Appendix Q

Preliminary Drainage Report- Ramona and Perris

Preliminary

Drainage Report

For

NEC of Ramona and Perris
DPR __-_____

Perris, CA

February 2022

United Engineering Group - California
8885 Haven Avenue
Suite 195
Rancho Cucamonga, CA 91730

Tel: (909) 466-9240

Provided for:

Optimus Building Corp.
c/o MNA
445 S D Street
Perris, CA 92570
Contact: Mike Naggar

This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein. The registered civil engineer has also judged the qualifications of any employees that have provided data and calculations upon which the recommendations, conclusions, and decisions are based.

Christopher F. Lenz, PE 63001

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APPENDICES

1 INTRODUCTION

1.1. SITE DESCRIPTION

1.1.1. LOCATION

The project is located at the northeast corner of Ramona Expressway and Perris Boulevard in the City of Perris. Legally, it is parcels 302-130-002, -008, -018, -021, -022, -023, -024, & -027.

1.1.2. EXISTING FEATURES

The site consists of 43.5 gross acres of unsubdivided vacant land. The site drains gradually northwest to southeast with varying terrain with a flow slope of 0.3 percent. The site is infill and is bordered by developed properties. It has been graded in the past shows evidence of continued disturbance and compaction. Some seasonal grasses are present. There are no flow paths through the site. The site is within the Perris Valley MDP, with the proposed Line E regional storm drain traversing the southwest corner of the property.

1.1.3. PROPOSED CONDITION

It is proposed that the subject property be developed to permit development of a single 878,750 sf industrial building per the request of the client. Primary access to the site will be from Perry Street and Perris Boulevard. The building will be surrounded by parking on the west and east sides, with the north and south side of the building having the loading docks and truck parking. The site will be primarily impervious surface, with some open space and landscape areas (some used as buffers and water quality features).

1.2. PURPOSE OF REPORT

The purpose of this report is to review the regional studies prepared for this area (Perris Valley Master Drainage Plan), analyze the proposed conditions hydrology and hydraulics, and ensure design compatibility with the master plan and city code. This report will analyze the hydrology of the landscape and assess the hydraulic conditions of the subject parcel to verify consistency with the previously listed reports.

1.3. FEMA INFORMATION

The Flood Insurance Rate Maps (Panel 06065C1430H) for this subject property shows that the site falls within Zone AE. Zone AE denotes areas determined to be within the 1% annual chance floodplain, with base flood elevations identified. Refer to Appendix F for detail.

2. EXISTING DRAINAGE PATTERNS

2.1. OFFSITE

There are no offsite flows impacting the subject property. Regional drainage is conveyed along Ramona Expressway. As the site is north of Ramona, no regional flows impact the site. The regional area to the west of the site is identified to be collected and routed as part of the Line E system. That system is not yet in place and as such regional flows drain easterly along Ramona Expressway. Per discussions with the City, there is inundation of all intersections in the area, including Ramona and Perris.

2.2. ONSITE

The site is un-subdivided vacant land. The site drains gradually northwest to southeast with varying terrain with a flow slope of 0.3 percent. The site is infill and is bordered by developed properties. It has been graded in the past shows evidence of continued disturbance and compaction. Some seasonal grasses are present. The runoff from the site is primarily sheet flow. The ultimate outfall is the southeast corner of the site. The site is within the Perris Valley MDP, with the proposed Line E regional storm drain traversing the southwest corner of the property.

3. PROPOSED DRAINAGE PATTERNS

3.1. OFFSITE

As the project is within the areas of the ADP, it will participate in regional facilities. Line E is proposed to be constructed north of Ramona Expressway. The project proposes to construct the portion of Line E where it crosses the subject property, per the current master plan. That culvert is preliminarily designed in the master plan as a 7.5'H x 14'W RCB. It is assumed that future projects west of the subject project will then be able to connect to the underground culvert system.

3.2. ONSITE

The project is in the vicinity of the Airport (Zone D), and determination was made, due to threat of bird strike, that no surface basins should be allowed (Appendix . In order to still comply with Water Quality rules, bio-swales or filtration trenches along the west and south sides of the project have been placed, with no long term ponding. As such the project has been designed with underground storage to offset the difference in runoff hydrograph volume between the developed and pre-developed condition for the 24 hour duration, 10 year return frequency design storm. The site soils have low infiltration potential, at less than the required 1.6in/hr (Appendix E), so a system of sump pumps will be used to dewater the three underground

systems. The pumps will convey the water to the bio-swales, which will treat the water, before discharging to the line E system. In addition to the underground storage a system of storm drain is proposed to collect and route the site runoff (refer to section 5 and Figure 3 for detail).

4. HYDROLOGIC CONDITIONS

The Synthetic Unit Hydrograph and Rationale Methods have been employed to determine peak runoff amounts and volumes. The Riverside County Flood Control and Water Conservation District (RCFCD & WCD) Hydrology Manual (reference 1) was used to develop the hydrological parameters for the 1, 3, 6, and 24 hr 2, 5, and 10 year storm event. Refer to appendix A for detail.

In the existing condition, the proposed development envelope is relatively flat with an average flowline slope of 0.3 percent and is in relatively poor condition. It is proposed to be developed into a single industrial building. The onsite runoff potential has been analyzed with the Synthetic Unit Hydrograph Method per the Riverside County Flood Control and Water Conservation District (RCFCD & WCD) Hydrology Manual (reference 1). The Following Data is used in the calculations;

Soils Group – C
Pre-development Runoff Index – 86, with 5% impervious (existing streets)
Post-development Runoff Index – 69 with 90% impervious

Rainfall Data – NOAA 14
2yr – 1hr = 0.466”
100yr – 1hr = 1.35”
2yr – 3hr = 0.819”
100yr – 3hr = 2.04”
2yr – 6hr = 1.14”
100yr – 6hr = 2.75”
2yr – 24hr = 1.97”
100yr – 24hr = 5.02”

The results of that analysis are as follows, with detailed output in Appendix A;

NEC Ramone & Perris Pre-Development								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year	25.0	0.7	14.7	0.7	12.5	0.8	1.2	0.7
5 year	42.0	1.3	24.6	1.2	20.9	1.3	3.3	1.1
10 year	61.9	2.4	39.2	3.0	34.5	3.2	12.5	4.0

NEC Ramone & Perris Post-Development								
	Storm Duration							
	1 hour		3 hour		6 hour		24 hour	
Frequency	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume	Q Peak	Volume
2 year	41.3	1.4	26.1	2.5	23.0	3.4	9.6	5.9
5 year	61.1	2.1	36.6	3.4	32.0	4.6	13.1	8.0
10 year	77.9	2.7	46.3	4.2	40.5	5.6	16.5	9.6

To mitigate the increased runoff from the development, four underground storage facilities have been provided to offset the difference in runoff hydrograph volume between the developed and pre-developed condition for the 24 hour duration, 10 year return frequency design storm per the below table.

	Volume	
SWC Ramona & Perris	[cf]	[ac-ft]
Pre Development 10yr 24hr	173,457	3.98
Post Development 10yr 24hr	419,703	9.64
Total Vol Required	246,246	5.65
Total Vol Provided	257,942	5.92

The facility for the western area was preliminarily sized to be 46,363 cf. The facility for the north area, including the loading bay and majority of the north roof drainage, was preliminarily sized to be 89,668 cf. The facility for the south area, including the loading bay and majority of the south roof drainage, was preliminarily sized to be 97,016 cf. And the facility for the eastern area was preliminarily sized to be 24,895 cf. In total the 4 facilities mitigate the difference in 10 year 24 hour runoff volume from development. The footprint of the proposed systems is indicated with detail in Appendix C. At time of final design additional storage basin and outlet details will be required.

5. HYDRAULIC CONDITIONS

5.1. Existing Conditions

There is one existing storm drain inlet affecting the subject site. A curb inlet along Perris Boulevard accepts street flow and discharges it on site. This inlet will be maintained with the outlet pipe being relocated to connect to the proposed underground system.

5.2. Proposed Conditions

The proposed condition for this site will be to construct a network of paved access within the site to convey storm runoff into a system of storm drain. Storm Drain will be used to collect and route the runoff from the paved areas and into the underground systems. The underground system will be pumped to the surface for treatment through Bio-swales and will then be carried by storm drain into the Line E system. Preliminary line sizing is provided as shown in Figure 3. For maintenance considerations a minimum 18" line size has been indicated. The roads will remain in the existing condition, with the exception that sidewalks and driveways will be added as needed.

The Bio-swales/water quality channels are planned at locations throughout the project to clean and discharge the flood water. These structures will be designed per Riverside County LID – Bio-swale standards in more detail at time of final design. Refer to Figure 4 for additional detail.

6. WATER QUALITY

The project is in the vicinity of the Airport (Zone D), and determination was made, due to threat of bird strike, that no surface basins should be allowed (Appendix . In order to still comply with Water Quality rules, bio-swales or filtration trenches along the west and south sides of the project have been placed, with no long term ponding. The channels are designed to treat the 2yr 24hr flows, at a maximum depth of 6", with freeboard. Detailed design of the channels, outlet structures, underdrains, and any landscaping will be prepared at final design, but must treat the flows indicated in the Project Preliminary WQMP. Final design of the channels, complete with landscaping and pipe plans will be provided with final construction plans and landscape plans.

7. MAINTENANCE

It is proposed that none of the features discussed above to handle onsite flows, will be required to be placed in flood control easements (Max line size 36"). Maintenance and ownership of the onsite facilities with be the responsibility of the property owner. At the Cities request, storm drain easements can be provided.

Internal to the site, the underground systems will require pumps to raise the water to the water quality basins. It is assumed that these systems will be the responsibility of the tenant, a property association, or the Owner, with easements being placed to allow for city access and emergency maintenance.

The new Line E stormdrain across the property, will be placed within Riverside County Flood Control Easement, and is assumed to be RCFDWCD maintenance responsibility once accepted.

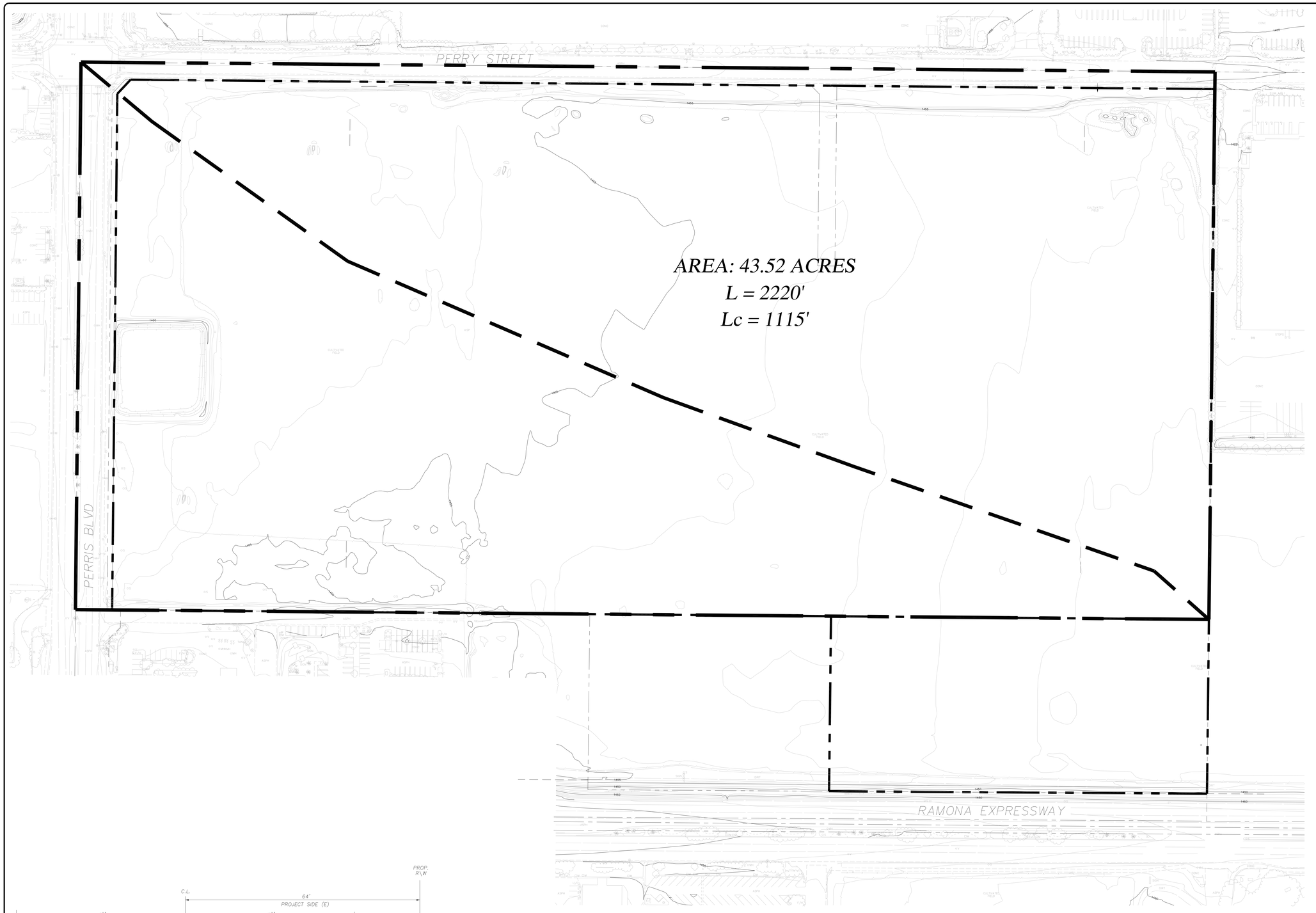
There are other smaller inlets, control structures, channels, and pipes where maintenance will be the responsibility of the tenant, a property association, or the Owner.

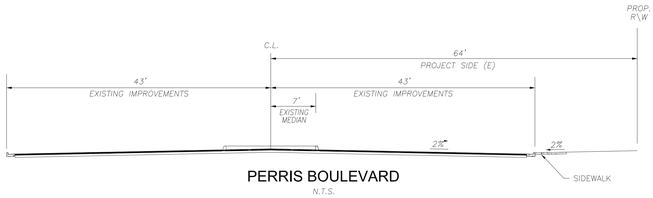
REFERENCES

1. Riverside County Flood Control and Water Conservation District Hydrology Manual, April 1978.

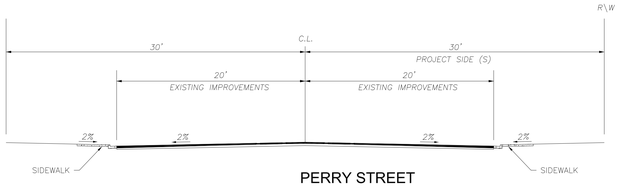
Figure 1

Drainage Map Existing





PERRIS BOULEVARD
N.T.S.



PERRY STREET
N.T.S.

LEGEND/ABBREVIATION

CF	CURB FACE	TC	TOP OF CURB
FG	FINISH GRADE	TG	TOP OF GRATE
FF	FINISHED FLOOR	SD	STORM DRAIN
FL	FLOW LINE	PL	PROPERTY LINE
GB	GRADE BREAK	PED.	PEDESTRIAN
HP	HIGH POINT	TYP.	TYPICAL
INV	INVERT		EXISTING FIRE HYDRANT
LP	LOW POINT		WATER VALVE
R/W	RIGHT-OF-WAY	W	WATER METER
P=XX.X	PAD ELEVATION		STREET LIGHT
FF=XX.X	FINISH FLOOR ELEVATION		PROPOSED STORM DRAIN LINE
2%	DIRECTION OF DRAINAGE/GRADE	1425	EXISTING CONTOUR

60' 30' 0' 60'
GRAPHIC SCALE: 1"=60'

BGR NO. _____ WDID:

DIGALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

NOTE:
WORK CONTAINED WITHIN THESE PLANS SHALL NOT COMMENCE UNTIL ENCROACHMENT PERMIT AND/OR GRADING PERMIT HAS BEEN ISSUED.

THE PRIVATE ENGINEER SIGNING THESE PLANS IS RESPONSIBLE FOR ASSURING THE ACCURACY OF DESIGN AND ACCEPTABILITY OF THE WORK HEREON. IN THE EVENT OF DISCREPANCIES ARISING AFTER CITY APPROVAL OR DURING CONSTRUCTION, THE PRIVATE ENGINEER SHALL BE RESPONSIBLE DETERMINING AN ACCEPTABLE SOLUTION AND REVISING THE PLANS FOR APPROVAL BY CITY.

MARK	BY	DATE	REVISIONS	APPR.	DATE
				ENGINEER	
				CITY	

DESIGN BY: DRAWN BY: CHECKED BY:

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER DATE

SEAL—ENGINEER
REGISTERED PROFESSIONAL ENGINEER — CHRISTOPHER F. LENZ — NO. 6.3001 EXP. 6/30/22 — CIVIL — STATE OF CALIFORNIA

ueg united engineering group
8885 Haven Avenue - Suite 195
Rancho Cucamonga, CA 91730
Phone: 909.466.9240
www.unitedeng.com

PREPARED UNDER THE DIRECTION OF:
CHRISTOPHER F. LENZ 6.3001
DATE: _____ REGISTRATION EXPIRES 6-30-22

BENCH MARK:
METRO WATER DISTRICT SO. CALIFORNIA DISC SET ON EAST SIDE OF BASE OF STEEL TRAFFIC SIGNAL LIGHT AT THE SOUTHWEST CORNER OF INTERSECTION OF PERRIS BVLD AND RIDER STREET. RIVERSIDE COUNTY BENCHMARK NUMBER BM-432 - DX5439
ELEVATION = 1455.11' NAVD 88

SCALE 1"=60'
FIELD BOOK
DESIGN
DRAWN
CHECKED

ZONING CASE #DPR ___-_____ I.P. No. _____
PERRIS, CA, 92571
COUNTY OF RIVERSIDE

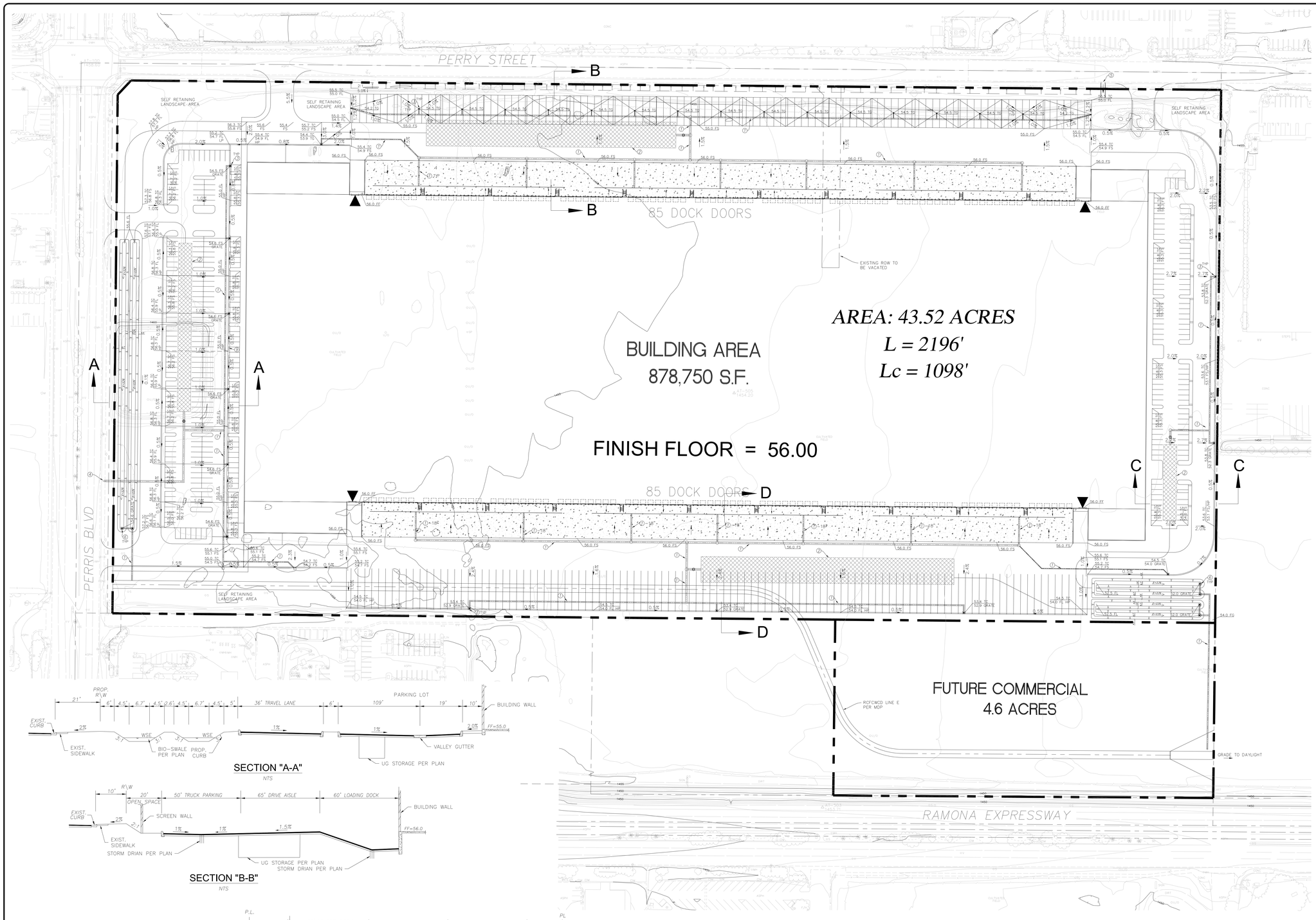
PRELIMINARY GRADING & DRAINAGE PLAN NEC RAMONA & PERRIS DRAINAGE EXISTING SCS RUNOFF

FOR: OPTIMUS BUILDING CORP. W.O. CITY FILE NO. DPR ___-_____

SHEET NO. 1 OF 1 SHEETS

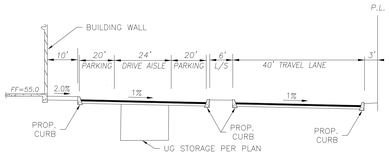
FIGURE 2

Drainage Map Proposed



SECTION "A-A"
NTS

SECTION "B-B"
NTS



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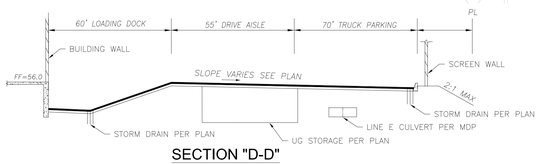

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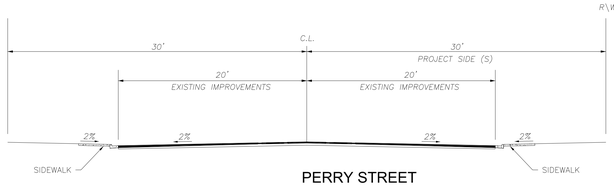
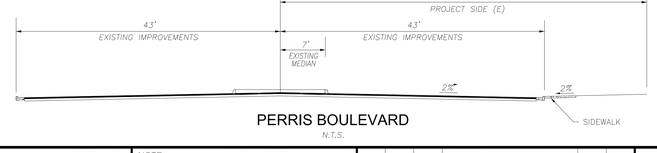
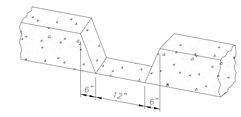


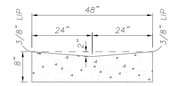
PERRY STREET
N.T.S.



PERRIS BOULEVARD
N.T.S.



DETAIL "A" - CURB FACE OPENING
NTS



DETAIL "B" - VALLEY GUTTER
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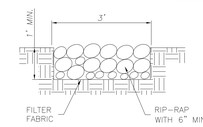

DETAIL "C" - RIP-RAP PAD
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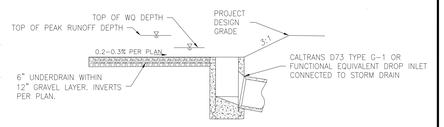
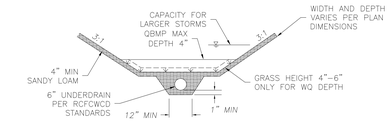


BIO-SWALE END DRAIN DETAIL
NTS



BIO-SWALE SECTION
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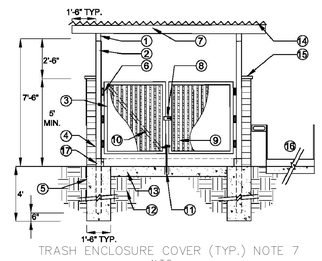

TRASH ENCLOSURE COVER (TYP.) NOTE 7
N.T.S.

TRASH ENCLOSRE COVER NOTES:
1. 4-INCH X 6-INCH METAL BEAM POWDER COATED
2. 4-INCH X 4-INCH TUBULAR STEEL POST. SET POST FLUSH TO WALL. GROUT FILL POST SOLID. PAINT WITH 2 COATS ZINC PRIMER & 2 COATS SATIN FINISH PAINT.
3. GATE FRAME CONTINUOUS, ATTACH GATE FRAME TO STEEL POST WITH 3 HEAVY DUTY HINGES. CONTRACTOR SHALL SUPPLY SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION.
4. CMU WALL / REFER TO STRUCTURAL ENGINEERS SPECIFICATIONS FOR REINFORCEMENT.
5. CONCRETE FOOTING / REFER TO STRUCTURAL ENGINEERS SPECIFICATIONS FOR REINFORCEMENT.
6. HEAVY DUTY HINGES.
7. METAL TRELLIS POWDER COATED (OR 2 COATS ZINC PRIMER & 2 COATS SATIN FINISH PAINT); COLOR TO BE SELECTED /REFER TO SHOP DRAWINGS FOR ROOF FRAMING.
8. 3-INCH X 6-INCH X 1/4-INCH THICK GALVANIZED STEEL SJOP PLATE AND LOCKABLE KEEPER. WELD TO GATE FRAME - AS SHOWN / CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL.
9. MINI-V-BEAM 26 GAUGE WITH ENDURA CLAD FINISH AS MANUFACTURED BY ASC PACIFIC INC. OR APPROVED EQUAL. SPOT WELD TO ANGLE FRAME (CONTRACTOR TO SUBMIT SHOP DRAWINGS).
10. 9-INCH X 1/2-INCH GALVANIZED STEEL DIAGONAL CROSS BRACE / FILLET WELD TO FRAME AND SPOT WELD TO MINI-V-BEAM (AT BACK OF GATE).
11. HEAVY DUTY DROP CRANE BOLT. ATTACH TO GATE FRAME. SET 1-6 INCHES LONG X 1-INCH O.D. GALVANIZED PIPE SLEEVE TO ACCEPT BOLT. "STANLY" CD 10009-18 INCHES OR APPROVED EQUAL.
12. COMPACTED SUBGRADE PER GEOTECHNICAL REPORT.
13. 6-INCH THICK PCC CONCRETE PAD WITH 6 X 6 X 10 WWM.
14. METAL ROOF: CORRUGATED STEEL - BERRIDGE LEAD-COPE STRAIGHT S-DECK / INSTALL PER MANUFACTURERS SPECIFICATIONS.
15. 8-INCH X 2-INCH X 16-INCH CMU CAP TO MATCH WALL COLOR.
16. DISABLED ACCESSIBLE RAMP AND HANDRAIL IF REQUIRED.
17. CONCRETE CURB

NOTES
A. CONCRETE FOOTING TO ACHIEVE 4300 PSI @ 28 DAYS.
B. TRASH BINS - SIZE AND NUMBER AS REQUIRED BY CITY.

LEGEND/ABBREVIATION

CF	CURB FACE	TC	TOP OF CURB
FG	FINISH GRADE	TG	TOP OF GRATE
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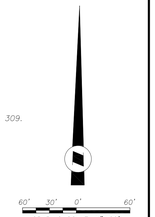
INV	INVERT		EXISTING FIRE HYDRANT
LP	LOW POINT		WATER VALVE
R/W	RIGHT-OF-WAY	W	WATER METER
P=XX.X	PAD ELEVATION		STREET LIGHT
FF=XX.X	FINISH FLOOR ELEVATION		PROPOSED STORM DRAIN LINE
2%	DIRECTION OF DRAINAGE/GRADE	1425	EXISTING CONTOUR

CONSTRUCTION NOTES:

1. CONSTRUCT STORM DRAIN AND FITTINGS AT SIZES SHOWN.
2. CONSTRUCT CONTECH TYPE OR EQUIVALENT UNDERGROUND STORAGE SYSTEM PER PLAN.
3. CONSTRUCT GRATE INLET PER PLAN SIZING AND DETAIL PER GRADING PLAN
4. CONNECT EXISTING CATCH BASIN TO UNDERGOUND STORAGE VIA NEW SD LINES PER PLAN.
5. CONSTRUCT INVERTED UNDER SIDEWALK DRAIN CAST IN PLACE PER COUNTY OF RIVERSIDE STD. NO. 309.
6. INSTALL JENSEN PRECAST DROP INLET DI363636, WITH PEDESTRIAN GRATE.
7. INSTALL TRASH ENCLOSURE PER LANDSCAPE ARCHITECT PLAN.
8. INSTALL JENSEN PRECAST DROP INLET DI484848, WITH PEDESTRIAN GRATE.
9. INSTALL VALLEY GUTTER AT 0.5% SLOPE PER DETAIL B.



BGR NO. _____ WDID:

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TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

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MARK	BY	DATE	REVISIONS	APPR.	DATE
			ENGINEER	CITY	

DESIGN BY: DRAWN BY: CHECKED BY:

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER DATE

SEAL-ENGINEER
REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER F. LENZ NO. 63001 EXP. 6/30/22 CIVIL STATE OF CALIFORNIA

ueg united engineering group
8885 Haven Avenue - Suite 195
Rancho Cucamonga, CA 91730
Phone: 909.466.9240
www.unitedeng.com

PREPARED UNDER THE DIRECTION OF:
CHRISTOPHER F. LENZ 63001
DATE: _____ REGISTRATION EXPIRES 6-30-22

BENCH MARK:
METRO WATER DISTRICT SO. CALIFORNIA DISC SET ON EAST SIDE OF BASE OF STEEL TRAFFIC SIGNAL LIGHT AT THE SOUTHWEST CORNER OF INTERSECTION OF PERRIS BVLD AND RIDER STREET. RIVERSIDE COUNTY BENCHMARK NUMBER BM-432 - DX5439
ELEVATION = 1455.11' NAVD 88

SCALE 1"=60'
FIELD BOOK
DESIGN
DRAWN
CHECKED

ZONING CASE #DPR ___-_____ I.P. No. _____
PERRIS, CA. 92571
COUNTY OF RIVERSIDE

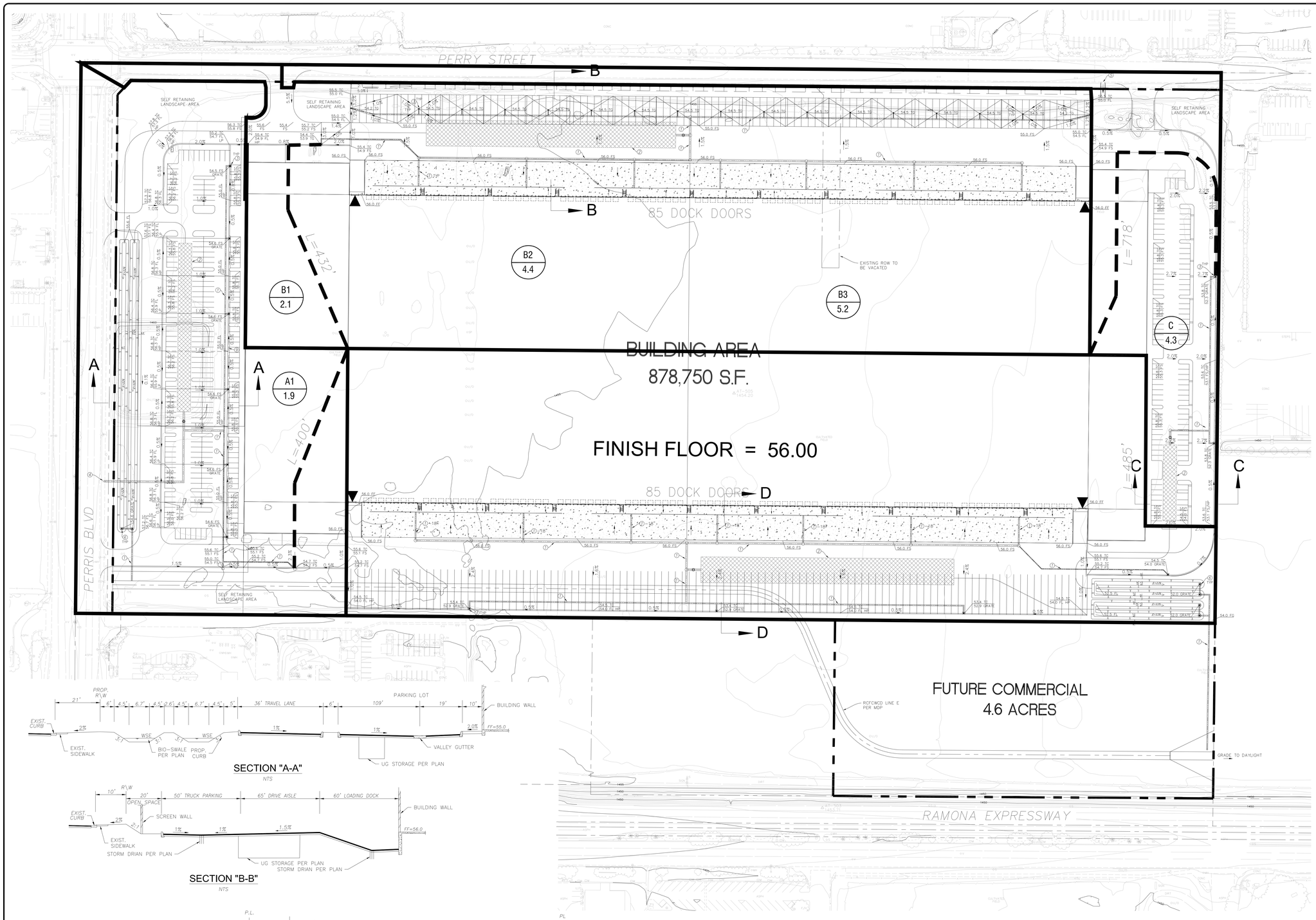
PRELIMINARY GRADING & DRAINAGE PLAN NEC RAMONA & PERRIS DRAINAGE PROPOSED SCS RUNOFF

SHEET NO. 1 OF 1 SHEETS

FOR: OPTIMUS BUILDING CORP. W.O. CITY FILE NO. DPR ___-_____

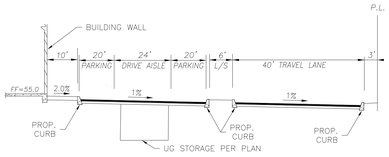
FIGURE 3

Drainage Map Storm Drain



SECTION "A-A"
NTS

SECTION "B-B"
NTS



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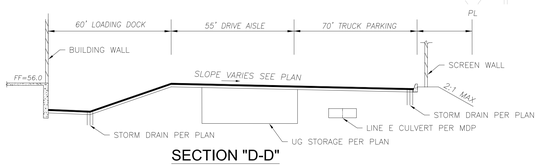

SECTION "D-D"
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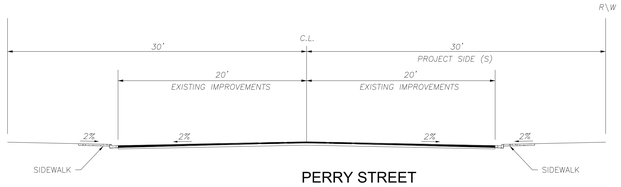
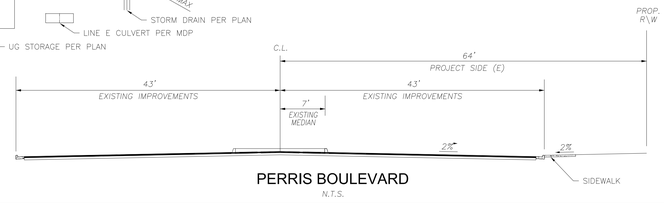
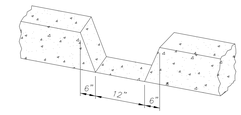


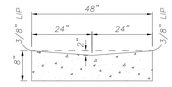
PERRY STREET
N.T.S.



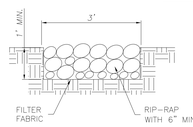
PERRIS BOULEVARD
N.T.S.



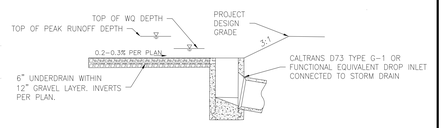
DETAIL "A" - CURB FACE OPENING
NTS



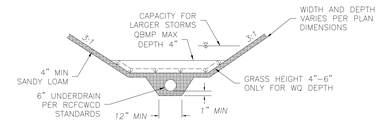
DETAIL "B" - VALLEY GUTTER
NTS



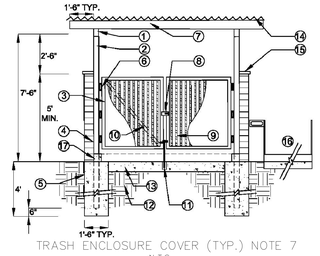
DETAIL "C" - RIP-RAP PAD
NTS



BIO-SWALE END DRAIN DETAIL
NTS



BIO-SWALE SECTION
NTS



TRASH ENCLOSURE COVER (TYP.) NOTE 7
N.T.S.

TRASH ENCLOSRE COVER NOTES:
1. 4-INCH X 6-INCH METAL BEAM POWDER COATED
2. 4-INCH X 4-INCH TUBULAR STEEL POST. SET POST FLUSH TO WALL. GROUT FILL POST SOLID. PAINT WITH 2 COATS ZINC PRIMER & 2 COATS SATIN FINISH PAINT.
3. GATE FRAME CONTINUOUS, ATTACH GATE FRAME TO STEEL POST WITH 3 HEAVY DUTY HINGES. CONTRACTOR SHALL SUPPLY SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION.
4. CMU WALL / REFER TO STRUCTURAL ENGINEERS SPECIFICATIONS FOR REINFORCEMENT.
5. CONCRETE FOOTING / REFER TO STRUCTURAL ENGINEERS SPECIFICATIONS FOR REINFORCEMENT.
6. HEAVY DUTY HINGES.
7. METAL TRELLIS POWDER COATED (OR 2 COATS ZINC PRIMER & 2 COATS SATIN FINISH PAINT); COLOR TO BE SELECTED /REFER TO SHOP DRAWINGS FOR ROOF FRAMING.
8. 3-INCH X 6-INCH X 1/4-INCH THICK GALVANIZED STEEL SLOP PLATE AND LOCKABLE KEEPER. WELD TO GATE FRAME - AS SHOWN / CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL.
9. MINI-V-BEAM 26 GAUGE WITH ENDURA CLAD FINISH AS MANUFACTURED BY ASC PACIFIC INC. OR APPROVED EQUAL. SPOT WELD TO ANGLE FRAME (CONTRACTOR TO SUBMIT SHOP DRAWINGS).
10. 9-INCH X 1/2-INCH GALVANIZED STEEL DIAGONAL CROSS BRACE / FILLET WELD TO FRAME AND SPOT WELD TO MINI-V-BEAM (AT BACK OF GATE).
11. HEAVY DUTY DROP CRANE BOLT. ATTACH TO GATE FRAME. SET 1-6 INCHES LONG X 1-INCH O.D. GALVANIZED PIPE SLEEVE TO ACCEPT BOLT. "STANLY" CD 10009-18 INCHES OR APPROVED EQUAL.
12. COMPACTED SUBGRADE PER GEOTECHNICAL REPORT.
13. 6-INCH THICK PCC CONCRETE PAD WITH 6 X 6 X 10 WWM.
14. METAL ROOF; CORRUGATED STEEL - BERRIDGE LEAD-COPE STRAIGHT S-DECK / INSTALL PER MANUFACTURERS SPECIFICATIONS.
15. 8-INCH X 2-INCH X 16-INCH CMU CAP TO MATCH WALL COLOR.
16. DISABLED ACCESSIBLE RAMP AND HANDRAIL IF REQUIRED.
17. CONCRETE CURB

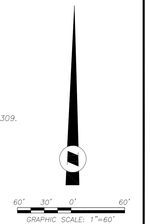
NOTES
A. CONCRETE FOOTING TO ACHIEVE 4300 PSI @ 28 DAYS.
B. TRASH BINS - SIZE AND NUMBER AS REQUIRED BY CITY.

LEGEND/ABBREVIATION

CF	CURB FACE	TC	TOP OF CURB
FG	FINISH GRADE	TG	TOP OF GRATE
FF	FINISHED FLOOR	SD	STORM DRAIN
FL	FLOW LINE	P	PROPERTY LINE
GB	GRADE BREAK	PED.	PEDESTRIAN
HP	HIGH POINT	TYP.	TYPICAL
INV	INVERT		EXISTING FIRE HYDRANT
LP	LOW POINT		WATER VALVE
R/W	RIGHT-OF-WAY	W	WATER METER
P=XX.X	PAD ELEVATION		STREET LIGHT
FF=XX.X	FINISH FLOOR ELEVATION		PROPOSED STORM DRAIN LINE
2%	DIRECTION OF DRAINAGE/GRADE	1425	EXISTING CONTOUR

CONSTRUCTION NOTES:

1. CONSTRUCT STORM DRAIN AND FITTINGS AT SIZES SHOWN.
2. CONSTRUCT CONTECH TYPE OR EQUIVALENT UNDERGROUND STORAGE SYSTEM PER PLAN.
3. CONSTRUCT GRATE INLET PER PLAN SIZING AND DETAIL PER GRADING PLAN
4. CONNECT EXISTING CATCH BASIN TO UNDERGOUND STORAGE VIA NEW SD LINES PER PLAN.
5. CONSTRUCT INVERTED UNDER SIDEWALK DRAIN CAST IN PLACE PER COUNTY OF RIVERSIDE STD. NO. 309.
6. INSTALL JENSEN PRECAST DROP INLET DI363636, WITH PEDESTRIAN GRATE.
7. INSTALL TRASH ENCLOSURE PER LANDSCAPE ARCHITECT PLAN.
8. INSTALL JENSEN PRECAST DROP INLET DI484848, WITH PEDESTRIAN GRATE.
9. INSTALL VALLEY GUTTER AT 0.5% SLOPE PER DETAIL B.



