retained (cu. ft.)	**392,547**
	Volume Retained (ac-ft)	**9.01**

Drawdown Time

$$d_{max} = \frac{p_{design}}{12} t$$

t= required draw down time (hrs) Use 72 hours for LA County

Pdesign= design infiltration rate (in/hr)

dmax= 1.295*72
/12

	7.77	3.00	MAX POND DEPTH
Dmax=	**3.00**		

Surface Area Required

Wq+design volume

Tfill= time to fill to max ponding depth

Dp= design pond depth

$$SA_{\square} = \frac{WQv_{\square}}{\left(\frac{T_{fill} * Pdesign}{12}\right) + Dp}$$

SA= 392546.875/
(3*1.295+3)

SA=	**118,104**

source: Storm Water Best Management Practice "Design and Maintenacnce Manual" , County of Los Angeles Department of Public Works (August 2010)

BASIN L-4
NORTH BASIN

INFILTRATION FACILITIES

	Design Data	
Pmeasured	Measured Infiltration Rate	3.7
	Safety Factor	0.35
	Surface Area	61000
	Time Drawdown	72
	Time Fill (default 3 hrs)	3

	Output	
	Pdesign=Pmeasured * F (correction)	
Pdesign	P design (Infiltration Rate withSafety Factor) (In/hr)=	**1.30**
	Volume Retained (cu. ft.)	**493,719**
	Volume Retained (ac-ft)	**11.33**

Drawdown Time

$$d_{max} = \frac{p_{design}}{12} t$$

t= required draw down time (hrs) Use 72 hours for LA County

Pdesign= design infiltration rate (in/hr)

dmax= 1.295*72
/12

	7.77	3.00	MAX POND DEPTH
Dmax=	**3.00**		

Surface Area Required

$$SA_{\square} = \frac{WQv_{\square}}{\left(\frac{T_{fill} * Pdesign}{12}\right) + Dp}$$

Wq+design volume

Tfill= time to fill to max ponding depth

Dp= design pond depth

SA= 493718.75/
(3*1.295+3)

SA=	**148,543**

source: Storm Water Best Management Practice "Design and Maintenacnce Manual" , County of Los Angeles Department of Public Works (August 2010)

BASIN L-8

SOUTH BASIN

PERCOLATION TEST DATA SHEET							
Project:	Copart Palmdale		Project No.	2042546200		Date:	1/29/2019
Test Hole No.	P3		Tested By:	JS			
Depth of Test Hole, D_T:		72	USCS Soil Classification		SP		
Test Hole Dimensions (inches)				Length	Width		
Diameter (if round)	8	Sides (if rectangular)					

Sandy Soil Test Criteria*

Trial No.	Start Time	Stop Time	Time Interval, (min)	Initial Depth of Water (in)	Final Depth of Water (in)	Change in Water Level (in.)	Greater than or Equal to 6"? (y/n)
1	9:10	9:40	30	47.0	62.6	15.6	y
2	9:40	10:10	30	46.0	62.6	16.6	y

*If two consecutive measurements show that twelve inches of water seeps away in less than 30 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) for a minimum of four hours before running test. Obtain at least eight measurements per hole over at least four hours (approximately 30 minute intervals) with a precision of at least 1/8" until the last 3 consecutive readings are within 10% of each other.

Trial No.	Start Time	Stop Time	Δt, Time Interval, (min)	D_o, Initial Depth of Water (in)	D_f, Final Depth of Water (in)	ΔD, Change in Water Level (in.)	Percolation Rate (in/hr)
1	8:18	8:28	10	39.0	28.5	10.5	63.0
2	8:28	8:38	10	39.5	33.25	6.3	37.5
3	8:38	8:48	10	38.3	32	6.3	37.5
4	8:48	8:58	10	36.0	31.75	4.3	25.5
5	8:58	9:08	10	42.3	34	8.3	49.5
6	9:08	9:18	10	37.0	30.75	6.3	37.5
7							
8							
9							
10							
11							
12							
13							
14							
15							

Comments: Reduction Factor (R_f) = (($2d_1$ - delta d) / DIA) + 1

d_1 = initial water depth (inches)

delta d = water level drop of the stabilized rate (inches)

DIA = diameter of the boring (inches)