BGR NO. _____ WDID:

DIGALERT
DIAL BEFORE YOU DIG
TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

NOTE:
WORK CONTAINED WITHIN THESE PLANS SHALL NOT COMMENCE UNTIL ENCROACHMENT PERMIT AND/OR GRADING PERMIT HAS BEEN ISSUED.
THE PRIVATE ENGINEER SIGNING THESE PLANS IS RESPONSIBLE FOR ASSURING THE ACCURACY OF DESIGN AND ACCEPTABILITY OF THE WORK HEREON. IN THE EVENT OF DISCREPANCIES ARISING AFTER CITY APPROVAL OR DURING CONSTRUCTION, THE PRIVATE ENGINEER SHALL BE RESPONSIBLE DETERMINING AN ACCEPTABLE SOLUTION AND REVISING THE PLANS FOR APPROVAL BY CITY.

MARK	BY	DATE	REVISIONS	APPR.	DATE

ENGINEER DESIGN BY: DRAWN BY: CHECKED BY: CITY

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER DATE

SEAL-ENGINEER
REGISTERED PROFESSIONAL ENGINEER CHRISTOPHER F. LENZ NO. 63001 EXP. 6/30/22 CIVIL STATE OF CALIFORNIA

ueg united engineering group
8885 Haven Avenue - Suite 195
Rancho Cucamonga, CA 91730
Phone: 909.466.9240
www.uniteden g.com

PREPARED UNDER THE DIRECTION OF:
CHRISTOPHER F. LENZ 63001
DATE: _____ REGISTRATION EXPIRES 6-30-22

BENCH MARK:
METRO WATER DISTRICT SO. CALIFORNIA DISC SET ON EAST SIDE OF BASE OF STEEL TRAFFIC SIGNAL LIGHT AT THE SOUTHWEST CORNER OF INTERSECTION OF PERRIS BVLD AND RIDER STREET. RIVERSIDE COUNTY BENCHMARK NUMBER 6M-432 - DX5439
ELEVATION = 1455.11' NAVD 88

SCALE 1"=60'
FIELD BOOK
DESIGN
DRAWN
CHECKED

ZONING CASE #DPR ___-_____ I.P. No. _____
PERRIS CA. 92571
COUNTY OF RIVERSIDE

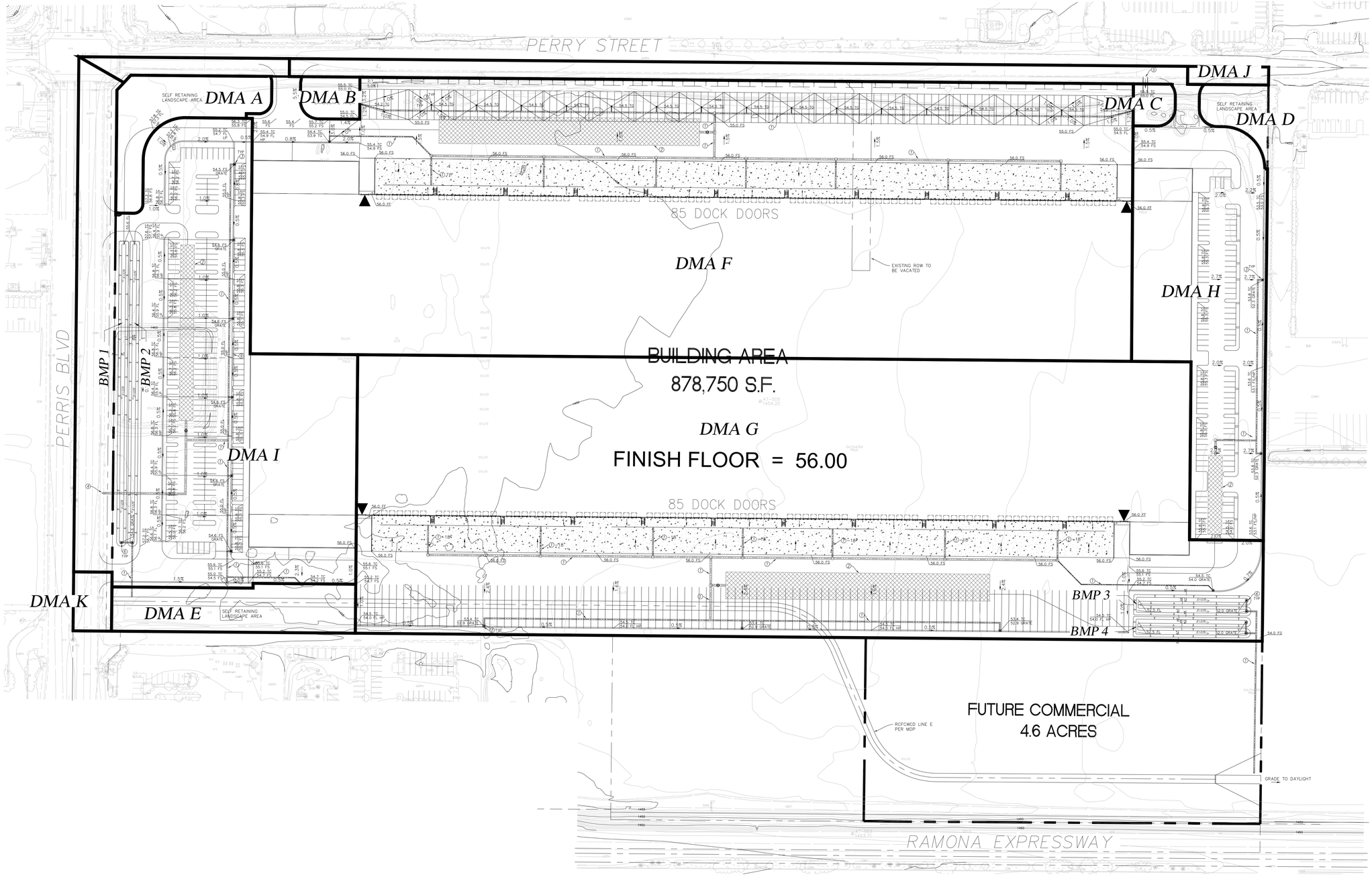
PRELIMINARY GRADING & DRAINAGE PLAN NEC RAMONA & PERRIS DRAINAGE PROPOSED SD SIZING

FOR: OPTIMUS BUILDING CORP. W.O. CITY FILE NO. DPR ___-_____

SHEET NO. 1 OF 1 SHEETS

FIGURE 4

Drainage Map WQMP



BGR NO. XXXXXX WDID: XXXXXX

SEAL–ENGINEER

REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER F. LENZ
NO. 63001
EXP. 6/30/22
CIVIL
STATE OF CALIFORNIA

ueg
united engineering group
8885 Haven Avenue - Suite 195
Rancho Cucamonga, CA 91730
Phone: 909.466.9240
www.unitedeng.com

PREPARED UNDER THE DIRECTION OF:

CHRISTOPHER F. LENZ 63001

DATE: _____ REGISTRATION EXPIRES 6–30–22

BENCH MARK:
BOLT AND WASHER ILLEGIBLE, AT THE CENTERLINE INTERSECTION OF MARKHAM STREET AND PERRIS BOULEVARD. RIVERSIDE COUNTY BENCHMARK NUMBER BM–CSA4 AND RCM81.

ELEVATION 1455.224

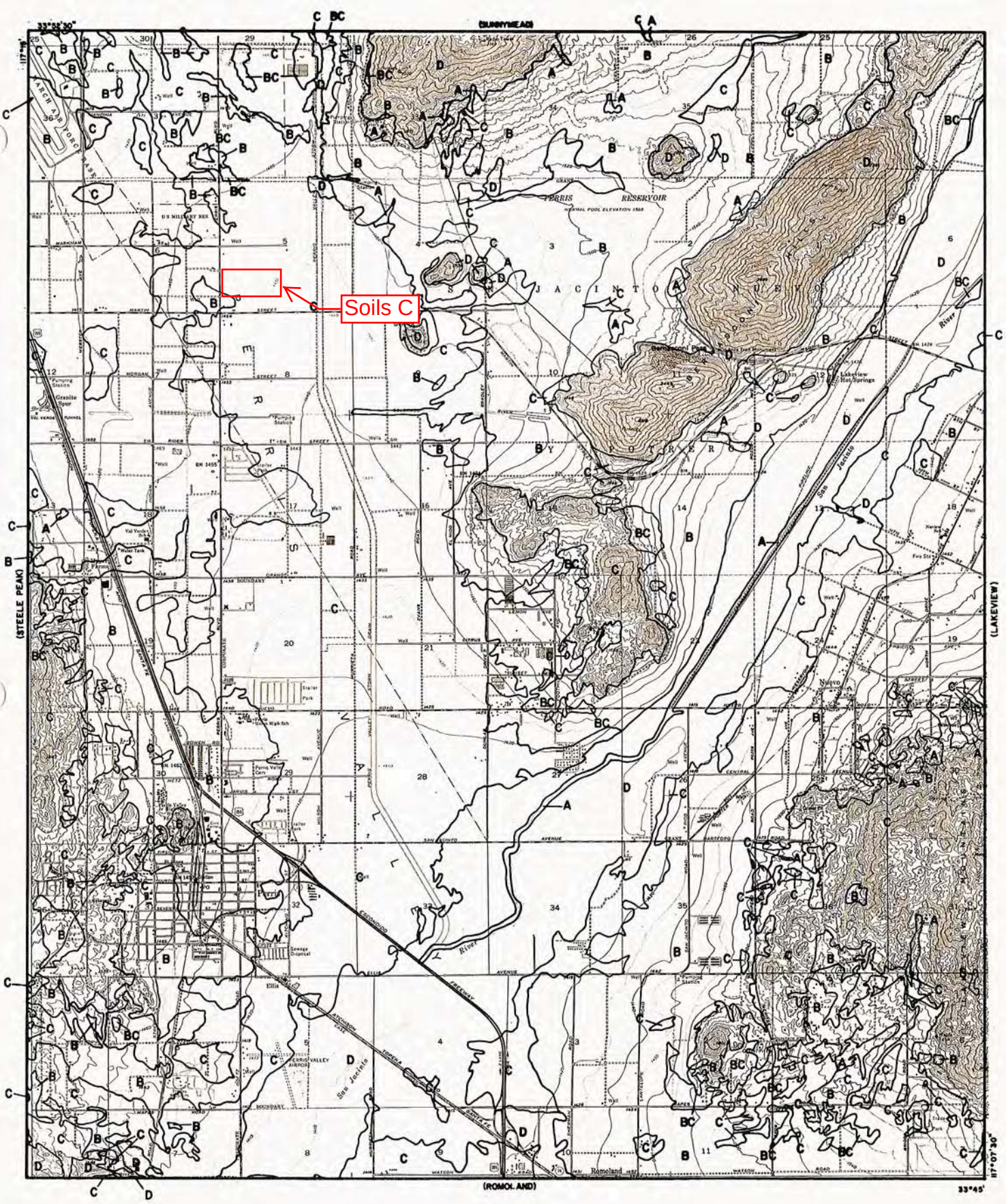
DPR __–_____ I.P. No. XXXXXX
PERRIS CA, 92571

POST CONSTRUCTION BMP SITE PLAN
NEC RAMONA & PERRIS
DPR __–___
DMA BMP MAP

SHEET NO. 4 OF 5 SHEETS

FOR: OPTIMUS BUILDING CORPORATION | W.O. | CITY FILE NO. DPR __–_____

Appendix A



LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC&WCD

HYDROLOGY MANUAL

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR PERRIS

PLATE C-1.30

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

RCFC & WCD
HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS FOR PERVIOUS AREA

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
AGRICULTURAL COVERS (cont.) -					
Legumes, Close Seeded (Alfalfa, sweetclover, timothy, etc.)	Poor	66	77	85	89
	Good	58	72	81	85
Orchards, Deciduous (Apples, apricots, pears, walnuts, etc.)		See Note 4			
Orchards, Evergreen (Citrus, avocados, etc.)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
Pasture, Dryland (Annual grasses)	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Pasture, Irrigated (Legumes and perennial grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
Row Crops (Field crops - tomatoes, sugar beets, etc.)	Poor	72	81	88	91
	Good	67	78	85	89
Small Grain (Wheat, oats, barley, etc.)	Poor	65	76	84	88
	Good	63	75	83	87
Vineyard		See Note 4			

Notes:

1. All runoff index (RI) numbers are for Antecedent Moisture Condition (AMC) II.

2. Quality of cover definitions:
   Poor-Heavily grazed or regularly burned areas. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.
   Fair-Moderate cover with 50 percent to 75 percent of the ground surface protected.
   Good-Heavy or dense cover with more than 75 percent of the ground surface protected.

3. See Plate C-2 for a detailed description of cover types.

4. Use runoff index numbers based on ground cover type. See discussion under "Cover Type Descriptions" on Plate C-2.

5. Reference Bibliography item 17.

ACTUAL IMPERVIOUS COVER

Land Use (1)	Range-Percent	Recommended Value For Average Conditions-Percent(2)
Natural or Agriculture	0 - 10	0
Single Family Residential: (3)		
40,000 S. F. (1 Acre) Lots	10 - 25	20
20,000 S. F. (½ Acre) Lots	30 - 45	40
7,200 - 10,000 S. F. Lots	45 - 55	50
Multiple Family Residential:		
Condominiums	45 - 70	65
Apartments	65 - 90	80
Mobile Home Park	60 - 85	75
Commercial, Downtown Business or Industrial	80 -100	90

Notes:

1. Land use should be based on ultimate development of the watershed. Long range master plans for the County and incorporated cities should be reviewed to insure reasonable land use assumptions.

2. Recommended values are based on average conditions which may not apply to a particular study area. The percentage impervious may vary greatly even on comparable sized lots due to differences in dwelling size, improvements, etc. Landscape practices should also be considered as it is common in some areas to use ornamental gravels underlain by impervious plastic materials in place of lawns and shrubs. A field investigation of a study area should always be made, and a review of aerial photos, where available may assist in estimating the percentage of impervious cover in developed areas.

3. For typical horse ranch subdivisions increase impervious area 5 percent over the values recommended in the table above.

RCFC & WCD
HYDROLOGY MANUAL

IMPERVIOUS COVER FOR DEVELOPED AREAS

PLATE D-5.6

NOAA Atlas 14, Volume 6, Version 2
Location name: Perris, California, USA*
Latitude: 33.8435°, Longitude: -117.2284°
Elevation: 1459.54 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.089** (0.074-0.108)	**0.124** (0.103-0.150)	**0.171** (0.142-0.207)	**0.211** (0.174-0.258)	**0.267** (0.213-0.338)	**0.312** (0.243-0.404)	**0.359** (0.273-0.477)	**0.410** (0.302-0.561)	**0.482** (0.340-0.688)	**0.540** (0.368-0.800)
10-min	**0.128** (0.107-0.154)	**0.177** (0.148-0.215)	**0.245** (0.204-0.297)	**0.302** (0.249-0.369)	**0.382** (0.305-0.485)	**0.447** (0.348-0.579)	**0.515** (0.391-0.684)	**0.587** (0.434-0.804)	**0.690** (0.488-0.987)	**0.774** (0.528-1.15)
15-min	**0.154** (0.129-0.187)	**0.214** (0.179-0.260)	**0.296** (0.246-0.359)	**0.365** (0.301-0.447)	**0.462** (0.369-0.586)	**0.540** (0.421-0.700)	**0.623** (0.473-0.828)	**0.710** (0.524-0.972)	**0.835** (0.590-1.19)	**0.936** (0.638-1.39)
30-min	**0.252** (0.210-0.304)	**0.350** (0.292-0.423)	**0.483** (0.402-0.586)	**0.595** (0.491-0.729)	**0.754** (0.601-0.956)	**0.882** (0.687-1.14)	**1.02** (0.772-1.35)	**1.16** (0.855-1.59)	**1.36** (0.962-1.95)	**1.53** (1.04-2.26)
60-min	**0.336** (0.281-0.406)	**0.466** (0.389-0.564)	**0.644** (0.536-0.781)	**0.794** (0.655-0.971)	**1.00** (0.801-1.27)	**1.18** (0.916-1.52)	**1.35** (1.03-1.80)	**1.55** (1.14-2.11)	**1.82** (1.28-2.59)	**2.04** (1.39-3.01)
2-hr	**0.504** (0.421-0.609)	**0.670** (0.560-0.811)	**0.892** (0.743-1.08)	**1.08** (0.889-1.32)	**1.33** (1.06-1.69)	**1.53** (1.20-1.99)	**1.74** (1.32-2.31)	**1.96** (1.45-2.68)	**2.26** (1.60-3.23)	**2.50** (1.70-3.70)
3-hr	**0.624** (0.522-0.754)	**0.819** (0.684-0.991)	**1.08** (0.896-1.31)	**1.29** (1.06-1.58)	**1.58** (1.26-2.00)	**1.81** (1.41-2.34)	**2.04** (1.55-2.71)	**2.28** (1.69-3.13)	**2.62** (1.85-3.74)	**2.88** (1.96-4.26)
6-hr	**0.879** (0.735-1.06)	**1.14** (0.955-1.39)	**1.49** (1.24-1.81)	**1.77** (1.46-2.17)	**2.16** (1.72-2.74)	**2.45** (1.91-3.18)	**2.75** (2.09-3.66)	**3.06** (2.26-4.19)	**3.48** (2.46-4.98)	**3.81** (2.60-5.64)
12-hr	**1.14** (0.954-1.38)	**1.51** (1.26-1.82)	**1.98** (1.65-2.41)	**2.37** (1.95-2.90)	**2.89** (2.30-3.66)	**3.29** (2.56-4.26)	**3.69** (2.80-4.90)	**4.10** (3.02-5.61)	**4.65** (3.29-6.64)	**5.08** (3.46-7.52)
24-hr	**1.45** (1.28-1.67)	**1.97** (1.74-2.27)	**2.64** (2.32-3.05)	**3.18** (2.78-3.71)	**3.91** (3.31-4.71)	**4.46** (3.70-5.49)	**5.02** (4.07-6.32)	**5.59** (4.41-7.24)	**6.36** (4.82-8.57)	**6.96** (5.10-9.69)
2-day	**1.67** (1.48-1.92)	**2.30** (2.03-2.66)	**3.13** (2.76-3.62)	**3.80** (3.32-4.43)	**4.71** (3.99-5.68)	**5.41** (4.49-6.66)	**6.12** (4.96-7.71)	**6.86** (5.41-8.87)	**7.85** (5.94-10.6)	**8.62** (6.31-12.0)
3-day	**1.77** (1.57-2.04)	**2.46** (2.18-2.85)	**3.38** (2.98-3.91)	**4.13** (3.61-4.82)	**5.15** (4.36-6.21)	**5.94** (4.93-7.31)	**6.75** (5.47-8.50)	**7.59** (5.98-9.82)	**8.73** (6.61-11.8)	**9.63** (7.05-13.4)
4-day	**1.90** (1.68-2.19)	**2.67** (2.36-3.08)	**3.69** (3.25-4.27)	**4.52** (3.95-5.28)	**5.67** (4.80-6.83)	**6.56** (5.44-8.07)	**7.47** (6.05-9.41)	**8.42** (6.64-10.9)	**9.72** (7.36-13.1)	**10.7** (7.87-15.0)
7-day	**2.04** (1.80-2.35)	**2.90** (2.56-3.35)	**4.06** (3.58-4.70)	**5.02** (4.39-5.86)	**6.34** (5.37-7.64)	**7.37** (6.11-9.07)	**8.43** (6.83-10.6)	**9.54** (7.52-12.3)	**11.1** (8.38-14.9)	**12.3** (8.99-17.1)
10-day	**2.07** (1.83-2.38)	**2.98** (2.63-3.44)	**4.20** (3.70-4.86)	**5.22** (4.56-6.09)	**6.63** (5.62-8.00)	**7.74** (6.42-9.53)	**8.89** (7.21-11.2)	**10.1** (7.96-13.1)	**11.8** (8.91-15.9)	**13.1** (9.58-18.2)
20-day	**2.34** (2.07-2.69)	**3.41** (3.02-3.94)	**4.89** (4.31-5.66)	**6.15** (5.37-7.17)	**7.93** (6.71-9.55)	**9.35** (7.76-11.5)	**10.8** (8.79-13.7)	**12.4** (9.81-16.1)	**14.7** (11.1-19.8)	**16.5** (12.1-23.0)
30-day	**2.61** (2.31-3.01)	**3.81** (3.36-4.39)	**5.48** (4.83-6.35)	**6.93** (6.06-8.09)	**9.02** (7.63-10.9)	**10.7** (8.89-13.2)	**12.5** (10.1-15.8)	**14.4** (11.4-18.7)	**17.2** (13.0-23.2)	**19.4** (14.2-27.1)
45-day	**3.02** (2.67-3.49)	**4.36** (3.85-5.04)	**6.27** (5.53-7.26)	**7.95** (6.95-9.28)	**10.4** (8.82-12.6)	**12.5** (10.3-15.3)	**14.7** (11.9-18.5)	**17.1** (13.5-22.1)	**20.6** (15.6-27.7)	**23.5** (17.2-32.7)
60-day	**3.40** (3.00-3.92)	**4.82** (4.26-5.57)	**6.89** (6.08-7.98)	**8.74** (7.64-10.2)	**11.5** (9.74-13.9)	**13.8** (11.5-17.0)	**16.4** (13.3-20.6)	**19.2** (15.1-24.8)	**23.3** (17.7-31.4)	**26.8** (19.6-37.3)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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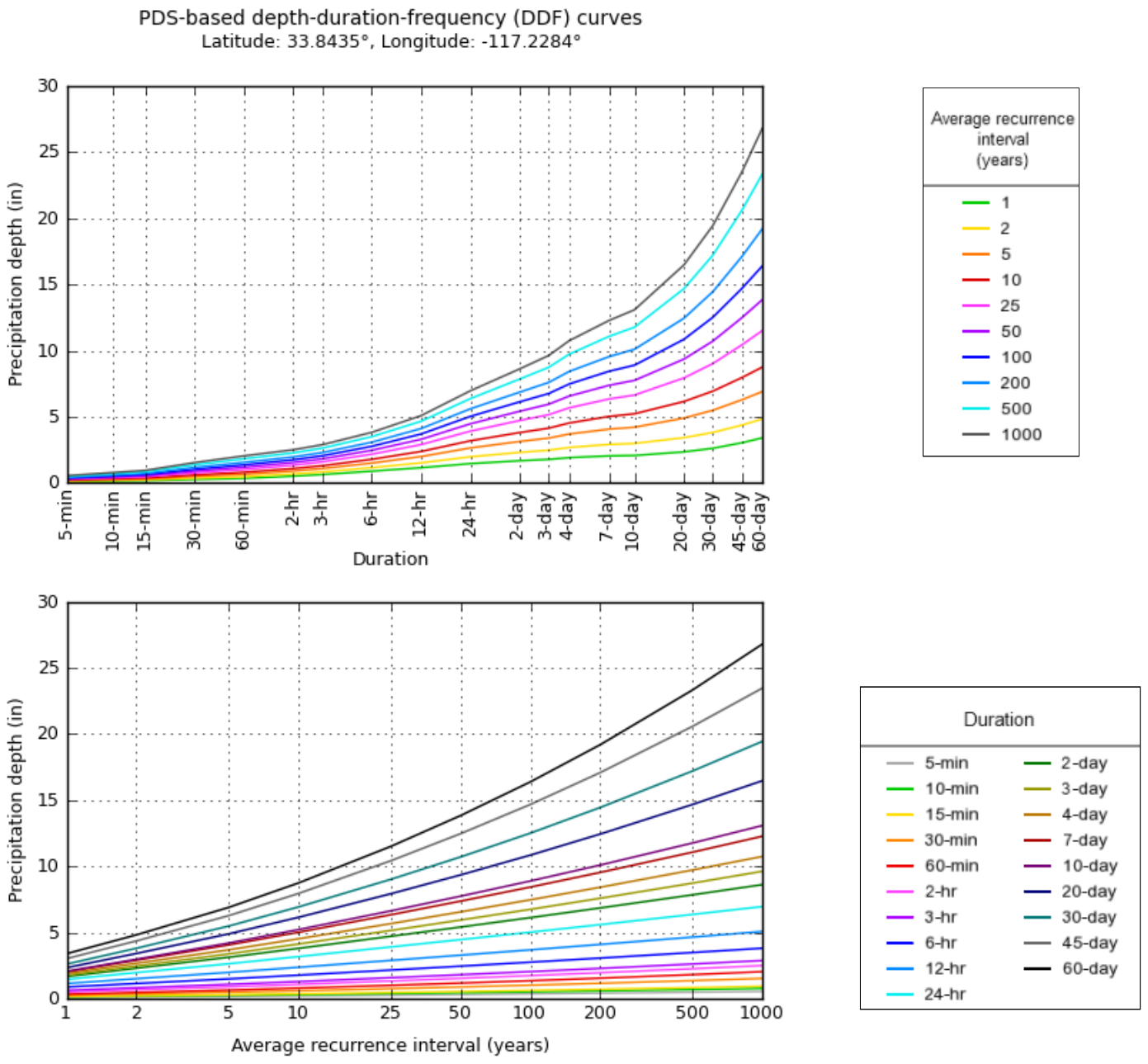
PF graphical



NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Fri Oct 30 21:11:54 2020

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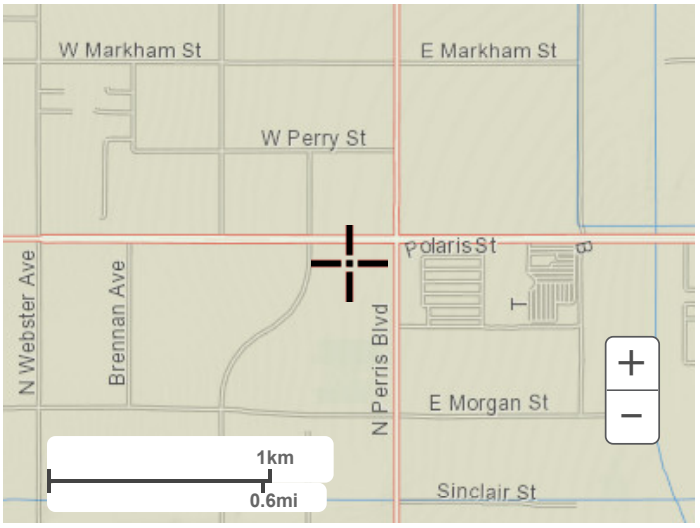
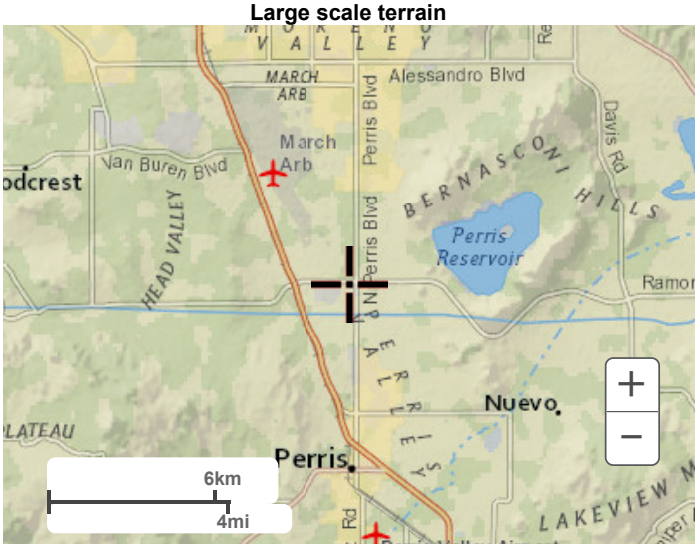
Maps & aerials

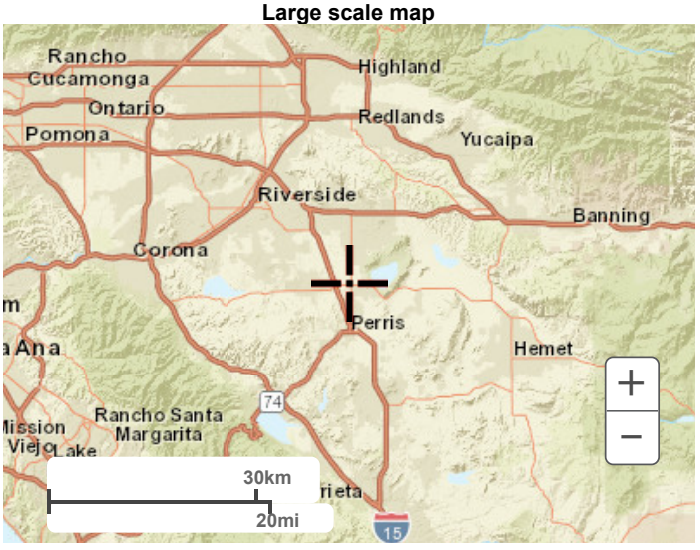
Small scale terrain



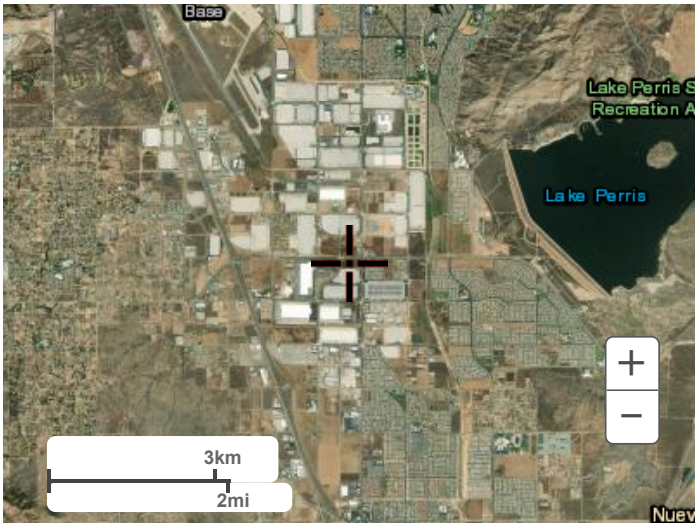
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

U n i t H y d r o g r a p h A n a l y s i s

Study date 02/09/22 File: NECRamonaEx12.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Existing Condition
2yr 1hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2220.00(Ft.)
Length along longest watercourse measured to centroid = 1115.00 (Ft.)
Length along longest watercourse = 0.420 Mi.
Length along longest watercourse measured to centroid = 0.211 Mi.
Difference in elevation = 7.60(Ft.)
Slope along watercourse = 18.0757 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.138 Hr.
Lag time = 8.28 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50              0.47                    20.27

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
             43.50              1.35                    58.73

      STORM EVENT (YEAR) =    2.00
      Area Averaged 2-Year Rainfall =    0.466(In)
      Area Averaged 100-Year Rainfall =    1.350(In)

      Point rain (area averaged) =    0.466(In)
      Areal adjustment factor =   99.96 %
      Adjusted average point rain =    0.466(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
          43.500           86.00          0.050
       Total Area Entered =     43.50(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
      86.0  71.6      0.343     0.050        0.328       1.000
0.328
                                                          Sum (F) =
0.328
      Area averaged mean soil loss (F) (In/Hr) =  0.328
      Minimum soil loss rate ((In/Hr)) =  0.164
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.900
      ------------------------------------------------------------------
---
      Slope of intensity-duration curve for a 1 hour storm =0.5000
      ------------------------------------------------------------------
----

                  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         60.414          8.310             3.643
           2   0.167        120.828         34.258            15.018
           3   0.250        181.242         26.449            11.595
           4   0.333        241.657         10.231             4.485
           5   0.417        302.071          6.073             2.662
           6   0.500        362.485          4.096             1.796
           7   0.583        422.899          2.910             1.276
           8   0.667        483.313          2.055             0.901
           9   0.750        543.727          1.698             0.744
          10   0.833        604.141          1.250             0.548
```

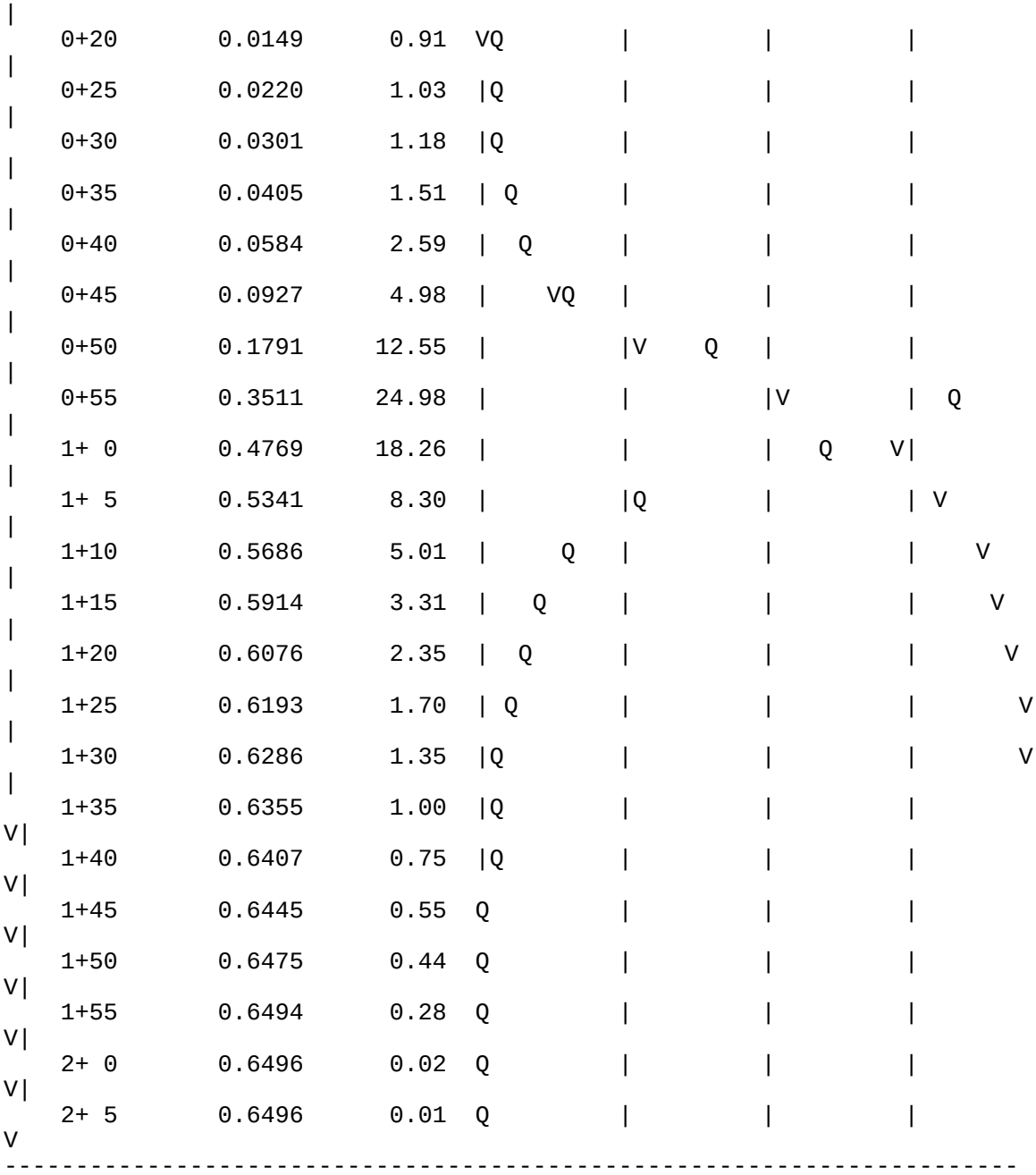
```
        11   0.917        664.556          0.945              0.414
        12   1.000        724.970          0.674              0.295
        13   1.083        785.384          0.604              0.265
        14   1.167        845.798          0.448              0.197
                                    Sum = 100.000   Sum=      43.840
-------------------------------------------------------------------------


 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   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low         (In/Hr)
   1   0.08     4.20      0.235       (  0.328)       0.211        0.023
   2   0.17     4.30      0.240       (  0.328)       0.216        0.024
   3   0.25     5.00      0.279       (  0.328)       0.252        0.028
   4   0.33     5.00      0.279       (  0.328)       0.252        0.028
   5   0.42     5.80      0.324       (  0.328)       0.292        0.032
   6   0.50     6.50      0.363       (  0.328)       0.327        0.036
   7   0.58     7.40      0.414          0.328    (  0.372)        0.086
   8   0.67     8.60      0.481          0.328    (  0.433)        0.153
   9   0.75    12.30      0.688          0.328    (  0.619)        0.360
  10   0.83    29.10      1.627          0.328    (  1.464)        1.299
  11   0.92     6.80      0.380          0.328    (  0.342)        0.052
  12   1.00     5.00      0.279       (  0.328)       0.252        0.028
            (Loss Rate Not Used)
     Sum =     100.0                                    Sum =     2.2
      Flood volume = Effective rainfall      0.18(In)
       times area      43.5(Ac.)/[(In)/(Ft.)] =       0.6(Ac.Ft)
      Total soil loss =      0.29(In)
      Total soil loss =     1.039(Ac.Ft)
      Total rainfall =      0.47(In)
      Flood volume =       28296.1 Cubic Feet
      Total soil loss =       45258.6 Cubic Feet
      -------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =     24.976(CFS)
      -------------------------------------------------------------------
--
      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                          1 - 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        7.5      15.0      22.5
30.0

-------------------------------------------------------------------------
    0+ 5       0.0006      0.09  Q         |         |         |
|
    0+10       0.0036      0.44  Q         |         |         |
|
    0+15       0.0087      0.74  Q         |         |         |
```


0+20 0.0149 0.91
0+25 0.0220 1.03
0+30 0.0301 1.18
0+35 0.0405 1.51
0+40 0.0584 2.59
0+45 0.0927 4.98
0+50 0.1791 12.55
0+55 0.3511 24.98
1+ 0 0.4769 18.26
1+ 5 0.5341 8.30
1+10 0.5686 5.01
1+15 0.5914 3.31
1+20 0.6076 2.35
1+25 0.6193 1.70
1+30 0.6286 1.35
1+35 0.6355 1.00
1+40 0.6407 0.75
1+45 0.6445 0.55
1+50 0.6475 0.44
1+55 0.6494 0.28
2+ 0 0.6496 0.02
2+ 5 0.6496 0.01

U n i t H y d r o g r a p h A n a l y s i s

Study date 02/09/22 File: NECRamonaEx32.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Existing Condition
2yr 3hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2220.00(Ft.)
Length along longest watercourse measured to centroid = 1115.00 (Ft.)
Length along longest watercourse = 0.420 Mi.
Length along longest watercourse measured to centroid = 0.211 Mi.
Difference in elevation = 7.60(Ft.)
Slope along watercourse = 18.0757 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.138 Hr.
Lag time = 8.28 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50              0.82                    35.63

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50              2.04                    88.74

  STORM EVENT (YEAR) =    2.00
  Area Averaged 2-Year Rainfall =    0.819(In)
  Area Averaged 100-Year Rainfall =    2.040(In)

  Point rain (area averaged) =    0.819(In)
  Areal adjustment factor =   99.98 %
  Adjusted average point rain =    0.819(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           86.00          0.050
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  86.0  71.6      0.343     0.050        0.328       1.000
0.328
                                                      Sum (F) =
0.328
  Area averaged mean soil loss (F) (In/Hr) =  0.328
  Minimum soil loss rate ((In/Hr)) =  0.164
  (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   Time % of lag   Distribution   Unit Hydrograph
      (hrs)                          Graph %           (CFS)
  ------------------------------------------------------------------
---
         1   0.083         60.414          8.310             3.643
         2   0.167        120.828         34.258            15.018
         3   0.250        181.242         26.449            11.595
         4   0.333        241.657         10.231             4.485
         5   0.417        302.071          6.073             2.662
         6   0.500        362.485          4.096             1.796
         7   0.583        422.899          2.910             1.276
         8   0.667        483.313          2.055             0.901
         9   0.750        543.727          1.698             0.744
        10   0.833        604.141          1.250             0.548
        11   0.917        664.556          0.945             0.414
        12   1.000        724.970          0.674             0.295
        13   1.083        785.384          0.604             0.265
```

14	1.167	845.798	0.448		0.197
			Sum = 100.000	Sum=	43.840

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	1.30	0.128	(0.328)	0.115	0.013
2	0.17	1.30	0.128	(0.328)	0.115	0.013
3	0.25	1.10	0.108	(0.328)	0.097	0.011
4	0.33	1.50	0.147	(0.328)	0.133	0.015
5	0.42	1.50	0.147	(0.328)	0.133	0.015
6	0.50	1.80	0.177	(0.328)	0.159	0.018
7	0.58	1.50	0.147	(0.328)	0.133	0.015
8	0.67	1.80	0.177	(0.328)	0.159	0.018
9	0.75	1.80	0.177	(0.328)	0.159	0.018
10	0.83	1.50	0.147	(0.328)	0.133	0.015
11	0.92	1.60	0.157	(0.328)	0.141	0.016
12	1.00	1.80	0.177	(0.328)	0.159	0.018
13	1.08	2.20	0.216	(0.328)	0.195	0.022
14	1.17	2.20	0.216	(0.328)	0.195	0.022
15	1.25	2.20	0.216	(0.328)	0.195	0.022
16	1.33	2.00	0.197	(0.328)	0.177	0.020
17	1.42	2.60	0.255	(0.328)	0.230	0.026
18	1.50	2.70	0.265	(0.328)	0.239	0.027
19	1.58	2.40	0.236	(0.328)	0.212	0.024
20	1.67	2.70	0.265	(0.328)	0.239	0.027
21	1.75	3.30	0.324	(0.328)	0.292	0.032
22	1.83	3.10	0.305	(0.328)	0.274	0.030
23	1.92	2.90	0.285	(0.328)	0.256	0.028
24	2.00	3.00	0.295	(0.328)	0.265	0.029
25	2.08	3.10	0.305	(0.328)	0.274	0.030
26	2.17	4.20	0.413	0.328	(0.371)	0.085
27	2.25	5.00	0.491	0.328	(0.442)	0.164
28	2.33	3.50	0.344	(0.328)	0.310	0.034
29	2.42	6.80	0.668	0.328	(0.601)	0.340
30	2.50	7.30	0.717	0.328	(0.646)	0.390
31	2.58	8.20	0.806	0.328	(0.725)	0.478
32	2.67	5.90	0.580	0.328	(0.522)	0.252
33	2.75	2.00	0.197	(0.328)	0.177	0.020
34	2.83	1.80	0.177	(0.328)	0.159	0.018
35	2.92	1.80	0.177	(0.328)	0.159	0.018
36	3.00	0.60	0.059	(0.328)	0.053	0.006
	(Loss Rate Not Used)					
Sum =		100.0			Sum =	2.3