Factor of Safety (FS) = 3.0

R_f = ((2*37)-6.3)/8)+1

R_f = 9.46

Infiltration rate (Ir) = perc rate / R_f = 37.5/9.5

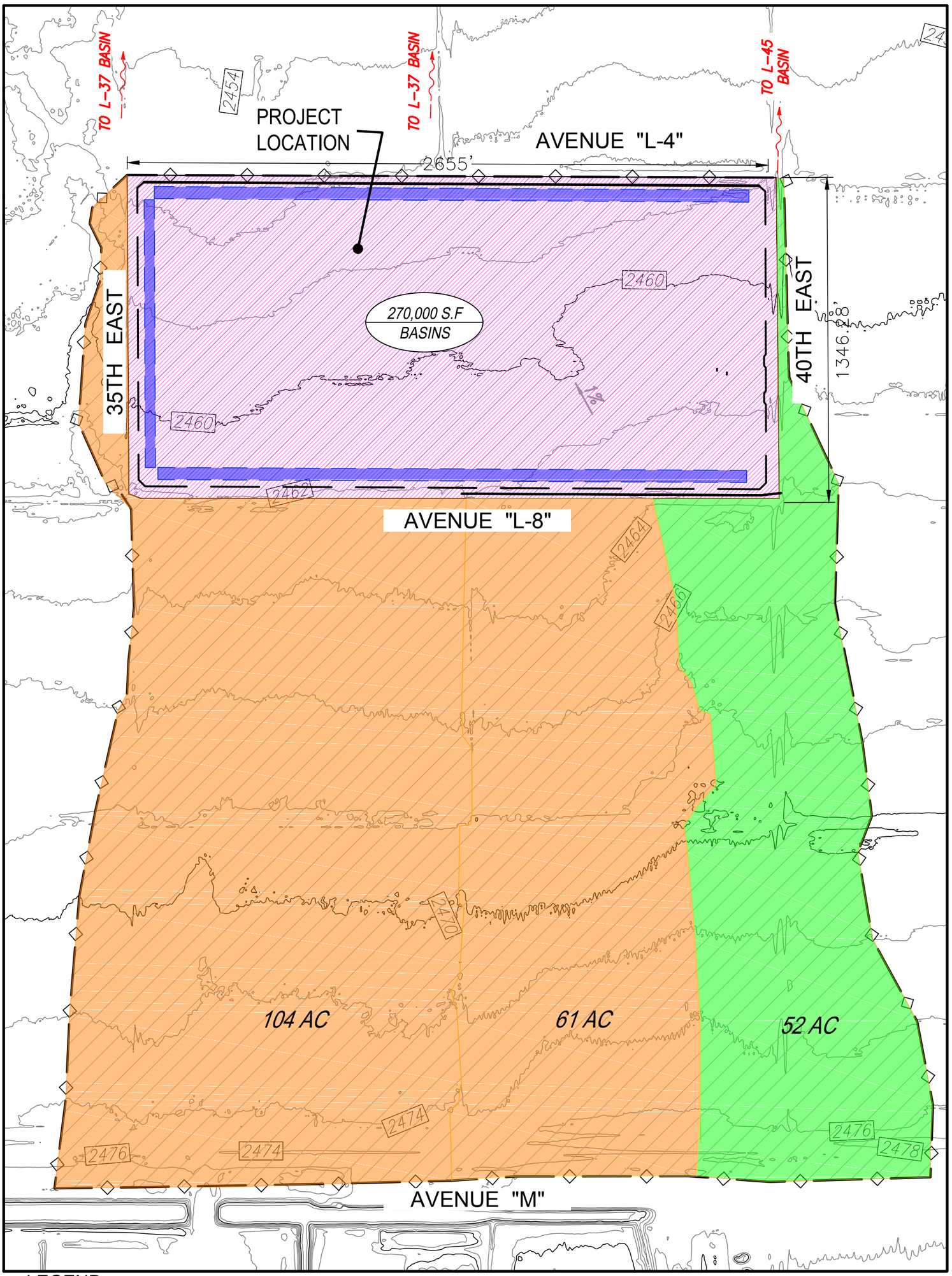
Ir = 3.95 inches/hour

Ir_{all} = Ir / FS = 3.95 / 3.0 = 1.3 in/hr

Source:
Copart Palmdale Geotechnical Investigation Report, February 28, 2019
Stantec Consulting Inc.

APPENDIX V

INFILTRATION BASIN CROSS SECTIONS



LEGEND

- INFILTRATION BASINS
- SUBAREA BY-PASS: STORM FLOW TO 40TH STREET EAST
- OFF-SITE SUBAREAS: STORM FLOW TO INFILTRATION BASINS
- ON-SITE SUBAREAS: STORM FLOW TO INFILTRATION BASINS

TARGETED INFILTRATION SURFACE AREA = 270,000 S.F.

Pearland Watershed

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25864-F Business Center Drive
Redlands CA 92374-4515
Tel: 909.335.6116
www.stantec.com