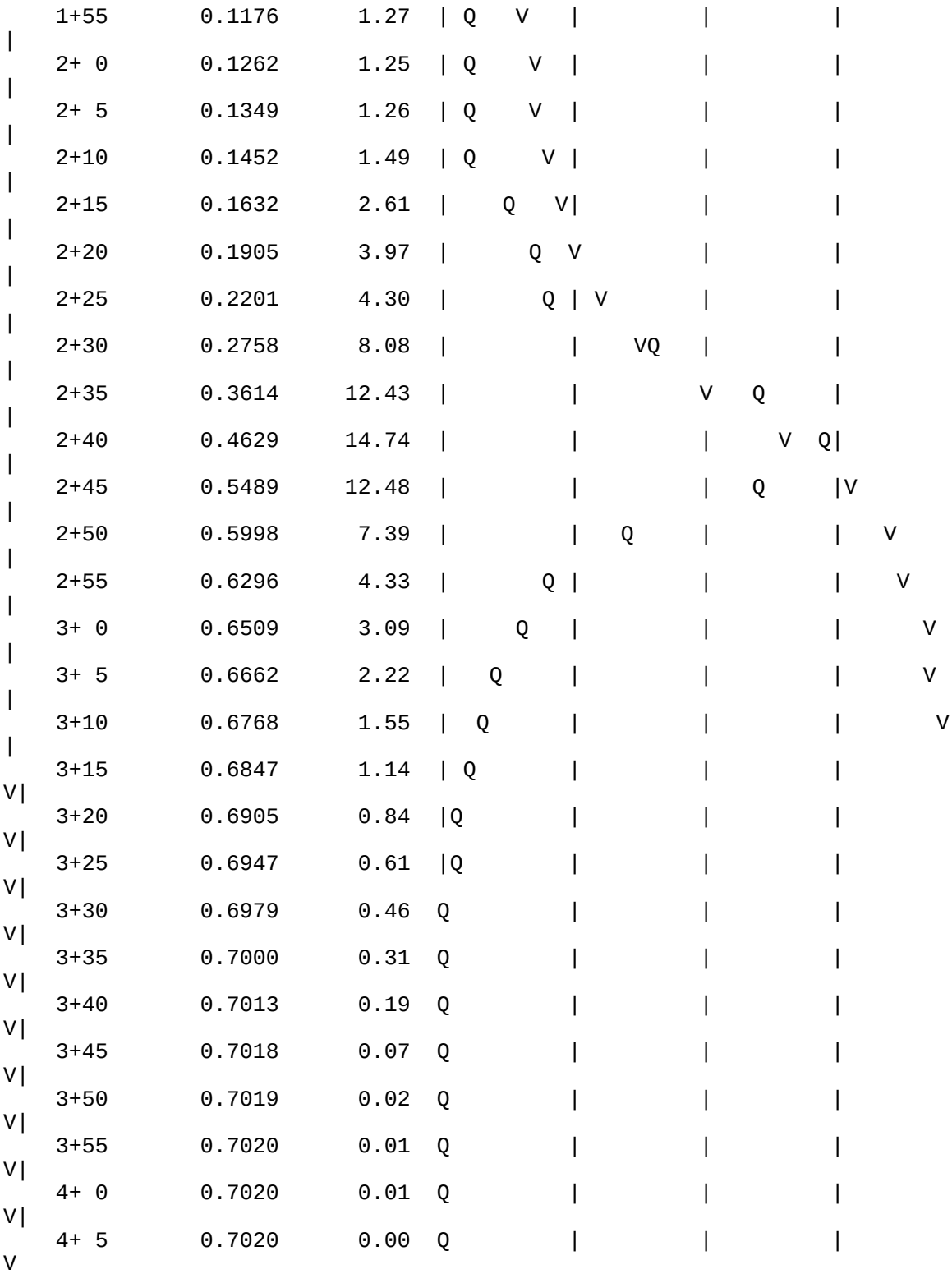
Flood volume = Effective rainfall 0.19(In)
times area 43.5(Ac.)/[(In)/(Ft.)] = 0.7(Ac.Ft)
Total soil loss = 0.63(In)
Total soil loss = 2.266(Ac.Ft)
Total rainfall = 0.82(In)
Flood volume = 30581.1 Cubic Feet
Total soil loss = 98718.5 Cubic Feet

Peak flow rate of this hydrograph = 14.743(CFS)

```
      ------------------------------------------------------------------
--
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                          3 - H O U R    S T O R M
                       R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------
--
                     Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------
--
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0
20.0

---------------------------------------------------------------------------
    0+ 5       0.0003      0.05  Q         |         |         |
|
    0+10       0.0020      0.24  Q         |         |         |
|
    0+15       0.0046      0.38  Q         |         |         |
|
    0+20       0.0075      0.42  Q         |         |         |
|
    0+25       0.0109      0.49  Q         |         |         |
|
    0+30       0.0147      0.56  VQ        |         |         |
|
    0+35       0.0190      0.62  |Q        |         |         |
|
    0+40       0.0235      0.64  |Q        |         |         |
|
    0+45       0.0282      0.68  |Q        |         |         |
|
    0+50       0.0331      0.71  |Q        |         |         |
|
    0+55       0.0378      0.69  |QV       |         |         |
|
    1+ 0       0.0425      0.69  |QV       |         |         |
|
    1+ 5       0.0476      0.74  |QV       |         |         |
|
    1+10       0.0533      0.82  |Q V      |         |         |
|
    1+15       0.0593      0.88  |Q V      |         |         |
|
    1+20       0.0655      0.89  |Q V      |         |         |
|
    1+25       0.0717      0.90  |Q  V     |         |         |
|
    1+30       0.0784      0.98  |Q  V     |         |         |
|
    1+35       0.0856      1.05  | Q V     |         |         |
|
    1+40       0.0929      1.05  | Q  V    |         |         |
|
    1+45       0.1005      1.10  | Q  V    |         |         |
|
    1+50       0.1089      1.22  | Q   V   |         |         |
|
```


1+55 0.1176 1.27 | Q V | | |
2+ 0 0.1262 1.25 | Q V | | |
2+ 5 0.1349 1.26 | Q V | | |
2+10 0.1452 1.49 | Q V | | |
2+15 0.1632 2.61 | Q V| | |
2+20 0.1905 3.97 | Q V | | |
2+25 0.2201 4.30 | Q | V | | |
2+30 0.2758 8.08 | | VQ | | |
2+35 0.3614 12.43 | | V Q | |
2+40 0.4629 14.74 | | | V Q|
2+45 0.5489 12.48 | | | Q |V
2+50 0.5998 7.39 | | Q | | V
2+55 0.6296 4.33 | Q | | | V
3+ 0 0.6509 3.09 | Q | | | V
3+ 5 0.6662 2.22 | Q | | | V
3+10 0.6768 1.55 | Q | | | V
3+15 0.6847 1.14 | Q | | |
V|
3+20 0.6905 0.84 |Q | | |
V|
3+25 0.6947 0.61 |Q | | |
V|
3+30 0.6979 0.46 Q | | |
V|
3+35 0.7000 0.31 Q | | |
V|
3+40 0.7013 0.19 Q | | |
V|
3+45 0.7018 0.07 Q | | |
V|
3+50 0.7019 0.02 Q | | |
V|
3+55 0.7020 0.01 Q | | |
V|
4+ 0 0.7020 0.01 Q | | |
V|
4+ 5 0.7020 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

Study date 02/09/22 File: NECRamonaEx62.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Existing Condition
2yr 6hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2220.00(Ft.)
Length along longest watercourse measured to centroid = 1115.00 (Ft.)
Length along longest watercourse = 0.420 Mi.
Length along longest watercourse measured to centroid = 0.211 Mi.
Difference in elevation = 7.60(Ft.)
Slope along watercourse = 18.0757 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.138 Hr.
Lag time = 8.28 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50              1.14                    49.59

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50              2.75                   119.63

  STORM EVENT (YEAR) =    2.00
  Area Averaged 2-Year Rainfall =    1.140(In)
  Area Averaged 100-Year Rainfall =    2.750(In)

  Point rain (area averaged) =    1.140(In)
  Areal adjustment factor =   99.99 %
  Adjusted average point rain =    1.140(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           86.00          0.050
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  86.0  71.6      0.343     0.050        0.328       1.000
0.328
                                                      Sum (F) =
0.328
  Area averaged mean soil loss (F) (In/Hr) =  0.328
  Minimum soil loss rate ((In/Hr)) =  0.164
  (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   Time % of lag   Distribution   Unit Hydrograph
      (hrs)                          Graph %           (CFS)
  ------------------------------------------------------------------
---
         1   0.083        60.414         8.310             3.643
         2   0.167       120.828        34.258            15.018
         3   0.250       181.242        26.449            11.595
         4   0.333       241.657        10.231             4.485
         5   0.417       302.071         6.073             2.662
         6   0.500       362.485         4.096             1.796
         7   0.583       422.899         2.910             1.276
         8   0.667       483.313         2.055             0.901
         9   0.750       543.727         1.698             0.744
        10   0.833       604.141         1.250             0.548
        11   0.917       664.556         0.945             0.414
        12   1.000       724.970         0.674             0.295
        13   1.083       785.384         0.604             0.265
```

14	1.167	845.798	0.448		0.197
			Sum = 100.000	Sum=	43.840

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	0.50	0.068	(0.328)	0.062	0.007
2	0.17	0.60	0.082	(0.328)	0.074	0.008
3	0.25	0.60	0.082	(0.328)	0.074	0.008
4	0.33	0.60	0.082	(0.328)	0.074	0.008
5	0.42	0.60	0.082	(0.328)	0.074	0.008
6	0.50	0.70	0.096	(0.328)	0.086	0.010
7	0.58	0.70	0.096	(0.328)	0.086	0.010
8	0.67	0.70	0.096	(0.328)	0.086	0.010
9	0.75	0.70	0.096	(0.328)	0.086	0.010
10	0.83	0.70	0.096	(0.328)	0.086	0.010
11	0.92	0.70	0.096	(0.328)	0.086	0.010
12	1.00	0.80	0.109	(0.328)	0.098	0.011
13	1.08	0.80	0.109	(0.328)	0.098	0.011
14	1.17	0.80	0.109	(0.328)	0.098	0.011
15	1.25	0.80	0.109	(0.328)	0.098	0.011
16	1.33	0.80	0.109	(0.328)	0.098	0.011
17	1.42	0.80	0.109	(0.328)	0.098	0.011
18	1.50	0.80	0.109	(0.328)	0.098	0.011
19	1.58	0.80	0.109	(0.328)	0.098	0.011
20	1.67	0.80	0.109	(0.328)	0.098	0.011
21	1.75	0.80	0.109	(0.328)	0.098	0.011
22	1.83	0.80	0.109	(0.328)	0.098	0.011
23	1.92	0.80	0.109	(0.328)	0.098	0.011
24	2.00	0.90	0.123	(0.328)	0.111	0.012
25	2.08	0.80	0.109	(0.328)	0.098	0.011
26	2.17	0.90	0.123	(0.328)	0.111	0.012
27	2.25	0.90	0.123	(0.328)	0.111	0.012
28	2.33	0.90	0.123	(0.328)	0.111	0.012
29	2.42	0.90	0.123	(0.328)	0.111	0.012
30	2.50	0.90	0.123	(0.328)	0.111	0.012
31	2.58	0.90	0.123	(0.328)	0.111	0.012
32	2.67	0.90	0.123	(0.328)	0.111	0.012
33	2.75	1.00	0.137	(0.328)	0.123	0.014
34	2.83	1.00	0.137	(0.328)	0.123	0.014
35	2.92	1.00	0.137	(0.328)	0.123	0.014
36	3.00	1.00	0.137	(0.328)	0.123	0.014
37	3.08	1.00	0.137	(0.328)	0.123	0.014
38	3.17	1.10	0.150	(0.328)	0.135	0.015
39	3.25	1.10	0.150	(0.328)	0.135	0.015
40	3.33	1.10	0.150	(0.328)	0.135	0.015
41	3.42	1.20	0.164	(0.328)	0.148	0.016
42	3.50	1.30	0.178	(0.328)	0.160	0.018
43	3.58	1.40	0.191	(0.328)	0.172	0.019
44	3.67	1.40	0.191	(0.328)	0.172	0.019
45	3.75	1.50	0.205	(0.328)	0.185	0.021
46	3.83	1.50	0.205	(0.328)	0.185	0.021
47	3.92	1.60	0.219	(0.328)	0.197	0.022
48	4.00	1.60	0.219	(0.328)	0.197	0.022

```
 49   4.08     1.70      0.233       (  0.328)       0.209        0.023
 50   4.17     1.80      0.246       (  0.328)       0.222        0.025
 51   4.25     1.90      0.260       (  0.328)       0.234        0.026
 52   4.33     2.00      0.274       (  0.328)       0.246        0.027
 53   4.42     2.10      0.287       (  0.328)       0.259        0.029
 54   4.50     2.10      0.287       (  0.328)       0.259        0.029
 55   4.58     2.20      0.301       (  0.328)       0.271        0.030
 56   4.67     2.30      0.315       (  0.328)       0.283        0.031
 57   4.75     2.40      0.328       (  0.328)       0.295        0.033
 58   4.83     2.40      0.328       (  0.328)       0.295        0.033
 59   4.92     2.50      0.342       (  0.328)       0.308        0.034
 60   5.00     2.60      0.356       (  0.328)       0.320        0.036
 61   5.08     3.10      0.424          0.328    (  0.382)       0.096
 62   5.17     3.60      0.492          0.328    (  0.443)       0.165
 63   5.25     3.90      0.533          0.328    (  0.480)       0.206
 64   5.33     4.20      0.574          0.328    (  0.517)       0.247
 65   5.42     4.70      0.643          0.328    (  0.579)       0.315
 66   5.50     5.60      0.766          0.328    (  0.689)       0.438
 67   5.58     1.90      0.260       (  0.328)       0.234        0.026
 68   5.67     0.90      0.123       (  0.328)       0.111        0.012
 69   5.75     0.60      0.082       (  0.328)       0.074        0.008
 70   5.83     0.50      0.068       (  0.328)       0.062        0.007
 71   5.92     0.30      0.041       (  0.328)       0.037        0.004
 72   6.00     0.20      0.027       (  0.328)       0.025        0.003
          (Loss Rate Not Used)
    Sum =     100.0                                   Sum =     2.5
     Flood volume = Effective rainfall      0.21(In)
      times area      43.5(Ac.)/[(In)/(Ft.)] =       0.8(Ac.Ft)
     Total soil loss =      0.93(In)
     Total soil loss =     3.379(Ac.Ft)
     Total rainfall =      1.14(In)
     Flood volume =       32785.9 Cubic Feet
     Total soil loss =      147198.9 Cubic Feet
     ------------------------------------------------------------------
--
      Peak flow rate of this hydrograph =     12.524(CFS)
     ------------------------------------------------------------------
--
     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                         6 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
     ------------------------------------------------------------------
--
                  Hydrograph in   5   Minute intervals ((CFS))

     ------------------------------------------------------------------
--
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        5.0      10.0      15.0
20.0

-------------------------------------------------------------------------
    0+ 5       0.0002      0.02  Q         |         |         |
|
    0+10       0.0011      0.13  Q         |         |         |
|
    0+15       0.0027      0.23  Q         |         |         |
|
    0+20       0.0046      0.28  Q         |         |         |
|
```

0+25	0.0067	0.30	Q	|	|	|
0+30	0.0089	0.32	Q	|	|	|
0+35	0.0114	0.36	Q	|	|	|
0+40	0.0140	0.38	Q	|	|	|
0+45	0.0167	0.39	Q	|	|	|
0+50	0.0195	0.40	QV	|	|	|
0+55	0.0223	0.41	QV	|	|	|
1+ 0	0.0251	0.42	QV	|	|	|
1+ 5	0.0282	0.44	QV	|	|	|
1+10	0.0313	0.46	QV	|	|	|
1+15	0.0345	0.47	QV	|	|	|
1+20	0.0378	0.47	Q V	|	|	|
1+25	0.0410	0.47	Q V	|	|	|
1+30	0.0443	0.48	Q V	|	|	|
1+35	0.0476	0.48	Q V	|	|	|
1+40	0.0509	0.48	Q V	|	|	|
1+45	0.0542	0.48	Q V	|	|	|
1+50	0.0575	0.48	Q V	|	|	|
1+55	0.0608	0.48	Q V	|	|	|
2+ 0	0.0641	0.48	Q V	|	|	|
2+ 5	0.0676	0.50	|Q V	|	|	|
2+10	0.0710	0.50	|Q V	|	|	|
2+15	0.0745	0.51	|Q V	|	|	|
2+20	0.0781	0.53	|Q V	|	|	|
2+25	0.0818	0.53	|Q V	|	|	|
2+30	0.0855	0.53	|Q V	|	|	|
2+35	0.0891	0.53	|Q V	|	|	|
2+40	0.0928	0.54	|Q V	|	|	|
2+45	0.0966	0.54	|Q V	|	|	|
2+50	0.1005	0.56	|Q V	|	|	|

2+55	0.1044	0.58	|Q V |	|	|
3+ 0	0.1085	0.59	|Q V |	|	|
3+ 5	0.1126	0.59	|Q V |	|	|
3+10	0.1167	0.60	|Q V |	|	|
3+15	0.1210	0.62	|Q V |	|	|
3+20	0.1254	0.64	|Q V |	|	|
3+25	0.1298	0.65	|Q V |	|	|
3+30	0.1345	0.68	|Q V |	|	|
3+35	0.1395	0.72	|Q V |	|	|
3+40	0.1448	0.77	|Q V |	|	|
3+45	0.1503	0.80	|Q V |	|	|
3+50	0.1561	0.84	|Q V |	|	|
3+55	0.1620	0.86	|Q V |	|	|
4+ 0	0.1682	0.90	|Q V |	|	|
4+ 5	0.1746	0.93	|Q V|	|	|
4+10	0.1812	0.96	|Q V|	|	|
4+15	0.1882	1.01	| Q V |	|	|
4+20	0.1956	1.07	| Q V |	|	|
4+25	0.2033	1.12	| Q V |	|	|
4+30	0.2114	1.17	| Q |V |	|	|
4+35	0.2197	1.21	| Q |V |	|	|
4+40	0.2283	1.25	| Q | V |	|	|
4+45	0.2373	1.31	| Q | V |	|	|
4+50	0.2466	1.36	| Q | V |	|	|
4+55	0.2562	1.39	| Q | V |	|	|
5+ 0	0.2661	1.43	| Q | V |	|	|
5+ 5	0.2778	1.70	| Q | V |	|	|
5+10	0.2978	2.89	| Q | V |	|	|
5+15	0.3308	4.79	| Q| V |	|	|
5+20	0.3765	6.63	| | Q V |	|	|

```
    5+25       0.4347      8.45  |         |     Q   |  V      |
|
    5+30       0.5097     10.89  |         |         |Q     V  |
|
    5+35       0.5959     12.52  |         |         |    Q    |V
|
    5+40       0.6534      8.34  |         |     Q   |         |   V
|
    5+45       0.6830      4.31  |       Q |         |         |     V
|
    5+50       0.7027      2.86  |    Q    |         |         |      V
|
    5+55       0.7169      2.06  |   Q     |         |         |       V
|
    6+ 0       0.7274      1.52  |  Q      |         |         |       V
|
    6+ 5       0.7351      1.13  | Q       |         |         |
V|
    6+10       0.7410      0.85  |Q        |         |         |
V|
    6+15       0.7451      0.61  |Q        |         |         |
V|
    6+20       0.7481      0.43  Q         |         |         |
V|
    6+25       0.7502      0.30  Q         |         |         |
V|
    6+30       0.7516      0.21  Q         |         |         |
V|
    6+35       0.7524      0.11  Q         |         |         |
V|
    6+40       0.7525      0.02  Q         |         |         |
V|
    6+45       0.7526      0.01  Q         |         |         |
V|
    6+50       0.7526      0.01  Q         |         |         |
V|
    6+55       0.7526      0.00  Q         |         |         |
V|
    7+ 0       0.7527      0.00  Q         |         |         |
V|
    7+ 5       0.7527      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

Study date 02/09/22 File: NECRamonaEx242.out

++

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Existing Condition
2yr 24hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2220.00(Ft.)
Length along longest watercourse measured to centroid = 1115.00 (Ft.)
Length along longest watercourse = 0.420 Mi.
Length along longest watercourse measured to centroid = 0.211 Mi.
Difference in elevation = 7.60(Ft.)
Slope along watercourse = 18.0757 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.138 Hr.
Lag time = 8.28 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 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]

```
       43.50              1.97                    85.69

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
             43.50              5.02                  218.37

      STORM EVENT (YEAR) =    2.00
      Area Averaged 2-Year Rainfall =    1.970(In)
      Area Averaged 100-Year Rainfall =    5.020(In)

      Point rain (area averaged) =    1.970(In)
      Areal adjustment factor =   99.99 %
      Adjusted average point rain =    1.970(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
          43.500           86.00          0.050
       Total Area Entered =     43.50(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
      86.0  71.6      0.343     0.050        0.328       1.000
0.328
                                                          Sum (F) =
0.328
      Area averaged mean soil loss (F) (In/Hr) =  0.328
      Minimum soil loss rate ((In/Hr)) =  0.164
      (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   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                           Graph %           (CFS)
      ------------------------------------------------------------------
---
           1   0.083         60.414          8.310             3.643
           2   0.167        120.828         34.258            15.018
           3   0.250        181.242         26.449            11.595
           4   0.333        241.657         10.231             4.485
           5   0.417        302.071          6.073             2.662
           6   0.500        362.485          4.096             1.796
           7   0.583        422.899          2.910             1.276
           8   0.667        483.313          2.055             0.901
           9   0.750        543.727          1.698             0.744
          10   0.833        604.141          1.250             0.548
          11   0.917        664.556          0.945             0.414
          12   1.000        724.970          0.674             0.295
          13   1.083        785.384          0.604             0.265
```

14	1.167	845.798	0.448		0.197
			Sum = 100.000	Sum=	43.840

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	0.016	(0.581)	0.014	0.002
2	0.17	0.07	0.016	(0.579)	0.014	0.002
3	0.25	0.07	0.016	(0.576)	0.014	0.002
4	0.33	0.10	0.024	(0.574)	0.021	0.002
5	0.42	0.10	0.024	(0.572)	0.021	0.002
6	0.50	0.10	0.024	(0.570)	0.021	0.002
7	0.58	0.10	0.024	(0.567)	0.021	0.002
8	0.67	0.10	0.024	(0.565)	0.021	0.002
9	0.75	0.10	0.024	(0.563)	0.021	0.002
10	0.83	0.13	0.032	(0.561)	0.028	0.003
11	0.92	0.13	0.032	(0.559)	0.028	0.003
12	1.00	0.13	0.032	(0.556)	0.028	0.003
13	1.08	0.10	0.024	(0.554)	0.021	0.002
14	1.17	0.10	0.024	(0.552)	0.021	0.002
15	1.25	0.10	0.024	(0.550)	0.021	0.002
16	1.33	0.10	0.024	(0.548)	0.021	0.002
17	1.42	0.10	0.024	(0.545)	0.021	0.002
18	1.50	0.10	0.024	(0.543)	0.021	0.002
19	1.58	0.10	0.024	(0.541)	0.021	0.002
20	1.67	0.10	0.024	(0.539)	0.021	0.002
21	1.75	0.10	0.024	(0.537)	0.021	0.002
22	1.83	0.13	0.032	(0.535)	0.028	0.003
23	1.92	0.13	0.032	(0.532)	0.028	0.003
24	2.00	0.13	0.032	(0.530)	0.028	0.003
25	2.08	0.13	0.032	(0.528)	0.028	0.003
26	2.17	0.13	0.032	(0.526)	0.028	0.003
27	2.25	0.13	0.032	(0.524)	0.028	0.003
28	2.33	0.13	0.032	(0.522)	0.028	0.003
29	2.42	0.13	0.032	(0.520)	0.028	0.003
30	2.50	0.13	0.032	(0.518)	0.028	0.003
31	2.58	0.17	0.039	(0.515)	0.035	0.004
32	2.67	0.17	0.039	(0.513)	0.035	0.004
33	2.75	0.17	0.039	(0.511)	0.035	0.004
34	2.83	0.17	0.039	(0.509)	0.035	0.004
35	2.92	0.17	0.039	(0.507)	0.035	0.004
36	3.00	0.17	0.039	(0.505)	0.035	0.004
37	3.08	0.17	0.039	(0.503)	0.035	0.004
38	3.17	0.17	0.039	(0.501)	0.035	0.004
39	3.25	0.17	0.039	(0.499)	0.035	0.004
40	3.33	0.17	0.039	(0.497)	0.035	0.004
41	3.42	0.17	0.039	(0.494)	0.035	0.004
42	3.50	0.17	0.039	(0.492)	0.035	0.004
43	3.58	0.17	0.039	(0.490)	0.035	0.004
44	3.67	0.17	0.039	(0.488)	0.035	0.004
45	3.75	0.17	0.039	(0.486)	0.035	0.004
46	3.83	0.20	0.047	(0.484)	0.043	0.005
47	3.92	0.20	0.047	(0.482)	0.043	0.005
48	4.00	0.20	0.047	(0.480)	0.043	0.005

49	4.08	0.20	0.047	(0.478)	0.043	0.005
50	4.17	0.20	0.047	(0.476)	0.043	0.005
51	4.25	0.20	0.047	(0.474)	0.043	0.005
52	4.33	0.23	0.055	(0.472)	0.050	0.006
53	4.42	0.23	0.055	(0.470)	0.050	0.006
54	4.50	0.23	0.055	(0.468)	0.050	0.006
55	4.58	0.23	0.055	(0.466)	0.050	0.006
56	4.67	0.23	0.055	(0.464)	0.050	0.006
57	4.75	0.23	0.055	(0.462)	0.050	0.006
58	4.83	0.27	0.063	(0.460)	0.057	0.006
59	4.92	0.27	0.063	(0.458)	0.057	0.006
60	5.00	0.27	0.063	(0.456)	0.057	0.006
61	5.08	0.20	0.047	(0.454)	0.043	0.005
62	5.17	0.20	0.047	(0.452)	0.043	0.005
63	5.25	0.20	0.047	(0.450)	0.043	0.005
64	5.33	0.23	0.055	(0.448)	0.050	0.006
65	5.42	0.23	0.055	(0.446)	0.050	0.006
66	5.50	0.23	0.055	(0.444)	0.050	0.006
67	5.58	0.27	0.063	(0.442)	0.057	0.006
68	5.67	0.27	0.063	(0.440)	0.057	0.006
69	5.75	0.27	0.063	(0.438)	0.057	0.006
70	5.83	0.27	0.063	(0.436)	0.057	0.006
71	5.92	0.27	0.063	(0.434)	0.057	0.006
72	6.00	0.27	0.063	(0.433)	0.057	0.006
73	6.08	0.30	0.071	(0.431)	0.064	0.007
74	6.17	0.30	0.071	(0.429)	0.064	0.007
75	6.25	0.30	0.071	(0.427)	0.064	0.007
76	6.33	0.30	0.071	(0.425)	0.064	0.007
77	6.42	0.30	0.071	(0.423)	0.064	0.007
78	6.50	0.30	0.071	(0.421)	0.064	0.007
79	6.58	0.33	0.079	(0.419)	0.071	0.008
80	6.67	0.33	0.079	(0.417)	0.071	0.008
81	6.75	0.33	0.079	(0.415)	0.071	0.008
82	6.83	0.33	0.079	(0.414)	0.071	0.008
83	6.92	0.33	0.079	(0.412)	0.071	0.008
84	7.00	0.33	0.079	(0.410)	0.071	0.008
85	7.08	0.33	0.079	(0.408)	0.071	0.008
86	7.17	0.33	0.079	(0.406)	0.071	0.008
87	7.25	0.33	0.079	(0.404)	0.071	0.008
88	7.33	0.37	0.087	(0.402)	0.078	0.009
89	7.42	0.37	0.087	(0.401)	0.078	0.009
90	7.50	0.37	0.087	(0.399)	0.078	0.009
91	7.58	0.40	0.095	(0.397)	0.085	0.009
92	7.67	0.40	0.095	(0.395)	0.085	0.009
93	7.75	0.40	0.095	(0.393)	0.085	0.009
94	7.83	0.43	0.102	(0.391)	0.092	0.010
95	7.92	0.43	0.102	(0.390)	0.092	0.010
96	8.00	0.43	0.102	(0.388)	0.092	0.010
97	8.08	0.50	0.118	(0.386)	0.106	0.012
98	8.17	0.50	0.118	(0.384)	0.106	0.012
99	8.25	0.50	0.118	(0.382)	0.106	0.012
100	8.33	0.50	0.118	(0.381)	0.106	0.012
101	8.42	0.50	0.118	(0.379)	0.106	0.012
102	8.50	0.50	0.118	(0.377)	0.106	0.012
103	8.58	0.53	0.126	(0.375)	0.113	0.013
104	8.67	0.53	0.126	(0.374)	0.113	0.013
105	8.75	0.53	0.126	(0.372)	0.113	0.013
106	8.83	0.57	0.134	(0.370)	0.121	0.013
107	8.92	0.57	0.134	(0.368)	0.121	0.013
108	9.00	0.57	0.134	(0.367)	0.121	0.013

109	9.08	0.63	0.150	(0.365)	0.135	0.015
110	9.17	0.63	0.150	(0.363)	0.135	0.015
111	9.25	0.63	0.150	(0.361)	0.135	0.015
112	9.33	0.67	0.158	(0.360)	0.142	0.016
113	9.42	0.67	0.158	(0.358)	0.142	0.016
114	9.50	0.67	0.158	(0.356)	0.142	0.016
115	9.58	0.70	0.165	(0.354)	0.149	0.017
116	9.67	0.70	0.165	(0.353)	0.149	0.017
117	9.75	0.70	0.165	(0.351)	0.149	0.017
118	9.83	0.73	0.173	(0.349)	0.156	0.017
119	9.92	0.73	0.173	(0.348)	0.156	0.017
120	10.00	0.73	0.173	(0.346)	0.156	0.017
121	10.08	0.50	0.118	(0.344)	0.106	0.012
122	10.17	0.50	0.118	(0.343)	0.106	0.012
123	10.25	0.50	0.118	(0.341)	0.106	0.012
124	10.33	0.50	0.118	(0.339)	0.106	0.012
125	10.42	0.50	0.118	(0.338)	0.106	0.012
126	10.50	0.50	0.118	(0.336)	0.106	0.012
127	10.58	0.67	0.158	(0.334)	0.142	0.016
128	10.67	0.67	0.158	(0.333)	0.142	0.016
129	10.75	0.67	0.158	(0.331)	0.142	0.016
130	10.83	0.67	0.158	(0.330)	0.142	0.016
131	10.92	0.67	0.158	(0.328)	0.142	0.016
132	11.00	0.67	0.158	(0.326)	0.142	0.016
133	11.08	0.63	0.150	(0.325)	0.135	0.015
134	11.17	0.63	0.150	(0.323)	0.135	0.015
135	11.25	0.63	0.150	(0.322)	0.135	0.015
136	11.33	0.63	0.150	(0.320)	0.135	0.015
137	11.42	0.63	0.150	(0.318)	0.135	0.015
138	11.50	0.63	0.150	(0.317)	0.135	0.015
139	11.58	0.57	0.134	(0.315)	0.121	0.013
140	11.67	0.57	0.134	(0.314)	0.121	0.013
141	11.75	0.57	0.134	(0.312)	0.121	0.013
142	11.83	0.60	0.142	(0.311)	0.128	0.014
143	11.92	0.60	0.142	(0.309)	0.128	0.014
144	12.00	0.60	0.142	(0.307)	0.128	0.014
145	12.08	0.83	0.197	(0.306)	0.177	0.020
146	12.17	0.83	0.197	(0.304)	0.177	0.020
147	12.25	0.83	0.197	(0.303)	0.177	0.020
148	12.33	0.87	0.205	(0.301)	0.184	0.020
149	12.42	0.87	0.205	(0.300)	0.184	0.020
150	12.50	0.87	0.205	(0.298)	0.184	0.020
151	12.58	0.93	0.221	(0.297)	0.199	0.022
152	12.67	0.93	0.221	(0.295)	0.199	0.022
153	12.75	0.93	0.221	(0.294)	0.199	0.022
154	12.83	0.97	0.229	(0.292)	0.206	0.023
155	12.92	0.97	0.229	(0.291)	0.206	0.023
156	13.00	0.97	0.229	(0.289)	0.206	0.023
157	13.08	1.13	0.268	(0.288)	0.241	0.027
158	13.17	1.13	0.268	(0.286)	0.241	0.027
159	13.25	1.13	0.268	(0.285)	0.241	0.027
160	13.33	1.13	0.268	(0.284)	0.241	0.027
161	13.42	1.13	0.268	(0.282)	0.241	0.027
162	13.50	1.13	0.268	(0.281)	0.241	0.027
163	13.58	0.77	0.181	(0.279)	0.163	0.018
164	13.67	0.77	0.181	(0.278)	0.163	0.018
165	13.75	0.77	0.181	(0.276)	0.163	0.018
166	13.83	0.77	0.181	(0.275)	0.163	0.018
167	13.92	0.77	0.181	(0.274)	0.163	0.018
168	14.00	0.77	0.181	(0.272)	0.163	0.018

169	14.08	0.90	0.213	(0.271)	0.191	0.021
170	14.17	0.90	0.213	(0.269)	0.191	0.021
171	14.25	0.90	0.213	(0.268)	0.191	0.021
172	14.33	0.87	0.205	(0.267)	0.184	0.020
173	14.42	0.87	0.205	(0.265)	0.184	0.020
174	14.50	0.87	0.205	(0.264)	0.184	0.020
175	14.58	0.87	0.205	(0.263)	0.184	0.020
176	14.67	0.87	0.205	(0.261)	0.184	0.020
177	14.75	0.87	0.205	(0.260)	0.184	0.020
178	14.83	0.83	0.197	(0.259)	0.177	0.020
179	14.92	0.83	0.197	(0.257)	0.177	0.020
180	15.00	0.83	0.197	(0.256)	0.177	0.020
181	15.08	0.80	0.189	(0.255)	0.170	0.019
182	15.17	0.80	0.189	(0.253)	0.170	0.019
183	15.25	0.80	0.189	(0.252)	0.170	0.019
184	15.33	0.77	0.181	(0.251)	0.163	0.018
185	15.42	0.77	0.181	(0.249)	0.163	0.018
186	15.50	0.77	0.181	(0.248)	0.163	0.018
187	15.58	0.63	0.150	(0.247)	0.135	0.015
188	15.67	0.63	0.150	(0.246)	0.135	0.015
189	15.75	0.63	0.150	(0.244)	0.135	0.015
190	15.83	0.63	0.150	(0.243)	0.135	0.015
191	15.92	0.63	0.150	(0.242)	0.135	0.015
192	16.00	0.63	0.150	(0.241)	0.135	0.015
193	16.08	0.13	0.032	(0.239)	0.028	0.003
194	16.17	0.13	0.032	(0.238)	0.028	0.003
195	16.25	0.13	0.032	(0.237)	0.028	0.003
196	16.33	0.13	0.032	(0.236)	0.028	0.003
197	16.42	0.13	0.032	(0.235)	0.028	0.003
198	16.50	0.13	0.032	(0.233)	0.028	0.003
199	16.58	0.10	0.024	(0.232)	0.021	0.002
200	16.67	0.10	0.024	(0.231)	0.021	0.002
201	16.75	0.10	0.024	(0.230)	0.021	0.002
202	16.83	0.10	0.024	(0.229)	0.021	0.002
203	16.92	0.10	0.024	(0.227)	0.021	0.002
204	17.00	0.10	0.024	(0.226)	0.021	0.002
205	17.08	0.17	0.039	(0.225)	0.035	0.004
206	17.17	0.17	0.039	(0.224)	0.035	0.004
207	17.25	0.17	0.039	(0.223)	0.035	0.004
208	17.33	0.17	0.039	(0.222)	0.035	0.004
209	17.42	0.17	0.039	(0.221)	0.035	0.004
210	17.50	0.17	0.039	(0.220)	0.035	0.004
211	17.58	0.17	0.039	(0.219)	0.035	0.004
212	17.67	0.17	0.039	(0.217)	0.035	0.004
213	17.75	0.17	0.039	(0.216)	0.035	0.004
214	17.83	0.13	0.032	(0.215)	0.028	0.003
215	17.92	0.13	0.032	(0.214)	0.028	0.003
216	18.00	0.13	0.032	(0.213)	0.028	0.003
217	18.08	0.13	0.032	(0.212)	0.028	0.003
218	18.17	0.13	0.032	(0.211)	0.028	0.003
219	18.25	0.13	0.032	(0.210)	0.028	0.003
220	18.33	0.13	0.032	(0.209)	0.028	0.003
221	18.42	0.13	0.032	(0.208)	0.028	0.003
222	18.50	0.13	0.032	(0.207)	0.028	0.003
223	18.58	0.10	0.024	(0.206)	0.021	0.002
224	18.67	0.10	0.024	(0.205)	0.021	0.002
225	18.75	0.10	0.024	(0.204)	0.021	0.002
226	18.83	0.07	0.016	(0.203)	0.014	0.002
227	18.92	0.07	0.016	(0.202)	0.014	0.002
228	19.00	0.07	0.016	(0.201)	0.014	0.002

229	19.08	0.10	0.024	(0.200)	0.021	0.002
230	19.17	0.10	0.024	(0.199)	0.021	0.002
231	19.25	0.10	0.024	(0.198)	0.021	0.002
232	19.33	0.13	0.032	(0.197)	0.028	0.003
233	19.42	0.13	0.032	(0.196)	0.028	0.003
234	19.50	0.13	0.032	(0.196)	0.028	0.003
235	19.58	0.10	0.024	(0.195)	0.021	0.002
236	19.67	0.10	0.024	(0.194)	0.021	0.002
237	19.75	0.10	0.024	(0.193)	0.021	0.002
238	19.83	0.07	0.016	(0.192)	0.014	0.002
239	19.92	0.07	0.016	(0.191)	0.014	0.002
240	20.00	0.07	0.016	(0.190)	0.014	0.002
241	20.08	0.10	0.024	(0.189)	0.021	0.002
242	20.17	0.10	0.024	(0.189)	0.021	0.002
243	20.25	0.10	0.024	(0.188)	0.021	0.002
244	20.33	0.10	0.024	(0.187)	0.021	0.002
245	20.42	0.10	0.024	(0.186)	0.021	0.002
246	20.50	0.10	0.024	(0.185)	0.021	0.002
247	20.58	0.10	0.024	(0.185)	0.021	0.002
248	20.67	0.10	0.024	(0.184)	0.021	0.002
249	20.75	0.10	0.024	(0.183)	0.021	0.002
250	20.83	0.07	0.016	(0.182)	0.014	0.002
251	20.92	0.07	0.016	(0.182)	0.014	0.002
252	21.00	0.07	0.016	(0.181)	0.014	0.002
253	21.08	0.10	0.024	(0.180)	0.021	0.002
254	21.17	0.10	0.024	(0.179)	0.021	0.002
255	21.25	0.10	0.024	(0.179)	0.021	0.002
256	21.33	0.07	0.016	(0.178)	0.014	0.002
257	21.42	0.07	0.016	(0.177)	0.014	0.002
258	21.50	0.07	0.016	(0.177)	0.014	0.002
259	21.58	0.10	0.024	(0.176)	0.021	0.002
260	21.67	0.10	0.024	(0.175)	0.021	0.002
261	21.75	0.10	0.024	(0.175)	0.021	0.002
262	21.83	0.07	0.016	(0.174)	0.014	0.002
263	21.92	0.07	0.016	(0.174)	0.014	0.002
264	22.00	0.07	0.016	(0.173)	0.014	0.002
265	22.08	0.10	0.024	(0.172)	0.021	0.002
266	22.17	0.10	0.024	(0.172)	0.021	0.002
267	22.25	0.10	0.024	(0.171)	0.021	0.002
268	22.33	0.07	0.016	(0.171)	0.014	0.002
269	22.42	0.07	0.016	(0.170)	0.014	0.002
270	22.50	0.07	0.016	(0.170)	0.014	0.002
271	22.58	0.07	0.016	(0.169)	0.014	0.002
272	22.67	0.07	0.016	(0.169)	0.014	0.002
273	22.75	0.07	0.016	(0.168)	0.014	0.002
274	22.83	0.07	0.016	(0.168)	0.014	0.002
275	22.92	0.07	0.016	(0.167)	0.014	0.002
276	23.00	0.07	0.016	(0.167)	0.014	0.002
277	23.08	0.07	0.016	(0.167)	0.014	0.002
278	23.17	0.07	0.016	(0.166)	0.014	0.002
279	23.25	0.07	0.016	(0.166)	0.014	0.002
280	23.33	0.07	0.016	(0.166)	0.014	0.002
281	23.42	0.07	0.016	(0.165)	0.014	0.002
282	23.50	0.07	0.016	(0.165)	0.014	0.002
283	23.58	0.07	0.016	(0.165)	0.014	0.002
284	23.67	0.07	0.016	(0.165)	0.014	0.002
285	23.75	0.07	0.016	(0.164)	0.014	0.002
286	23.83	0.07	0.016	(0.164)	0.014	0.002
287	23.92	0.07	0.016	(0.164)	0.014	0.002
288	24.00	0.07	0.016	(0.164)	0.014	0.002

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            (Loss Rate Not Used)
     Sum =     100.0                                    Sum =     2.4
      Flood volume = Effective rainfall      0.20(In)
       times area      43.5(Ac.)/[(In)/(Ft.)] =       0.7(Ac.Ft)
      Total soil loss =      1.77(In)
      Total soil loss =     6.427(Ac.Ft)
      Total rainfall =      1.97(In)
      Flood volume =       31104.6 Cubic Feet
      Total soil loss =      279941.8 Cubic Feet
      ---------------------------------------------------------------
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       Peak flow rate of this hydrograph =      1.155(CFS)
      ---------------------------------------------------------------
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      +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ---------------------------------------------------------------
--
                   Hydrograph in   5   Minute intervals ((CFS))

      ---------------------------------------------------------------
--
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5
10.0

-------------------------------------------------------------------------
    0+ 5       0.0000      0.01  Q         |         |         |
|
    0+10       0.0002      0.03  Q         |         |         |
|
    0+15       0.0006      0.05  Q         |         |         |
|
    0+20       0.0010      0.06  Q         |         |         |
|
    0+25       0.0015      0.07  Q         |         |         |
|
    0+30       0.0021      0.09  Q         |         |         |
|
    0+35       0.0027      0.09  Q         |         |         |
|
    0+40       0.0033      0.09  Q         |         |         |
|
    0+45       0.0040      0.10  Q         |         |         |
|
    0+50       0.0047      0.10  Q         |         |         |
|
    0+55       0.0055      0.12  Q         |         |         |
|
    1+ 0       0.0064      0.13  Q         |         |         |
|
    1+ 5       0.0073      0.13  Q         |         |         |
|
    1+10       0.0081      0.12  Q         |         |         |
|
    1+15       0.0088      0.11  Q         |         |         |
|
    1+20       0.0096      0.11  Q         |         |         |
|
```

1+25	0.0103	0.11	Q			
1+30	0.0110	0.11	Q			
1+35	0.0118	0.11	Q			
1+40	0.0125	0.11	Q			
1+45	0.0132	0.10	Q			
1+50	0.0139	0.11	Q			
1+55	0.0148	0.12	Q			
2+ 0	0.0156	0.13	Q			
2+ 5	0.0165	0.13	Q			
2+10	0.0175	0.13	Q			
2+15	0.0184	0.13	QV			
2+20	0.0193	0.14	QV			
2+25	0.0203	0.14	QV			
2+30	0.0212	0.14	QV			
2+35	0.0222	0.14	QV			
2+40	0.0232	0.15	QV			
2+45	0.0243	0.16	QV			
2+50	0.0255	0.17	QV			
2+55	0.0266	0.17	QV			
3+ 0	0.0278	0.17	QV			
3+ 5	0.0290	0.17	QV			
3+10	0.0301	0.17	QV			
3+15	0.0313	0.17	QV			
3+20	0.0325	0.17	QV			
3+25	0.0337	0.17	QV			
3+30	0.0349	0.17	QV			
3+35	0.0361	0.17	Q V			
3+40	0.0373	0.17	Q V			
3+45	0.0384	0.17	Q V			
3+50	0.0397	0.18	Q V			

3+55	0.0410	0.19	Q V	|	|	|
4+ 0	0.0423	0.20	Q V	|	|	|
4+ 5	0.0437	0.20	Q V	|	|	|
4+10	0.0451	0.20	Q V	|	|	|
4+15	0.0465	0.20	Q V	|	|	|
4+20	0.0479	0.21	Q V	|	|	|
4+25	0.0494	0.22	Q V	|	|	|
4+30	0.0510	0.23	Q V	|	|	|
4+35	0.0526	0.23	Q V	|	|	|
4+40	0.0542	0.24	Q V	|	|	|
4+45	0.0559	0.24	Q V	|	|	|
4+50	0.0576	0.24	Q V	|	|	|
4+55	0.0593	0.25	|Q V	|	|	|
5+ 0	0.0611	0.26	|Q V	|	|	|
5+ 5	0.0629	0.26	|Q V	|	|	|
5+10	0.0646	0.24	Q V	|	|	|
5+15	0.0661	0.22	Q V	|	|	|
5+20	0.0677	0.22	Q V	|	|	|
5+25	0.0693	0.23	Q V	|	|	|
5+30	0.0709	0.24	Q V	|	|	|
5+35	0.0726	0.24	Q V	|	|	|
5+40	0.0743	0.25	|Q V	|	|	|
5+45	0.0761	0.26	|Q V	|	|	|
5+50	0.0780	0.27	|Q V	|	|	|
5+55	0.0798	0.27	|Q V	|	|	|
6+ 0	0.0817	0.27	|Q V	|	|	|
6+ 5	0.0836	0.28	|Q V	|	|	|
6+10	0.0856	0.29	|Q V	|	|	|
6+15	0.0877	0.30	|Q V	|	|	|
6+20	0.0898	0.30	|Q V	|	|	|

6+25	0.0919	0.31	|Q V |	|	|
6+30	0.0940	0.31	|Q V |	|	|
6+35	0.0961	0.31	|Q V |	|	|
6+40	0.0983	0.32	|Q V |	|	|
6+45	0.1006	0.33	|Q V |	|	|
6+50	0.1030	0.34	|Q V |	|	|
6+55	0.1053	0.34	|Q V |	|	|
7+ 0	0.1077	0.34	|Q V |	|	|
7+ 5	0.1100	0.34	|Q V |	|	|
7+10	0.1124	0.34	|Q V |	|	|
7+15	0.1148	0.34	|Q V |	|	|
7+20	0.1172	0.35	|Q V |	|	|
7+25	0.1196	0.36	|Q V |	|	|
7+30	0.1222	0.37	|Q V |	|	|
7+35	0.1248	0.38	|Q V |	|	|
7+40	0.1274	0.39	|Q V |	|	|
7+45	0.1302	0.40	|Q V |	|	|
7+50	0.1330	0.41	|Q V |	|	|
7+55	0.1359	0.42	|Q V |	|	|
8+ 0	0.1389	0.43	|Q V |	|	|
8+ 5	0.1420	0.44	|Q V |	|	|
8+10	0.1452	0.47	|Q V |	|	|
8+15	0.1486	0.49	|Q V |	|	|
8+20	0.1520	0.50	| Q V |	|	|
8+25	0.1555	0.51	| Q V |	|	|
8+30	0.1590	0.51	| Q V |	|	|
8+35	0.1626	0.51	| Q V|	|	|
8+40	0.1662	0.53	| Q V|	|	|
8+45	0.1699	0.54	| Q V|	|	|
8+50	0.1737	0.55	| Q V|	|	|

8+55	0.1776	0.56	Q	V		
9+ 0	0.1815	0.57	Q	V		
9+ 5	0.1855	0.58	Q	V		
9+10	0.1897	0.61	Q	V		
9+15	0.1941	0.63	Q	V		
9+20	0.1985	0.64	Q	V		
9+25	0.2030	0.66	Q	V		
9+30	0.2076	0.67	Q	V		
9+35	0.2123	0.68	Q	V		
9+40	0.2171	0.70	Q	V		
9+45	0.2220	0.71	Q	V		
9+50	0.2269	0.72	Q	V		
9+55	0.2320	0.73	Q	V		
10+ 0	0.2371	0.74	Q	V		
10+ 5	0.2421	0.73	Q	V		
10+10	0.2466	0.65	Q	V		
10+15	0.2507	0.59	Q	V		
10+20	0.2545	0.56	Q	V		
10+25	0.2583	0.55	Q	V		
10+30	0.2621	0.54	Q	V		
10+35	0.2659	0.55	Q	V		
10+40	0.2700	0.60	Q	V		
10+45	0.2745	0.65	Q	V		
10+50	0.2790	0.66	Q	V		
10+55	0.2837	0.67	Q	V		
11+ 0	0.2883	0.68	Q	V		
11+ 5	0.2930	0.68	Q	V		
11+10	0.2976	0.67	Q	V		
11+15	0.3021	0.66	Q	V		
11+20	0.3066	0.66	Q	V		

11+25	0.3112	0.66	Q	V		
11+30	0.3157	0.66	Q	V		
11+35	0.3202	0.65	Q	V		
11+40	0.3245	0.63	Q	V		
11+45	0.3288	0.61	Q	V		
11+50	0.3329	0.61	Q	V		
11+55	0.3371	0.61	Q	V		
12+ 0	0.3414	0.62	Q	V		
12+ 5	0.3458	0.64	Q	V		
12+10	0.3508	0.72	Q	V		
12+15	0.3562	0.79	Q	V		
12+20	0.3619	0.82	Q	V		
12+25	0.3677	0.84	Q	V		
12+30	0.3736	0.86	Q	V		
12+35	0.3796	0.88	Q	V		
12+40	0.3859	0.91	Q	V		
12+45	0.3923	0.93	Q	V		
12+50	0.3988	0.95	Q	V		
12+55	0.4055	0.97	Q	V		
13+ 0	0.4122	0.98	Q	V		
13+ 5	0.4191	1.00	Q	V		
13+10	0.4265	1.07	Q	V		
13+15	0.4342	1.11	Q	V		
13+20	0.4420	1.13	Q	V		
13+25	0.4499	1.15	Q	V		
13+30	0.4578	1.15	Q	V		
13+35	0.4656	1.13	Q	V		
13+40	0.4725	1.00	Q	V		
13+45	0.4787	0.91	Q	V		
13+50	0.4847	0.87	Q	V		

13+55	0.4906	0.85	Q			V
14+ 0	0.4963	0.83	Q			V
14+ 5	0.5021	0.83	Q			V
14+10	0.5081	0.88	Q			V
14+15	0.5143	0.91	Q			V
14+20	0.5206	0.91	Q			V
14+25	0.5268	0.90	Q			V
14+30	0.5330	0.90	Q			V
14+35	0.5392	0.90	Q			V
14+40	0.5454	0.90	Q			V
14+45	0.5515	0.90	Q			V
14+50	0.5577	0.89	Q			V
14+55	0.5638	0.88	Q			V
15+ 0	0.5698	0.87	Q			V
15+ 5	0.5758	0.87	Q			V
15+10	0.5817	0.85	Q			V
15+15	0.5875	0.84	Q			V
15+20	0.5933	0.84	Q			V
15+25	0.5989	0.82	Q			V
15+30	0.6045	0.81	Q			V
15+35	0.6100	0.79	Q			V
15+40	0.6151	0.74	Q			V
15+45	0.6199	0.70	Q			V
15+50	0.6247	0.69	Q			V
15+55	0.6294	0.68	Q			V
16+ 0	0.6340	0.67	Q			V
16+ 5	0.6383	0.63	Q			V
16+10	0.6414	0.44	Q			V
16+15	0.6435	0.30	Q			V
16+20	0.6452	0.25	Q			V

16+25	0.6467	0.22	Q				V
16+30	0.6480	0.19	Q				V
16+35	0.6492	0.18	Q				V
16+40	0.6503	0.15	Q				V
16+45	0.6512	0.13	Q				V
16+50	0.6521	0.12	Q				V
16+55	0.6529	0.12	Q				V
17+ 0	0.6537	0.11	Q				V
17+ 5	0.6544	0.11	Q				V
17+10	0.6554	0.14	Q				V
17+15	0.6564	0.15	Q				V
17+20	0.6575	0.16	Q				V
17+25	0.6587	0.16	Q				V
17+30	0.6598	0.17	Q				V
17+35	0.6609	0.17	Q				V
17+40	0.6621	0.17	Q				V
17+45	0.6633	0.17	Q				V
17+50	0.6644	0.17	Q				V
17+55	0.6655	0.16	Q				V
18+ 0	0.6665	0.15	Q				V
18+ 5	0.6675	0.15	Q				V
18+10	0.6685	0.14	Q				V
18+15	0.6695	0.14	Q				V
18+20	0.6705	0.14	Q				V
18+25	0.6714	0.14	Q				V
18+30	0.6724	0.14	Q				V
18+35	0.6733	0.14	Q				V
18+40	0.6742	0.12	Q				V
18+45	0.6750	0.11	Q				V
18+50	0.6757	0.11	Q				V

18+55	0.6764	0.09	Q	|	|	|	V |
19+ 0	0.6770	0.08	Q	|	|	|	V |
19+ 5	0.6775	0.08	Q	|	|	|	V |
19+10	0.6781	0.09	Q	|	|	|	V |
19+15	0.6788	0.10	Q	|	|	|	V |
19+20	0.6795	0.10	Q	|	|	|	V |
19+25	0.6803	0.12	Q	|	|	|	V |
19+30	0.6812	0.13	Q	|	|	|	V |
19+35	0.6821	0.13	Q	|	|	|	V |
19+40	0.6829	0.12	Q	|	|	|	V |
19+45	0.6836	0.11	Q	|	|	|	V |
19+50	0.6843	0.10	Q	|	|	|	V |
19+55	0.6850	0.09	Q	|	|	|	V |
20+ 0	0.6855	0.08	Q	|	|	|	V |
20+ 5	0.6861	0.08	Q	|	|	|	V |
20+10	0.6867	0.09	Q	|	|	|	V |
20+15	0.6874	0.10	Q	|	|	|	V |
20+20	0.6881	0.10	Q	|	|	|	V |
20+25	0.6888	0.10	Q	|	|	|	V |
20+30	0.6895	0.10	Q	|	|	|	V |
20+35	0.6902	0.10	Q	|	|	|	V |
20+40	0.6909	0.10	Q	|	|	|	V |
20+45	0.6916	0.10	Q	|	|	|	V |
20+50	0.6923	0.10	Q	|	|	|	V |
20+55	0.6929	0.09	Q	|	|	|	V |
21+ 0	0.6934	0.08	Q	|	|	|	V |
21+ 5	0.6940	0.08	Q	|	|	|	V |
21+10	0.6946	0.09	Q	|	|	|	V |
21+15	0.6953	0.10	Q	|	|	|	V |
21+20	0.6959	0.10	Q	|	|	|	V |

21+25	0.6965	0.09	Q	|	|	| V|
21+30	0.6970	0.08	Q	|	|	| V|
21+35	0.6976	0.08	Q	|	|	| V|
21+40	0.6982	0.09	Q	|	|	| V|
21+45	0.6988	0.10	Q	|	|	| V|
21+50	0.6995	0.10	Q	|	|	| V|
21+55	0.7001	0.09	Q	|	|	| V|
22+ 0	0.7006	0.08	Q	|	|	| V|
22+ 5	0.7011	0.08	Q	|	|	| V|
22+10	0.7018	0.09	Q	|	|	| V|
22+15	0.7024	0.10	Q	|	|	| V|
22+20	0.7031	0.10	Q	|	|	| V|
22+25	0.7037	0.09	Q	|	|	| V|
22+30	0.7042	0.08	Q	|	|	| V|
22+35	0.7047	0.07	Q	|	|	| V|
22+40	0.7052	0.07	Q	|	|	| V|
22+45	0.7057	0.07	Q	|	|	| V|
22+50	0.7062	0.07	Q	|	|	| V|
22+55	0.7067	0.07	Q	|	|	| V|
23+ 0	0.7072	0.07	Q	|	|	| V|
23+ 5	0.7076	0.07	Q	|	|	| V|
23+10	0.7081	0.07	Q	|	|	| V|
23+15	0.7086	0.07	Q	|	|	| V|
23+20	0.7091	0.07	Q	|	|	| V|
23+25	0.7095	0.07	Q	|	|	| V|
23+30	0.7100	0.07	Q	|	|	| V|
23+35	0.7105	0.07	Q	|	|	| V|
23+40	0.7110	0.07	Q	|	|	| V|
23+45	0.7114	0.07	Q	|	|	| V|
23+50	0.7119	0.07	Q	|	|	| V|

```
   23+55       0.7124      0.07  Q         |         |         |
V|
   24+ 0       0.7129      0.07  Q         |         |         |
V|
   24+ 5       0.7133      0.06  Q         |         |         |
V|
   24+10       0.7136      0.04  Q         |         |         |
V|
   24+15       0.7137      0.02  Q         |         |         |
V|
   24+20       0.7138      0.01  Q         |         |         |
V|
   24+25       0.7139      0.01  Q         |         |         |
V|
   24+30       0.7140      0.01  Q         |         |         |
V|
   24+35       0.7140      0.01  Q         |         |         |
V|
   24+40       0.7140      0.00  Q         |         |         |
V|
   24+45       0.7140      0.00  Q         |         |         |
V|
   24+50       0.7140      0.00  Q         |         |         |
V|
   24+55       0.7141      0.00  Q         |         |         |
V|
   25+ 0       0.7141      0.00  Q         |         |         |
V|
   25+ 5       0.7141      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

Study date 02/09/22 File: NECRamonaEx15.out

++

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Existing Condition
5yr 1hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2220.00(Ft.)
Length along longest watercourse measured to centroid = 1115.00 (Ft.)
Length along longest watercourse = 0.420 Mi.
Length along longest watercourse measured to centroid = 0.211 Mi.
Difference in elevation = 7.60(Ft.)
Slope along watercourse = 18.0757 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.138 Hr.
Lag time = 8.28 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50              0.47                    20.27

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50              1.35                    58.73

  STORM EVENT (YEAR) =    5.00
  Area Averaged 2-Year Rainfall =    0.466(In)
  Area Averaged 100-Year Rainfall =    1.350(In)

  Point rain (area averaged) =    0.673(In)
  Areal adjustment factor =   99.96 %
  Adjusted average point rain =    0.673(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           86.00          0.050
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  86.0  71.6      0.343     0.050        0.328       1.000
0.328
                                                      Sum (F) =
0.328
  Area averaged mean soil loss (F) (In/Hr) =  0.328
  Minimum soil loss rate ((In/Hr)) =  0.164
  (for 24 hour storm duration)
  Soil low loss rate (decimal) =   0.900
  ------------------------------------------------------------------
---
  Slope of intensity-duration curve for a 1 hour storm =0.5000
  ------------------------------------------------------------------
----

              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        60.414         8.310            3.643
         2   0.167       120.828        34.258           15.018
         3   0.250       181.242        26.449           11.595
         4   0.333       241.657        10.231            4.485
         5   0.417       302.071         6.073            2.662
         6   0.500       362.485         4.096            1.796
         7   0.583       422.899         2.910            1.276
         8   0.667       483.313         2.055            0.901
         9   0.750       543.727         1.698            0.744
        10   0.833       604.141         1.250            0.548
```

11	0.917	664.556	0.945	0.414
12	1.000	724.970	0.674	0.295
13	1.083	785.384	0.604	0.265
14	1.167	845.798	0.448	0.197
			Sum = 100.000	Sum= 43.840

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	4.20	0.339	(0.328)	0.305	0.034
2	0.17	4.30	0.347	(0.328)	0.312	0.035
3	0.25	5.00	0.404	0.328	(0.363)	0.076
4	0.33	5.00	0.404	0.328	(0.363)	0.076
5	0.42	5.80	0.468	0.328	(0.421)	0.141
6	0.50	6.50	0.525	0.328	(0.472)	0.197
7	0.58	7.40	0.597	0.328	(0.538)	0.270
8	0.67	8.60	0.694	0.328	(0.625)	0.367
9	0.75	12.30	0.993	0.328	(0.894)	0.665
10	0.83	29.10	2.349	0.328	(2.114)	2.022
11	0.92	6.80	0.549	0.328	(0.494)	0.221
12	1.00	5.00	0.404	0.328	(0.363)	0.076
	(Loss Rate Not Used)					
Sum =		100.0			Sum =	4.2

Flood volume = Effective rainfall 0.35(In)
times area 43.5(Ac.)/[(In)/(Ft.)] = 1.3(Ac.Ft)
Total soil loss = 0.32(In)
Total soil loss = 1.176(Ac.Ft)
Total rainfall = 0.67(In)
Flood volume = 54991.1 Cubic Feet
Total soil loss = 51245.6 Cubic Feet

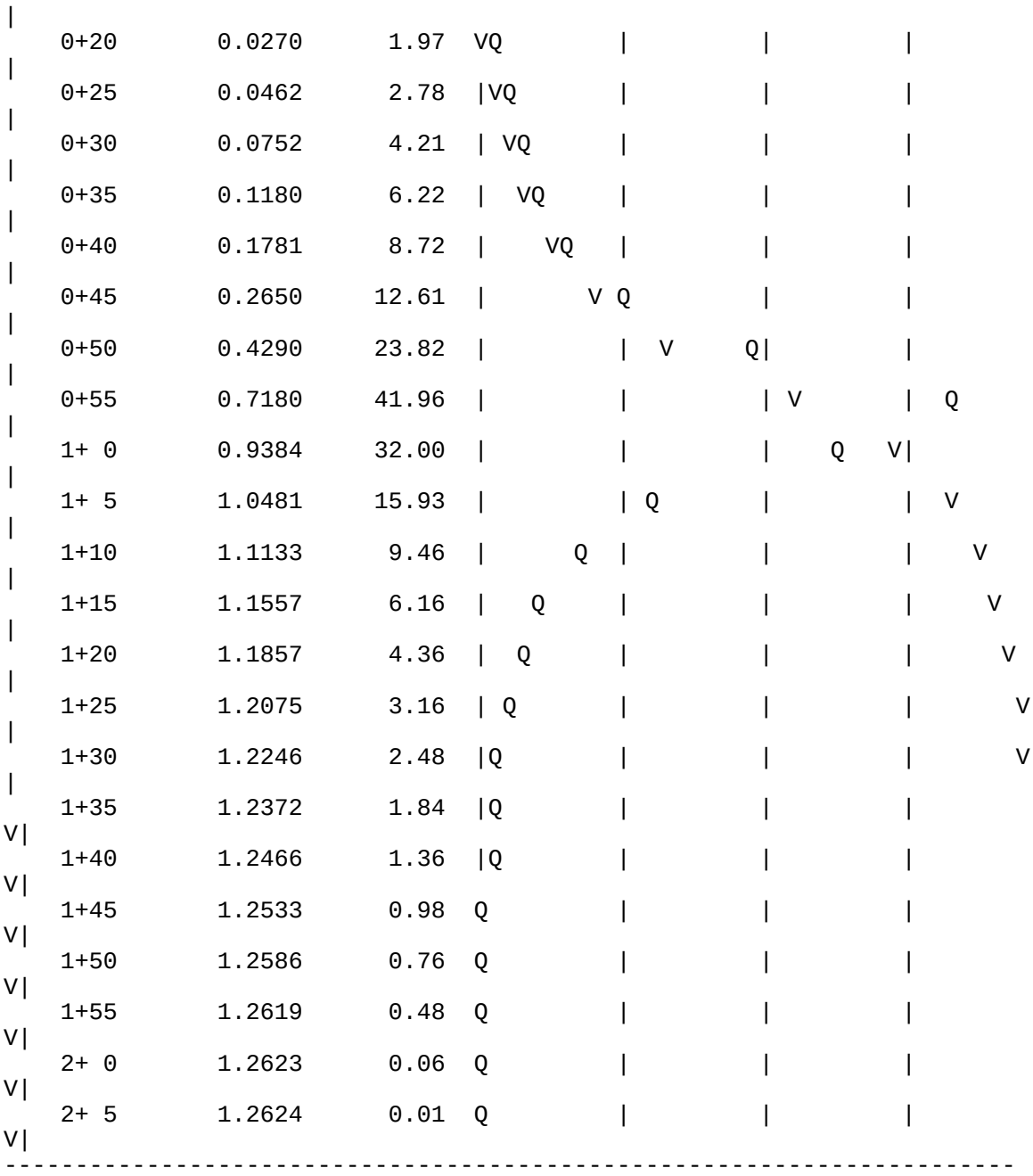
Peak flow rate of this hydrograph = 41.960(CFS)

++

1 - 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	12.5	25.0	37.5	50.0
0+ 5	0.0009	0.12 Q					
0+10	0.0052	0.64 Q					
0+15	0.0134	1.19 Q					


0+20 0.0270 1.97
0+25 0.0462 2.78
0+30 0.0752 4.21
0+35 0.1180 6.22
0+40 0.1781 8.72
0+45 0.2650 12.61
0+50 0.4290 23.82
0+55 0.7180 41.96
1+ 0 0.9384 32.00
1+ 5 1.0481 15.93
1+10 1.1133 9.46
1+15 1.1557 6.16
1+20 1.1857 4.36
1+25 1.2075 3.16
1+30 1.2246 2.48
1+35 1.2372 1.84
1+40 1.2466 1.36
1+45 1.2533 0.98
1+50 1.2586 0.76
1+55 1.2619 0.48
2+ 0 1.2623 0.06
2+ 5 1.2624 0.01

U n i t H y d r o g r a p h A n a l y s i s

Study date 02/09/22 File: NECRamonaEx35.out

++

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Existing Condition
5yr 3hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2220.00(Ft.)
Length along longest watercourse measured to centroid = 1115.00 (Ft.)
Length along longest watercourse = 0.420 Mi.
Length along longest watercourse measured to centroid = 0.211 Mi.
Difference in elevation = 7.60(Ft.)
Slope along watercourse = 18.0757 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.138 Hr.
Lag time = 8.28 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50              0.82                    35.63

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50              2.04                    88.74

      STORM EVENT (YEAR) =    5.00
      Area Averaged 2-Year Rainfall =    0.819(In)
      Area Averaged 100-Year Rainfall =    2.040(In)

      Point rain (area averaged) =    1.105(In)
      Areal adjustment factor =   99.98 %
      Adjusted average point rain =    1.105(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
          43.500           86.00          0.050
       Total Area Entered =     43.50(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
      86.0  71.6      0.343     0.050        0.328       1.000
0.328
                                                          Sum (F) =
0.328
      Area averaged mean soil loss (F) (In/Hr) =  0.328
      Minimum soil loss rate ((In/Hr)) =  0.164
      (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   Time % of lag   Distribution   Unit Hydrograph
          (hrs)                           Graph %           (CFS)
      ------------------------------------------------------------------
---
           1   0.083         60.414          8.310             3.643
           2   0.167        120.828         34.258            15.018
           3   0.250        181.242         26.449            11.595
           4   0.333        241.657         10.231             4.485
           5   0.417        302.071          6.073             2.662
           6   0.500        362.485          4.096             1.796
           7   0.583        422.899          2.910             1.276
           8   0.667        483.313          2.055             0.901
           9   0.750        543.727          1.698             0.744
          10   0.833        604.141          1.250             0.548
          11   0.917        664.556          0.945             0.414
          12   1.000        724.970          0.674             0.295
          13   1.083        785.384          0.604             0.265
```

14	1.167	845.798	0.448		0.197
			Sum = 100.000	Sum=	43.840

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	1.30	0.172	(0.328)	0.155	0.017
2	0.17	1.30	0.172	(0.328)	0.155	0.017
3	0.25	1.10	0.146	(0.328)	0.131	0.015
4	0.33	1.50	0.199	(0.328)	0.179	0.020
5	0.42	1.50	0.199	(0.328)	0.179	0.020
6	0.50	1.80	0.239	(0.328)	0.215	0.024
7	0.58	1.50	0.199	(0.328)	0.179	0.020
8	0.67	1.80	0.239	(0.328)	0.215	0.024
9	0.75	1.80	0.239	(0.328)	0.215	0.024
10	0.83	1.50	0.199	(0.328)	0.179	0.020
11	0.92	1.60	0.212	(0.328)	0.191	0.021
12	1.00	1.80	0.239	(0.328)	0.215	0.024
13	1.08	2.20	0.292	(0.328)	0.262	0.029
14	1.17	2.20	0.292	(0.328)	0.262	0.029
15	1.25	2.20	0.292	(0.328)	0.262	0.029
16	1.33	2.00	0.265	(0.328)	0.239	0.027
17	1.42	2.60	0.345	(0.328)	0.310	0.034
18	1.50	2.70	0.358	(0.328)	0.322	0.036
19	1.58	2.40	0.318	(0.328)	0.286	0.032
20	1.67	2.70	0.358	(0.328)	0.322	0.036
21	1.75	3.30	0.437	0.328	(0.394)	0.110
22	1.83	3.10	0.411	0.328	(0.370)	0.083
23	1.92	2.90	0.384	0.328	(0.346)	0.057
24	2.00	3.00	0.398	0.328	(0.358)	0.070
25	2.08	3.10	0.411	0.328	(0.370)	0.083
26	2.17	4.20	0.557	0.328	(0.501)	0.229
27	2.25	5.00	0.663	0.328	(0.597)	0.335
28	2.33	3.50	0.464	0.328	(0.418)	0.136
29	2.42	6.80	0.901	0.328	(0.811)	0.574
30	2.50	7.30	0.968	0.328	(0.871)	0.640
31	2.58	8.20	1.087	0.328	(0.978)	0.759
32	2.67	5.90	0.782	0.328	(0.704)	0.455
33	2.75	2.00	0.265	(0.328)	0.239	0.027
34	2.83	1.80	0.239	(0.328)	0.215	0.024
35	2.92	1.80	0.239	(0.328)	0.215	0.024
36	3.00	0.60	0.080	(0.328)	0.072	0.008
	(Loss Rate Not Used)					
Sum =		100.0			Sum =	4.1

Flood volume = Effective rainfall 0.34(In)
times area 43.5(Ac.)/[(In)/(Ft.)] = 1.2(Ac.Ft)
Total soil loss = 0.76(In)
Total soil loss = 2.763(Ac.Ft)
Total rainfall = 1.10(In)
Flood volume = 54096.5 Cubic Feet
Total soil loss = 120353.4 Cubic Feet

Peak flow rate of this hydrograph = 24.568(CFS)

```
      ------------------------------------------------------------------
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      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                          3 - H O U R    S T O R M
                       R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------
--
                     Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------
--
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5
30.0

-------------------------------------------------------------------------
    0+ 5       0.0004      0.06  Q         |         |         |
|
    0+10       0.0026      0.32  Q         |         |         |
|
    0+15       0.0062      0.51  Q         |         |         |
|
    0+20       0.0101      0.57  Q         |         |         |
|
    0+25       0.0147      0.66  Q         |         |         |
|
    0+30       0.0199      0.76  VQ        |         |         |
|
    0+35       0.0257      0.84  VQ        |         |         |
|
    0+40       0.0317      0.87  |Q        |         |         |
|
    0+45       0.0380      0.92  |Q        |         |         |
|
    0+50       0.0446      0.96  |Q        |         |         |
|
    0+55       0.0510      0.93  |Q        |         |         |
|
    1+ 0       0.0574      0.93  |Q        |         |         |
|
    1+ 5       0.0642      0.99  |QV       |         |         |
|
    1+10       0.0719      1.11  |QV       |         |         |
|
    1+15       0.0800      1.18  |QV       |         |         |
|
    1+20       0.0883      1.21  |QV       |         |         |
|
    1+25       0.0967      1.21  |Q V      |         |         |
|
    1+30       0.1058      1.32  |Q V      |         |         |
|
    1+35       0.1155      1.42  |Q V      |         |         |
|
    1+40       0.1253      1.42  |Q  V     |         |         |
|
    1+45       0.1372      1.73  | Q V     |         |         |
|
    1+50       0.1564      2.79  |  Q V    |         |         |
|
```

```
    1+55       0.1783      3.18  |   QV    |         |         |
|
    2+ 0       0.1980      2.86  |  Q  V   |         |         |
|
    2+ 5       0.2180      2.89  |  Q   V  |         |         |
|
    2+10       0.2436      3.73  |   Q  V  |         |         |
|
    2+15       0.2884      6.50  |       QV|         |         |
|
    2+20       0.3513      9.14  |         |VQ       |         |
|
    2+25       0.4181      9.69  |         | QV      |         |
|
    2+30       0.5221     15.10  |         |     V   Q         |
|
    2+35       0.6687     21.29  |         |         |V      Q |
|
    2+40       0.8379     24.57  |         |         |     V   | Q
|
    2+45       0.9839     21.20  |         |         |       Q |V
|
    2+50       1.0713     12.68  |         |     Q   |         |   V
|
    2+55       1.1214      7.28  |        Q|         |         |     V
|
    3+ 0       1.1568      5.13  |     Q   |         |         |      V
|
    3+ 5       1.1821      3.68  |   Q     |         |         |       V
|
    3+10       1.2000      2.60  |  Q      |         |         |       V
|
    3+15       1.2132      1.91  | Q       |         |         |
V|
    3+20       1.2229      1.41  |Q        |         |         |
V|
    3+25       1.2299      1.02  |Q        |         |         |
V|
    3+30       1.2351      0.76  |Q        |         |         |
V|
    3+35       1.2387      0.51  Q         |         |         |
V|
    3+40       1.2408      0.31  Q         |         |         |
V|
    3+45       1.2416      0.12  Q         |         |         |
V|
    3+50       1.2417      0.02  Q         |         |         |
V|
    3+55       1.2418      0.01  Q         |         |         |
V|
    4+ 0       1.2419      0.01  Q         |         |         |
V|
    4+ 5       1.2419      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

Study date 02/09/22 File: NECRamonaEx65.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Existing Condition
5yr 6hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2220.00(Ft.)
Length along longest watercourse measured to centroid = 1115.00 (Ft.)
Length along longest watercourse = 0.420 Mi.
Length along longest watercourse measured to centroid = 0.211 Mi.
Difference in elevation = 7.60(Ft.)
Slope along watercourse = 18.0757 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.138 Hr.
Lag time = 8.28 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50             1.14                   49.59

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50              2.75                 119.63

  STORM EVENT (YEAR) =    5.00
  Area Averaged 2-Year Rainfall =    1.140(In)
  Area Averaged 100-Year Rainfall =    2.750(In)

  Point rain (area averaged) =    1.517(In)
  Areal adjustment factor =   99.99 %
  Adjusted average point rain =    1.517(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           86.00          0.050
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  86.0  71.6      0.343     0.050        0.328       1.000
0.328
                                                      Sum (F) =
0.328
  Area averaged mean soil loss (F) (In/Hr) =  0.328
  Minimum soil loss rate ((In/Hr)) =  0.164
  (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   Time % of lag   Distribution   Unit Hydrograph
      (hrs)                          Graph %           (CFS)
  ------------------------------------------------------------------
---
         1   0.083        60.414         8.310             3.643
         2   0.167       120.828        34.258            15.018
         3   0.250       181.242        26.449            11.595
         4   0.333       241.657        10.231             4.485
         5   0.417       302.071         6.073             2.662
         6   0.500       362.485         4.096             1.796
         7   0.583       422.899         2.910             1.276
         8   0.667       483.313         2.055             0.901
         9   0.750       543.727         1.698             0.744
        10   0.833       604.141         1.250             0.548
        11   0.917       664.556         0.945             0.414
        12   1.000       724.970         0.674             0.295
        13   1.083       785.384         0.604             0.265
```

14	1.167	845.798	0.448	0.197
			Sum = 100.000	Sum= 43.840

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	0.50	0.091	(0.328)	0.082	0.009
2	0.17	0.60	0.109	(0.328)	0.098	0.011
3	0.25	0.60	0.109	(0.328)	0.098	0.011
4	0.33	0.60	0.109	(0.328)	0.098	0.011
5	0.42	0.60	0.109	(0.328)	0.098	0.011
6	0.50	0.70	0.127	(0.328)	0.115	0.013
7	0.58	0.70	0.127	(0.328)	0.115	0.013
8	0.67	0.70	0.127	(0.328)	0.115	0.013
9	0.75	0.70	0.127	(0.328)	0.115	0.013
10	0.83	0.70	0.127	(0.328)	0.115	0.013
11	0.92	0.70	0.127	(0.328)	0.115	0.013
12	1.00	0.80	0.146	(0.328)	0.131	0.015
13	1.08	0.80	0.146	(0.328)	0.131	0.015
14	1.17	0.80	0.146	(0.328)	0.131	0.015
15	1.25	0.80	0.146	(0.328)	0.131	0.015
16	1.33	0.80	0.146	(0.328)	0.131	0.015
17	1.42	0.80	0.146	(0.328)	0.131	0.015
18	1.50	0.80	0.146	(0.328)	0.131	0.015
19	1.58	0.80	0.146	(0.328)	0.131	0.015
20	1.67	0.80	0.146	(0.328)	0.131	0.015
21	1.75	0.80	0.146	(0.328)	0.131	0.015
22	1.83	0.80	0.146	(0.328)	0.131	0.015
23	1.92	0.80	0.146	(0.328)	0.131	0.015
24	2.00	0.90	0.164	(0.328)	0.147	0.016
25	2.08	0.80	0.146	(0.328)	0.131	0.015
26	2.17	0.90	0.164	(0.328)	0.147	0.016
27	2.25	0.90	0.164	(0.328)	0.147	0.016
28	2.33	0.90	0.164	(0.328)	0.147	0.016
29	2.42	0.90	0.164	(0.328)	0.147	0.016
30	2.50	0.90	0.164	(0.328)	0.147	0.016
31	2.58	0.90	0.164	(0.328)	0.147	0.016
32	2.67	0.90	0.164	(0.328)	0.147	0.016
33	2.75	1.00	0.182	(0.328)	0.164	0.018
34	2.83	1.00	0.182	(0.328)	0.164	0.018
35	2.92	1.00	0.182	(0.328)	0.164	0.018
36	3.00	1.00	0.182	(0.328)	0.164	0.018
37	3.08	1.00	0.182	(0.328)	0.164	0.018
38	3.17	1.10	0.200	(0.328)	0.180	0.020
39	3.25	1.10	0.200	(0.328)	0.180	0.020
40	3.33	1.10	0.200	(0.328)	0.180	0.020
41	3.42	1.20	0.218	(0.328)	0.197	0.022
42	3.50	1.30	0.237	(0.328)	0.213	0.024
43	3.58	1.40	0.255	(0.328)	0.229	0.025
44	3.67	1.40	0.255	(0.328)	0.229	0.025
45	3.75	1.50	0.273	(0.328)	0.246	0.027
46	3.83	1.50	0.273	(0.328)	0.246	0.027
47	3.92	1.60	0.291	(0.328)	0.262	0.029
48	4.00	1.60	0.291	(0.328)	0.262	0.029

```
 49   4.08     1.70      0.309       (  0.328)       0.278        0.031
 50   4.17     1.80      0.328       (  0.328)       0.295        0.033
 51   4.25     1.90      0.346       (  0.328)       0.311        0.035
 52   4.33     2.00      0.364       (  0.328)       0.328        0.036
 53   4.42     2.10      0.382          0.328    (  0.344)       0.055
 54   4.50     2.10      0.382          0.328    (  0.344)       0.055
 55   4.58     2.20      0.400          0.328    (  0.360)       0.073
 56   4.67     2.30      0.419          0.328    (  0.377)       0.091
 57   4.75     2.40      0.437          0.328    (  0.393)       0.109
 58   4.83     2.40      0.437          0.328    (  0.393)       0.109
 59   4.92     2.50      0.455          0.328    (  0.410)       0.127
 60   5.00     2.60      0.473          0.328    (  0.426)       0.146
 61   5.08     3.10      0.564          0.328    (  0.508)       0.237
 62   5.17     3.60      0.655          0.328    (  0.590)       0.328
 63   5.25     3.90      0.710          0.328    (  0.639)       0.382
 64   5.33     4.20      0.765          0.328    (  0.688)       0.437
 65   5.42     4.70      0.856          0.328    (  0.770)       0.528
 66   5.50     5.60      1.019          0.328    (  0.917)       0.692
 67   5.58     1.90      0.346       (  0.328)       0.311        0.035
 68   5.67     0.90      0.164       (  0.328)       0.147        0.016
 69   5.75     0.60      0.109       (  0.328)       0.098        0.011
 70   5.83     0.50      0.091       (  0.328)       0.082        0.009
 71   5.92     0.30      0.055       (  0.328)       0.049        0.005
 72   6.00     0.20      0.036       (  0.328)       0.033        0.004
            (Loss Rate Not Used)
    Sum =     100.0                                   Sum =     4.4
     Flood volume = Effective rainfall      0.37(In)
      times area      43.5(Ac.)/[(In)/(Ft.)] =       1.3(Ac.Ft)
     Total soil loss =      1.15(In)
     Total soil loss =     4.172(Ac.Ft)
     Total rainfall =      1.52(In)
     Flood volume =       57790.3 Cubic Feet
     Total soil loss =      181731.8 Cubic Feet
     ---------------------------------------------------------------------
--
      Peak flow rate of this hydrograph =     20.900(CFS)
     ---------------------------------------------------------------------
--
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                         6 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
     ---------------------------------------------------------------------
--
                   Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
--
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5
30.0

-------------------------------------------------------------------------
    0+ 5       0.0002      0.03  Q         |         |         |
|
    0+10       0.0014      0.18  Q         |         |         |
|
    0+15       0.0036      0.31  Q         |         |         |
|
    0+20       0.0061      0.37  Q         |         |         |
|
```

0+25	0.0089	0.40	Q	|	|	|
0+30	0.0119	0.43	Q	|	|	|
0+35	0.0152	0.47	Q	|	|	|
0+40	0.0186	0.51	Q	|	|	|
0+45	0.0222	0.52	Q	|	|	|
0+50	0.0259	0.53	Q	|	|	|
0+55	0.0296	0.54	Q	|	|	|
1+ 0	0.0334	0.55	QV	|	|	|
1+ 5	0.0375	0.59	QV	|	|	|
1+10	0.0417	0.61	QV	|	|	|
1+15	0.0460	0.62	QV	|	|	|
1+20	0.0503	0.63	QV	|	|	|
1+25	0.0546	0.63	QV	|	|	|
1+30	0.0590	0.63	QV	|	|	|
1+35	0.0633	0.63	QV	|	|	|
1+40	0.0677	0.64	Q V	|	|	|
1+45	0.0721	0.64	Q V	|	|	|
1+50	0.0765	0.64	Q V	|	|	|
1+55	0.0809	0.64	Q V	|	|	|
2+ 0	0.0853	0.65	Q V	|	|	|
2+ 5	0.0899	0.67	Q V	|	|	|
2+10	0.0945	0.67	Q V	|	|	|
2+15	0.0992	0.68	Q V	|	|	|
2+20	0.1040	0.70	Q V	|	|	|
2+25	0.1088	0.71	Q V	|	|	|
2+30	0.1137	0.71	Q V	|	|	|
2+35	0.1186	0.71	Q V	|	|	|
2+40	0.1235	0.71	Q V	|	|	|
2+45	0.1285	0.72	Q V	|	|	|
2+50	0.1337	0.75	|Q V	|	|	|

```
    2+55       0.1390      0.77  |Q  V     |         |         |
|
    3+ 0       0.1444      0.78  |Q  V     |         |         |
|
    3+ 5       0.1498      0.79  |Q  V     |         |         |
|
    3+10       0.1553      0.80  |Q  V     |         |         |
|
    3+15       0.1610      0.83  |Q  V     |         |         |
|
    3+20       0.1668      0.85  |Q   V    |         |         |
|
    3+25       0.1728      0.87  |Q   V    |         |         |
|
    3+30       0.1790      0.91  |Q   V    |         |         |
|
    3+35       0.1856      0.96  |Q   V    |         |         |
|
    3+40       0.1927      1.02  |Q   V    |         |         |
|
    3+45       0.2000      1.07  |Q    V   |         |         |
|
    3+50       0.2077      1.11  |Q    V   |         |         |
|
    3+55       0.2156      1.15  |Q    V   |         |         |
|
    4+ 0       0.2239      1.19  |Q    V   |         |         |
|
    4+ 5       0.2323      1.23  |Q     V  |         |         |
|
    4+10       0.2412      1.28  |Q     V  |         |         |
|
    4+15       0.2505      1.35  |Q     V  |         |         |
|
    4+20       0.2602      1.42  |Q     V  |         |         |
|
    4+25       0.2709      1.55  | Q     V |         |         |
|
    4+30       0.2838      1.87  | Q     V |         |         |
|
    4+35       0.2987      2.17  | Q      V|         |         |
|
    4+40       0.3166      2.60  |  Q     V|         |         |
|
    4+45       0.3387      3.21  |   Q     V         |         |
|
    4+50       0.3650      3.82  |    Q    |V        |         |
|
    4+55       0.3943      4.25  |    Q    |V        |         |
|
    5+ 0       0.4272      4.78  |     Q   | V       |         |
|
    5+ 5       0.4665      5.71  |      Q  |   V     |         |
|
    5+10       0.5202      7.79  |         Q    V    |         |
|
    5+15       0.5932     10.60  |         |   Q  V  |         |
|
    5+20       0.6842     13.22  |         |      Q  V         |
|
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```
    5+25       0.7926     15.74  |         |         Q  V      |
|
    5+30       0.9239     19.06  |         |         |    Q V  |
|
    5+35       1.0678     20.90  |         |         |      Q  | V
|
    5+40       1.1625     13.75  |         |       Q |         |    V
|
    5+45       1.2118      7.15  |        Q|         |         |     V
|
    5+50       1.2446      4.76  |     Q   |         |         |      V
|
    5+55       1.2681      3.42  |   Q     |         |         |       V
|
    6+ 0       1.2854      2.52  |  Q      |         |         |       V
|
    6+ 5       1.2983      1.86  | Q       |         |         |
V|
    6+10       1.3079      1.39  |Q        |         |         |
V|
    6+15       1.3147      0.99  |Q        |         |         |
V|
    6+20       1.3196      0.71  Q         |         |         |
V|
    6+25       1.3229      0.48  Q         |         |         |
V|
    6+30       1.3252      0.33  Q         |         |         |
V|
    6+35       1.3263      0.17  Q         |         |         |
V|
    6+40       1.3265      0.02  Q         |         |         |
V|
    6+45       1.3266      0.01  Q         |         |         |
V|
    6+50       1.3266      0.01  Q         |         |         |
V|
    6+55       1.3267      0.00  Q         |         |         |
V|
    7+ 0       1.3267      0.00  Q         |         |         |
V|
    7+ 5       1.3267      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

Study date 02/09/22 File: NECRamonaEx245.out

++

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Existing Condition
5yr 24hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2220.00(Ft.)
Length along longest watercourse measured to centroid = 1115.00 (Ft.)
Length along longest watercourse = 0.420 Mi.
Length along longest watercourse measured to centroid = 0.211 Mi.
Difference in elevation = 7.60(Ft.)
Slope along watercourse = 18.0757 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.138 Hr.
Lag time = 8.28 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 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]