Notes

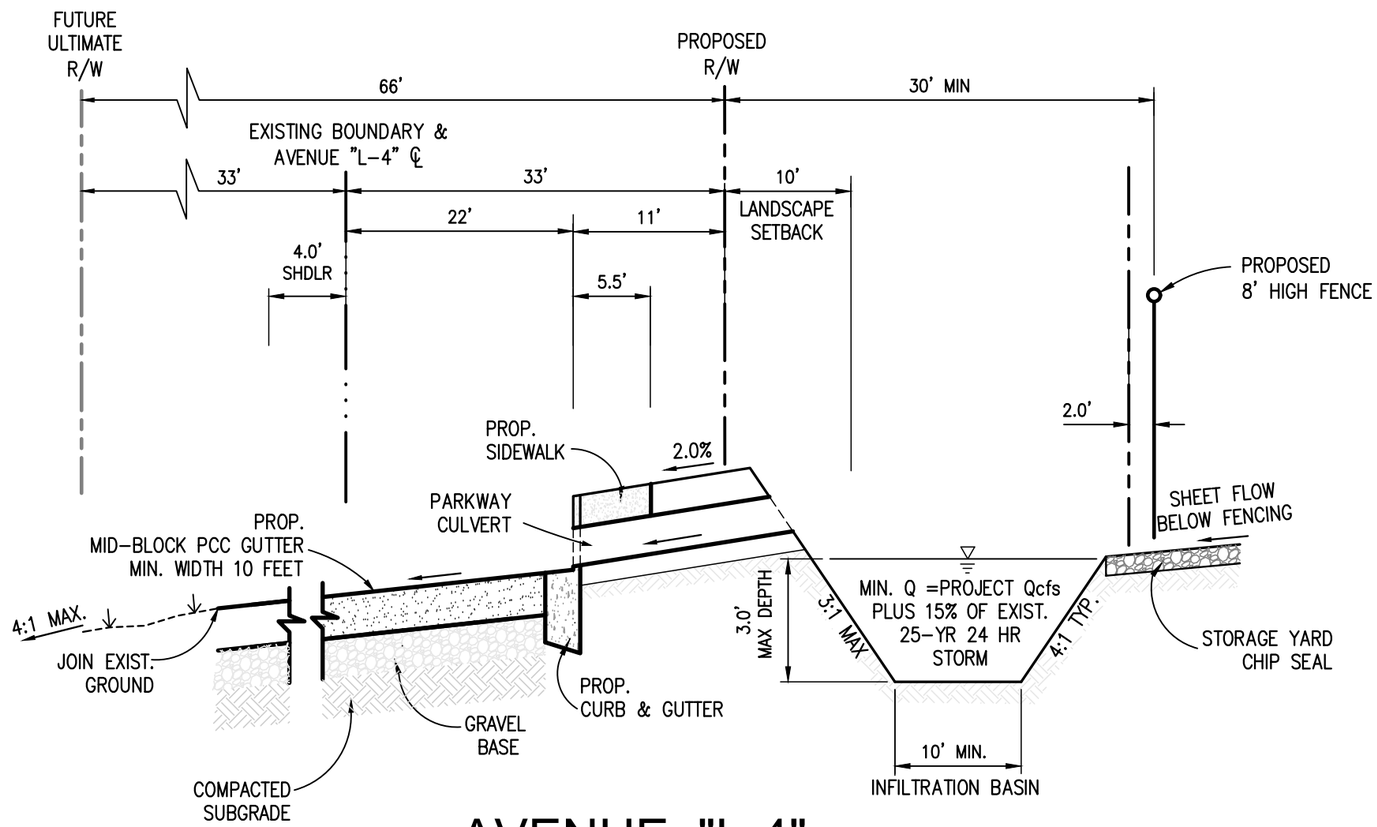
Client/Project
COPART, USA

Vehicle Storage Yard
Palmdale, CA

Project No.
2042546200

Title
Runoff Mitigation Option A : Restrict Flows to 85% of Existing 25-yr Storm Event

Revision	Date
02	2019.03.14
Reference Sheet	Figure No.
-	XS-01



AVENUE "L-4"

ROADWAY SAG CURVE
ALTERNATIVE A – LOCAL DISCHARGE
ALTERNATIVE B – MASTER PLAN OF DRAINAGE DISCHARGE
N.T.S.

LOW POINTS OF VERTICAL INTERSECTION
ROADWAY DE-WATERING AND CROSS GUTTER LOCATIONS

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Notes

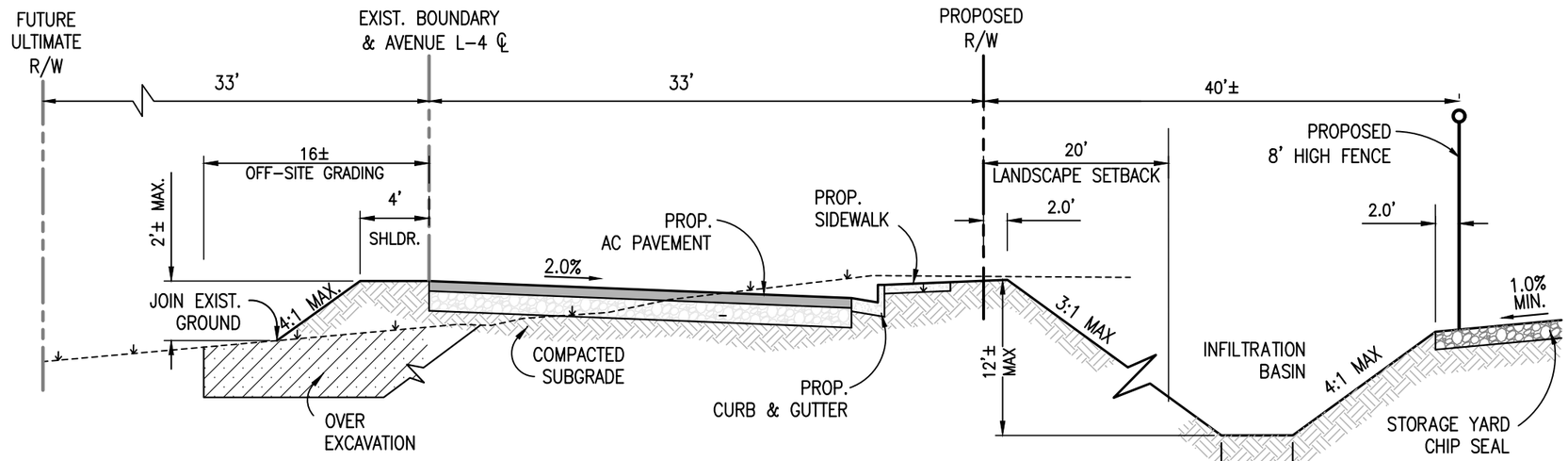
Client/Project
COPART, USA
Vehicle Storage Yard
Palmdale, CA

Project No.
2042546200

Title
Stormwater Mitigation
Avenue L-4 (Sag Curve)
Drainage X-Section

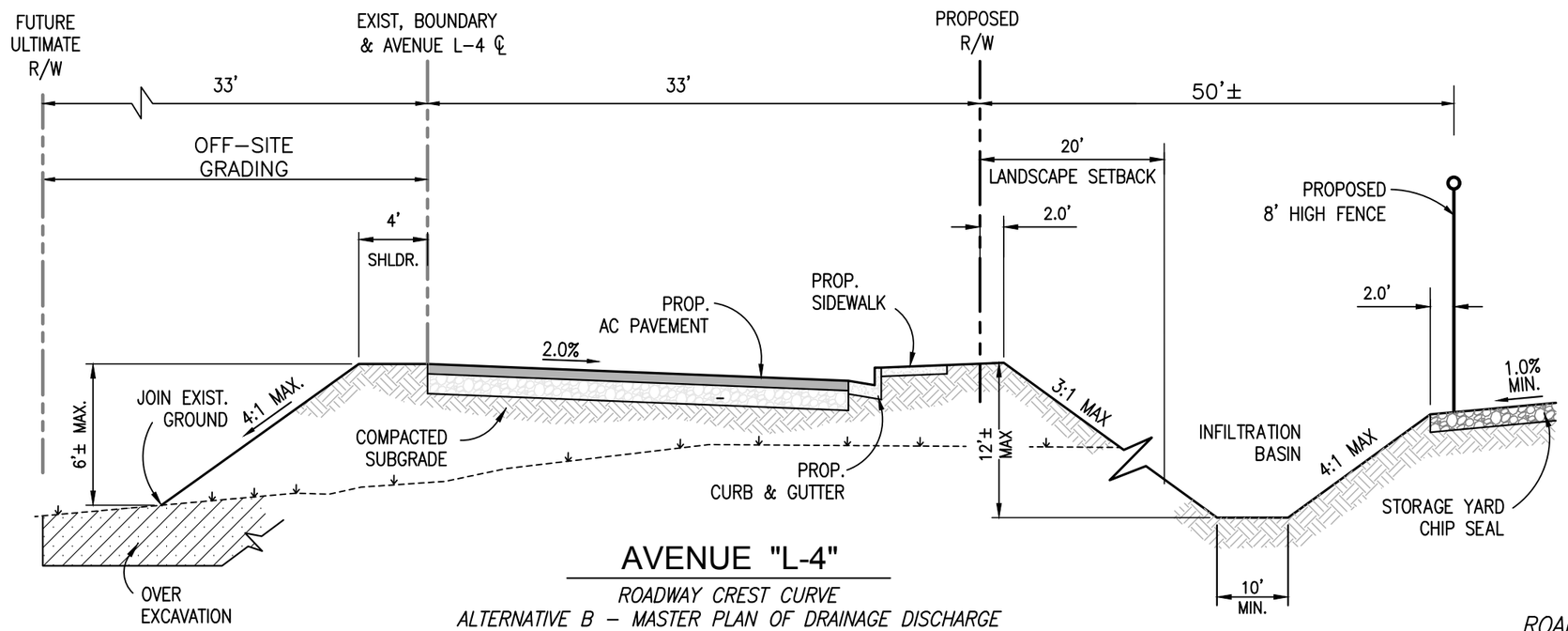
Revision	Date
01	2019.02.19

Reference Sheet	Figure No.
-	XS-1



AVENUE "L-4"

ROADWAY CREST CURVE
ALTERNATIVE A – LOCAL DISCHARGE
N.T.S.



AVENUE "L-4"

ROADWAY CREST CURVE
ALTERNATIVE B – MASTER PLAN OF DRAINAGE DISCHARGE
N.T.S.

ROADWAY CREST
HIGH POINTS OF VERTICAL INTERSECTION

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Notes
Widened Half-Width of AVENUE L-4 to 33 Feet.