```
       43.50             1.97                   85.69

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50              5.02                 218.37

  STORM EVENT (YEAR) =    5.00
  Area Averaged 2-Year Rainfall =    1.970(In)
  Area Averaged 100-Year Rainfall =    5.020(In)

  Point rain (area averaged) =    2.684(In)
  Areal adjustment factor =   99.99 %
  Adjusted average point rain =    2.684(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           86.00          0.050
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  86.0  71.6      0.343     0.050        0.328       1.000
0.328
                                                      Sum (F) =
0.328
  Area averaged mean soil loss (F) (In/Hr) =  0.328
  Minimum soil loss rate ((In/Hr)) =  0.164
  (for 24 hour storm duration)
  Soil low loss rate (decimal) =   0.900
  ------------------------------------------------------------------
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              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        60.414         8.310             3.643
         2   0.167       120.828        34.258            15.018
         3   0.250       181.242        26.449            11.595
         4   0.333       241.657        10.231             4.485
         5   0.417       302.071         6.073             2.662
         6   0.500       362.485         4.096             1.796
         7   0.583       422.899         2.910             1.276
         8   0.667       483.313         2.055             0.901
         9   0.750       543.727         1.698             0.744
        10   0.833       604.141         1.250             0.548
        11   0.917       664.556         0.945             0.414
        12   1.000       724.970         0.674             0.295
        13   1.083       785.384         0.604             0.265
```

14	1.167	845.798	0.448		0.197
			Sum = 100.000	Sum=	43.840

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	0.021	(0.581)	0.019	0.002
2	0.17	0.07	0.021	(0.579)	0.019	0.002
3	0.25	0.07	0.021	(0.576)	0.019	0.002
4	0.33	0.10	0.032	(0.574)	0.029	0.003
5	0.42	0.10	0.032	(0.572)	0.029	0.003
6	0.50	0.10	0.032	(0.570)	0.029	0.003
7	0.58	0.10	0.032	(0.567)	0.029	0.003
8	0.67	0.10	0.032	(0.565)	0.029	0.003
9	0.75	0.10	0.032	(0.563)	0.029	0.003
10	0.83	0.13	0.043	(0.561)	0.039	0.004
11	0.92	0.13	0.043	(0.559)	0.039	0.004
12	1.00	0.13	0.043	(0.556)	0.039	0.004
13	1.08	0.10	0.032	(0.554)	0.029	0.003
14	1.17	0.10	0.032	(0.552)	0.029	0.003
15	1.25	0.10	0.032	(0.550)	0.029	0.003
16	1.33	0.10	0.032	(0.548)	0.029	0.003
17	1.42	0.10	0.032	(0.545)	0.029	0.003
18	1.50	0.10	0.032	(0.543)	0.029	0.003
19	1.58	0.10	0.032	(0.541)	0.029	0.003
20	1.67	0.10	0.032	(0.539)	0.029	0.003
21	1.75	0.10	0.032	(0.537)	0.029	0.003
22	1.83	0.13	0.043	(0.535)	0.039	0.004
23	1.92	0.13	0.043	(0.532)	0.039	0.004
24	2.00	0.13	0.043	(0.530)	0.039	0.004
25	2.08	0.13	0.043	(0.528)	0.039	0.004
26	2.17	0.13	0.043	(0.526)	0.039	0.004
27	2.25	0.13	0.043	(0.524)	0.039	0.004
28	2.33	0.13	0.043	(0.522)	0.039	0.004
29	2.42	0.13	0.043	(0.520)	0.039	0.004
30	2.50	0.13	0.043	(0.518)	0.039	0.004
31	2.58	0.17	0.054	(0.515)	0.048	0.005
32	2.67	0.17	0.054	(0.513)	0.048	0.005
33	2.75	0.17	0.054	(0.511)	0.048	0.005
34	2.83	0.17	0.054	(0.509)	0.048	0.005
35	2.92	0.17	0.054	(0.507)	0.048	0.005
36	3.00	0.17	0.054	(0.505)	0.048	0.005
37	3.08	0.17	0.054	(0.503)	0.048	0.005
38	3.17	0.17	0.054	(0.501)	0.048	0.005
39	3.25	0.17	0.054	(0.499)	0.048	0.005
40	3.33	0.17	0.054	(0.497)	0.048	0.005
41	3.42	0.17	0.054	(0.494)	0.048	0.005
42	3.50	0.17	0.054	(0.492)	0.048	0.005
43	3.58	0.17	0.054	(0.490)	0.048	0.005
44	3.67	0.17	0.054	(0.488)	0.048	0.005
45	3.75	0.17	0.054	(0.486)	0.048	0.005
46	3.83	0.20	0.064	(0.484)	0.058	0.006
47	3.92	0.20	0.064	(0.482)	0.058	0.006
48	4.00	0.20	0.064	(0.480)	0.058	0.006

49	4.08	0.20	0.064	(0.478)	0.058	0.006
50	4.17	0.20	0.064	(0.476)	0.058	0.006
51	4.25	0.20	0.064	(0.474)	0.058	0.006
52	4.33	0.23	0.075	(0.472)	0.068	0.008
53	4.42	0.23	0.075	(0.470)	0.068	0.008
54	4.50	0.23	0.075	(0.468)	0.068	0.008
55	4.58	0.23	0.075	(0.466)	0.068	0.008
56	4.67	0.23	0.075	(0.464)	0.068	0.008
57	4.75	0.23	0.075	(0.462)	0.068	0.008
58	4.83	0.27	0.086	(0.460)	0.077	0.009
59	4.92	0.27	0.086	(0.458)	0.077	0.009
60	5.00	0.27	0.086	(0.456)	0.077	0.009
61	5.08	0.20	0.064	(0.454)	0.058	0.006
62	5.17	0.20	0.064	(0.452)	0.058	0.006
63	5.25	0.20	0.064	(0.450)	0.058	0.006
64	5.33	0.23	0.075	(0.448)	0.068	0.008
65	5.42	0.23	0.075	(0.446)	0.068	0.008
66	5.50	0.23	0.075	(0.444)	0.068	0.008
67	5.58	0.27	0.086	(0.442)	0.077	0.009
68	5.67	0.27	0.086	(0.440)	0.077	0.009
69	5.75	0.27	0.086	(0.438)	0.077	0.009
70	5.83	0.27	0.086	(0.436)	0.077	0.009
71	5.92	0.27	0.086	(0.434)	0.077	0.009
72	6.00	0.27	0.086	(0.433)	0.077	0.009
73	6.08	0.30	0.097	(0.431)	0.087	0.010
74	6.17	0.30	0.097	(0.429)	0.087	0.010
75	6.25	0.30	0.097	(0.427)	0.087	0.010
76	6.33	0.30	0.097	(0.425)	0.087	0.010
77	6.42	0.30	0.097	(0.423)	0.087	0.010
78	6.50	0.30	0.097	(0.421)	0.087	0.010
79	6.58	0.33	0.107	(0.419)	0.097	0.011
80	6.67	0.33	0.107	(0.417)	0.097	0.011
81	6.75	0.33	0.107	(0.415)	0.097	0.011
82	6.83	0.33	0.107	(0.414)	0.097	0.011
83	6.92	0.33	0.107	(0.412)	0.097	0.011
84	7.00	0.33	0.107	(0.410)	0.097	0.011
85	7.08	0.33	0.107	(0.408)	0.097	0.011
86	7.17	0.33	0.107	(0.406)	0.097	0.011
87	7.25	0.33	0.107	(0.404)	0.097	0.011
88	7.33	0.37	0.118	(0.402)	0.106	0.012
89	7.42	0.37	0.118	(0.401)	0.106	0.012
90	7.50	0.37	0.118	(0.399)	0.106	0.012
91	7.58	0.40	0.129	(0.397)	0.116	0.013
92	7.67	0.40	0.129	(0.395)	0.116	0.013
93	7.75	0.40	0.129	(0.393)	0.116	0.013
94	7.83	0.43	0.140	(0.391)	0.126	0.014
95	7.92	0.43	0.140	(0.390)	0.126	0.014
96	8.00	0.43	0.140	(0.388)	0.126	0.014
97	8.08	0.50	0.161	(0.386)	0.145	0.016
98	8.17	0.50	0.161	(0.384)	0.145	0.016
99	8.25	0.50	0.161	(0.382)	0.145	0.016
100	8.33	0.50	0.161	(0.381)	0.145	0.016
101	8.42	0.50	0.161	(0.379)	0.145	0.016
102	8.50	0.50	0.161	(0.377)	0.145	0.016
103	8.58	0.53	0.172	(0.375)	0.155	0.017
104	8.67	0.53	0.172	(0.374)	0.155	0.017
105	8.75	0.53	0.172	(0.372)	0.155	0.017
106	8.83	0.57	0.183	(0.370)	0.164	0.018
107	8.92	0.57	0.183	(0.368)	0.164	0.018
108	9.00	0.57	0.183	(0.367)	0.164	0.018

109	9.08	0.63	0.204	(0.365)	0.184	0.020
110	9.17	0.63	0.204	(0.363)	0.184	0.020
111	9.25	0.63	0.204	(0.361)	0.184	0.020
112	9.33	0.67	0.215	(0.360)	0.193	0.021
113	9.42	0.67	0.215	(0.358)	0.193	0.021
114	9.50	0.67	0.215	(0.356)	0.193	0.021
115	9.58	0.70	0.225	(0.354)	0.203	0.023
116	9.67	0.70	0.225	(0.353)	0.203	0.023
117	9.75	0.70	0.225	(0.351)	0.203	0.023
118	9.83	0.73	0.236	(0.349)	0.213	0.024
119	9.92	0.73	0.236	(0.348)	0.213	0.024
120	10.00	0.73	0.236	(0.346)	0.213	0.024
121	10.08	0.50	0.161	(0.344)	0.145	0.016
122	10.17	0.50	0.161	(0.343)	0.145	0.016
123	10.25	0.50	0.161	(0.341)	0.145	0.016
124	10.33	0.50	0.161	(0.339)	0.145	0.016
125	10.42	0.50	0.161	(0.338)	0.145	0.016
126	10.50	0.50	0.161	(0.336)	0.145	0.016
127	10.58	0.67	0.215	(0.334)	0.193	0.021
128	10.67	0.67	0.215	(0.333)	0.193	0.021
129	10.75	0.67	0.215	(0.331)	0.193	0.021
130	10.83	0.67	0.215	(0.330)	0.193	0.021
131	10.92	0.67	0.215	(0.328)	0.193	0.021
132	11.00	0.67	0.215	(0.326)	0.193	0.021
133	11.08	0.63	0.204	(0.325)	0.184	0.020
134	11.17	0.63	0.204	(0.323)	0.184	0.020
135	11.25	0.63	0.204	(0.322)	0.184	0.020
136	11.33	0.63	0.204	(0.320)	0.184	0.020
137	11.42	0.63	0.204	(0.318)	0.184	0.020
138	11.50	0.63	0.204	(0.317)	0.184	0.020
139	11.58	0.57	0.183	(0.315)	0.164	0.018
140	11.67	0.57	0.183	(0.314)	0.164	0.018
141	11.75	0.57	0.183	(0.312)	0.164	0.018
142	11.83	0.60	0.193	(0.311)	0.174	0.019
143	11.92	0.60	0.193	(0.309)	0.174	0.019
144	12.00	0.60	0.193	(0.307)	0.174	0.019
145	12.08	0.83	0.268	(0.306)	0.242	0.027
146	12.17	0.83	0.268	(0.304)	0.242	0.027
147	12.25	0.83	0.268	(0.303)	0.242	0.027
148	12.33	0.87	0.279	(0.301)	0.251	0.028
149	12.42	0.87	0.279	(0.300)	0.251	0.028
150	12.50	0.87	0.279	(0.298)	0.251	0.028
151	12.58	0.93	0.301	(0.297)	0.271	0.030
152	12.67	0.93	0.301	(0.295)	0.271	0.030
153	12.75	0.93	0.301	(0.294)	0.271	0.030
154	12.83	0.97	0.311	(0.292)	0.280	0.031
155	12.92	0.97	0.311	(0.291)	0.280	0.031
156	13.00	0.97	0.311	(0.289)	0.280	0.031
157	13.08	1.13	0.365	0.288	(0.329)	0.077
158	13.17	1.13	0.365	0.286	(0.329)	0.079
159	13.25	1.13	0.365	0.285	(0.329)	0.080
160	13.33	1.13	0.365	0.284	(0.329)	0.082
161	13.42	1.13	0.365	0.282	(0.329)	0.083
162	13.50	1.13	0.365	0.281	(0.329)	0.084
163	13.58	0.77	0.247	(0.279)	0.222	0.025
164	13.67	0.77	0.247	(0.278)	0.222	0.025
165	13.75	0.77	0.247	(0.276)	0.222	0.025
166	13.83	0.77	0.247	(0.275)	0.222	0.025
167	13.92	0.77	0.247	(0.274)	0.222	0.025
168	14.00	0.77	0.247	(0.272)	0.222	0.025

169	14.08	0.90	0.290	(0.271)	0.261	0.029
170	14.17	0.90	0.290	(0.269)	0.261	0.029
171	14.25	0.90	0.290	(0.268)	0.261	0.029
172	14.33	0.87	0.279	(0.267)	0.251	0.028
173	14.42	0.87	0.279	(0.265)	0.251	0.028
174	14.50	0.87	0.279	(0.264)	0.251	0.028
175	14.58	0.87	0.279	(0.263)	0.251	0.028
176	14.67	0.87	0.279	(0.261)	0.251	0.028
177	14.75	0.87	0.279	(0.260)	0.251	0.028
178	14.83	0.83	0.268	(0.259)	0.242	0.027
179	14.92	0.83	0.268	(0.257)	0.242	0.027
180	15.00	0.83	0.268	(0.256)	0.242	0.027
181	15.08	0.80	0.258	(0.255)	0.232	0.026
182	15.17	0.80	0.258	(0.253)	0.232	0.026
183	15.25	0.80	0.258	(0.252)	0.232	0.026
184	15.33	0.77	0.247	(0.251)	0.222	0.025
185	15.42	0.77	0.247	(0.249)	0.222	0.025
186	15.50	0.77	0.247	(0.248)	0.222	0.025
187	15.58	0.63	0.204	(0.247)	0.184	0.020
188	15.67	0.63	0.204	(0.246)	0.184	0.020
189	15.75	0.63	0.204	(0.244)	0.184	0.020
190	15.83	0.63	0.204	(0.243)	0.184	0.020
191	15.92	0.63	0.204	(0.242)	0.184	0.020
192	16.00	0.63	0.204	(0.241)	0.184	0.020
193	16.08	0.13	0.043	(0.239)	0.039	0.004
194	16.17	0.13	0.043	(0.238)	0.039	0.004
195	16.25	0.13	0.043	(0.237)	0.039	0.004
196	16.33	0.13	0.043	(0.236)	0.039	0.004
197	16.42	0.13	0.043	(0.235)	0.039	0.004
198	16.50	0.13	0.043	(0.233)	0.039	0.004
199	16.58	0.10	0.032	(0.232)	0.029	0.003
200	16.67	0.10	0.032	(0.231)	0.029	0.003
201	16.75	0.10	0.032	(0.230)	0.029	0.003
202	16.83	0.10	0.032	(0.229)	0.029	0.003
203	16.92	0.10	0.032	(0.227)	0.029	0.003
204	17.00	0.10	0.032	(0.226)	0.029	0.003
205	17.08	0.17	0.054	(0.225)	0.048	0.005
206	17.17	0.17	0.054	(0.224)	0.048	0.005
207	17.25	0.17	0.054	(0.223)	0.048	0.005
208	17.33	0.17	0.054	(0.222)	0.048	0.005
209	17.42	0.17	0.054	(0.221)	0.048	0.005
210	17.50	0.17	0.054	(0.220)	0.048	0.005
211	17.58	0.17	0.054	(0.219)	0.048	0.005
212	17.67	0.17	0.054	(0.217)	0.048	0.005
213	17.75	0.17	0.054	(0.216)	0.048	0.005
214	17.83	0.13	0.043	(0.215)	0.039	0.004
215	17.92	0.13	0.043	(0.214)	0.039	0.004
216	18.00	0.13	0.043	(0.213)	0.039	0.004
217	18.08	0.13	0.043	(0.212)	0.039	0.004
218	18.17	0.13	0.043	(0.211)	0.039	0.004
219	18.25	0.13	0.043	(0.210)	0.039	0.004
220	18.33	0.13	0.043	(0.209)	0.039	0.004
221	18.42	0.13	0.043	(0.208)	0.039	0.004
222	18.50	0.13	0.043	(0.207)	0.039	0.004
223	18.58	0.10	0.032	(0.206)	0.029	0.003
224	18.67	0.10	0.032	(0.205)	0.029	0.003
225	18.75	0.10	0.032	(0.204)	0.029	0.003
226	18.83	0.07	0.021	(0.203)	0.019	0.002
227	18.92	0.07	0.021	(0.202)	0.019	0.002
228	19.00	0.07	0.021	(0.201)	0.019	0.002

229	19.08	0.10	0.032	(0.200)	0.029	0.003
230	19.17	0.10	0.032	(0.199)	0.029	0.003
231	19.25	0.10	0.032	(0.198)	0.029	0.003
232	19.33	0.13	0.043	(0.197)	0.039	0.004
233	19.42	0.13	0.043	(0.196)	0.039	0.004
234	19.50	0.13	0.043	(0.196)	0.039	0.004
235	19.58	0.10	0.032	(0.195)	0.029	0.003
236	19.67	0.10	0.032	(0.194)	0.029	0.003
237	19.75	0.10	0.032	(0.193)	0.029	0.003
238	19.83	0.07	0.021	(0.192)	0.019	0.002
239	19.92	0.07	0.021	(0.191)	0.019	0.002
240	20.00	0.07	0.021	(0.190)	0.019	0.002
241	20.08	0.10	0.032	(0.189)	0.029	0.003
242	20.17	0.10	0.032	(0.189)	0.029	0.003
243	20.25	0.10	0.032	(0.188)	0.029	0.003
244	20.33	0.10	0.032	(0.187)	0.029	0.003
245	20.42	0.10	0.032	(0.186)	0.029	0.003
246	20.50	0.10	0.032	(0.185)	0.029	0.003
247	20.58	0.10	0.032	(0.185)	0.029	0.003
248	20.67	0.10	0.032	(0.184)	0.029	0.003
249	20.75	0.10	0.032	(0.183)	0.029	0.003
250	20.83	0.07	0.021	(0.182)	0.019	0.002
251	20.92	0.07	0.021	(0.182)	0.019	0.002
252	21.00	0.07	0.021	(0.181)	0.019	0.002
253	21.08	0.10	0.032	(0.180)	0.029	0.003
254	21.17	0.10	0.032	(0.179)	0.029	0.003
255	21.25	0.10	0.032	(0.179)	0.029	0.003
256	21.33	0.07	0.021	(0.178)	0.019	0.002
257	21.42	0.07	0.021	(0.177)	0.019	0.002
258	21.50	0.07	0.021	(0.177)	0.019	0.002
259	21.58	0.10	0.032	(0.176)	0.029	0.003
260	21.67	0.10	0.032	(0.175)	0.029	0.003
261	21.75	0.10	0.032	(0.175)	0.029	0.003
262	21.83	0.07	0.021	(0.174)	0.019	0.002
263	21.92	0.07	0.021	(0.174)	0.019	0.002
264	22.00	0.07	0.021	(0.173)	0.019	0.002
265	22.08	0.10	0.032	(0.172)	0.029	0.003
266	22.17	0.10	0.032	(0.172)	0.029	0.003
267	22.25	0.10	0.032	(0.171)	0.029	0.003
268	22.33	0.07	0.021	(0.171)	0.019	0.002
269	22.42	0.07	0.021	(0.170)	0.019	0.002
270	22.50	0.07	0.021	(0.170)	0.019	0.002
271	22.58	0.07	0.021	(0.169)	0.019	0.002
272	22.67	0.07	0.021	(0.169)	0.019	0.002
273	22.75	0.07	0.021	(0.168)	0.019	0.002
274	22.83	0.07	0.021	(0.168)	0.019	0.002
275	22.92	0.07	0.021	(0.167)	0.019	0.002
276	23.00	0.07	0.021	(0.167)	0.019	0.002
277	23.08	0.07	0.021	(0.167)	0.019	0.002
278	23.17	0.07	0.021	(0.166)	0.019	0.002
279	23.25	0.07	0.021	(0.166)	0.019	0.002
280	23.33	0.07	0.021	(0.166)	0.019	0.002
281	23.42	0.07	0.021	(0.165)	0.019	0.002
282	23.50	0.07	0.021	(0.165)	0.019	0.002
283	23.58	0.07	0.021	(0.165)	0.019	0.002
284	23.67	0.07	0.021	(0.165)	0.019	0.002
285	23.75	0.07	0.021	(0.164)	0.019	0.002
286	23.83	0.07	0.021	(0.164)	0.019	0.002
287	23.92	0.07	0.021	(0.164)	0.019	0.002
288	24.00	0.07	0.021	(0.164)	0.019	0.002

```
            (Loss Rate Not Used)
     Sum =     100.0                                    Sum =     3.5
      Flood volume = Effective rainfall      0.29(In)
       times area      43.5(Ac.)/[(In)/(Ft.)] =       1.1(Ac.Ft)
      Total soil loss =      2.39(In)
      Total soil loss =     8.677(Ac.Ft)
      Total rainfall =      2.68(In)
      Flood volume =       45879.3 Cubic Feet
      Total soil loss =      377962.3 Cubic Feet
      ------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      3.348(CFS)
      ------------------------------------------------------------------
--
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                          24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------
--
                   Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------
--
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        2.5       5.0       7.5
10.0

-------------------------------------------------------------------------
    0+ 5       0.0001      0.01  Q         |         |         |
|
    0+10       0.0003      0.04  Q         |         |         |
|
    0+15       0.0008      0.07  Q         |         |         |
|
    0+20       0.0013      0.08  Q         |         |         |
|
    0+25       0.0020      0.10  Q         |         |         |
|
    0+30       0.0028      0.12  Q         |         |         |
|
    0+35       0.0037      0.12  Q         |         |         |
|
    0+40       0.0046      0.13  Q         |         |         |
|
    0+45       0.0055      0.13  Q         |         |         |
|
    0+50       0.0064      0.14  Q         |         |         |
|
    0+55       0.0075      0.16  Q         |         |         |
|
    1+ 0       0.0087      0.17  Q         |         |         |
|
    1+ 5       0.0099      0.17  Q         |         |         |
|
    1+10       0.0110      0.16  Q         |         |         |
|
    1+15       0.0120      0.15  Q         |         |         |
|
    1+20       0.0130      0.15  Q         |         |         |
|
```

1+25	0.0140	0.15	Q			
1+30	0.0150	0.14	Q			
1+35	0.0160	0.14	Q			
1+40	0.0170	0.14	Q			
1+45	0.0180	0.14	Q			
1+50	0.0190	0.15	Q			
1+55	0.0201	0.16	Q			
2+ 0	0.0213	0.17	Q			
2+ 5	0.0225	0.18	Q			
2+10	0.0238	0.18	Q			
2+15	0.0251	0.18	Q			
2+20	0.0263	0.18	QV			
2+25	0.0276	0.19	QV			
2+30	0.0289	0.19	QV			
2+35	0.0302	0.19	QV			
2+40	0.0316	0.21	QV			
2+45	0.0332	0.22	QV			
2+50	0.0347	0.23	QV			
2+55	0.0363	0.23	QV			
3+ 0	0.0379	0.23	QV			
3+ 5	0.0395	0.23	QV			
3+10	0.0411	0.23	QV			
3+15	0.0427	0.23	QV			
3+20	0.0443	0.23	QV			
3+25	0.0459	0.23	QV			
3+30	0.0475	0.23	QV			
3+35	0.0491	0.24	QV			
3+40	0.0508	0.24	QV			
3+45	0.0524	0.24	QV			
3+50	0.0540	0.24	Q V			

3+55	0.0558	0.26	|QV	|	|	|
4+ 0	0.0576	0.27	|QV	|	|	|
4+ 5	0.0595	0.27	|QV	|	|	|
4+10	0.0614	0.28	|QV	|	|	|
4+15	0.0633	0.28	|QV	|	|	|
4+20	0.0653	0.28	|QV	|	|	|
4+25	0.0673	0.30	|QV	|	|	|
4+30	0.0695	0.31	|QV	|	|	|
4+35	0.0717	0.32	|QV	|	|	|
4+40	0.0739	0.32	|QV	|	|	|
4+45	0.0762	0.32	|QV	|	|	|
4+50	0.0784	0.33	|QV	|	|	|
4+55	0.0808	0.35	|Q V	|	|	|
5+ 0	0.0833	0.36	|Q V	|	|	|
5+ 5	0.0858	0.36	|Q V	|	|	|
5+10	0.0880	0.33	|Q V	|	|	|
5+15	0.0901	0.31	|Q V	|	|	|
5+20	0.0922	0.30	|Q V	|	|	|
5+25	0.0944	0.31	|Q V	|	|	|
5+30	0.0966	0.32	|Q V	|	|	|
5+35	0.0989	0.33	|Q V	|	|	|
5+40	0.1013	0.35	|Q V	|	|	|
5+45	0.1037	0.36	|Q V	|	|	|
5+50	0.1063	0.37	|Q V	|	|	|
5+55	0.1088	0.37	|Q V	|	|	|
6+ 0	0.1114	0.37	|Q V	|	|	|
6+ 5	0.1139	0.38	|Q V	|	|	|
6+10	0.1167	0.39	|Q V	|	|	|
6+15	0.1195	0.41	|Q V	|	|	|
6+20	0.1223	0.41	|Q V	|	|	|

6+25	0.1252	0.42	|Q V |		
6+30	0.1280	0.42	|Q V |		
6+35	0.1310	0.42	|Q V |		
6+40	0.1340	0.44	|Q V |		
6+45	0.1371	0.45	|Q V |		
6+50	0.1403	0.46	|Q V |		
6+55	0.1435	0.46	|Q V |		
7+ 0	0.1467	0.47	|Q V |		
7+ 5	0.1499	0.47	|Q V |		
7+10	0.1531	0.47	|Q V |		
7+15	0.1564	0.47	|Q V |		
7+20	0.1596	0.47	|Q V |		
7+25	0.1630	0.49	|Q V |		
7+30	0.1665	0.50	| Q V |		
7+35	0.1700	0.51	| Q V |		
7+40	0.1737	0.53	| Q V |		
7+45	0.1774	0.55	| Q V |		
7+50	0.1812	0.56	| Q V |		
7+55	0.1852	0.58	| Q V |		
8+ 0	0.1893	0.59	| Q V |		
8+ 5	0.1934	0.61	| Q V |		
8+10	0.1979	0.64	| Q V |		
8+15	0.2025	0.67	| Q V |		
8+20	0.2072	0.68	| Q V |		
8+25	0.2119	0.69	| Q V |		
8+30	0.2167	0.69	| Q V |		
8+35	0.2215	0.70	| Q V |		
8+40	0.2265	0.72	| Q V |		
8+45	0.2316	0.73	| Q V |		
8+50	0.2367	0.74	| Q V |		

8+55	0.2420	0.77	Q	V		
9+ 0	0.2473	0.78	Q	V		
9+ 5	0.2528	0.79	Q	V		
9+10	0.2585	0.83	Q	V		
9+15	0.2644	0.86	Q	V		
9+20	0.2705	0.87	Q	V		
9+25	0.2766	0.90	Q	V		
9+30	0.2829	0.91	Q	V		
9+35	0.2893	0.93	Q	V		
9+40	0.2959	0.95	Q	V		
9+45	0.3025	0.97	Q	V		
9+50	0.3092	0.98	Q	V		
9+55	0.3161	1.00	Q	V		
10+ 0	0.3231	1.01	Q	V		
10+ 5	0.3299	0.99	Q	V		
10+10	0.3360	0.89	Q	V		
10+15	0.3415	0.80	Q	V		
10+20	0.3468	0.77	Q	V		
10+25	0.3520	0.75	Q	V		
10+30	0.3571	0.74	Q	V		
10+35	0.3623	0.75	Q	V		
10+40	0.3680	0.82	Q	V		
10+45	0.3740	0.88	Q	V		
10+50	0.3802	0.90	Q	V		
10+55	0.3865	0.91	Q	V		
11+ 0	0.3929	0.92	Q	V		
11+ 5	0.3992	0.92	Q	V		
11+10	0.4055	0.91	Q	V		
11+15	0.4117	0.90	Q	V		
11+20	0.4178	0.90	Q	V		

11+25	0.4240	0.90	Q	V		
11+30	0.4302	0.90	Q	V		
11+35	0.4363	0.89	Q	V		
11+40	0.4422	0.86	Q	V		
11+45	0.4480	0.83	Q	V		
11+50	0.4537	0.83	Q	V		
11+55	0.4594	0.84	Q	V		
12+ 0	0.4652	0.84	Q	V		
12+ 5	0.4712	0.87	Q	V		
12+10	0.4780	0.99	Q	V		
12+15	0.4854	1.07	Q	V		
12+20	0.4931	1.11	Q	V		
12+25	0.5010	1.15	Q	V		
12+30	0.5091	1.17	Q	V		
12+35	0.5173	1.20	Q	V		
12+40	0.5258	1.24	Q	V		
12+45	0.5346	1.27	Q	V		
12+50	0.5435	1.29	Q	V		
12+55	0.5525	1.32	Q	V		
13+ 0	0.5617	1.34	Q	V		
13+ 5	0.5722	1.51	Q	V		
13+10	0.5874	2.22	Q	V		
13+15	0.6066	2.78	Q	V		
13+20	0.6275	3.04	Q	V		
13+25	0.6496	3.21	Q	V		
13+30	0.6727	3.35	Q	V		
13+35	0.6950	3.24	Q	V		
13+40	0.7117	2.42	Q	V		
13+45	0.7239	1.78	Q	V		
13+50	0.7345	1.55	Q	V		

13+55	0.7443	1.41	Q		V	
14+ 0	0.7534	1.33	Q		V	
14+ 5	0.7622	1.28	Q		V	
14+10	0.7712	1.30	Q		V	
14+15	0.7802	1.31	Q		V	
14+20	0.7892	1.30	Q		V	
14+25	0.7979	1.27	Q		V	
14+30	0.8065	1.25	Q		V	
14+35	0.8150	1.23	Q		V	
14+40	0.8234	1.22	Q		V	
14+45	0.8318	1.22	Q		V	
14+50	0.8402	1.22	Q		V	
14+55	0.8485	1.20	Q		V	
15+ 0	0.8567	1.19	Q		V	
15+ 5	0.8648	1.18	Q		V	
15+10	0.8729	1.17	Q		V	
15+15	0.8808	1.15	Q		V	
15+20	0.8886	1.14	Q		V	
15+25	0.8963	1.12	Q		V	
15+30	0.9040	1.10	Q		V	
15+35	0.9114	1.08	Q		V	
15+40	0.9184	1.01	Q		V	
15+45	0.9250	0.96	Q		V	
15+50	0.9315	0.94	Q		V	
15+55	0.9378	0.93	Q		V	
16+ 0	0.9442	0.92	Q		V	
16+ 5	0.9500	0.85	Q		V	
16+10	0.9542	0.61	Q		V	
16+15	0.9571	0.42	Q		V	
16+20	0.9594	0.34	Q		V	

16+25	0.9614	0.30	|Q	|	|	|	V |
16+30	0.9633	0.27	|Q	|	|	|	V |
16+35	0.9649	0.24	Q	|	|	|	V |
16+40	0.9663	0.21	Q	|	|	|	V |
16+45	0.9676	0.18	Q	|	|	|	V |
16+50	0.9688	0.17	Q	|	|	|	V |
16+55	0.9699	0.16	Q	|	|	|	V |
17+ 0	0.9709	0.15	Q	|	|	|	V |
17+ 5	0.9720	0.16	Q	|	|	|	V |
17+10	0.9733	0.18	Q	|	|	|	V |
17+15	0.9747	0.21	Q	|	|	|	V |
17+20	0.9762	0.22	Q	|	|	|	V |
17+25	0.9777	0.22	Q	|	|	|	V |
17+30	0.9793	0.23	Q	|	|	|	V |
17+35	0.9809	0.23	Q	|	|	|	V |
17+40	0.9825	0.23	Q	|	|	|	V |
17+45	0.9840	0.23	Q	|	|	|	V |
17+50	0.9856	0.23	Q	|	|	|	V |
17+55	0.9871	0.21	Q	|	|	|	V |
18+ 0	0.9885	0.20	Q	|	|	|	V |
18+ 5	0.9899	0.20	Q	|	|	|	V |
18+10	0.9912	0.20	Q	|	|	|	V |
18+15	0.9925	0.19	Q	|	|	|	V |
18+20	0.9939	0.19	Q	|	|	|	V |
18+25	0.9952	0.19	Q	|	|	|	V |
18+30	0.9965	0.19	Q	|	|	|	V |
18+35	0.9978	0.19	Q	|	|	|	V |
18+40	0.9989	0.17	Q	|	|	|	V |
18+45	1.0000	0.16	Q	|	|	|	V |
18+50	1.0010	0.15	Q	|	|	|	V |

18+55	1.0019	0.13	Q	|	|	|	V |
19+ 0	1.0027	0.11	Q	|	|	|	V |
19+ 5	1.0034	0.11	Q	|	|	|	V |
19+10	1.0043	0.12	Q	|	|	|	V |
19+15	1.0052	0.13	Q	|	|	|	V |
19+20	1.0062	0.14	Q	|	|	|	V |
19+25	1.0073	0.16	Q	|	|	|	V |
19+30	1.0085	0.17	Q	|	|	|	V |
19+35	1.0096	0.17	Q	|	|	|	V |
19+40	1.0107	0.16	Q	|	|	|	V |
19+45	1.0118	0.15	Q	|	|	|	V |
19+50	1.0127	0.14	Q	|	|	|	V |
19+55	1.0136	0.12	Q	|	|	|	V |
20+ 0	1.0144	0.11	Q	|	|	|	V |
20+ 5	1.0151	0.11	Q	|	|	|	V |
20+10	1.0160	0.12	Q	|	|	|	V |
20+15	1.0169	0.13	Q	|	|	|	V |
20+20	1.0178	0.14	Q	|	|	|	V |
20+25	1.0188	0.14	Q	|	|	|	V |
20+30	1.0197	0.14	Q	|	|	|	V |
20+35	1.0207	0.14	Q	|	|	|	V |
20+40	1.0217	0.14	Q	|	|	|	V |
20+45	1.0226	0.14	Q	|	|	|	V |
20+50	1.0236	0.14	Q	|	|	|	V |
20+55	1.0244	0.12	Q	|	|	|	V |
21+ 0	1.0251	0.11	Q	|	|	|	V |
21+ 5	1.0259	0.11	Q	|	|	|	V |
21+10	1.0267	0.12	Q	|	|	|	V |
21+15	1.0276	0.13	Q	|	|	|	V|
21+20	1.0285	0.13	Q	|	|	|	V|

21+25	1.0293	0.12	Q			
21+30	1.0301	0.11	Q			
21+35	1.0308	0.11	Q			
21+40	1.0316	0.12	Q			
21+45	1.0325	0.13	Q			
21+50	1.0334	0.13	Q			
21+55	1.0342	0.12	Q			
22+ 0	1.0349	0.11	Q			
22+ 5	1.0356	0.11	Q			
22+10	1.0365	0.12	Q			
22+15	1.0374	0.13	Q			
22+20	1.0383	0.13	Q			
22+25	1.0391	0.12	Q			
22+30	1.0398	0.11	Q			
22+35	1.0405	0.10	Q			
22+40	1.0412	0.10	Q			
22+45	1.0418	0.10	Q			
22+50	1.0425	0.10	Q			
22+55	1.0432	0.10	Q			
23+ 0	1.0438	0.10	Q			
23+ 5	1.0445	0.10	Q			
23+10	1.0451	0.09	Q			
23+15	1.0458	0.09	Q			
23+20	1.0464	0.09	Q			
23+25	1.0471	0.09	Q			
23+30	1.0477	0.09	Q			
23+35	1.0484	0.09	Q			
23+40	1.0490	0.09	Q			
23+45	1.0497	0.09	Q			
23+50	1.0503	0.09	Q			

```
   23+55       1.0510      0.09  Q         |         |         |
V|
   24+ 0       1.0516      0.09  Q         |         |         |
V|
   24+ 5       1.0522      0.09  Q         |         |         |
V|
   24+10       1.0526      0.05  Q         |         |         |
V|
   24+15       1.0528      0.03  Q         |         |         |
V|
   24+20       1.0529      0.02  Q         |         |         |
V|
   24+25       1.0530      0.01  Q         |         |         |
V|
   24+30       1.0531      0.01  Q         |         |         |
V|
   24+35       1.0531      0.01  Q         |         |         |
V|
   24+40       1.0532      0.01  Q         |         |         |
V|
   24+45       1.0532      0.00  Q         |         |         |
V|
   24+50       1.0532      0.00  Q         |         |         |
V|
   24+55       1.0532      0.00  Q         |         |         |
V|
   25+ 0       1.0532      0.00  Q         |         |         |
V|
   25+ 5       1.0532      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

Study date 02/09/22 File: NECRamonaEx110.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Existing Condition
10yr 1hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2220.00(Ft.)
Length along longest watercourse measured to centroid = 1115.00 (Ft.)
Length along longest watercourse = 0.420 Mi.
Length along longest watercourse measured to centroid = 0.211 Mi.
Difference in elevation = 7.60(Ft.)
Slope along watercourse = 18.0757 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.138 Hr.
Lag time = 8.28 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50              0.47                    20.27

      100 YEAR Area rainfall data:


      Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
             43.50              1.35                    58.73

      STORM EVENT (YEAR) =   10.00
      Area Averaged 2-Year Rainfall =    0.466(In)
      Area Averaged 100-Year Rainfall =    1.350(In)

      Point rain (area averaged) =    0.830(In)
      Areal adjustment factor =   99.96 %
      Adjusted average point rain =    0.829(In)

      Sub-Area Data:
      Area(Ac.)         Runoff Index   Impervious %
          43.500           86.00          0.050
       Total Area Entered =     43.50(Ac.)


      RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
      AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
      86.0  86.0      0.176     0.050        0.168       1.000
0.168
                                                          Sum (F) =
0.168
      Area averaged mean soil loss (F) (In/Hr) =  0.168
      Minimum soil loss rate ((In/Hr)) =  0.084
      (for 24 hour storm duration)
      Soil low loss rate (decimal) =   0.900
      ------------------------------------------------------------------
---
      Slope of intensity-duration curve for a 1 hour storm =0.5000
      ------------------------------------------------------------------
----

                  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         60.414          8.310             3.643
           2   0.167        120.828         34.258            15.018
           3   0.250        181.242         26.449            11.595
           4   0.333        241.657         10.231             4.485
           5   0.417        302.071          6.073             2.662
           6   0.500        362.485          4.096             1.796
           7   0.583        422.899          2.910             1.276
           8   0.667        483.313          2.055             0.901
           9   0.750        543.727          1.698             0.744
          10   0.833        604.141          1.250             0.548
```

11	0.917	664.556	0.945	0.414
12	1.000	724.970	0.674	0.295
13	1.083	785.384	0.604	0.265
14	1.167	845.798	0.448	0.197
			Sum = 100.000	Sum= 43.840

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	4.20	0.418	0.168	(0.376)	0.250
2	0.17	4.30	0.428	0.168	(0.385)	0.260
3	0.25	5.00	0.498	0.168	(0.448)	0.330
4	0.33	5.00	0.498	0.168	(0.448)	0.330
5	0.42	5.80	0.577	0.168	(0.520)	0.410
6	0.50	6.50	0.647	0.168	(0.582)	0.479
7	0.58	7.40	0.736	0.168	(0.663)	0.569
8	0.67	8.60	0.856	0.168	(0.770)	0.688
9	0.75	12.30	1.224	0.168	(1.102)	1.056
10	0.83	29.10	2.896	0.168	(2.607)	2.728
11	0.92	6.80	0.677	0.168	(0.609)	0.509
12	1.00	5.00	0.498	0.168	(0.448)	0.330
	(Loss Rate Not Used)					
Sum =		100.0			Sum =	7.9

Flood volume = Effective rainfall 0.66(In)
times area 43.5(Ac.)/[(In)/(Ft.)] = 2.4(Ac.Ft)
Total soil loss = 0.17(In)
Total soil loss = 0.608(Ac.Ft)
Total rainfall = 0.83(In)
Flood volume = 104479.4 Cubic Feet
Total soil loss = 26480.4 Cubic Feet

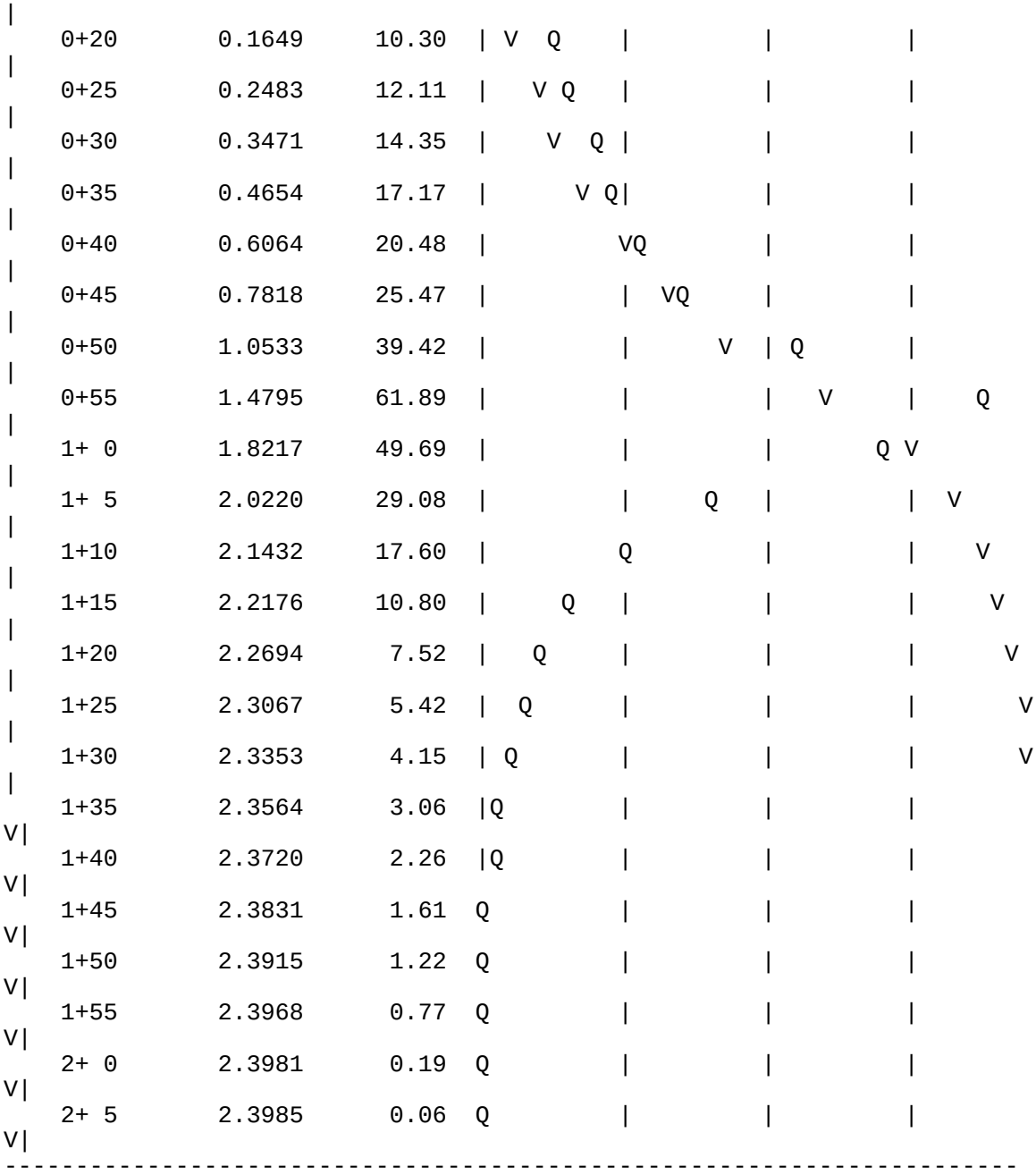
Peak flow rate of this hydrograph = 61.886(CFS)

++

1 - 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	17.5	35.0	52.5	70.0
0+ 5	0.0063	0.91	Q				
0+10	0.0387	4.71	V Q				
0+15	0.0939	8.02	|V Q				


0+20 0.1649 10.30
0+25 0.2483 12.11
0+30 0.3471 14.35
0+35 0.4654 17.17
0+40 0.6064 20.48
0+45 0.7818 25.47
0+50 1.0533 39.42
0+55 1.4795 61.89
1+ 0 1.8217 49.69
1+ 5 2.0220 29.08
1+10 2.1432 17.60
1+15 2.2176 10.80
1+20 2.2694 7.52
1+25 2.3067 5.42
1+30 2.3353 4.15
1+35 2.3564 3.06
1+40 2.3720 2.26
1+45 2.3831 1.61
1+50 2.3915 1.22
1+55 2.3968 0.77
2+ 0 2.3981 0.19
2+ 5 2.3985 0.06

U n i t H y d r o g r a p h A n a l y s i s

Study date 02/09/22 File: NECRamonaEx310.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Existing Condition
10yr 3hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2220.00(Ft.)
Length along longest watercourse measured to centroid = 1115.00 (Ft.)
Length along longest watercourse = 0.420 Mi.
Length along longest watercourse measured to centroid = 0.211 Mi.
Difference in elevation = 7.60(Ft.)
Slope along watercourse = 18.0757 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.138 Hr.
Lag time = 8.28 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50              0.82                    35.63

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50              2.04                    88.74

  STORM EVENT (YEAR) =   10.00
  Area Averaged 2-Year Rainfall =    0.819(In)
  Area Averaged 100-Year Rainfall =    2.040(In)

  Point rain (area averaged) =    1.321(In)
  Areal adjustment factor =   99.98 %
  Adjusted average point rain =    1.321(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           86.00          0.050
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  86.0  86.0      0.176     0.050        0.168       1.000
0.168
                                                      Sum (F) =
0.168
  Area averaged mean soil loss (F) (In/Hr) =  0.168
  Minimum soil loss rate ((In/Hr)) =  0.084
  (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   Time % of lag   Distribution   Unit Hydrograph
      (hrs)                          Graph %           (CFS)
  ------------------------------------------------------------------
---
         1   0.083        60.414         8.310             3.643
         2   0.167       120.828        34.258            15.018
         3   0.250       181.242        26.449            11.595
         4   0.333       241.657        10.231             4.485
         5   0.417       302.071         6.073             2.662
         6   0.500       362.485         4.096             1.796
         7   0.583       422.899         2.910             1.276
         8   0.667       483.313         2.055             0.901
         9   0.750       543.727         1.698             0.744
        10   0.833       604.141         1.250             0.548
        11   0.917       664.556         0.945             0.414
        12   1.000       724.970         0.674             0.295
        13   1.083       785.384         0.604             0.265
```

```
        14   1.167        845.798          0.448              0.197
                                    Sum = 100.000   Sum=      43.840
-------------------------------------------------------------------------


 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   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low         (In/Hr)
    1   0.08     1.30      0.206          0.168    (  0.185)        0.038
    2   0.17     1.30      0.206          0.168    (  0.185)        0.038
    3   0.25     1.10      0.174       (  0.168)       0.157        0.017
    4   0.33     1.50      0.238          0.168    (  0.214)        0.070
    5   0.42     1.50      0.238          0.168    (  0.214)        0.070
    6   0.50     1.80      0.285          0.168    (  0.257)        0.118
    7   0.58     1.50      0.238          0.168    (  0.214)        0.070
    8   0.67     1.80      0.285          0.168    (  0.257)        0.118
    9   0.75     1.80      0.285          0.168    (  0.257)        0.118
   10   0.83     1.50      0.238          0.168    (  0.214)        0.070
   11   0.92     1.60      0.254          0.168    (  0.228)        0.086
   12   1.00     1.80      0.285          0.168    (  0.257)        0.118
   13   1.08     2.20      0.349          0.168    (  0.314)        0.181
   14   1.17     2.20      0.349          0.168    (  0.314)        0.181
   15   1.25     2.20      0.349          0.168    (  0.314)        0.181
   16   1.33     2.00      0.317          0.168    (  0.285)        0.149
   17   1.42     2.60      0.412          0.168    (  0.371)        0.244
   18   1.50     2.70      0.428          0.168    (  0.385)        0.260
   19   1.58     2.40      0.380          0.168    (  0.342)        0.213
   20   1.67     2.70      0.428          0.168    (  0.385)        0.260
   21   1.75     3.30      0.523          0.168    (  0.471)        0.355
   22   1.83     3.10      0.491          0.168    (  0.442)        0.324
   23   1.92     2.90      0.460          0.168    (  0.414)        0.292
   24   2.00     3.00      0.476          0.168    (  0.428)        0.308
   25   2.08     3.10      0.491          0.168    (  0.442)        0.324
   26   2.17     4.20      0.666          0.168    (  0.599)        0.498
   27   2.25     5.00      0.793          0.168    (  0.713)        0.625
   28   2.33     3.50      0.555          0.168    (  0.499)        0.387
   29   2.42     6.80      1.078          0.168    (  0.970)        0.910
   30   2.50     7.30      1.157          0.168    (  1.042)        0.990
   31   2.58     8.20      1.300          0.168    (  1.170)        1.132
   32   2.67     5.90      0.935          0.168    (  0.842)        0.768
   33   2.75     2.00      0.317          0.168    (  0.285)        0.149
   34   2.83     1.80      0.285          0.168    (  0.257)        0.118
   35   2.92     1.80      0.285          0.168    (  0.257)        0.118
   36   3.00     0.60      0.095       (  0.168)       0.086        0.010
            (Loss Rate Not Used)
    Sum =     100.0                                    Sum =     9.9
     Flood volume = Effective rainfall      0.83(In)
      times area      43.5(Ac.)/[(In)/(Ft.)] =       3.0(Ac.Ft)
     Total soil loss =      0.50(In)
     Total soil loss =     1.796(Ac.Ft)
     Total rainfall =      1.32(In)
     Flood volume =      130385.5 Cubic Feet
     Total soil loss =       78219.3 Cubic Feet
     -------------------------------------------------------------------
--
      Peak flow rate of this hydrograph =     39.197(CFS)
```

```
      ------------------------------------------------------------------
--
      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                          3 - H O U R    S T O R M
                       R u n o f f      H y d r o g r a p h
      ------------------------------------------------------------------
--
                     Hydrograph in   5   Minute intervals ((CFS))

      ------------------------------------------------------------------
--
  Time(h+m) Volume Ac.Ft   Q(CFS)  0       10.0      20.0      30.0
40.0

-------------------------------------------------------------------------
    0+ 5       0.0010      0.14  Q         |         |         |
|
    0+10       0.0059      0.72  Q         |         |         |
|
    0+15       0.0134      1.09  VQ        |         |         |
|
    0+20       0.0212      1.14  VQ        |         |         |
|
    0+25       0.0335      1.79  VQ        |         |         |
|
    0+30       0.0510      2.54  V Q       |         |         |
|
    0+35       0.0739      3.32  V  Q      |         |         |
|
    0+40       0.0977      3.46  |V Q      |         |         |
|
    0+45       0.1248      3.94  |V Q      |         |         |
|
    0+50       0.1544      4.30  | V Q     |         |         |
|
    0+55       0.1810      3.86  | VQ      |         |         |
|
    1+ 0       0.2072      3.80  | VQ      |         |         |
|
    1+ 5       0.2387      4.58  |  VQ     |         |         |
|
    1+10       0.2795      5.92  |  V Q    |         |         |
|
    1+15       0.3263      6.80  |   V Q   |         |         |
|
    1+20       0.3749      7.06  |    V Q  |         |         |
|
    1+25       0.4243      7.16  |    V Q  |         |         |
|
    1+30       0.4824      8.43  |     V Q |         |         |
|
    1+35       0.5482      9.57  |      V Q|         |         |
|
    1+40       0.6145      9.62  |       VQ|         |         |
|
    1+45       0.6866     10.47  |        VQ         |         |
|
    1+50       0.7716     12.33  |         V Q       |         |
|
```

```
    1+55       0.8617     13.08  |         |V Q      |         |
|
    2+ 0       0.9503     12.88  |         | Q       |         |
|
    2+ 5       1.0401     13.03  |         |  Q      |         |
|
    2+10       1.1373     14.11  |         |   QV    |         |
|
    2+15       1.2577     17.48  |         |     VQ  |         |
|
    2+20       1.4001     20.68  |         |       V Q         |
|
    2+25       1.5472     21.37  |         |         VQ        |
|
    2+30       1.7392     27.87  |         |         |  V   Q  |
|
    2+35       1.9821     35.27  |         |         |     V   |    Q
|
    2+40       2.2520     39.20  |         |         |         V
Q|
    2+45       2.4917     34.79  |         |         |         |  VQ
|
    2+50       2.6494     22.91  |         |         | Q       |    V
|
    2+55       2.7513     14.78  |         |   Q     |         |     V
|
    3+ 0       2.8275     11.07  |         |Q        |         |      V
|
    3+ 5       2.8798      7.59  |      Q  |         |         |       V
|
    3+10       2.9142      5.00  |   Q     |         |         |       V
|
    3+15       2.9390      3.59  |  Q      |         |         |
V|
    3+20       2.9570      2.62  | Q       |         |         |
V|
    3+25       2.9700      1.88  |Q        |         |         |
V|
    3+30       2.9795      1.38  |Q        |         |         |
V|
    3+35       2.9860      0.94  Q         |         |         |
V|
    3+40       2.9900      0.59  Q         |         |         |
V|
    3+45       2.9920      0.28  Q         |         |         |
V|
    3+50       2.9927      0.10  Q         |         |         |
V|
    3+55       2.9930      0.06  Q         |         |         |
V|
    4+ 0       2.9932      0.03  Q         |         |         |
V|
    4+ 5       2.9932      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

Study date 02/09/22 File: NECRamonaEx610.out

++

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Existing Condition
10yr 6hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2220.00(Ft.)
Length along longest watercourse measured to centroid = 1115.00 (Ft.)
Length along longest watercourse = 0.420 Mi.
Length along longest watercourse measured to centroid = 0.211 Mi.
Difference in elevation = 7.60(Ft.)
Slope along watercourse = 18.0757 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.138 Hr.
Lag time = 8.28 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50             1.14                   49.59

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50              2.75                 119.63

  STORM EVENT (YEAR) =   10.00
  Area Averaged 2-Year Rainfall =    1.140(In)
  Area Averaged 100-Year Rainfall =    2.750(In)

  Point rain (area averaged) =    1.802(In)
  Areal adjustment factor =   99.99 %
  Adjusted average point rain =    1.802(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           86.00          0.050
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  86.0  86.0      0.176     0.050        0.168       1.000
0.168
                                                      Sum (F) =
0.168
  Area averaged mean soil loss (F) (In/Hr) =  0.168
  Minimum soil loss rate ((In/Hr)) =  0.084
  (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   Time % of lag   Distribution   Unit Hydrograph
      (hrs)                          Graph %           (CFS)
  ------------------------------------------------------------------
---
         1   0.083        60.414         8.310             3.643
         2   0.167       120.828        34.258            15.018
         3   0.250       181.242        26.449            11.595
         4   0.333       241.657        10.231             4.485
         5   0.417       302.071         6.073             2.662
         6   0.500       362.485         4.096             1.796
         7   0.583       422.899         2.910             1.276
         8   0.667       483.313         2.055             0.901
         9   0.750       543.727         1.698             0.744
        10   0.833       604.141         1.250             0.548
        11   0.917       664.556         0.945             0.414
        12   1.000       724.970         0.674             0.295
        13   1.083       785.384         0.604             0.265
```

14	1.167	845.798	0.448	0.197
			Sum = 100.000	Sum= 43.840

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	0.50	0.108	(0.168)	0.097	0.011
2	0.17	0.60	0.130	(0.168)	0.117	0.013
3	0.25	0.60	0.130	(0.168)	0.117	0.013
4	0.33	0.60	0.130	(0.168)	0.117	0.013
5	0.42	0.60	0.130	(0.168)	0.117	0.013
6	0.50	0.70	0.151	(0.168)	0.136	0.015
7	0.58	0.70	0.151	(0.168)	0.136	0.015
8	0.67	0.70	0.151	(0.168)	0.136	0.015
9	0.75	0.70	0.151	(0.168)	0.136	0.015
10	0.83	0.70	0.151	(0.168)	0.136	0.015
11	0.92	0.70	0.151	(0.168)	0.136	0.015
12	1.00	0.80	0.173	(0.168)	0.156	0.017
13	1.08	0.80	0.173	(0.168)	0.156	0.017
14	1.17	0.80	0.173	(0.168)	0.156	0.017
15	1.25	0.80	0.173	(0.168)	0.156	0.017
16	1.33	0.80	0.173	(0.168)	0.156	0.017
17	1.42	0.80	0.173	(0.168)	0.156	0.017
18	1.50	0.80	0.173	(0.168)	0.156	0.017
19	1.58	0.80	0.173	(0.168)	0.156	0.017
20	1.67	0.80	0.173	(0.168)	0.156	0.017
21	1.75	0.80	0.173	(0.168)	0.156	0.017
22	1.83	0.80	0.173	(0.168)	0.156	0.017
23	1.92	0.80	0.173	(0.168)	0.156	0.017
24	2.00	0.90	0.195	0.168	(0.175)	0.027
25	2.08	0.80	0.173	(0.168)	0.156	0.017
26	2.17	0.90	0.195	0.168	(0.175)	0.027
27	2.25	0.90	0.195	0.168	(0.175)	0.027
28	2.33	0.90	0.195	0.168	(0.175)	0.027
29	2.42	0.90	0.195	0.168	(0.175)	0.027
30	2.50	0.90	0.195	0.168	(0.175)	0.027
31	2.58	0.90	0.195	0.168	(0.175)	0.027
32	2.67	0.90	0.195	0.168	(0.175)	0.027
33	2.75	1.00	0.216	0.168	(0.195)	0.049
34	2.83	1.00	0.216	0.168	(0.195)	0.049
35	2.92	1.00	0.216	0.168	(0.195)	0.049
36	3.00	1.00	0.216	0.168	(0.195)	0.049
37	3.08	1.00	0.216	0.168	(0.195)	0.049
38	3.17	1.10	0.238	0.168	(0.214)	0.070
39	3.25	1.10	0.238	0.168	(0.214)	0.070
40	3.33	1.10	0.238	0.168	(0.214)	0.070
41	3.42	1.20	0.260	0.168	(0.234)	0.092
42	3.50	1.30	0.281	0.168	(0.253)	0.113
43	3.58	1.40	0.303	0.168	(0.272)	0.135
44	3.67	1.40	0.303	0.168	(0.272)	0.135
45	3.75	1.50	0.324	0.168	(0.292)	0.157
46	3.83	1.50	0.324	0.168	(0.292)	0.157
47	3.92	1.60	0.346	0.168	(0.311)	0.178
48	4.00	1.60	0.346	0.168	(0.311)	0.178

```
 49   4.08     1.70      0.368          0.168    (  0.331)        0.200
 50   4.17     1.80      0.389          0.168    (  0.350)        0.222
 51   4.25     1.90      0.411          0.168    (  0.370)        0.243
 52   4.33     2.00      0.433          0.168    (  0.389)        0.265
 53   4.42     2.10      0.454          0.168    (  0.409)        0.286
 54   4.50     2.10      0.454          0.168    (  0.409)        0.286
 55   4.58     2.20      0.476          0.168    (  0.428)        0.308
 56   4.67     2.30      0.497          0.168    (  0.448)        0.330
 57   4.75     2.40      0.519          0.168    (  0.467)        0.351
 58   4.83     2.40      0.519          0.168    (  0.467)        0.351
 59   4.92     2.50      0.541          0.168    (  0.487)        0.373
 60   5.00     2.60      0.562          0.168    (  0.506)        0.395
 61   5.08     3.10      0.670          0.168    (  0.603)        0.503
 62   5.17     3.60      0.779          0.168    (  0.701)        0.611
 63   5.25     3.90      0.843          0.168    (  0.759)        0.676
 64   5.33     4.20      0.908          0.168    (  0.817)        0.741
 65   5.42     4.70      1.016          0.168    (  0.915)        0.849
 66   5.50     5.60      1.211          0.168    (  1.090)        1.043
 67   5.58     1.90      0.411          0.168    (  0.370)        0.243
 68   5.67     0.90      0.195          0.168    (  0.175)        0.027
 69   5.75     0.60      0.130       (  0.168)       0.117        0.013
 70   5.83     0.50      0.108       (  0.168)       0.097        0.011
 71   5.92     0.30      0.065       (  0.168)       0.058        0.006
 72   6.00     0.20      0.043       (  0.168)       0.039        0.004
            (Loss Rate Not Used)
    Sum =     100.0                                   Sum =    10.5
     Flood volume = Effective rainfall      0.88(In)
      times area      43.5(Ac.)/[(In)/(Ft.)] =       3.2(Ac.Ft)
     Total soil loss =      0.92(In)
     Total soil loss =     3.352(Ac.Ft)
     Total rainfall =      1.80(In)
     Flood volume =      138549.7 Cubic Feet
     Total soil loss =      146010.5 Cubic Feet
     ---------------------------------------------------------------------
--
      Peak flow rate of this hydrograph =     34.478(CFS)
     ---------------------------------------------------------------------
--
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                         6 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
     ---------------------------------------------------------------------
--
                   Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
--
  Time(h+m) Volume Ac.Ft   Q(CFS)  0       10.0      20.0      30.0
40.0

-------------------------------------------------------------------------
    0+ 5       0.0003      0.04  Q         |         |         |
|
    0+10       0.0017      0.21  Q         |         |         |
|
    0+15       0.0042      0.37  Q         |         |         |
|
    0+20       0.0073      0.44  Q         |         |         |
|
```

0+25	0.0106	0.48	Q	|	|	|
0+30	0.0141	0.51	Q	|	|	|
0+35	0.0180	0.56	Q	|	|	|
0+40	0.0221	0.60	Q	|	|	|
0+45	0.0264	0.62	Q	|	|	|
0+50	0.0308	0.63	Q	|	|	|
0+55	0.0352	0.64	Q	|	|	|
1+ 0	0.0397	0.66	Q	|	|	|
1+ 5	0.0445	0.70	Q	|	|	|
1+10	0.0495	0.73	Q	|	|	|
1+15	0.0546	0.74	Q	|	|	|
1+20	0.0597	0.74	Q	|	|	|
1+25	0.0649	0.75	Q	|	|	|
1+30	0.0700	0.75	Q	|	|	|
1+35	0.0752	0.75	Q	|	|	|
1+40	0.0804	0.76	QV	|	|	|
1+45	0.0856	0.76	QV	|	|	|
1+50	0.0909	0.76	QV	|	|	|
1+55	0.0961	0.76	QV	|	|	|
2+ 0	0.1015	0.79	QV	|	|	|
2+ 5	0.1078	0.90	QV	|	|	|
2+10	0.1140	0.91	QV	|	|	|
2+15	0.1208	0.98	QV	|	|	|
2+20	0.1282	1.08	|Q	|	|	|
2+25	0.1358	1.11	|Q	|	|	|
2+30	0.1436	1.13	|Q	|	|	|
2+35	0.1515	1.15	|Q	|	|	|
2+40	0.1595	1.16	|QV	|	|	|
2+45	0.1680	1.24	|QV	|	|	|
2+50	0.1788	1.57	|QV	|	|	|

2+55	0.1914	1.83	QV			
3+ 0	0.2047	1.93	QV			
3+ 5	0.2184	1.99	QV			
3+10	0.2329	2.11	Q			
3+15	0.2498	2.46	QV			
3+20	0.2687	2.73	QV			
3+25	0.2888	2.92	QV			
3+30	0.3122	3.40	Q			
3+35	0.3404	4.10	Q			
3+40	0.3735	4.81	Q			
3+45	0.4101	5.32	Q			
3+50	0.4504	5.85	Q			
3+55	0.4939	6.32	Q			
4+ 0	0.5410	6.84	Q			
4+ 5	0.5913	7.29	Q			
4+10	0.6456	7.89	QV			
4+15	0.7053	8.67	Q			
4+20	0.7707	9.50	Q			
4+25	0.8422	10.38	Q			
4+30	0.9193	11.20	Q			
4+35	1.0004	11.78	QV			
4+40	1.0862	12.45	QV			
4+45	1.1776	13.28	QV			
4+50	1.2745	14.07	Q V			
4+55	1.3754	14.65	Q V			
5+ 0	1.4809	15.31	Q V			
5+ 5	1.5942	16.46	Q V			
5+10	1.7247	18.95	Q	V		
5+15	1.8783	22.30		QV		
5+20	2.0534	25.42		Q		

```
    5+25       2.2491     28.42  |         |         |       Q |
|
    5+30       2.4720     32.36  |         |         |         |VQ
|
    5+35       2.7095     34.48  |         |         |         |   Q
|
    5+40       2.8815     24.98  |         |         |   Q     |     V
|
    5+45       2.9777     13.97  |         |  Q      |         |      V
|
    5+50       3.0373      8.66  |       Q |         |         |       V
|
    5+55       3.0791      6.06  |     Q   |         |         |       V
|
    6+ 0       3.1094      4.40  |   Q     |         |         |
V|
    6+ 5       3.1317      3.23  |  Q      |         |         |
V|
    6+10       3.1482      2.39  | Q       |         |         |
V|
    6+15       3.1600      1.72  |Q        |         |         |
V|
    6+20       3.1684      1.21  |Q        |         |         |
V|
    6+25       3.1741      0.83  Q         |         |         |
V|
    6+30       3.1779      0.55  Q         |         |         |
V|
    6+35       3.1799      0.30  Q         |         |         |
V|
    6+40       3.1804      0.07  Q         |         |         |
V|
    6+45       3.1805      0.02  Q         |         |         |
V|
    6+50       3.1806      0.01  Q         |         |         |
V|
    6+55       3.1806      0.01  Q         |         |         |
V|
    7+ 0       3.1807      0.00  Q         |         |         |
V|
    7+ 5       3.1807      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

Study date 02/09/22 File: NECRamonaEx2410.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Existing Condition
10yr 24hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2220.00(Ft.)
Length along longest watercourse measured to centroid = 1115.00 (Ft.)
Length along longest watercourse = 0.420 Mi.
Length along longest watercourse measured to centroid = 0.211 Mi.
Difference in elevation = 7.60(Ft.)
Slope along watercourse = 18.0757 Ft./Mi.
Average Manning's 'N' = 0.025
Lag time = 0.138 Hr.
Lag time = 8.28 Min.
25% of lag time = 2.07 Min.
40% of lag time = 3.31 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]

```
       43.50              1.97                    85.69

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50              5.02                  218.37

  STORM EVENT (YEAR) =   10.00
  Area Averaged 2-Year Rainfall =    1.970(In)
  Area Averaged 100-Year Rainfall =    5.020(In)

  Point rain (area averaged) =    3.225(In)
  Areal adjustment factor =   99.99 %
  Adjusted average point rain =    3.225(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           86.00          0.050
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  86.0  86.0      0.176     0.050        0.168       1.000
0.168
                                                      Sum (F) =
0.168
  Area averaged mean soil loss (F) (In/Hr) =  0.168
  Minimum soil loss rate ((In/Hr)) =  0.084
  (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   Time % of lag   Distribution   Unit Hydrograph
      (hrs)                          Graph %           (CFS)
  ------------------------------------------------------------------
---
         1   0.083        60.414         8.310             3.643
         2   0.167       120.828        34.258            15.018
         3   0.250       181.242        26.449            11.595
         4   0.333       241.657        10.231             4.485
         5   0.417       302.071         6.073             2.662
         6   0.500       362.485         4.096             1.796
         7   0.583       422.899         2.910             1.276
         8   0.667       483.313         2.055             0.901
         9   0.750       543.727         1.698             0.744
        10   0.833       604.141         1.250             0.548
        11   0.917       664.556         0.945             0.414
        12   1.000       724.970         0.674             0.295
        13   1.083       785.384         0.604             0.265
```

14	1.167	845.798	0.448		0.197
			Sum = 100.000	Sum=	43.840

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	0.026	(0.297)	0.023	0.003
2	0.17	0.07	0.026	(0.296)	0.023	0.003
3	0.25	0.07	0.026	(0.295)	0.023	0.003
4	0.33	0.10	0.039	(0.294)	0.035	0.004
5	0.42	0.10	0.039	(0.293)	0.035	0.004
6	0.50	0.10	0.039	(0.292)	0.035	0.004
7	0.58	0.10	0.039	(0.290)	0.035	0.004
8	0.67	0.10	0.039	(0.289)	0.035	0.004
9	0.75	0.10	0.039	(0.288)	0.035	0.004
10	0.83	0.13	0.052	(0.287)	0.046	0.005
11	0.92	0.13	0.052	(0.286)	0.046	0.005
12	1.00	0.13	0.052	(0.285)	0.046	0.005
13	1.08	0.10	0.039	(0.284)	0.035	0.004
14	1.17	0.10	0.039	(0.283)	0.035	0.004
15	1.25	0.10	0.039	(0.281)	0.035	0.004
16	1.33	0.10	0.039	(0.280)	0.035	0.004
17	1.42	0.10	0.039	(0.279)	0.035	0.004
18	1.50	0.10	0.039	(0.278)	0.035	0.004
19	1.58	0.10	0.039	(0.277)	0.035	0.004
20	1.67	0.10	0.039	(0.276)	0.035	0.004
21	1.75	0.10	0.039	(0.275)	0.035	0.004
22	1.83	0.13	0.052	(0.274)	0.046	0.005
23	1.92	0.13	0.052	(0.273)	0.046	0.005
24	2.00	0.13	0.052	(0.271)	0.046	0.005
25	2.08	0.13	0.052	(0.270)	0.046	0.005
26	2.17	0.13	0.052	(0.269)	0.046	0.005
27	2.25	0.13	0.052	(0.268)	0.046	0.005
28	2.33	0.13	0.052	(0.267)	0.046	0.005
29	2.42	0.13	0.052	(0.266)	0.046	0.005
30	2.50	0.13	0.052	(0.265)	0.046	0.005
31	2.58	0.17	0.064	(0.264)	0.058	0.006
32	2.67	0.17	0.064	(0.263)	0.058	0.006
33	2.75	0.17	0.064	(0.262)	0.058	0.006
34	2.83	0.17	0.064	(0.261)	0.058	0.006
35	2.92	0.17	0.064	(0.259)	0.058	0.006
36	3.00	0.17	0.064	(0.258)	0.058	0.006
37	3.08	0.17	0.064	(0.257)	0.058	0.006
38	3.17	0.17	0.064	(0.256)	0.058	0.006
39	3.25	0.17	0.064	(0.255)	0.058	0.006
40	3.33	0.17	0.064	(0.254)	0.058	0.006
41	3.42	0.17	0.064	(0.253)	0.058	0.006
42	3.50	0.17	0.064	(0.252)	0.058	0.006
43	3.58	0.17	0.064	(0.251)	0.058	0.006
44	3.67	0.17	0.064	(0.250)	0.058	0.006
45	3.75	0.17	0.064	(0.249)	0.058	0.006
46	3.83	0.20	0.077	(0.248)	0.070	0.008
47	3.92	0.20	0.077	(0.247)	0.070	0.008
48	4.00	0.20	0.077	(0.246)	0.070	0.008

49	4.08	0.20	0.077	(0.245)	0.070	0.008
50	4.17	0.20	0.077	(0.244)	0.070	0.008
51	4.25	0.20	0.077	(0.243)	0.070	0.008
52	4.33	0.23	0.090	(0.242)	0.081	0.009
53	4.42	0.23	0.090	(0.241)	0.081	0.009
54	4.50	0.23	0.090	(0.239)	0.081	0.009
55	4.58	0.23	0.090	(0.238)	0.081	0.009
56	4.67	0.23	0.090	(0.237)	0.081	0.009
57	4.75	0.23	0.090	(0.236)	0.081	0.009
58	4.83	0.27	0.103	(0.235)	0.093	0.010
59	4.92	0.27	0.103	(0.234)	0.093	0.010
60	5.00	0.27	0.103	(0.233)	0.093	0.010
61	5.08	0.20	0.077	(0.232)	0.070	0.008
62	5.17	0.20	0.077	(0.231)	0.070	0.008
63	5.25	0.20	0.077	(0.230)	0.070	0.008
64	5.33	0.23	0.090	(0.229)	0.081	0.009
65	5.42	0.23	0.090	(0.228)	0.081	0.009
66	5.50	0.23	0.090	(0.227)	0.081	0.009
67	5.58	0.27	0.103	(0.226)	0.093	0.010
68	5.67	0.27	0.103	(0.225)	0.093	0.010
69	5.75	0.27	0.103	(0.224)	0.093	0.010
70	5.83	0.27	0.103	(0.223)	0.093	0.010
71	5.92	0.27	0.103	(0.222)	0.093	0.010
72	6.00	0.27	0.103	(0.221)	0.093	0.010
73	6.08	0.30	0.116	(0.220)	0.104	0.012
74	6.17	0.30	0.116	(0.219)	0.104	0.012
75	6.25	0.30	0.116	(0.218)	0.104	0.012
76	6.33	0.30	0.116	(0.217)	0.104	0.012
77	6.42	0.30	0.116	(0.216)	0.104	0.012
78	6.50	0.30	0.116	(0.215)	0.104	0.012
79	6.58	0.33	0.129	(0.215)	0.116	0.013
80	6.67	0.33	0.129	(0.214)	0.116	0.013
81	6.75	0.33	0.129	(0.213)	0.116	0.013
82	6.83	0.33	0.129	(0.212)	0.116	0.013
83	6.92	0.33	0.129	(0.211)	0.116	0.013
84	7.00	0.33	0.129	(0.210)	0.116	0.013
85	7.08	0.33	0.129	(0.209)	0.116	0.013
86	7.17	0.33	0.129	(0.208)	0.116	0.013
87	7.25	0.33	0.129	(0.207)	0.116	0.013
88	7.33	0.37	0.142	(0.206)	0.128	0.014
89	7.42	0.37	0.142	(0.205)	0.128	0.014
90	7.50	0.37	0.142	(0.204)	0.128	0.014
91	7.58	0.40	0.155	(0.203)	0.139	0.015
92	7.67	0.40	0.155	(0.202)	0.139	0.015
93	7.75	0.40	0.155	(0.201)	0.139	0.015
94	7.83	0.43	0.168	(0.200)	0.151	0.017
95	7.92	0.43	0.168	(0.199)	0.151	0.017
96	8.00	0.43	0.168	(0.198)	0.151	0.017
97	8.08	0.50	0.193	(0.198)	0.174	0.019
98	8.17	0.50	0.193	(0.197)	0.174	0.019
99	8.25	0.50	0.193	(0.196)	0.174	0.019
100	8.33	0.50	0.193	(0.195)	0.174	0.019
101	8.42	0.50	0.193	(0.194)	0.174	0.019
102	8.50	0.50	0.193	(0.193)	0.174	0.019
103	8.58	0.53	0.206	(0.192)	0.186	0.021
104	8.67	0.53	0.206	(0.191)	0.186	0.021
105	8.75	0.53	0.206	(0.190)	0.186	0.021
106	8.83	0.57	0.219	0.189	(0.197)	0.030
107	8.92	0.57	0.219	0.188	(0.197)	0.031
108	9.00	0.57	0.219	0.188	(0.197)	0.032

109	9.08	0.63	0.245	0.187	(0.221)	0.058
110	9.17	0.63	0.245	0.186	(0.221)	0.059
111	9.25	0.63	0.245	0.185	(0.221)	0.060
112	9.33	0.67	0.258	0.184	(0.232)	0.074
113	9.42	0.67	0.258	0.183	(0.232)	0.075
114	9.50	0.67	0.258	0.182	(0.232)	0.076
115	9.58	0.70	0.271	0.181	(0.244)	0.089
116	9.67	0.70	0.271	0.181	(0.244)	0.090
117	9.75	0.70	0.271	0.180	(0.244)	0.091
118	9.83	0.73	0.284	0.179	(0.255)	0.105
119	9.92	0.73	0.284	0.178	(0.255)	0.106
120	10.00	0.73	0.284	0.177	(0.255)	0.107
121	10.08	0.50	0.193	(0.176)	0.174	0.019
122	10.17	0.50	0.193	(0.175)	0.174	0.019
123	10.25	0.50	0.193	(0.175)	0.174	0.019
124	10.33	0.50	0.193	0.174	(0.174)	0.020
125	10.42	0.50	0.193	0.173	(0.174)	0.021
126	10.50	0.50	0.193	0.172	(0.174)	0.021
127	10.58	0.67	0.258	0.171	(0.232)	0.087
128	10.67	0.67	0.258	0.170	(0.232)	0.088
129	10.75	0.67	0.258	0.169	(0.232)	0.088
130	10.83	0.67	0.258	0.169	(0.232)	0.089
131	10.92	0.67	0.258	0.168	(0.232)	0.090
132	11.00	0.67	0.258	0.167	(0.232)	0.091
133	11.08	0.63	0.245	0.166	(0.221)	0.079
134	11.17	0.63	0.245	0.165	(0.221)	0.080
135	11.25	0.63	0.245	0.165	(0.221)	0.081
136	11.33	0.63	0.245	0.164	(0.221)	0.081
137	11.42	0.63	0.245	0.163	(0.221)	0.082
138	11.50	0.63	0.245	0.162	(0.221)	0.083
139	11.58	0.57	0.219	0.161	(0.197)	0.058
140	11.67	0.57	0.219	0.161	(0.197)	0.059
141	11.75	0.57	0.219	0.160	(0.197)	0.060
142	11.83	0.60	0.232	0.159	(0.209)	0.073
143	11.92	0.60	0.232	0.158	(0.209)	0.074
144	12.00	0.60	0.232	0.157	(0.209)	0.075
145	12.08	0.83	0.322	0.157	(0.290)	0.166
146	12.17	0.83	0.322	0.156	(0.290)	0.167
147	12.25	0.83	0.322	0.155	(0.290)	0.167
148	12.33	0.87	0.335	0.154	(0.302)	0.181
149	12.42	0.87	0.335	0.153	(0.302)	0.182
150	12.50	0.87	0.335	0.153	(0.302)	0.183
151	12.58	0.93	0.361	0.152	(0.325)	0.209
152	12.67	0.93	0.361	0.151	(0.325)	0.210
153	12.75	0.93	0.361	0.150	(0.325)	0.211
154	12.83	0.97	0.374	0.150	(0.337)	0.224
155	12.92	0.97	0.374	0.149	(0.337)	0.225
156	13.00	0.97	0.374	0.148	(0.337)	0.226
157	13.08	1.13	0.439	0.147	(0.395)	0.291
158	13.17	1.13	0.439	0.147	(0.395)	0.292
159	13.25	1.13	0.439	0.146	(0.395)	0.293
160	13.33	1.13	0.439	0.145	(0.395)	0.293
161	13.42	1.13	0.439	0.144	(0.395)	0.294
162	13.50	1.13	0.439	0.144	(0.395)	0.295
163	13.58	0.77	0.297	0.143	(0.267)	0.154
164	13.67	0.77	0.297	0.142	(0.267)	0.154
165	13.75	0.77	0.297	0.141	(0.267)	0.155
166	13.83	0.77	0.297	0.141	(0.267)	0.156
167	13.92	0.77	0.297	0.140	(0.267)	0.157
168	14.00	0.77	0.297	0.139	(0.267)	0.157

169	14.08	0.90	0.348	0.139	(0.313)	0.210
170	14.17	0.90	0.348	0.138	(0.313)	0.210
171	14.25	0.90	0.348	0.137	(0.313)	0.211
172	14.33	0.87	0.335	0.136	(0.302)	0.199
173	14.42	0.87	0.335	0.136	(0.302)	0.200
174	14.50	0.87	0.335	0.135	(0.302)	0.200
175	14.58	0.87	0.335	0.134	(0.302)	0.201
176	14.67	0.87	0.335	0.134	(0.302)	0.202
177	14.75	0.87	0.335	0.133	(0.302)	0.202
178	14.83	0.83	0.322	0.132	(0.290)	0.190
179	14.92	0.83	0.322	0.132	(0.290)	0.191
180	15.00	0.83	0.322	0.131	(0.290)	0.191
181	15.08	0.80	0.310	0.130	(0.279)	0.179
182	15.17	0.80	0.310	0.130	(0.279)	0.180
183	15.25	0.80	0.310	0.129	(0.279)	0.181
184	15.33	0.77	0.297	0.128	(0.267)	0.168
185	15.42	0.77	0.297	0.128	(0.267)	0.169
186	15.50	0.77	0.297	0.127	(0.267)	0.170
187	15.58	0.63	0.245	0.126	(0.221)	0.119
188	15.67	0.63	0.245	0.126	(0.221)	0.119
189	15.75	0.63	0.245	0.125	(0.221)	0.120
190	15.83	0.63	0.245	0.124	(0.221)	0.121
191	15.92	0.63	0.245	0.124	(0.221)	0.121
192	16.00	0.63	0.245	0.123	(0.221)	0.122
193	16.08	0.13	0.052	(0.123)	0.046	0.005
194	16.17	0.13	0.052	(0.122)	0.046	0.005
195	16.25	0.13	0.052	(0.121)	0.046	0.005
196	16.33	0.13	0.052	(0.121)	0.046	0.005
197	16.42	0.13	0.052	(0.120)	0.046	0.005
198	16.50	0.13	0.052	(0.119)	0.046	0.005
199	16.58	0.10	0.039	(0.119)	0.035	0.004
200	16.67	0.10	0.039	(0.118)	0.035	0.004
201	16.75	0.10	0.039	(0.118)	0.035	0.004
202	16.83	0.10	0.039	(0.117)	0.035	0.004
203	16.92	0.10	0.039	(0.116)	0.035	0.004
204	17.00	0.10	0.039	(0.116)	0.035	0.004
205	17.08	0.17	0.064	(0.115)	0.058	0.006
206	17.17	0.17	0.064	(0.115)	0.058	0.006
207	17.25	0.17	0.064	(0.114)	0.058	0.006
208	17.33	0.17	0.064	(0.114)	0.058	0.006
209	17.42	0.17	0.064	(0.113)	0.058	0.006
210	17.50	0.17	0.064	(0.112)	0.058	0.006
211	17.58	0.17	0.064	(0.112)	0.058	0.006
212	17.67	0.17	0.064	(0.111)	0.058	0.006
213	17.75	0.17	0.064	(0.111)	0.058	0.006
214	17.83	0.13	0.052	(0.110)	0.046	0.005
215	17.92	0.13	0.052	(0.110)	0.046	0.005
216	18.00	0.13	0.052	(0.109)	0.046	0.005
217	18.08	0.13	0.052	(0.109)	0.046	0.005
218	18.17	0.13	0.052	(0.108)	0.046	0.005
219	18.25	0.13	0.052	(0.107)	0.046	0.005
220	18.33	0.13	0.052	(0.107)	0.046	0.005
221	18.42	0.13	0.052	(0.106)	0.046	0.005
222	18.50	0.13	0.052	(0.106)	0.046	0.005
223	18.58	0.10	0.039	(0.105)	0.035	0.004
224	18.67	0.10	0.039	(0.105)	0.035	0.004
225	18.75	0.10	0.039	(0.104)	0.035	0.004
226	18.83	0.07	0.026	(0.104)	0.023	0.003
227	18.92	0.07	0.026	(0.103)	0.023	0.003
228	19.00	0.07	0.026	(0.103)	0.023	0.003

229	19.08	0.10	0.039	(0.102)	0.035	0.004
230	19.17	0.10	0.039	(0.102)	0.035	0.004
231	19.25	0.10	0.039	(0.101)	0.035	0.004
232	19.33	0.13	0.052	(0.101)	0.046	0.005
233	19.42	0.13	0.052	(0.101)	0.046	0.005
234	19.50	0.13	0.052	(0.100)	0.046	0.005
235	19.58	0.10	0.039	(0.100)	0.035	0.004
236	19.67	0.10	0.039	(0.099)	0.035	0.004
237	19.75	0.10	0.039	(0.099)	0.035	0.004
238	19.83	0.07	0.026	(0.098)	0.023	0.003
239	19.92	0.07	0.026	(0.098)	0.023	0.003
240	20.00	0.07	0.026	(0.097)	0.023	0.003
241	20.08	0.10	0.039	(0.097)	0.035	0.004
242	20.17	0.10	0.039	(0.097)	0.035	0.004
243	20.25	0.10	0.039	(0.096)	0.035	0.004
244	20.33	0.10	0.039	(0.096)	0.035	0.004
245	20.42	0.10	0.039	(0.095)	0.035	0.004
246	20.50	0.10	0.039	(0.095)	0.035	0.004
247	20.58	0.10	0.039	(0.094)	0.035	0.004
248	20.67	0.10	0.039	(0.094)	0.035	0.004
249	20.75	0.10	0.039	(0.094)	0.035	0.004
250	20.83	0.07	0.026	(0.093)	0.023	0.003
251	20.92	0.07	0.026	(0.093)	0.023	0.003
252	21.00	0.07	0.026	(0.093)	0.023	0.003
253	21.08	0.10	0.039	(0.092)	0.035	0.004
254	21.17	0.10	0.039	(0.092)	0.035	0.004
255	21.25	0.10	0.039	(0.091)	0.035	0.004
256	21.33	0.07	0.026	(0.091)	0.023	0.003
257	21.42	0.07	0.026	(0.091)	0.023	0.003
258	21.50	0.07	0.026	(0.090)	0.023	0.003
259	21.58	0.10	0.039	(0.090)	0.035	0.004
260	21.67	0.10	0.039	(0.090)	0.035	0.004
261	21.75	0.10	0.039	(0.089)	0.035	0.004
262	21.83	0.07	0.026	(0.089)	0.023	0.003
263	21.92	0.07	0.026	(0.089)	0.023	0.003
264	22.00	0.07	0.026	(0.089)	0.023	0.003
265	22.08	0.10	0.039	(0.088)	0.035	0.004
266	22.17	0.10	0.039	(0.088)	0.035	0.004
267	22.25	0.10	0.039	(0.088)	0.035	0.004
268	22.33	0.07	0.026	(0.087)	0.023	0.003
269	22.42	0.07	0.026	(0.087)	0.023	0.003
270	22.50	0.07	0.026	(0.087)	0.023	0.003
271	22.58	0.07	0.026	(0.087)	0.023	0.003
272	22.67	0.07	0.026	(0.086)	0.023	0.003
273	22.75	0.07	0.026	(0.086)	0.023	0.003
274	22.83	0.07	0.026	(0.086)	0.023	0.003
275	22.92	0.07	0.026	(0.086)	0.023	0.003
276	23.00	0.07	0.026	(0.086)	0.023	0.003
277	23.08	0.07	0.026	(0.085)	0.023	0.003
278	23.17	0.07	0.026	(0.085)	0.023	0.003
279	23.25	0.07	0.026	(0.085)	0.023	0.003
280	23.33	0.07	0.026	(0.085)	0.023	0.003
281	23.42	0.07	0.026	(0.085)	0.023	0.003
282	23.50	0.07	0.026	(0.084)	0.023	0.003
283	23.58	0.07	0.026	(0.084)	0.023	0.003
284	23.67	0.07	0.026	(0.084)	0.023	0.003
285	23.75	0.07	0.026	(0.084)	0.023	0.003
286	23.83	0.07	0.026	(0.084)	0.023	0.003
287	23.92	0.07	0.026	(0.084)	0.023	0.003
288	24.00	0.07	0.026	(0.084)	0.023	0.003