Client/Project
COPART, USA

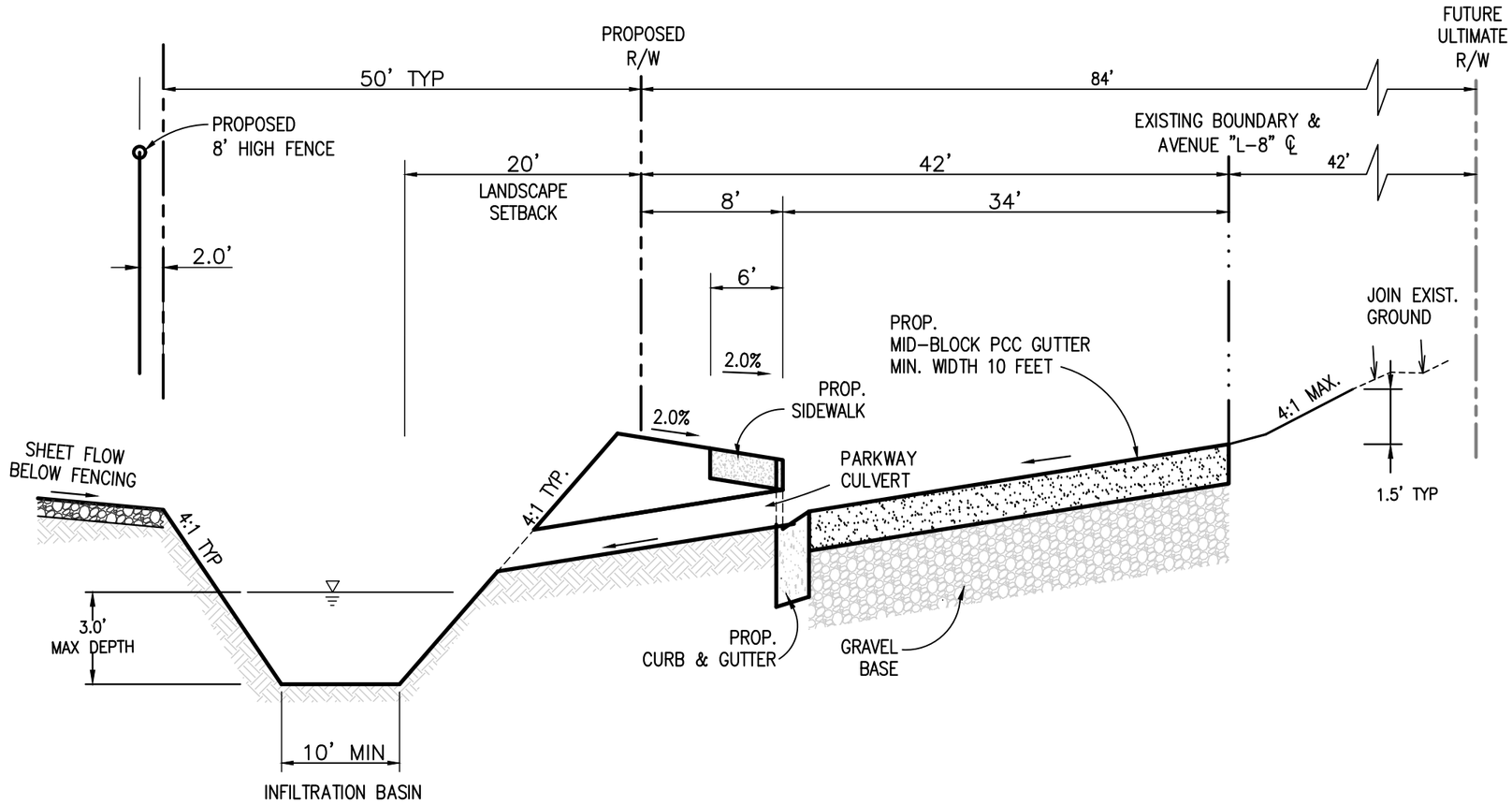
Vehicle Storage Yard

Palmdale, CA

Project No.
2042546200

Title
Stormwater Mitigation
Avenue L-4 (Crest Curve)
Drainage X-Section

Revision	Date
01	2019.02.19
Reference Sheet	Figure No.
-	XS-2



AVENUE "L-8"

ROADWAY SAG CURVE
ALTERNATIVE A – LOCAL DISCHARGE
ALTERNATIVE B – MASTER PLAN OF DRAINAGE DISCHARGE
N.T.S.

LOW POINTS OF VERTICAL INTERSECTION
ROADWAY DE-WATERING AND CROSS GUTTER LOCATIONS

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Notes

Client/Project
COPART, USA

Vehicle Storage Yard

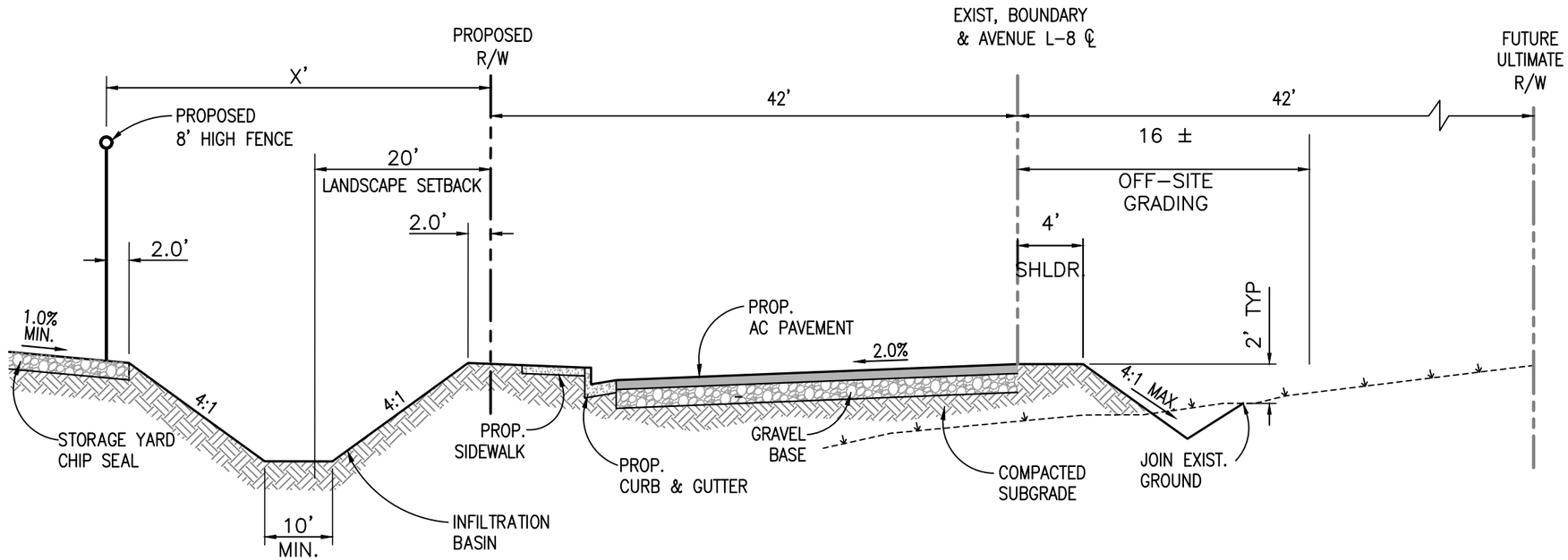
Palmdale, CA

Project No.
2042546200

Title
Stormwater Mitigation
Avenue L-8 (Sag Curve)
Drainage X-Section

Revision	Date
01	2019.02.19

Reference Sheet	Figure No.
-	XS-3



AVENUE "L-8"

ROADWAY CREST CURVE
ALTERNATIVE A – LOCAL DISCHARGE
ALTERNATIVE B – MASTER PLAN OF DRAINAGE DISCHARGE
N.T.S.

ROADWAY CREST
HIGH POINTS OF VERTICAL INTERSECTION

Stantec

Stantec Consulting Services Inc.
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Redlands CA 92374-4515
Tel: 909.335.6116
www.stantec.com

Notes

Client/Project
COPART, USA

Vehicle Storage Yard

Palmdale, CA

Project No.
2042546200

Title
Stormwater Mitigation
Avenue L-8 (Crest Curve)
Drainage X-Section

Revision
01

Date
2019.02.12

Reference Sheet
-

Figure No.
XS-4

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2019.02.12 6:12:13 PM

APPENDIX VI

NRCS SOILS REPORT

LA COUNTY FIRE DESIGNATION PLAT

United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Antelope Valley Area, California

December 12, 2018

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Map Scale: 1:2,570 if printed on B landscape (17" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Antelope Valley Area, California
Survey Area Data: Version 11, Sep 17, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 23, 2015—Feb 1, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Copart)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CaA	Cajon loamy sand, 0 to 2 percent slopes	11.5	14.6%
HgA	Hesperia loamy fine sand, 0 to 2 percent slopes	16.4	20.9%
Ro	Rosamond fine sandy loam	15.7	19.9%
Rp	Rosamond loam	35.1	44.7%
Totals for Area of Interest		**78.7**	**100.0%**

Map Unit Descriptions (Copart)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Antelope Valley Area, California

CaA—Cajon loamy sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hccx
Elevation: 400 to 4,000 feet
Mean annual precipitation: 3 to 9 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 200 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Cajon and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cajon

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 9 inches: loamy sand
H2 - 9 to 60 inches: fine sand, sand
H2 - 9 to 60 inches:

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: SANDY 4-9" (R030XG022CA)
Hydric soil rating: No

Minor Components

Arizo

Percent of map unit: 4 percent
Hydric soil rating: No

Hesperia

Percent of map unit: 4 percent
Hydric soil rating: No

Rosamond

Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 3 percent
Landform: Playas
Hydric soil rating: Yes

HgA—Hesperia loamy fine sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hcf9
Elevation: 200 to 4,000 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 61 to 70 degrees F
Frost-free period: 225 to 310 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Hesperia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hesperia

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 8 inches: loamy fine sand
H2 - 8 to 54 inches: sandy loam, fine sandy loam
H2 - 8 to 54 inches: coarse sandy loam, sandy loam
H3 - 54 to 77 inches:
H3 - 54 to 77 inches:

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very high (about 14.8 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: SANDY 4-9" (R030XG022CA)
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 9 percent
Hydric soil rating: No

Greenfield

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 1 percent
Landform: Playas
Hydric soil rating: Yes

Ro—Rosamond fine sandy loam

Map Unit Setting

National map unit symbol: hcgy
Elevation: 1,900 to 2,900 feet
Mean annual precipitation: 3 to 8 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 240 to 260 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Rosamond and similar soils: 85 percent
Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rosamond

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 60 inches: stratified loam to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Available water storage in profile: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: LOAMY 4-9" (R030XG021CA)
Hydric soil rating: No

Minor Components

Cajon

Percent of map unit: 10 percent
Hydric soil rating: No

Hesperia

Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 1 percent
Landform: Playas
Hydric soil rating: Yes

Rp—Rosamond loam

Map Unit Setting

National map unit symbol: hcgz
Elevation: 1,900 to 2,900 feet
Mean annual precipitation: 3 to 8 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 240 to 260 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Rosamond and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rosamond

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 60 inches: stratified loam to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: LOAMY 4-9" (R030XG021CA)
Hydric soil rating: No

Minor Components

Cajon

Percent of map unit: 5 percent
Hydric soil rating: No

Hesperia

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 1 percent
Landform: Playas
Hydric soil rating: Yes

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group (Existing_Conditions)