```
            (Loss Rate Not Used)
     Sum =     100.0                                    Sum =    13.2
      Flood volume = Effective rainfall      1.10(In)
       times area      43.5(Ac.)/[(In)/(Ft.)] =       4.0(Ac.Ft)
      Total soil loss =      2.13(In)
      Total soil loss =     7.707(Ac.Ft)
      Total rainfall =      3.22(In)
      Flood volume =      173457.2 Cubic Feet
      Total soil loss =      335710.8 Cubic Feet
      ---------------------------------------------------------------
--
       Peak flow rate of this hydrograph =     12.521(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        5.0      10.0      15.0
20.0

-------------------------------------------------------------------------
    0+ 5       0.0001      0.01  Q         |         |         |
|
    0+10       0.0004      0.05  Q         |         |         |
|
    0+15       0.0009      0.08  Q         |         |         |
|
    0+20       0.0016      0.09  Q         |         |         |
|
    0+25       0.0024      0.12  Q         |         |         |
|
    0+30       0.0034      0.14  Q         |         |         |
|
    0+35       0.0044      0.15  Q         |         |         |
|
    0+40       0.0055      0.16  Q         |         |         |
|
    0+45       0.0066      0.16  Q         |         |         |
|
    0+50       0.0077      0.17  Q         |         |         |
|
    0+55       0.0090      0.19  Q         |         |         |
|
    1+ 0       0.0104      0.21  Q         |         |         |
|
    1+ 5       0.0119      0.21  Q         |         |         |
|
    1+10       0.0132      0.19  Q         |         |         |
|
    1+15       0.0144      0.18  Q         |         |         |
|
    1+20       0.0157      0.18  Q         |         |         |
|
```

1+25	0.0169	0.17	Q			
1+30	0.0181	0.17	Q			
1+35	0.0192	0.17	Q			
1+40	0.0204	0.17	Q			
1+45	0.0216	0.17	Q			
1+50	0.0228	0.18	Q			
1+55	0.0242	0.19	Q			
2+ 0	0.0256	0.21	Q			
2+ 5	0.0271	0.21	Q			
2+10	0.0286	0.22	Q			
2+15	0.0301	0.22	Q			
2+20	0.0316	0.22	Q			
2+25	0.0332	0.22	Q			
2+30	0.0347	0.22	Q			
2+35	0.0363	0.23	Q			
2+40	0.0380	0.25	Q			
2+45	0.0398	0.26	Q			
2+50	0.0417	0.27	Q			
2+55	0.0436	0.27	Q			
3+ 0	0.0455	0.28	Q			
3+ 5	0.0474	0.28	Q			
3+10	0.0493	0.28	Q			
3+15	0.0513	0.28	Q			
3+20	0.0532	0.28	Q			
3+25	0.0552	0.28	Q			
3+30	0.0571	0.28	Q			
3+35	0.0590	0.28	Q			
3+40	0.0610	0.28	Q			
3+45	0.0629	0.28	Q			
3+50	0.0649	0.29	Q			

3+55	0.0670	0.31	Q			
4+ 0	0.0693	0.32	Q			
4+ 5	0.0715	0.33	Q			
4+10	0.0738	0.33	Q			
4+15	0.0761	0.33	Q			
4+20	0.0784	0.34	Q			
4+25	0.0809	0.36	Q			
4+30	0.0835	0.38	Q			
4+35	0.0861	0.38	Q			
4+40	0.0888	0.39	Q			
4+45	0.0915	0.39	Q			
4+50	0.0942	0.40	Q			
4+55	0.0971	0.42	Q			
5+ 0	0.1001	0.43	QV			
5+ 5	0.1030	0.43	QV			
5+10	0.1057	0.40	QV			
5+15	0.1083	0.37	QV			
5+20	0.1108	0.36	QV			
5+25	0.1134	0.38	QV			
5+30	0.1160	0.39	QV			
5+35	0.1188	0.40	QV			
5+40	0.1216	0.42	QV			
5+45	0.1246	0.43	QV			
5+50	0.1277	0.44	QV			
5+55	0.1307	0.44	QV			
6+ 0	0.1338	0.45	QV			
6+ 5	0.1369	0.45	QV			
6+10	0.1401	0.47	QV			
6+15	0.1435	0.49	QV			
6+20	0.1469	0.50	QV			

6+25	0.1504	0.50	QV			
6+30	0.1538	0.50	Q			
6+35	0.1573	0.51	Q			
6+40	0.1610	0.53	Q			
6+45	0.1647	0.55	Q			
6+50	0.1686	0.55	Q			
6+55	0.1724	0.56	Q			
7+ 0	0.1762	0.56	Q			
7+ 5	0.1801	0.56	Q			
7+10	0.1840	0.56	Q			
7+15	0.1879	0.56	Q			
7+20	0.1918	0.57	Q			
7+25	0.1958	0.59	Q			
7+30	0.2000	0.60	QV			
7+35	0.2042	0.62	QV			
7+40	0.2086	0.64	QV			
7+45	0.2131	0.66	QV			
7+50	0.2177	0.67	QV			
7+55	0.2225	0.69	QV			
8+ 0	0.2274	0.71	QV			
8+ 5	0.2324	0.73	QV			
8+10	0.2377	0.77	QV			
8+15	0.2432	0.80	QV			
8+20	0.2489	0.82	QV			
8+25	0.2546	0.83	QV			
8+30	0.2603	0.83	QV			
8+35	0.2661	0.84	QV			
8+40	0.2721	0.87	QV			
8+45	0.2782	0.88	QV			
8+50	0.2845	0.92	QV			

8+55	0.2919	1.07	Q		
9+ 0	0.3002	1.20	QV		
9+ 5	0.3096	1.36	QV		
9+10	0.3220	1.81	Q		
9+15	0.3369	2.16	VQ		
9+20	0.3532	2.37	VQ		
9+25	0.3716	2.68	V Q		
9+30	0.3917	2.92	V Q		
9+35	0.4130	3.10	V Q		
9+40	0.4363	3.39	V Q		
9+45	0.4613	3.62	V Q		
9+50	0.4874	3.80	V Q		
9+55	0.5156	4.09	V Q		
10+ 0	0.5453	4.32	V Q		
10+ 5	0.5737	4.12	V Q		
10+10	0.5935	2.89	Q		
10+15	0.6068	1.92	Q V		
10+20	0.6176	1.57	Q V		
10+25	0.6270	1.37	Q V		
10+30	0.6356	1.25	Q V		
10+35	0.6453	1.41	Q V		
10+40	0.6615	2.34	Q V		
10+45	0.6826	3.07	Q		
10+50	0.7056	3.34	QV		
10+55	0.7298	3.52	Q		
11+ 0	0.7549	3.64	Q		
11+ 5	0.7803	3.69	Q		
11+10	0.8049	3.57	QV		
11+15	0.8291	3.51	QV		
11+20	0.8533	3.52	QV		

11+25	0.8778	3.55	| QV |	|	|
11+30	0.9024	3.58	| Q V|	|	|
11+35	0.9267	3.52	| Q V|	|	|
11+40	0.9485	3.17	| Q V|	|	|
11+45	0.9685	2.90	| Q V|	|	|
11+50	0.9881	2.86	| Q V|	|	|
11+55	1.0089	3.01	| Q V	|	|
12+ 0	1.0306	3.15	| Q V	|	|
12+ 5	1.0549	3.53	| Q V	|	|
12+10	1.0888	4.93	| QV	|	|
12+15	1.1303	6.02	| |VQ	|	|
12+20	1.1751	6.51	| |V Q	|	|
12+25	1.2231	6.98	| | VQ	|	|
12+30	1.2736	7.32	| | V Q	|	|
12+35	1.3261	7.63	| | V Q	|	|
12+40	1.3823	8.16	| | V Q	|	|
12+45	1.4415	8.59	| | V Q |	|	|
12+50	1.5025	8.86	| | V Q |	|	|
12+55	1.5658	9.20	| | V Q |	|	|
13+ 0	1.6311	9.47	| | V Q |	|	|
13+ 5	1.6990	9.86	| | V Q|	|	|
13+10	1.7743	10.94	| | V |Q	|	|
13+15	1.8554	11.77	| | V | Q	|	|
13+20	1.9389	12.13	| | V| Q	|	|
13+25	2.0240	12.35	| | V Q	|	|
13+30	2.1102	12.52	| | |V Q	|	|
13+35	2.1938	12.13	| | | V Q	|	|
13+40	2.2633	10.10	| | Q V	|	|
13+45	2.3221	8.54	| | Q | V	|	|
13+50	2.3770	7.97	| | Q | V	|	|

13+55	2.4298	7.66	|	| Q |	V |		
14+ 0	2.4811	7.45	|	| Q |	V |		
14+ 5	2.5328	7.51	|	| Q |	V |		
14+10	2.5893	8.20	|	| Q |	V |		
14+15	2.6493	8.72	|	| Q |	V |		
14+20	2.7104	8.86	|	| Q |	V |		
14+25	2.7708	8.78	|	| Q |	V |		
14+30	2.8308	8.71	|	| Q |	V |		
14+35	2.8908	8.71	|	| Q |	V|		
14+40	2.9509	8.72	|	| Q |	V|		
14+45	3.0113	8.77	|	| Q |	V		
14+50	3.0716	8.77	|	| Q |	V		
14+55	3.1310	8.61	|	| Q |	|V		
15+ 0	3.1895	8.50	|	| Q |	| V		
15+ 5	3.2475	8.43	|	| Q |	| V		
15+10	3.3043	8.24	|	| Q |	| V		
15+15	3.3600	8.09	|	| Q |	| V		
15+20	3.4150	7.99	|	| Q |	| V		
15+25	3.4686	7.78	|	| Q |	| V		
15+30	3.5211	7.63	|	| Q |	| V		
15+35	3.5720	7.39	|	| Q |	| V		
15+40	3.6174	6.59	|	| Q |	| V		
15+45	3.6586	5.98	|	|Q |	| V		
15+50	3.6982	5.75	|	|Q |	| V		
15+55	3.7369	5.62	|	|Q |	| V		
16+ 0	3.7751	5.55	|	|Q |	| V		
16+ 5	3.8100	5.07	|	Q |	| V		
16+10	3.8326	3.28	| Q |	|	| V		
16+15	3.8456	1.89	| Q |	|	| V		
16+20	3.8548	1.34	| Q |	|	| V		

16+25	3.8617	1.01	| Q	|	|	|	V |
16+30	3.8671	0.79	|Q	|	|	|	V |
16+35	3.8714	0.62	|Q	|	|	|	V |
16+40	3.8748	0.49	Q	|	|	|	V |
16+45	3.8774	0.39	Q	|	|	|	V |
16+50	3.8796	0.32	Q	|	|	|	V |
16+55	3.8814	0.27	Q	|	|	|	V |
17+ 0	3.8830	0.23	Q	|	|	|	V|
17+ 5	3.8844	0.21	Q	|	|	|	V|
17+10	3.8860	0.22	Q	|	|	|	V|
17+15	3.8877	0.25	Q	|	|	|	V|
17+20	3.8895	0.26	Q	|	|	|	V|
17+25	3.8913	0.27	Q	|	|	|	V|
17+30	3.8932	0.27	Q	|	|	|	V|
17+35	3.8951	0.27	Q	|	|	|	V|
17+40	3.8970	0.28	Q	|	|	|	V|
17+45	3.8989	0.28	Q	|	|	|	V|
17+50	3.9008	0.28	Q	|	|	|	V|
17+55	3.9026	0.26	Q	|	|	|	V|
18+ 0	3.9042	0.24	Q	|	|	|	V|
18+ 5	3.9059	0.24	Q	|	|	|	V|
18+10	3.9075	0.23	Q	|	|	|	V|
18+15	3.9091	0.23	Q	|	|	|	V|
18+20	3.9107	0.23	Q	|	|	|	V|
18+25	3.9123	0.23	Q	|	|	|	V|
18+30	3.9138	0.23	Q	|	|	|	V|
18+35	3.9154	0.22	Q	|	|	|	V|
18+40	3.9168	0.20	Q	|	|	|	V|
18+45	3.9181	0.19	Q	|	|	|	V|
18+50	3.9193	0.18	Q	|	|	|	V|

18+55	3.9203	0.15	Q	|	|	| V|
19+ 0	3.9213	0.14	Q	|	|	| V|
19+ 5	3.9222	0.13	Q	|	|	| V|
19+10	3.9232	0.15	Q	|	|	| V|
19+15	3.9243	0.16	Q	|	|	| V|
19+20	3.9255	0.17	Q	|	|	| V|
19+25	3.9268	0.19	Q	|	|	| V|
19+30	3.9282	0.21	Q	|	|	| V|
19+35	3.9296	0.21	Q	|	|	| V|
19+40	3.9310	0.19	Q	|	|	| V|
19+45	3.9322	0.18	Q	|	|	| V|
19+50	3.9334	0.17	Q	|	|	| V|
19+55	3.9344	0.15	Q	|	|	| V|
20+ 0	3.9353	0.13	Q	|	|	| V|
20+ 5	3.9362	0.13	Q	|	|	| V|
20+10	3.9373	0.15	Q	|	|	| V|
20+15	3.9384	0.16	Q	|	|	| V|
20+20	3.9395	0.16	Q	|	|	| V|
20+25	3.9406	0.17	Q	|	|	| V|
20+30	3.9418	0.17	Q	|	|	| V|
20+35	3.9429	0.17	Q	|	|	| V|
20+40	3.9441	0.17	Q	|	|	| V|
20+45	3.9452	0.17	Q	|	|	| V|
20+50	3.9464	0.16	Q	|	|	| V|
20+55	3.9474	0.14	Q	|	|	| V|
21+ 0	3.9483	0.13	Q	|	|	| V|
21+ 5	3.9491	0.13	Q	|	|	| V|
21+10	3.9502	0.15	Q	|	|	| V|
21+15	3.9512	0.16	Q	|	|	| V|
21+20	3.9523	0.16	Q	|	|	| V|

21+25	3.9533	0.14	Q	|	|	| V|
21+30	3.9542	0.13	Q	|	|	| V|
21+35	3.9550	0.13	Q	|	|	| V|
21+40	3.9560	0.14	Q	|	|	| V|
21+45	3.9571	0.16	Q	|	|	| V|
21+50	3.9582	0.16	Q	|	|	| V|
21+55	3.9591	0.14	Q	|	|	| V|
22+ 0	3.9600	0.13	Q	|	|	| V|
22+ 5	3.9609	0.13	Q	|	|	| V|
22+10	3.9619	0.14	Q	|	|	| V|
22+15	3.9630	0.16	Q	|	|	| V|
22+20	3.9640	0.16	Q	|	|	| V|
22+25	3.9650	0.14	Q	|	|	| V|
22+30	3.9659	0.13	Q	|	|	| V|
22+35	3.9667	0.12	Q	|	|	| V|
22+40	3.9675	0.12	Q	|	|	| V|
22+45	3.9683	0.12	Q	|	|	| V|
22+50	3.9691	0.12	Q	|	|	| V|
22+55	3.9699	0.12	Q	|	|	| V|
23+ 0	3.9707	0.11	Q	|	|	| V|
23+ 5	3.9715	0.11	Q	|	|	| V|
23+10	3.9723	0.11	Q	|	|	| V|
23+15	3.9731	0.11	Q	|	|	| V|
23+20	3.9739	0.11	Q	|	|	| V|
23+25	3.9746	0.11	Q	|	|	| V|
23+30	3.9754	0.11	Q	|	|	| V|
23+35	3.9762	0.11	Q	|	|	| V|
23+40	3.9770	0.11	Q	|	|	| V|
23+45	3.9777	0.11	Q	|	|	| V|
23+50	3.9785	0.11	Q	|	|	| V|

```
   23+55       3.9793      0.11  Q         |         |         |
V|
   24+ 0       3.9801      0.11  Q         |         |         |
V|
   24+ 5       3.9808      0.10  Q         |         |         |
V|
   24+10       3.9812      0.06  Q         |         |         |
V|
   24+15       3.9815      0.04  Q         |         |         |
V|
   24+20       3.9817      0.02  Q         |         |         |
V|
   24+25       3.9818      0.02  Q         |         |         |
V|
   24+30       3.9818      0.01  Q         |         |         |
V|
   24+35       3.9819      0.01  Q         |         |         |
V|
   24+40       3.9820      0.01  Q         |         |         |
V|
   24+45       3.9820      0.00  Q         |         |         |
V|
   24+50       3.9820      0.00  Q         |         |         |
V|
   24+55       3.9820      0.00  Q         |         |         |
V|
   25+ 0       3.9820      0.00  Q         |         |         |
V|
   25+ 5       3.9820      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

Study date 02/09/22 File: NECRamonaPro12.out

++

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Proposed Condition
2yr 1hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2196.00(Ft.)
Length along longest watercourse measured to centroid = 1098.00 (Ft.)
Length along longest watercourse = 0.416 Mi.
Length along longest watercourse measured to centroid = 0.208 Mi.
Difference in elevation = 7.50(Ft.)
Slope along watercourse = 18.0328 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.082 Hr.
Lag time = 4.92 Min.
25% of lag time = 1.23 Min.
40% of lag time = 1.97 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50             0.47                  20.27

  100 YEAR Area rainfall data:


  Area(Ac.)[1]      Rainfall(In)[2]     Weighting[1*2]
       43.50             1.35                 58.73

  STORM EVENT (YEAR) =    2.00
  Area Averaged 2-Year Rainfall =    0.466(In)
  Area Averaged 100-Year Rainfall =    1.350(In)

  Point rain (area averaged) =    0.466(In)
  Areal adjustment factor =   99.96 %
  Adjusted average point rain =    0.466(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           69.00          0.900
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  69.0  49.8      0.574     0.900        0.109       1.000
0.109
                                                      Sum (F) =
0.109
  Area averaged mean soil loss (F) (In/Hr) =  0.109
  Minimum soil loss rate ((In/Hr)) =  0.055
  (for 24 hour storm duration)
  Soil low loss rate (decimal) =   0.180
  ------------------------------------------------------------------
---
  Slope of intensity-duration curve for a 1 hour storm =0.5000
  ------------------------------------------------------------------
----

              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       101.653        19.708            8.640
         2   0.167       203.306        48.518           21.270
         3   0.250       304.959        15.390            6.747
         4   0.333       406.613         6.976            3.058
         5   0.417       508.266         3.910            1.714
         6   0.500       609.919         2.525            1.107
         7   0.583       711.572         1.548            0.679
         8   0.667       813.225         1.424            0.624
                                 Sum = 100.000   Sum=      43.840
-------------------------------------------------------------------
```

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	4.20	0.235	(0.109)	0.042	0.193
2	0.17	4.30	0.240	(0.109)	0.043	0.197
3	0.25	5.00	0.279	(0.109)	0.050	0.229
4	0.33	5.00	0.279	(0.109)	0.050	0.229
5	0.42	5.80	0.324	(0.109)	0.058	0.266
6	0.50	6.50	0.363	(0.109)	0.065	0.298
7	0.58	7.40	0.414	(0.109)	0.074	0.339
8	0.67	8.60	0.481	(0.109)	0.087	0.394
9	0.75	12.30	0.688	0.109	(0.124)	0.578
10	0.83	29.10	1.627	0.109	(0.293)	1.518
11	0.92	6.80	0.380	(0.109)	0.068	0.312
12	1.00	5.00	0.279	(0.109)	0.050	0.229
	(Loss Rate Not Used)					
	Sum =	100.0			Sum =	4.8

Flood volume = Effective rainfall 0.40(In)
times area 43.5(Ac.)/[(In)/(Ft.)] = 1.4(Ac.Ft)
Total soil loss = 0.07(In)
Total soil loss = 0.244(Ac.Ft)
Total rainfall = 0.47(In)
Flood volume = 62926.2 Cubic Feet
Total soil loss = 10628.5 Cubic Feet

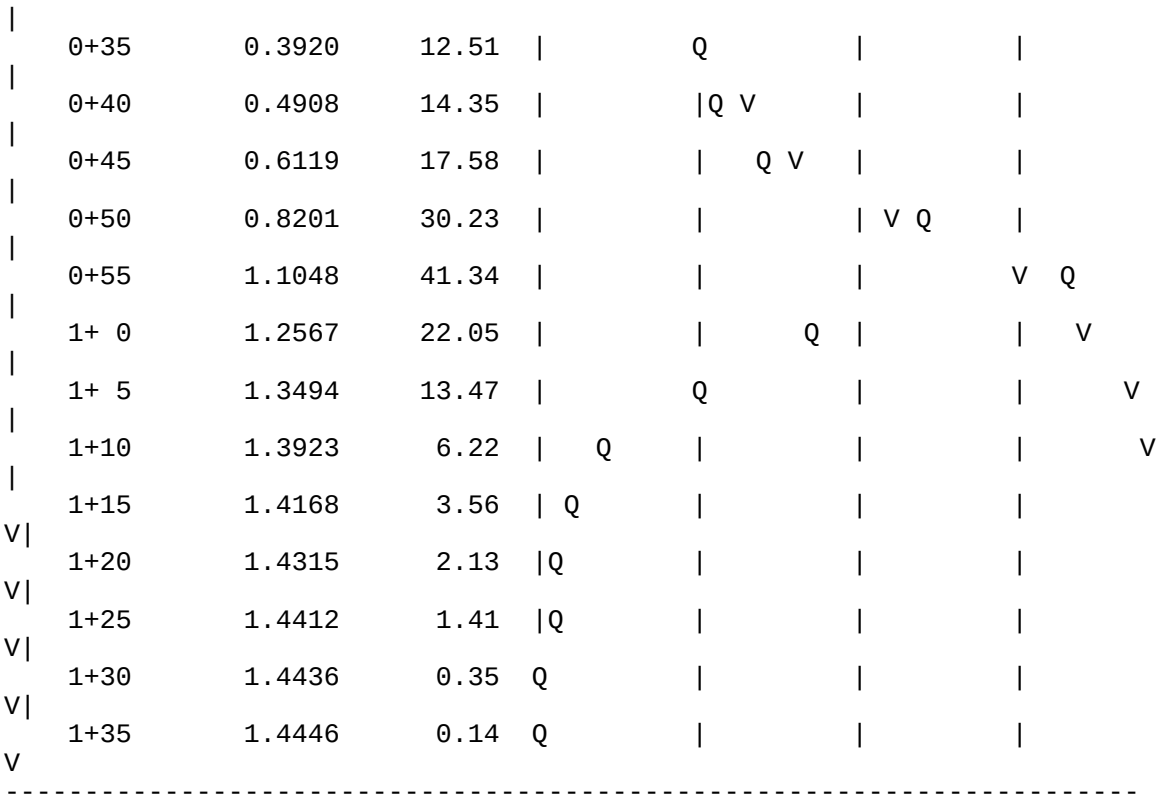
Peak flow rate of this hydrograph = 41.337(CFS)

++

1 - 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	12.5	25.0	37.5	50.0
0+ 5	0.0115	1.66	VQ				
0+10	0.0514	5.80	V Q				
0+15	0.1029	7.48	V Q				
0+20	0.1633	8.78	V Q				
0+25	0.2298	9.66	VQ				
0+30	0.3058	11.03	Q				


0+35 0.3920 12.51
0+40 0.4908 14.35
0+45 0.6119 17.58
0+50 0.8201 30.23
0+55 1.1048 41.34
1+ 0 1.2567 22.05
1+ 5 1.3494 13.47
1+10 1.3923 6.22
1+15 1.4168 3.56
1+20 1.4315 2.13
1+25 1.4412 1.41
1+30 1.4436 0.35
1+35 1.4446 0.14

U n i t H y d r o g r a p h A n a l y s i s

Study date 02/09/22 File: NECRamonaPro32.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Proposed Condition
2yr 3hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2196.00(Ft.)
Length along longest watercourse measured to centroid = 1098.00 (Ft.)
Length along longest watercourse = 0.416 Mi.
Length along longest watercourse measured to centroid = 0.208 Mi.
Difference in elevation = 7.50(Ft.)
Slope along watercourse = 18.0328 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.082 Hr.
Lag time = 4.92 Min.
25% of lag time = 1.23 Min.
40% of lag time = 1.97 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50              0.82                    35.63

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50              2.04                    88.74

  STORM EVENT (YEAR) =    2.00
  Area Averaged 2-Year Rainfall =    0.819(In)
  Area Averaged 100-Year Rainfall =    2.040(In)

  Point rain (area averaged) =    0.819(In)
  Areal adjustment factor =   99.98 %
  Adjusted average point rain =    0.819(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           69.00          0.900
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  69.0  49.8      0.574     0.900        0.109       1.000
0.109
                                                      Sum (F) =
0.109
  Area averaged mean soil loss (F) (In/Hr) =  0.109
  Minimum soil loss rate ((In/Hr)) =  0.055
  (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       101.653         19.708             8.640
        2   0.167       203.306         48.518            21.270
        3   0.250       304.959         15.390             6.747
        4   0.333       406.613          6.976             3.058
        5   0.417       508.266          3.910             1.714
        6   0.500       609.919          2.525             1.107
        7   0.583       711.572          1.548             0.679
        8   0.667       813.225          1.424             0.624
                                  Sum = 100.000   Sum=      43.840
-------------------------------------------------------------------

 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	1.30	0.128	(0.109)	0.023	0.105
2	0.17	1.30	0.128	(0.109)	0.023	0.105
3	0.25	1.10	0.108	(0.109)	0.019	0.089
4	0.33	1.50	0.147	(0.109)	0.027	0.121
5	0.42	1.50	0.147	(0.109)	0.027	0.121
6	0.50	1.80	0.177	(0.109)	0.032	0.145
7	0.58	1.50	0.147	(0.109)	0.027	0.121
8	0.67	1.80	0.177	(0.109)	0.032	0.145
9	0.75	1.80	0.177	(0.109)	0.032	0.145
10	0.83	1.50	0.147	(0.109)	0.027	0.121
11	0.92	1.60	0.157	(0.109)	0.028	0.129
12	1.00	1.80	0.177	(0.109)	0.032	0.145
13	1.08	2.20	0.216	(0.109)	0.039	0.177
14	1.17	2.20	0.216	(0.109)	0.039	0.177
15	1.25	2.20	0.216	(0.109)	0.039	0.177
16	1.33	2.00	0.197	(0.109)	0.035	0.161
17	1.42	2.60	0.255	(0.109)	0.046	0.209
18	1.50	2.70	0.265	(0.109)	0.048	0.218
19	1.58	2.40	0.236	(0.109)	0.042	0.193
20	1.67	2.70	0.265	(0.109)	0.048	0.218
21	1.75	3.30	0.324	(0.109)	0.058	0.266
22	1.83	3.10	0.305	(0.109)	0.055	0.250
23	1.92	2.90	0.285	(0.109)	0.051	0.234
24	2.00	3.00	0.295	(0.109)	0.053	0.242
25	2.08	3.10	0.305	(0.109)	0.055	0.250
26	2.17	4.20	0.413	(0.109)	0.074	0.338
27	2.25	5.00	0.491	(0.109)	0.088	0.403
28	2.33	3.50	0.344	(0.109)	0.062	0.282
29	2.42	6.80	0.668	0.109	(0.120)	0.559
30	2.50	7.30	0.717	0.109	(0.129)	0.608
31	2.58	8.20	0.806	0.109	(0.145)	0.697
32	2.67	5.90	0.580	(0.109)	0.104	0.475
33	2.75	2.00	0.197	(0.109)	0.035	0.161
34	2.83	1.80	0.177	(0.109)	0.032	0.145
35	2.92	1.80	0.177	(0.109)	0.032	0.145
36	3.00	0.60	0.059	(0.109)	0.011	0.048
	(Loss Rate Not Used)					
Sum =		100.0			Sum =	8.1

 Flood volume = Effective rainfall 0.68(In)
  times area 43.5(Ac.)/[(In)/(Ft.)] = 2.5(Ac.Ft)
 Total soil loss = 0.14(In)
 Total soil loss = 0.514(Ac.Ft)
 Total rainfall = 0.82(In)
 Flood volume = 106910.8 Cubic Feet
 Total soil loss = 22388.8 Cubic Feet

 Peak flow rate of this hydrograph = 26.069(CFS)

 ++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 7.5 15.0 22.5 30.0
0+ 5	0.0062	0.91	VQ | | |
0+10	0.0278	3.13	V Q | | |
0+15	0.0533	3.70	V Q | | |
0+20	0.0806	3.96	|V Q | | |
0+25	0.1131	4.72	|V Q | | |
0+30	0.1489	5.21	| V Q | | |
0+35	0.1879	5.66	| V Q | | |
0+40	0.2266	5.62	| V Q | | |
0+45	0.2684	6.07	| V Q | | |
0+50	0.3097	6.00	| V Q | | |
0+55	0.3485	5.63	| V Q | | |
1+ 0	0.3885	5.81	| VQ | | |
1+ 5	0.4329	6.44	| VQ | | |
1+10	0.4826	7.22	| V Q| | |
1+15	0.5342	7.49	| VQ| | |
1+20	0.5856	7.47	| Q| | |
1+25	0.6380	7.61	| Q | |
1+30	0.6976	8.65	| |Q | |
1+35	0.7590	8.92	| |QV | |
1+40	0.8197	8.81	| |Q V | |
1+45	0.8863	9.67	| | Q V | |
1+50	0.9600	10.70	| | QV | |
1+55	1.0331	10.61	| | Q V | |
2+ 0	1.1049	10.43	| | Q V | |
2+ 5	1.1779	10.61	| | Q V| |

```
    2+10       1.2577     11.58  |         |    Q    V         |
|
    2+15       1.3548     14.10  |         |       Q | V       |
|
    2+20       1.4586     15.07  |         |         Q  V      |
|
    2+25       1.5661     15.60  |         |         Q    V    |
|
    2+30       1.7139     21.46  |         |         |      VQ |
|
    2+35       1.8860     24.99  |         |         |         V  Q
|
    2+40       2.0655     26.07  |         |         |         |  VQ
|
    2+45       2.2021     19.83  |         |         |     Q   |    V
|
    2+50       2.2856     12.13  |         |     Q   |         |      V
|
    2+55       2.3497      9.31  |         | Q       |         |       V
|
    3+ 0       2.4002      7.33  |        Q|         |         |
V|
    3+ 5       2.4285      4.11  |    Q    |         |         |
V|
    3+10       2.4419      1.96  | Q       |         |         |
V|
    3+15       2.4486      0.96  |Q        |         |         |
V|
    3+20       2.4516      0.44  Q         |         |         |
V|
    3+25       2.4533      0.24  Q         |         |         |
V|
    3+30       2.4541      0.12  Q         |         |         |
V|
    3+35       2.4543      0.03  Q         |         |         |
V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Study date 02/09/22 File: NECRamonaPro62.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Proposed Condition
2yr 6hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2196.00(Ft.)
Length along longest watercourse measured to centroid = 1098.00 (Ft.)
Length along longest watercourse = 0.416 Mi.
Length along longest watercourse measured to centroid = 0.208 Mi.
Difference in elevation = 7.50(Ft.)
Slope along watercourse = 18.0328 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.082 Hr.
Lag time = 4.92 Min.
25% of lag time = 1.23 Min.
40% of lag time = 1.97 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50             1.14                  49.59

  100 YEAR Area rainfall data:


  Area(Ac.)[1]      Rainfall(In)[2]     Weighting[1*2]
       43.50             2.75                 119.63

  STORM EVENT (YEAR) =    2.00
  Area Averaged 2-Year Rainfall =    1.140(In)
  Area Averaged 100-Year Rainfall =    2.750(In)

  Point rain (area averaged) =    1.140(In)
  Areal adjustment factor =   99.99 %
  Adjusted average point rain =    1.140(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           69.00          0.900
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  69.0  49.8      0.574     0.900        0.109       1.000
0.109
                                                      Sum (F) =
0.109
  Area averaged mean soil loss (F) (In/Hr) =  0.109
  Minimum soil loss rate ((In/Hr)) =  0.055
  (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       101.653         19.708             8.640
        2   0.167       203.306         48.518            21.270
        3   0.250       304.959         15.390             6.747
        4   0.333       406.613          6.976             3.058
        5   0.417       508.266          3.910             1.714
        6   0.500       609.919          2.525             1.107
        7   0.583       711.572          1.548             0.679
        8   0.667       813.225          1.424             0.624
                                 Sum = 100.000   Sum=      43.840
-----------------------------------------------------------------------

 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	0.50	0.068	(0.109)	0.012	0.056
2	0.17	0.60	0.082	(0.109)	0.015	0.067
3	0.25	0.60	0.082	(0.109)	0.015	0.067
4	0.33	0.60	0.082	(0.109)	0.015	0.067
5	0.42	0.60	0.082	(0.109)	0.015	0.067
6	0.50	0.70	0.096	(0.109)	0.017	0.079
7	0.58	0.70	0.096	(0.109)	0.017	0.079
8	0.67	0.70	0.096	(0.109)	0.017	0.079
9	0.75	0.70	0.096	(0.109)	0.017	0.079
10	0.83	0.70	0.096	(0.109)	0.017	0.079
11	0.92	0.70	0.096	(0.109)	0.017	0.079
12	1.00	0.80	0.109	(0.109)	0.020	0.090
13	1.08	0.80	0.109	(0.109)	0.020	0.090
14	1.17	0.80	0.109	(0.109)	0.020	0.090
15	1.25	0.80	0.109	(0.109)	0.020	0.090
16	1.33	0.80	0.109	(0.109)	0.020	0.090
17	1.42	0.80	0.109	(0.109)	0.020	0.090
18	1.50	0.80	0.109	(0.109)	0.020	0.090
19	1.58	0.80	0.109	(0.109)	0.020	0.090
20	1.67	0.80	0.109	(0.109)	0.020	0.090
21	1.75	0.80	0.109	(0.109)	0.020	0.090
22	1.83	0.80	0.109	(0.109)	0.020	0.090
23	1.92	0.80	0.109	(0.109)	0.020	0.090
24	2.00	0.90	0.123	(0.109)	0.022	0.101
25	2.08	0.80	0.109	(0.109)	0.020	0.090
26	2.17	0.90	0.123	(0.109)	0.022	0.101
27	2.25	0.90	0.123	(0.109)	0.022	0.101
28	2.33	0.90	0.123	(0.109)	0.022	0.101
29	2.42	0.90	0.123	(0.109)	0.022	0.101
30	2.50	0.90	0.123	(0.109)	0.022	0.101
31	2.58	0.90	0.123	(0.109)	0.022	0.101
32	2.67	0.90	0.123	(0.109)	0.022	0.101
33	2.75	1.00	0.137	(0.109)	0.025	0.112
34	2.83	1.00	0.137	(0.109)	0.025	0.112
35	2.92	1.00	0.137	(0.109)	0.025	0.112
36	3.00	1.00	0.137	(0.109)	0.025	0.112
37	3.08	1.00	0.137	(0.109)	0.025	0.112
38	3.17	1.10	0.150	(0.109)	0.027	0.123
39	3.25	1.10	0.150	(0.109)	0.027	0.123
40	3.33	1.10	0.150	(0.109)	0.027	0.123
41	3.42	1.20	0.164	(0.109)	0.030	0.135
42	3.50	1.30	0.178	(0.109)	0.032	0.146
43	3.58	1.40	0.191	(0.109)	0.034	0.157
44	3.67	1.40	0.191	(0.109)	0.034	0.157
45	3.75	1.50	0.205	(0.109)	0.037	0.168
46	3.83	1.50	0.205	(0.109)	0.037	0.168
47	3.92	1.60	0.219	(0.109)	0.039	0.179
48	4.00	1.60	0.219	(0.109)	0.039	0.179
49	4.08	1.70	0.233	(0.109)	0.042	0.191
50	4.17	1.80	0.246	(0.109)	0.044	0.202
51	4.25	1.90	0.260	(0.109)	0.047	0.213
52	4.33	2.00	0.274	(0.109)	0.049	0.224
53	4.42	2.10	0.287	(0.109)	0.052	0.236
54	4.50	2.10	0.287	(0.109)	0.052	0.236

```
  55   4.58     2.20      0.301       (  0.109)       0.054        0.247
  56   4.67     2.30      0.315       (  0.109)       0.057        0.258
  57   4.75     2.40      0.328       (  0.109)       0.059        0.269
  58   4.83     2.40      0.328       (  0.109)       0.059        0.269
  59   4.92     2.50      0.342       (  0.109)       0.062        0.280
  60   5.00     2.60      0.356       (  0.109)       0.064        0.292
  61   5.08     3.10      0.424       (  0.109)       0.076        0.348
  62   5.17     3.60      0.492       (  0.109)       0.089        0.404
  63   5.25     3.90      0.533       (  0.109)       0.096        0.437
  64   5.33     4.20      0.574       (  0.109)       0.103        0.471
  65   5.42     4.70      0.643          0.109    (  0.116)       0.534
  66   5.50     5.60      0.766          0.109    (  0.138)       0.657
  67   5.58     1.90      0.260       (  0.109)       0.047        0.213
  68   5.67     0.90      0.123       (  0.109)       0.022        0.101
  69   5.75     0.60      0.082       (  0.109)       0.015        0.067
  70   5.83     0.50      0.068       (  0.109)       0.012        0.056
  71   5.92     0.30      0.041       (  0.109)       0.007        0.034
  72   6.00     0.20      0.027       (  0.109)       0.005        0.022
            (Loss Rate Not Used)
    Sum =     100.0                                    Sum =    11.3
     Flood volume = Effective rainfall      0.94(In)
      times area      43.5(Ac.)/[(In)/(Ft.)] =       3.4(Ac.Ft)
     Total soil loss =      0.20(In)
     Total soil loss =     0.733(Ac.Ft)
     Total rainfall =      1.14(In)
     Flood volume =      148054.5 Cubic Feet
     Total soil loss =       31930.3 Cubic Feet
     ------------------------------------------------------------------
--
      Peak flow rate of this hydrograph =     23.008(CFS)
     ------------------------------------------------------------------
--
     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                         6 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
     ------------------------------------------------------------------
--
                  Hydrograph in   5   Minute intervals ((CFS))

     ------------------------------------------------------------------
--
  Time(h+m) Volume Ac.Ft   Q(CFS)  0        7.5      15.0      22.5
30.0

-------------------------------------------------------------------------
    0+ 5       0.0033      0.48  Q         |         |         |
|
    0+10       0.0156      1.78  V Q       |         |         |
|
    0+15       0.0320      2.39  V  Q      |         |         |
|
    0+20       0.0502      2.64  V  Q      |         |         |
|
    0+25       0.0693      2.77  V  Q      |         |         |
|
    0+30       0.0896      2.95  |V Q      |         |         |
|
    0+35       0.1119      3.24  |V  Q     |         |         |
|
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0+40	0.1350	3.36	|V Q |		
0+45	0.1584	3.40	|V Q |		
0+50	0.1819	3.42	| V Q |		
0+55	0.2056	3.43	| V Q |		
1+ 0	0.2299	3.53	| V Q |		
1+ 5	0.2559	3.78	| V Q |		
1+10	0.2825	3.86	| V Q |		
1+15	0.3093	3.89	| V Q |		
1+20	0.3362	3.91	| V Q |		
1+25	0.3632	3.92	| VQ |		
1+30	0.3902	3.93	| VQ |		
1+35	0.4174	3.94	| VQ |		
1+40	0.4445	3.94	| Q |		
1+45	0.4716	3.94	| Q |		
1+50	0.4987	3.94	| Q |		
1+55	0.5258	3.94	| QV |		
2+ 0	0.5535	4.03	| QV |		
2+ 5	0.5823	4.17	| QV |		
2+10	0.6106	4.11	| Q V |		
2+15	0.6402	4.31	| Q V |		
2+20	0.6703	4.37	| Q V |		
2+25	0.7006	4.39	| Q V |		
2+30	0.7309	4.41	| Q V |		
2+35	0.7614	4.42	| Q V |		
2+40	0.7918	4.42	| Q V|		
2+45	0.8230	4.52	| Q V|		
2+50	0.8558	4.76	| Q V |		
2+55	0.8891	4.84	| Q V |		
3+ 0	0.9227	4.87	| Q V |		
3+ 5	0.9564	4.89	| Q |V |		

3+10	0.9908	5.00	|	Q	|V	|	|
3+15	1.0270	5.25	|	Q	| V	|	|
3+20	1.0637	5.33	|	Q	| V	|	|
3+25	1.1013	5.46	|	Q	| V	|	|
3+30	1.1414	5.82	|	Q	| V	|	|
3+35	1.1843	6.24	|	Q	| V	|	|
3+40	1.2298	6.60	|	Q	| V	|	|
3+45	1.2768	6.83	|	Q	| V	|	|
3+50	1.3260	7.14	|	Q	| V	|	|
3+55	1.3766	7.35	|	Q	| V	|	|
4+ 0	1.4292	7.65	|	Q	V	|	|
4+ 5	1.4833	7.85	|	Q	V	|	|
4+10	1.5401	8.24	|	Q	V	|	|
4+15	1.5999	8.68	|	Q	V	|	|
4+20	1.6629	9.15	|	Q	V	|	|
4+25	1.7291	9.62	|	Q	V	|	|
4+30	1.7980	10.01	|	Q	|V	|	|
4+35	1.8686	10.25	|	Q	|V	|	|
4+40	1.9421	10.67	|	Q	| V	|	|
4+45	2.0187	11.13	|	Q	| V	|	|
4+50	2.0979	11.50	|	Q	| V	|	|
4+55	2.1788	11.74	|	Q	| V	|	|
5+ 0	2.2625	12.15	|	Q	| V	|	|
5+ 5	2.3520	12.99	|	Q	| V	|	|
5+10	2.4539	14.81	|	Q	| V	|	|
5+15	2.5692	16.74	|	Q	| V	|	|
5+20	2.6955	18.33	|	Q	|V	|	|
5+25	2.8339	20.11	|	Q	| V	|	|
5+30	2.9924	23.01	|	Q	| V	|	|
5+35	3.1472	22.48	|	Q	| V	|	|