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

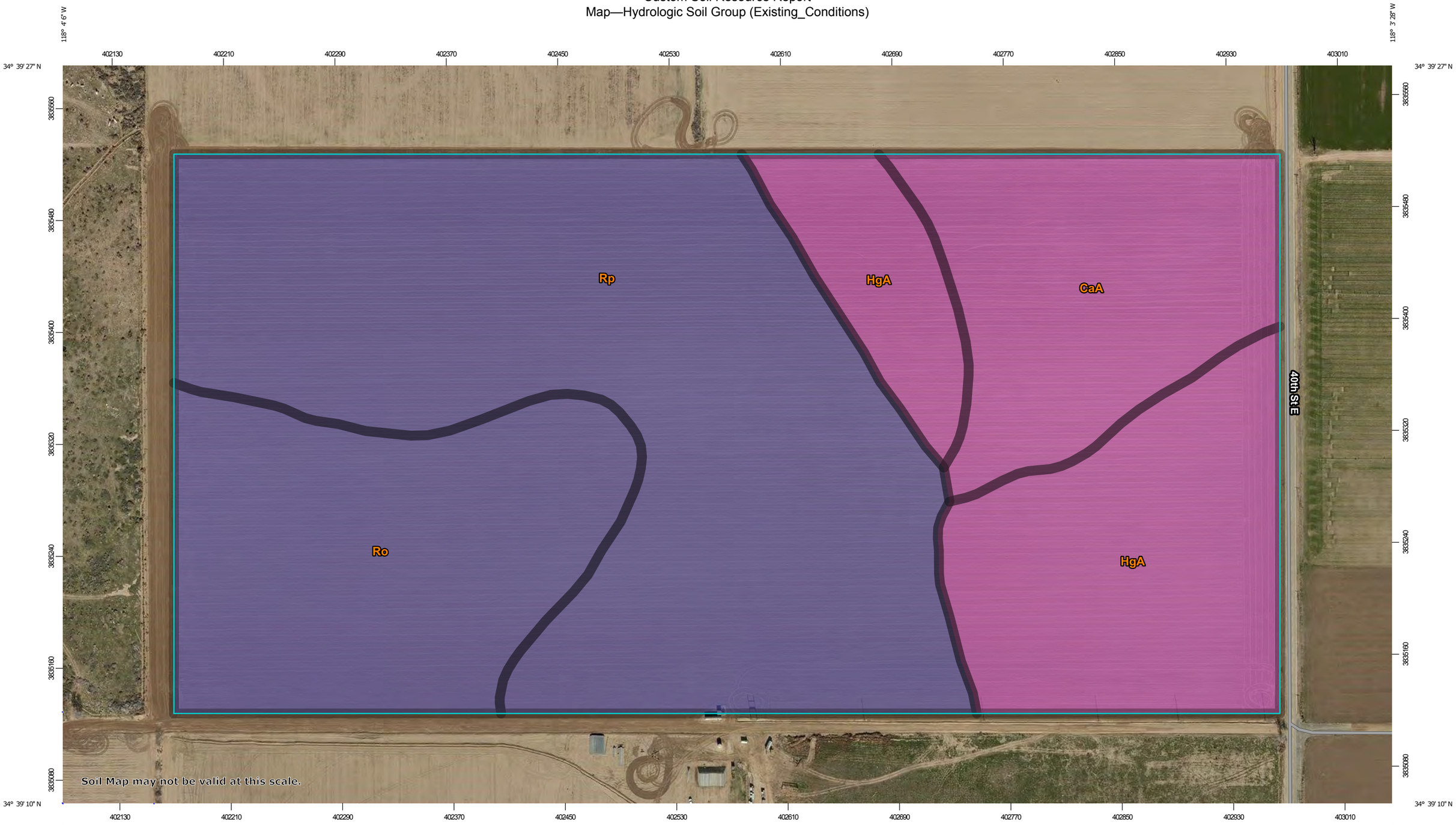
Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Map—Hydrologic Soil Group (Existing_Conditions)



Map Scale: 1:2,570 if printed on B landscape (17" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Antelope Valley Area, California
Survey Area Data: Version 11, Sep 17, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 23, 2015—Feb 1, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group (Existing_Conditions)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CaA	Cajon loamy sand, 0 to 2 percent slopes	A	11.5	14.6%
HgA	Hesperia loamy fine sand, 0 to 2 percent slopes	A	16.4	20.9%
Ro	Rosamond fine sandy loam	B	15.7	19.9%
Rp	Rosamond loam	B	35.1	44.7%
Totals for Area of Interest			**78.7**	**100.0%**

Rating Options—Hydrologic Soil Group (Existing_Conditions)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Map Unit Name (Map_Unit)

A soil map unit is a collection of soil areas or nonsoil areas (miscellaneous areas) delineated in a soil survey. Each map unit is given a name that uniquely identifies the unit in a particular soil survey area.

Map—Map Unit Name (Map_Unit)

Map Scale: 1:2,570 if printed on B landscape (17" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

Cajon loamy sand, 0 to 2 percent slopes

Hesperia loamy fine sand, 0 to 2 percent slopes

Rosamond fine sandy loam

Rosamond loam

Not rated or not available

Soil Rating Lines

Cajon loamy sand, 0 to 2 percent slopes

Hesperia loamy fine sand, 0 to 2 percent slopes

Rosamond fine sandy loam

Rosamond loam

Not rated or not available

Soil Rating Points

Cajon loamy sand, 0 to 2 percent slopes

Hesperia loamy fine sand, 0 to 2 percent slopes

Rosamond fine sandy loam

Rosamond loam

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Antelope Valley Area, California
Survey Area Data: Version 11, Sep 17, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 23, 2015—Feb 1, 2015

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Map Unit Name (Map_Unit)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CaA	Cajon loamy sand, 0 to 2 percent slopes	Cajon loamy sand, 0 to 2 percent slopes	11.5	14.6%
HgA	Hesperia loamy fine sand, 0 to 2 percent slopes	Hesperia loamy fine sand, 0 to 2 percent slopes	16.4	20.9%
Ro	Rosamond fine sandy loam	Rosamond fine sandy loam	15.7	19.9%
Rp	Rosamond loam	Rosamond loam	35.1	44.7%
Totals for Area of Interest			**78.7**	**100.0%**

Rating Options—Map Unit Name (Map_Unit)

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Unified Soil Classification (Surface) (Surface_soill_condition)

The Unified soil classification system classifies mineral and organic mineral soils for engineering purposes on the basis of particle-size characteristics, liquid limit, and plasticity index. It identifies three major soil divisions: (i) coarse-grained soils having less than 50 percent, by weight, particles smaller than 0.074 mm in diameter; (ii) fine-grained soils having 50 percent or more, by weight, particles smaller than 0.074 mm in diameter; and (iii) highly organic soils that demonstrate certain organic characteristics. These divisions are further subdivided into a total of 15 basic soil groups. The major soil divisions and basic soil groups are determined on the basis of estimated or measured values for grain-size distribution and Atterberg limits. ASTM D 2487 shows the criteria chart used for classifying soil in the Unified system and the 15 basic soil groups of the system and the plasticity chart for the Unified system.

The various groupings of this classification correlate in a general way with the engineering behavior of soils. This correlation provides a useful first step in any field or laboratory investigation for engineering purposes. It can serve to make some general interpretations relating to probable performance of the soil for engineering uses.

For each soil horizon in the database one or more Unified soil classifications may be listed. One is marked as the representative or most commonly occurring. The representative classification is shown here for the surface layer of the soil.

Map—Unified Soil Classification (Surface) (Surface_soill_condition)

Map Scale: 1:2,570 if printed on B landscape (17" x 11") sheet.

N

Meters: 0 35 70 140 210

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

CH
CL
CL-A (proposed)
CL-K (proposed)
CL-ML
CL-O (proposed)
CL-T (proposed)
GC
GC-GM
GM
GP
GP-GC
GP-GM
GW
GW-GC
GW-GM
MH
MH-A (proposed)
MH-K (proposed)
MH-O (proposed)
MH-T (proposed)
ML
ML-A (proposed)
ML-K (proposed)
ML-O (proposed)
ML-T (proposed)
OH
OH-T (proposed)
OL
PT
SC
SC-SM
SM
SP
SP-SC
SP-SM
SW
SW-SC
SW-SM
Not rated or not available

Soil Rating Lines

CH
CL
CL-A (proposed)
CL-K (proposed)
CL-ML
CL-O (proposed)
CL-T (proposed)
GC
GC-GM
GM
GP
GP-GC
GP-GM
GW
GW-GC
GW-GM
MH
MH-A (proposed)
MH-K (proposed)
MH-O (proposed)
MH-T (proposed)
ML
ML-A (proposed)
ML-K (proposed)
ML-O (proposed)
ML-T (proposed)
OH
OH-T (proposed)
OL
PT
SC
SC-SM
SM
SP
SP-SC
SP-SM
SW
SW-SC
SW-SM
Not rated or not available

Soil Rating Points

CH
CL
CL-A (proposed)
CL-K (proposed)
CL-ML
CL-O (proposed)
CL-T (proposed)
GC
GC-GM
GM
GP
GP-GC
GP-GM
GW
GW-GC
GW-GM
MH
MH-A (proposed)
MH-K (proposed)
MH-O (proposed)
MH-T (proposed)
ML
ML-A (proposed)
ML-K (proposed)
ML-O (proposed)
ML-T (proposed)
OH
OH-T (proposed)
OL
PT
SC
SC-SM
SM
SP
SP-SC
SP-SM
SW
SW-SC
SW-SM
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

MAP INFORMATION

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

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Totals for Area of Interest			**78.7**	**100.0%**

Rating Options—Unified Soil Classification (Surface) (Surface_soill_condition)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

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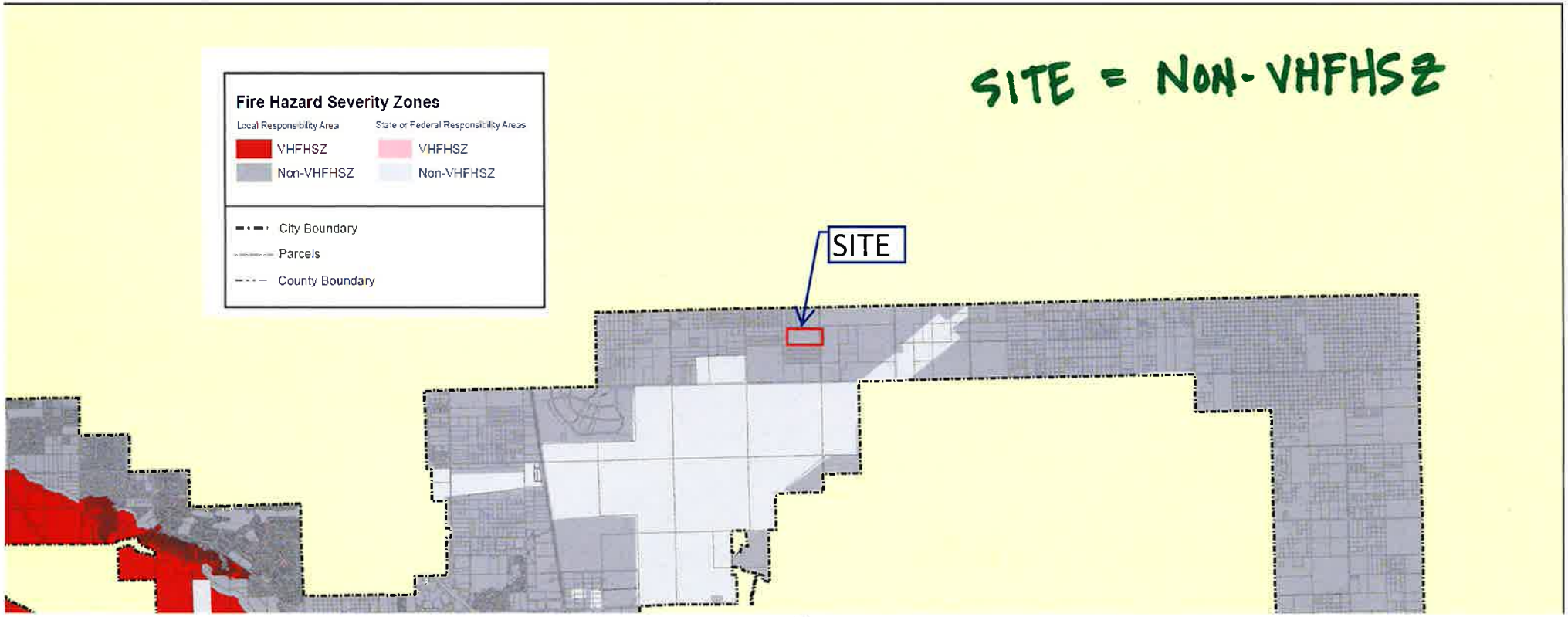
Palmdale

Very High Fire Hazard Severity Zones in LRA
As Recommended by CAL FIRE



FIRE DESIGNATION PLAT