```
    5+40       3.2385     13.26  |         |      Q  |         |       V
|
    5+45       3.2948      8.17  |         Q         |         |       V
|
    5+50       3.3331      5.56  |      Q  |         |         |
V|
    5+55       3.3606      4.00  |    Q    |         |         |
V|
    6+ 0       3.3791      2.68  |  Q      |         |         |
V|
    6+ 5       3.3905      1.66  | Q       |         |         |
V|
    6+10       3.3948      0.63  Q         |         |         |
V|
    6+15       3.3969      0.30  Q         |         |         |
V|
    6+20       3.3979      0.16  Q         |         |         |
V|
    6+25       3.3985      0.08  Q         |         |         |
V|
    6+30       3.3988      0.04  Q         |         |         |
V|
    6+35       3.3989      0.01  Q         |         |         |
V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Study date 02/09/22 File: NECRamonaPro242.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Proposed Condition
2yr 24hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2196.00(Ft.)
Length along longest watercourse measured to centroid = 1098.00 (Ft.)
Length along longest watercourse = 0.416 Mi.
Length along longest watercourse measured to centroid = 0.208 Mi.
Difference in elevation = 7.50(Ft.)
Slope along watercourse = 18.0328 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.082 Hr.
Lag time = 4.92 Min.
25% of lag time = 1.23 Min.
40% of lag time = 1.97 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]

```
       43.50             1.97                   85.69

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50              5.02                 218.37

  STORM EVENT (YEAR) =    2.00
  Area Averaged 2-Year Rainfall =    1.970(In)
  Area Averaged 100-Year Rainfall =    5.020(In)

  Point rain (area averaged) =    1.970(In)
  Areal adjustment factor =   99.99 %
  Adjusted average point rain =    1.970(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           69.00          0.900
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  69.0  49.8      0.574     0.900        0.109       1.000
0.109
                                                      Sum (F) =
0.109
  Area averaged mean soil loss (F) (In/Hr) =  0.109
  Minimum soil loss rate ((In/Hr)) =  0.055
  (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       101.653         19.708             8.640
        2   0.167       203.306         48.518            21.270
        3   0.250       304.959         15.390             6.747
        4   0.333       406.613          6.976             3.058
        5   0.417       508.266          3.910             1.714
        6   0.500       609.919          2.525             1.107
        7   0.583       711.572          1.548             0.679
        8   0.667       813.225          1.424             0.624
                                  Sum = 100.000   Sum=      43.840
-----------------------------------------------------------------------


 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	0.016	(0.193)	0.003	0.013
2	0.17	0.07	0.016	(0.193)	0.003	0.013
3	0.25	0.07	0.016	(0.192)	0.003	0.013
4	0.33	0.10	0.024	(0.191)	0.004	0.019
5	0.42	0.10	0.024	(0.190)	0.004	0.019
6	0.50	0.10	0.024	(0.190)	0.004	0.019
7	0.58	0.10	0.024	(0.189)	0.004	0.019
8	0.67	0.10	0.024	(0.188)	0.004	0.019
9	0.75	0.10	0.024	(0.187)	0.004	0.019
10	0.83	0.13	0.032	(0.187)	0.006	0.026
11	0.92	0.13	0.032	(0.186)	0.006	0.026
12	1.00	0.13	0.032	(0.185)	0.006	0.026
13	1.08	0.10	0.024	(0.184)	0.004	0.019
14	1.17	0.10	0.024	(0.184)	0.004	0.019
15	1.25	0.10	0.024	(0.183)	0.004	0.019
16	1.33	0.10	0.024	(0.182)	0.004	0.019
17	1.42	0.10	0.024	(0.182)	0.004	0.019
18	1.50	0.10	0.024	(0.181)	0.004	0.019
19	1.58	0.10	0.024	(0.180)	0.004	0.019
20	1.67	0.10	0.024	(0.179)	0.004	0.019
21	1.75	0.10	0.024	(0.179)	0.004	0.019
22	1.83	0.13	0.032	(0.178)	0.006	0.026
23	1.92	0.13	0.032	(0.177)	0.006	0.026
24	2.00	0.13	0.032	(0.176)	0.006	0.026
25	2.08	0.13	0.032	(0.176)	0.006	0.026
26	2.17	0.13	0.032	(0.175)	0.006	0.026
27	2.25	0.13	0.032	(0.174)	0.006	0.026
28	2.33	0.13	0.032	(0.174)	0.006	0.026
29	2.42	0.13	0.032	(0.173)	0.006	0.026
30	2.50	0.13	0.032	(0.172)	0.006	0.026
31	2.58	0.17	0.039	(0.172)	0.007	0.032
32	2.67	0.17	0.039	(0.171)	0.007	0.032
33	2.75	0.17	0.039	(0.170)	0.007	0.032
34	2.83	0.17	0.039	(0.169)	0.007	0.032
35	2.92	0.17	0.039	(0.169)	0.007	0.032
36	3.00	0.17	0.039	(0.168)	0.007	0.032
37	3.08	0.17	0.039	(0.167)	0.007	0.032
38	3.17	0.17	0.039	(0.167)	0.007	0.032
39	3.25	0.17	0.039	(0.166)	0.007	0.032
40	3.33	0.17	0.039	(0.165)	0.007	0.032
41	3.42	0.17	0.039	(0.165)	0.007	0.032
42	3.50	0.17	0.039	(0.164)	0.007	0.032
43	3.58	0.17	0.039	(0.163)	0.007	0.032
44	3.67	0.17	0.039	(0.162)	0.007	0.032
45	3.75	0.17	0.039	(0.162)	0.007	0.032
46	3.83	0.20	0.047	(0.161)	0.009	0.039
47	3.92	0.20	0.047	(0.160)	0.009	0.039
48	4.00	0.20	0.047	(0.160)	0.009	0.039
49	4.08	0.20	0.047	(0.159)	0.009	0.039
50	4.17	0.20	0.047	(0.158)	0.009	0.039
51	4.25	0.20	0.047	(0.158)	0.009	0.039
52	4.33	0.23	0.055	(0.157)	0.010	0.045
53	4.42	0.23	0.055	(0.156)	0.010	0.045
54	4.50	0.23	0.055	(0.156)	0.010	0.045

55	4.58	0.23	0.055	(0.155)	0.010	0.045
56	4.67	0.23	0.055	(0.154)	0.010	0.045
57	4.75	0.23	0.055	(0.154)	0.010	0.045
58	4.83	0.27	0.063	(0.153)	0.011	0.052
59	4.92	0.27	0.063	(0.152)	0.011	0.052
60	5.00	0.27	0.063	(0.152)	0.011	0.052
61	5.08	0.20	0.047	(0.151)	0.009	0.039
62	5.17	0.20	0.047	(0.150)	0.009	0.039
63	5.25	0.20	0.047	(0.150)	0.009	0.039
64	5.33	0.23	0.055	(0.149)	0.010	0.045
65	5.42	0.23	0.055	(0.148)	0.010	0.045
66	5.50	0.23	0.055	(0.148)	0.010	0.045
67	5.58	0.27	0.063	(0.147)	0.011	0.052
68	5.67	0.27	0.063	(0.147)	0.011	0.052
69	5.75	0.27	0.063	(0.146)	0.011	0.052
70	5.83	0.27	0.063	(0.145)	0.011	0.052
71	5.92	0.27	0.063	(0.145)	0.011	0.052
72	6.00	0.27	0.063	(0.144)	0.011	0.052
73	6.08	0.30	0.071	(0.143)	0.013	0.058
74	6.17	0.30	0.071	(0.143)	0.013	0.058
75	6.25	0.30	0.071	(0.142)	0.013	0.058
76	6.33	0.30	0.071	(0.141)	0.013	0.058
77	6.42	0.30	0.071	(0.141)	0.013	0.058
78	6.50	0.30	0.071	(0.140)	0.013	0.058
79	6.58	0.33	0.079	(0.140)	0.014	0.065
80	6.67	0.33	0.079	(0.139)	0.014	0.065
81	6.75	0.33	0.079	(0.138)	0.014	0.065
82	6.83	0.33	0.079	(0.138)	0.014	0.065
83	6.92	0.33	0.079	(0.137)	0.014	0.065
84	7.00	0.33	0.079	(0.136)	0.014	0.065
85	7.08	0.33	0.079	(0.136)	0.014	0.065
86	7.17	0.33	0.079	(0.135)	0.014	0.065
87	7.25	0.33	0.079	(0.135)	0.014	0.065
88	7.33	0.37	0.087	(0.134)	0.016	0.071
89	7.42	0.37	0.087	(0.133)	0.016	0.071
90	7.50	0.37	0.087	(0.133)	0.016	0.071
91	7.58	0.40	0.095	(0.132)	0.017	0.078
92	7.67	0.40	0.095	(0.131)	0.017	0.078
93	7.75	0.40	0.095	(0.131)	0.017	0.078
94	7.83	0.43	0.102	(0.130)	0.018	0.084
95	7.92	0.43	0.102	(0.130)	0.018	0.084
96	8.00	0.43	0.102	(0.129)	0.018	0.084
97	8.08	0.50	0.118	(0.128)	0.021	0.097
98	8.17	0.50	0.118	(0.128)	0.021	0.097
99	8.25	0.50	0.118	(0.127)	0.021	0.097
100	8.33	0.50	0.118	(0.127)	0.021	0.097
101	8.42	0.50	0.118	(0.126)	0.021	0.097
102	8.50	0.50	0.118	(0.125)	0.021	0.097
103	8.58	0.53	0.126	(0.125)	0.023	0.103
104	8.67	0.53	0.126	(0.124)	0.023	0.103
105	8.75	0.53	0.126	(0.124)	0.023	0.103
106	8.83	0.57	0.134	(0.123)	0.024	0.110
107	8.92	0.57	0.134	(0.123)	0.024	0.110
108	9.00	0.57	0.134	(0.122)	0.024	0.110
109	9.08	0.63	0.150	(0.121)	0.027	0.123
110	9.17	0.63	0.150	(0.121)	0.027	0.123
111	9.25	0.63	0.150	(0.120)	0.027	0.123
112	9.33	0.67	0.158	(0.120)	0.028	0.129
113	9.42	0.67	0.158	(0.119)	0.028	0.129
114	9.50	0.67	0.158	(0.119)	0.028	0.129

115	9.58	0.70	0.165	(0.118)	0.030	0.136
116	9.67	0.70	0.165	(0.117)	0.030	0.136
117	9.75	0.70	0.165	(0.117)	0.030	0.136
118	9.83	0.73	0.173	(0.116)	0.031	0.142
119	9.92	0.73	0.173	(0.116)	0.031	0.142
120	10.00	0.73	0.173	(0.115)	0.031	0.142
121	10.08	0.50	0.118	(0.115)	0.021	0.097
122	10.17	0.50	0.118	(0.114)	0.021	0.097
123	10.25	0.50	0.118	(0.113)	0.021	0.097
124	10.33	0.50	0.118	(0.113)	0.021	0.097
125	10.42	0.50	0.118	(0.112)	0.021	0.097
126	10.50	0.50	0.118	(0.112)	0.021	0.097
127	10.58	0.67	0.158	(0.111)	0.028	0.129
128	10.67	0.67	0.158	(0.111)	0.028	0.129
129	10.75	0.67	0.158	(0.110)	0.028	0.129
130	10.83	0.67	0.158	(0.110)	0.028	0.129
131	10.92	0.67	0.158	(0.109)	0.028	0.129
132	11.00	0.67	0.158	(0.109)	0.028	0.129
133	11.08	0.63	0.150	(0.108)	0.027	0.123
134	11.17	0.63	0.150	(0.108)	0.027	0.123
135	11.25	0.63	0.150	(0.107)	0.027	0.123
136	11.33	0.63	0.150	(0.106)	0.027	0.123
137	11.42	0.63	0.150	(0.106)	0.027	0.123
138	11.50	0.63	0.150	(0.105)	0.027	0.123
139	11.58	0.57	0.134	(0.105)	0.024	0.110
140	11.67	0.57	0.134	(0.104)	0.024	0.110
141	11.75	0.57	0.134	(0.104)	0.024	0.110
142	11.83	0.60	0.142	(0.103)	0.026	0.116
143	11.92	0.60	0.142	(0.103)	0.026	0.116
144	12.00	0.60	0.142	(0.102)	0.026	0.116
145	12.08	0.83	0.197	(0.102)	0.035	0.162
146	12.17	0.83	0.197	(0.101)	0.035	0.162
147	12.25	0.83	0.197	(0.101)	0.035	0.162
148	12.33	0.87	0.205	(0.100)	0.037	0.168
149	12.42	0.87	0.205	(0.100)	0.037	0.168
150	12.50	0.87	0.205	(0.099)	0.037	0.168
151	12.58	0.93	0.221	(0.099)	0.040	0.181
152	12.67	0.93	0.221	(0.098)	0.040	0.181
153	12.75	0.93	0.221	(0.098)	0.040	0.181
154	12.83	0.97	0.229	(0.097)	0.041	0.187
155	12.92	0.97	0.229	(0.097)	0.041	0.187
156	13.00	0.97	0.229	(0.096)	0.041	0.187
157	13.08	1.13	0.268	(0.096)	0.048	0.220
158	13.17	1.13	0.268	(0.095)	0.048	0.220
159	13.25	1.13	0.268	(0.095)	0.048	0.220
160	13.33	1.13	0.268	(0.094)	0.048	0.220
161	13.42	1.13	0.268	(0.094)	0.048	0.220
162	13.50	1.13	0.268	(0.093)	0.048	0.220
163	13.58	0.77	0.181	(0.093)	0.033	0.149
164	13.67	0.77	0.181	(0.092)	0.033	0.149
165	13.75	0.77	0.181	(0.092)	0.033	0.149
166	13.83	0.77	0.181	(0.092)	0.033	0.149
167	13.92	0.77	0.181	(0.091)	0.033	0.149
168	14.00	0.77	0.181	(0.091)	0.033	0.149
169	14.08	0.90	0.213	(0.090)	0.038	0.174
170	14.17	0.90	0.213	(0.090)	0.038	0.174
171	14.25	0.90	0.213	(0.089)	0.038	0.174
172	14.33	0.87	0.205	(0.089)	0.037	0.168
173	14.42	0.87	0.205	(0.088)	0.037	0.168
174	14.50	0.87	0.205	(0.088)	0.037	0.168

175	14.58	0.87	0.205	(0.087)	0.037	0.168
176	14.67	0.87	0.205	(0.087)	0.037	0.168
177	14.75	0.87	0.205	(0.086)	0.037	0.168
178	14.83	0.83	0.197	(0.086)	0.035	0.162
179	14.92	0.83	0.197	(0.086)	0.035	0.162
180	15.00	0.83	0.197	(0.085)	0.035	0.162
181	15.08	0.80	0.189	(0.085)	0.034	0.155
182	15.17	0.80	0.189	(0.084)	0.034	0.155
183	15.25	0.80	0.189	(0.084)	0.034	0.155
184	15.33	0.77	0.181	(0.083)	0.033	0.149
185	15.42	0.77	0.181	(0.083)	0.033	0.149
186	15.50	0.77	0.181	(0.083)	0.033	0.149
187	15.58	0.63	0.150	(0.082)	0.027	0.123
188	15.67	0.63	0.150	(0.082)	0.027	0.123
189	15.75	0.63	0.150	(0.081)	0.027	0.123
190	15.83	0.63	0.150	(0.081)	0.027	0.123
191	15.92	0.63	0.150	(0.080)	0.027	0.123
192	16.00	0.63	0.150	(0.080)	0.027	0.123
193	16.08	0.13	0.032	(0.080)	0.006	0.026
194	16.17	0.13	0.032	(0.079)	0.006	0.026
195	16.25	0.13	0.032	(0.079)	0.006	0.026
196	16.33	0.13	0.032	(0.078)	0.006	0.026
197	16.42	0.13	0.032	(0.078)	0.006	0.026
198	16.50	0.13	0.032	(0.078)	0.006	0.026
199	16.58	0.10	0.024	(0.077)	0.004	0.019
200	16.67	0.10	0.024	(0.077)	0.004	0.019
201	16.75	0.10	0.024	(0.076)	0.004	0.019
202	16.83	0.10	0.024	(0.076)	0.004	0.019
203	16.92	0.10	0.024	(0.076)	0.004	0.019
204	17.00	0.10	0.024	(0.075)	0.004	0.019
205	17.08	0.17	0.039	(0.075)	0.007	0.032
206	17.17	0.17	0.039	(0.075)	0.007	0.032
207	17.25	0.17	0.039	(0.074)	0.007	0.032
208	17.33	0.17	0.039	(0.074)	0.007	0.032
209	17.42	0.17	0.039	(0.073)	0.007	0.032
210	17.50	0.17	0.039	(0.073)	0.007	0.032
211	17.58	0.17	0.039	(0.073)	0.007	0.032
212	17.67	0.17	0.039	(0.072)	0.007	0.032
213	17.75	0.17	0.039	(0.072)	0.007	0.032
214	17.83	0.13	0.032	(0.072)	0.006	0.026
215	17.92	0.13	0.032	(0.071)	0.006	0.026
216	18.00	0.13	0.032	(0.071)	0.006	0.026
217	18.08	0.13	0.032	(0.071)	0.006	0.026
218	18.17	0.13	0.032	(0.070)	0.006	0.026
219	18.25	0.13	0.032	(0.070)	0.006	0.026
220	18.33	0.13	0.032	(0.070)	0.006	0.026
221	18.42	0.13	0.032	(0.069)	0.006	0.026
222	18.50	0.13	0.032	(0.069)	0.006	0.026
223	18.58	0.10	0.024	(0.069)	0.004	0.019
224	18.67	0.10	0.024	(0.068)	0.004	0.019
225	18.75	0.10	0.024	(0.068)	0.004	0.019
226	18.83	0.07	0.016	(0.068)	0.003	0.013
227	18.92	0.07	0.016	(0.067)	0.003	0.013
228	19.00	0.07	0.016	(0.067)	0.003	0.013
229	19.08	0.10	0.024	(0.067)	0.004	0.019
230	19.17	0.10	0.024	(0.066)	0.004	0.019
231	19.25	0.10	0.024	(0.066)	0.004	0.019
232	19.33	0.13	0.032	(0.066)	0.006	0.026
233	19.42	0.13	0.032	(0.065)	0.006	0.026
234	19.50	0.13	0.032	(0.065)	0.006	0.026

235	19.58	0.10	0.024	(0.065)	0.004	0.019
236	19.67	0.10	0.024	(0.064)	0.004	0.019
237	19.75	0.10	0.024	(0.064)	0.004	0.019
238	19.83	0.07	0.016	(0.064)	0.003	0.013
239	19.92	0.07	0.016	(0.064)	0.003	0.013
240	20.00	0.07	0.016	(0.063)	0.003	0.013
241	20.08	0.10	0.024	(0.063)	0.004	0.019
242	20.17	0.10	0.024	(0.063)	0.004	0.019
243	20.25	0.10	0.024	(0.062)	0.004	0.019
244	20.33	0.10	0.024	(0.062)	0.004	0.019
245	20.42	0.10	0.024	(0.062)	0.004	0.019
246	20.50	0.10	0.024	(0.062)	0.004	0.019
247	20.58	0.10	0.024	(0.061)	0.004	0.019
248	20.67	0.10	0.024	(0.061)	0.004	0.019
249	20.75	0.10	0.024	(0.061)	0.004	0.019
250	20.83	0.07	0.016	(0.061)	0.003	0.013
251	20.92	0.07	0.016	(0.060)	0.003	0.013
252	21.00	0.07	0.016	(0.060)	0.003	0.013
253	21.08	0.10	0.024	(0.060)	0.004	0.019
254	21.17	0.10	0.024	(0.060)	0.004	0.019
255	21.25	0.10	0.024	(0.059)	0.004	0.019
256	21.33	0.07	0.016	(0.059)	0.003	0.013
257	21.42	0.07	0.016	(0.059)	0.003	0.013
258	21.50	0.07	0.016	(0.059)	0.003	0.013
259	21.58	0.10	0.024	(0.059)	0.004	0.019
260	21.67	0.10	0.024	(0.058)	0.004	0.019
261	21.75	0.10	0.024	(0.058)	0.004	0.019
262	21.83	0.07	0.016	(0.058)	0.003	0.013
263	21.92	0.07	0.016	(0.058)	0.003	0.013
264	22.00	0.07	0.016	(0.058)	0.003	0.013
265	22.08	0.10	0.024	(0.057)	0.004	0.019
266	22.17	0.10	0.024	(0.057)	0.004	0.019
267	22.25	0.10	0.024	(0.057)	0.004	0.019
268	22.33	0.07	0.016	(0.057)	0.003	0.013
269	22.42	0.07	0.016	(0.057)	0.003	0.013
270	22.50	0.07	0.016	(0.057)	0.003	0.013
271	22.58	0.07	0.016	(0.056)	0.003	0.013
272	22.67	0.07	0.016	(0.056)	0.003	0.013
273	22.75	0.07	0.016	(0.056)	0.003	0.013
274	22.83	0.07	0.016	(0.056)	0.003	0.013
275	22.92	0.07	0.016	(0.056)	0.003	0.013
276	23.00	0.07	0.016	(0.056)	0.003	0.013
277	23.08	0.07	0.016	(0.055)	0.003	0.013
278	23.17	0.07	0.016	(0.055)	0.003	0.013
279	23.25	0.07	0.016	(0.055)	0.003	0.013
280	23.33	0.07	0.016	(0.055)	0.003	0.013
281	23.42	0.07	0.016	(0.055)	0.003	0.013
282	23.50	0.07	0.016	(0.055)	0.003	0.013
283	23.58	0.07	0.016	(0.055)	0.003	0.013
284	23.67	0.07	0.016	(0.055)	0.003	0.013
285	23.75	0.07	0.016	(0.055)	0.003	0.013
286	23.83	0.07	0.016	(0.055)	0.003	0.013
287	23.92	0.07	0.016	(0.055)	0.003	0.013
288	24.00	0.07	0.016	(0.055)	0.003	0.013

(Loss Rate Not Used)

Sum = 100.0 Sum = 19.4

Flood volume = Effective rainfall 1.62(In)
times area 43.5(Ac.)/[(In)/(Ft.)] = 5.9(Ac.Ft)
Total soil loss = 0.35(In)
Total soil loss = 1.285(Ac.Ft)

```
      Total rainfall =      1.97(In)
      Flood volume =      255058.1 Cubic Feet
      Total soil loss =       55988.4 Cubic Feet
      ---------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =      9.593(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       0.0008      0.11  Q         |         |         |
|
    0+10       0.0034      0.39  VQ        |         |         |
|
    0+15       0.0067      0.47  VQ        |         |         |
|
    0+20       0.0106      0.57  V Q       |         |         |
|
    0+25       0.0156      0.73  V Q       |         |         |
|
    0+30       0.0211      0.79  V  Q      |         |         |
|
    0+35       0.0267      0.82  V  Q      |         |         |
|
    0+40       0.0324      0.83  V  Q      |         |         |
|
    0+45       0.0382      0.84  V  Q      |         |         |
|
    0+50       0.0444      0.90  V  Q      |         |         |
|
    0+55       0.0516      1.04  V   Q     |         |         |
|
    1+ 0       0.0591      1.09  V   Q     |         |         |
|
    1+ 5       0.0663      1.05  V   Q     |         |         |
|
    1+10       0.0727      0.92  V  Q      |         |         |
|
    1+15       0.0788      0.89  V  Q      |         |         |
|
    1+20       0.0848      0.87  V  Q      |         |         |
|
    1+25       0.0908      0.87  V  Q      |         |         |
|
    1+30       0.0967      0.86  V  Q      |         |         |
|
    1+35       0.1026      0.85  V  Q      |         |         |
|
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1+40	0.1085	0.85	V Q	|	|	|
1+45	0.1143	0.85	V Q	|	|	|
1+50	0.1206	0.91	V Q	|	|	|
1+55	0.1277	1.04	V Q	|	|	|
2+ 0	0.1352	1.09	V Q	|	|	|
2+ 5	0.1428	1.11	V Q	|	|	|
2+10	0.1505	1.12	|V Q	|	|	|
2+15	0.1583	1.13	|V Q	|	|	|
2+20	0.1661	1.13	|V Q	|	|	|
2+25	0.1739	1.13	|V Q	|	|	|
2+30	0.1817	1.13	|V Q	|	|	|
2+35	0.1899	1.19	|V Q	|	|	|
2+40	0.1990	1.33	|V Q	|	|	|
2+45	0.2085	1.37	|V Q	|	|	|
2+50	0.2180	1.39	|V Q	|	|	|
2+55	0.2277	1.40	|V Q	|	|	|
3+ 0	0.2374	1.41	|V Q	|	|	|
3+ 5	0.2471	1.41	|V Q	|	|	|
3+10	0.2569	1.42	|V Q	|	|	|
3+15	0.2666	1.42	|V Q	|	|	|
3+20	0.2764	1.42	|V Q	|	|	|
3+25	0.2862	1.42	|V Q	|	|	|
3+30	0.2959	1.42	| V Q	|	|	|
3+35	0.3057	1.42	| V Q	|	|	|
3+40	0.3154	1.42	| V Q	|	|	|
3+45	0.3252	1.42	| V Q	|	|	|
3+50	0.3353	1.47	| V Q	|	|	|
3+55	0.3464	1.61	| V Q	|	|	|
4+ 0	0.3578	1.65	| V Q	|	|	|
4+ 5	0.3693	1.67	| V Q	|	|	|

4+10	0.3809	1.68	V Q		
4+15	0.3926	1.69	V Q		
4+20	0.4047	1.75	V Q		
4+25	0.4177	1.89	V Q		
4+30	0.4311	1.94	V Q		
4+35	0.4445	1.96	V Q		
4+40	0.4581	1.97	V Q		
4+45	0.4717	1.98	V Q		
4+50	0.4857	2.04	V Q		
4+55	0.5007	2.18	V Q		
5+ 0	0.5160	2.22	V Q		
5+ 5	0.5307	2.13	V Q		
5+10	0.5435	1.86	V Q		
5+15	0.5558	1.78	V Q		
5+20	0.5682	1.81	V Q		
5+25	0.5815	1.92	V Q		
5+30	0.5949	1.95	V Q		
5+35	0.6089	2.02	V Q		
5+40	0.6237	2.16	V Q		
5+45	0.6390	2.21	V Q		
5+50	0.6544	2.24	V Q		
5+55	0.6699	2.25	V Q		
6+ 0	0.6855	2.26	V Q		
6+ 5	0.7014	2.32	V Q		
6+10	0.7184	2.46	V Q		
6+15	0.7356	2.50	V Q		
6+20	0.7530	2.52	V Q		
6+25	0.7705	2.53	V Q		
6+30	0.7880	2.54	V Q		
6+35	0.8059	2.60	V Q		

6+40	0.8248	2.74	V Q		
6+45	0.8440	2.79	V Q		
6+50	0.8633	2.81	V Q		
6+55	0.8827	2.82	V Q		
7+ 0	0.9022	2.83	V Q		
7+ 5	0.9217	2.83	V Q		
7+10	0.9412	2.83	V Q		
7+15	0.9607	2.83	V Q		
7+20	0.9806	2.89	V Q		
7+25	1.0015	3.03	V Q		
7+30	1.0226	3.07	V Q		
7+35	1.0443	3.15	V Q		
7+40	1.0670	3.30	V Q		
7+45	1.0900	3.35	V Q		
7+50	1.1136	3.43	V Q		
7+55	1.1383	3.58	V Q		
8+ 0	1.1633	3.63	V Q		
8+ 5	1.1892	3.77	V Q		
8+10	1.2171	4.06	V Q		
8+15	1.2457	4.15	V Q		
8+20	1.2746	4.19	V Q		
8+25	1.3036	4.22	V Q		
8+30	1.3328	4.23	V Q		
8+35	1.3624	4.30	V Q		
8+40	1.3930	4.44	V Q		
8+45	1.4239	4.49	V Q		
8+50	1.4554	4.56	V Q		
8+55	1.4878	4.71	V Q		
9+ 0	1.5206	4.76	V Q		
9+ 5	1.5543	4.90	V Q		

9+10	1.5901	5.19	V	Q
9+15	1.6265	5.28	V	Q
9+20	1.6635	5.38	V	Q
9+25	1.7017	5.55	V	Q
9+30	1.7403	5.60	V	Q
9+35	1.7795	5.69	V	Q
9+40	1.8198	5.85	V	Q
9+45	1.8604	5.90	V	Q
9+50	1.9016	5.98	V	Q
9+55	1.9438	6.13	V	Q
10+ 0	1.9863	6.18	V	Q
10+ 5	2.0264	5.81	V	Q
10+10	2.0599	4.87	V	Q
10+15	2.0913	4.57	V	Q
10+20	2.1219	4.43	V	Q
10+25	2.1519	4.36	V	Q
10+30	2.1816	4.31	V	Q
10+35	2.2130	4.56	V	Q
10+40	2.2489	5.22	V	Q
10+45	2.2863	5.44	V	Q
10+50	2.3245	5.53	V	Q
10+55	2.3630	5.59	V	Q
11+ 0	2.4017	5.63	V	Q
11+ 5	2.4402	5.59	V	Q
11+10	2.4779	5.47	V	Q
11+15	2.5153	5.43	V	Q
11+20	2.5526	5.41	V	Q
11+25	2.5898	5.40	V	Q
11+30	2.6269	5.39	V	Q
11+35	2.6633	5.28	V	Q

11+40	2.6977	5.00			VQ	
11+45	2.7315	4.91			VQ	
11+50	2.7654	4.93			VQ	
11+55	2.8002	5.04			VQ	
12+ 0	2.8351	5.07			VQ	
12+ 5	2.8728	5.47			V Q	
12+10	2.9171	6.44			V Q	
12+15	2.9636	6.75			V Q	
12+20	3.0115	6.95			V Q	
12+25	3.0609	7.17			V Q	
12+30	3.1109	7.26			V Q	
12+35	3.1620	7.43			V Q	
12+40	3.2153	7.74			V Q	
12+45	3.2693	7.83			V Q	
12+50	3.3239	7.93			V Q	
12+55	3.3797	8.10			V Q	
13+ 0	3.4359	8.16			V Q	
13+ 5	3.4941	8.46			V Q	
13+10	3.5573	9.17			V Q	
13+15	3.6220	9.39			V Q	
13+20	3.6874	9.50			V Q	
13+25	3.7532	9.56			V Q	
13+30	3.8193	9.59			V Q	
13+35	3.8813	9.00			V Q	
13+40	3.9330	7.51			V Q	
13+45	3.9814	7.03			VQ	
13+50	4.0283	6.81			Q	
13+55	4.0744	6.69			QV	
14+ 0	4.1199	6.61			Q V	
14+ 5	4.1667	6.79			QV	

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  14+10       4.2169      7.29  |         |         |       VQ|
|
  14+15       4.2683      7.47  |         |         |        Q|
|
  14+20       4.3199      7.49  |         |         |        Q|
|
  14+25       4.3708      7.40  |         |         |        Q|
|
  14+30       4.4216      7.38  |         |         |        QV
|
  14+35       4.4725      7.38  |         |         |        QV
|
  14+40       4.5233      7.38  |         |         |        QV
|
  14+45       4.5741      7.38  |         |         |        Q|V
|
  14+50       4.6245      7.32  |         |         |        Q|V
|
  14+55       4.6739      7.17  |         |         |       Q |V
|
  15+ 0       4.7230      7.13  |         |         |       Q | V
|
  15+ 5       4.7716      7.06  |         |         |       Q | V
|
  15+10       4.8192      6.91  |         |         |      Q  | V
|
  15+15       4.8664      6.86  |         |         |      Q  |  V
|
  15+20       4.9131      6.78  |         |         |      Q  |  V
|
  15+25       4.9587      6.62  |         |         |     Q   |  V
|
  15+30       5.0040      6.57  |         |         |     Q   |   V
|
  15+35       5.0475      6.33  |         |         |    Q    |   V
|
  15+40       5.0872      5.76  |         |         |  Q      |   V
|
  15+45       5.1256      5.58  |         |         | Q       |    V
|
  15+50       5.1635      5.50  |         |         |Q        |    V
|
  15+55       5.2010      5.45  |         |         |Q        |    V
|
  16+ 0       5.2383      5.42  |         |         |Q        |    V
|
  16+ 5       5.2697      4.56  |         |       Q |         |    V
|
  16+10       5.2868      2.48  |        Q|         |         |     V
|
  16+15       5.2995      1.83  |      Q  |         |         |     V
|
  16+20       5.3100      1.53  |     Q   |         |         |     V
|
  16+25       5.3194      1.37  |    Q    |         |         |     V
|
  16+30       5.3281      1.26  |    Q    |         |         |     V
|
  16+35       5.3359      1.14  |   Q     |         |         |     V
|
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16+40	5.3424	0.94	Q				V
16+45	5.3486	0.90	Q				V
16+50	5.3546	0.88	Q				V
16+55	5.3606	0.87	Q				V
17+ 0	5.3665	0.86	Q				V
17+ 5	5.3732	0.97	Q				V
17+10	5.3817	1.24	Q				V
17+15	5.3908	1.32	Q				V
17+20	5.4002	1.36	Q				V
17+25	5.4097	1.39	Q				V
17+30	5.4194	1.40	Q				V
17+35	5.4291	1.41	Q				V
17+40	5.4388	1.42	Q				V
17+45	5.4486	1.42	Q				V
17+50	5.4580	1.36	Q				V
17+55	5.4664	1.22	Q				V
18+ 0	5.4745	1.18	Q				V
18+ 5	5.4825	1.16	Q				V
18+10	5.4904	1.15	Q				V
18+15	5.4983	1.14	Q				V
18+20	5.5061	1.14	Q				V
18+25	5.5139	1.13	Q				V
18+30	5.5217	1.13	Q				V
18+35	5.5292	1.08	Q				V
18+40	5.5356	0.94	Q				V
18+45	5.5418	0.90	Q				V
18+50	5.5475	0.82	Q				V
18+55	5.5521	0.67	Q				V
19+ 0	5.5564	0.62	Q				V
19+ 5	5.5609	0.65	Q				V

19+10	5.5662	0.78	Q				V
19+15	5.5718	0.81	Q				V
19+20	5.5779	0.88	Q				V
19+25	5.5850	1.03	Q				V
19+30	5.5924	1.08	Q				V
19+35	5.5996	1.05	Q				V
19+40	5.6060	0.92	Q				V
19+45	5.6121	0.89	Q				V
19+50	5.6177	0.82	Q				V
19+55	5.6224	0.67	Q				V
20+ 0	5.6267	0.62	Q				V
20+ 5	5.6312	0.65	Q				V
20+10	5.6365	0.78	Q				V
20+15	5.6421	0.81	Q				V
20+20	5.6478	0.83	Q				V
20+25	5.6535	0.83	Q				V
20+30	5.6593	0.84	Q				V
20+35	5.6652	0.85	Q				V
20+40	5.6710	0.85	Q				V
20+45	5.6769	0.85	Q				V
20+50	5.6823	0.79	Q				V
20+55	5.6869	0.66	Q				V
21+ 0	5.6911	0.61	Q				V
21+ 5	5.6956	0.65	Q				V
21+10	5.7009	0.78	Q				V
21+15	5.7065	0.81	Q				V
21+20	5.7118	0.77	Q				V
21+25	5.7162	0.64	Q				V
21+30	5.7204	0.60	Q				V
21+35	5.7248	0.65	Q				V

21+40	5.7302	0.78	| Q	|	|	|
21+45	5.7358	0.81	| Q	|	|	|
21+50	5.7411	0.77	| Q	|	|	|
21+55	5.7455	0.64	| Q	|	|	|
22+ 0	5.7497	0.60	| Q	|	|	|
22+ 5	5.7541	0.65	| Q	|	|	|
22+10	5.7595	0.78	| Q	|	|	|
22+15	5.7651	0.81	| Q	|	|	|
22+20	5.7704	0.77	| Q	|	|	|
22+25	5.7748	0.64	| Q	|	|	|
22+30	5.7789	0.60	| Q	|	|	|
22+35	5.7830	0.59	| Q	|	|	|
22+40	5.7870	0.58	| Q	|	|	|
22+45	5.7910	0.58	| Q	|	|	|
22+50	5.7949	0.57	| Q	|	|	|
22+55	5.7988	0.57	| Q	|	|	|
23+ 0	5.8027	0.57	| Q	|	|	|
23+ 5	5.8066	0.57	| Q	|	|	|
23+10	5.8105	0.57	| Q	|	|	|
23+15	5.8144	0.57	| Q	|	|	|
23+20	5.8183	0.57	| Q	|	|	|
23+25	5.8222	0.57	| Q	|	|	|
23+30	5.8261	0.57	| Q	|	|	|
23+35	5.8300	0.57	| Q	|	|	|
23+40	5.8339	0.57	| Q	|	|	|
23+45	5.8378	0.57	| Q	|	|	|
23+50	5.8418	0.57	| Q	|	|	|
23+55	5.8457	0.57	| Q	|	|	|
24+ 0	5.8496	0.57	| Q	|	|	|
24+ 5	5.8527	0.46	|Q	|	|	|

```
   24+10       5.8539      0.18  Q         |         |         |
V|
   24+15       5.8546      0.09  Q         |         |         |
V|
   24+20       5.8549      0.05  Q         |         |         |
V|
   24+25       5.8552      0.03  Q         |         |         |
V|
   24+30       5.8553      0.02  Q         |         |         |
V|
   24+35       5.8553      0.01  Q         |         |         |
V|
---------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Study date 02/09/22 File: NECRamonaPro15.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Proposed Condition
5yr 1hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2196.00(Ft.)
Length along longest watercourse measured to centroid = 1098.00 (Ft.)
Length along longest watercourse = 0.416 Mi.
Length along longest watercourse measured to centroid = 0.208 Mi.
Difference in elevation = 7.50(Ft.)
Slope along watercourse = 18.0328 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.082 Hr.
Lag time = 4.92 Min.
25% of lag time = 1.23 Min.
40% of lag time = 1.97 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50             0.47                  20.27

  100 YEAR Area rainfall data:


  Area(Ac.)[1]      Rainfall(In)[2]     Weighting[1*2]
       43.50             1.35                 58.73

  STORM EVENT (YEAR) =    5.00
  Area Averaged 2-Year Rainfall =    0.466(In)
  Area Averaged 100-Year Rainfall =    1.350(In)

  Point rain (area averaged) =    0.673(In)
  Areal adjustment factor =   99.96 %
  Adjusted average point rain =    0.673(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           69.00          0.900
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  69.0  49.8      0.574     0.900        0.109       1.000
0.109
                                                      Sum (F) =
0.109
  Area averaged mean soil loss (F) (In/Hr) =  0.109
  Minimum soil loss rate ((In/Hr)) =  0.055
  (for 24 hour storm duration)
  Soil low loss rate (decimal) =   0.180
  ------------------------------------------------------------------
---
  Slope of intensity-duration curve for a 1 hour storm =0.5000
  ------------------------------------------------------------------
----

              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       101.653        19.708            8.640
         2   0.167       203.306        48.518           21.270
         3   0.250       304.959        15.390            6.747
         4   0.333       406.613         6.976            3.058
         5   0.417       508.266         3.910            1.714
         6   0.500       609.919         2.525            1.107
         7   0.583       711.572         1.548            0.679
         8   0.667       813.225         1.424            0.624
                                 Sum = 100.000   Sum=      43.840
-------------------------------------------------------------------
```

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	4.20	0.339	(0.109)	0.061	0.278
2	0.17	4.30	0.347	(0.109)	0.062	0.285
3	0.25	5.00	0.404	(0.109)	0.073	0.331
4	0.33	5.00	0.404	(0.109)	0.073	0.331
5	0.42	5.80	0.468	(0.109)	0.084	0.384
6	0.50	6.50	0.525	(0.109)	0.094	0.430
7	0.58	7.40	0.597	(0.109)	0.108	0.490
8	0.67	8.60	0.694	0.109	(0.125)	0.585
9	0.75	12.30	0.993	0.109	(0.179)	0.884
10	0.83	29.10	2.349	0.109	(0.423)	2.240
11	0.92	6.80	0.549	(0.109)	0.099	0.450
12	1.00	5.00	0.404	(0.109)	0.073	0.331
	(Loss Rate Not Used)					
Sum =		100.0			Sum =	7.0

Flood volume = Effective rainfall 0.58(In)
times area 43.5(Ac.)/[(In)/(Ft.)] = 2.1(Ac.Ft)
Total soil loss = 0.09(In)
Total soil loss = 0.318(Ac.Ft)
Total rainfall = 0.67(In)
Flood volume = 92370.4 Cubic Feet
Total soil loss = 13866.3 Cubic Feet

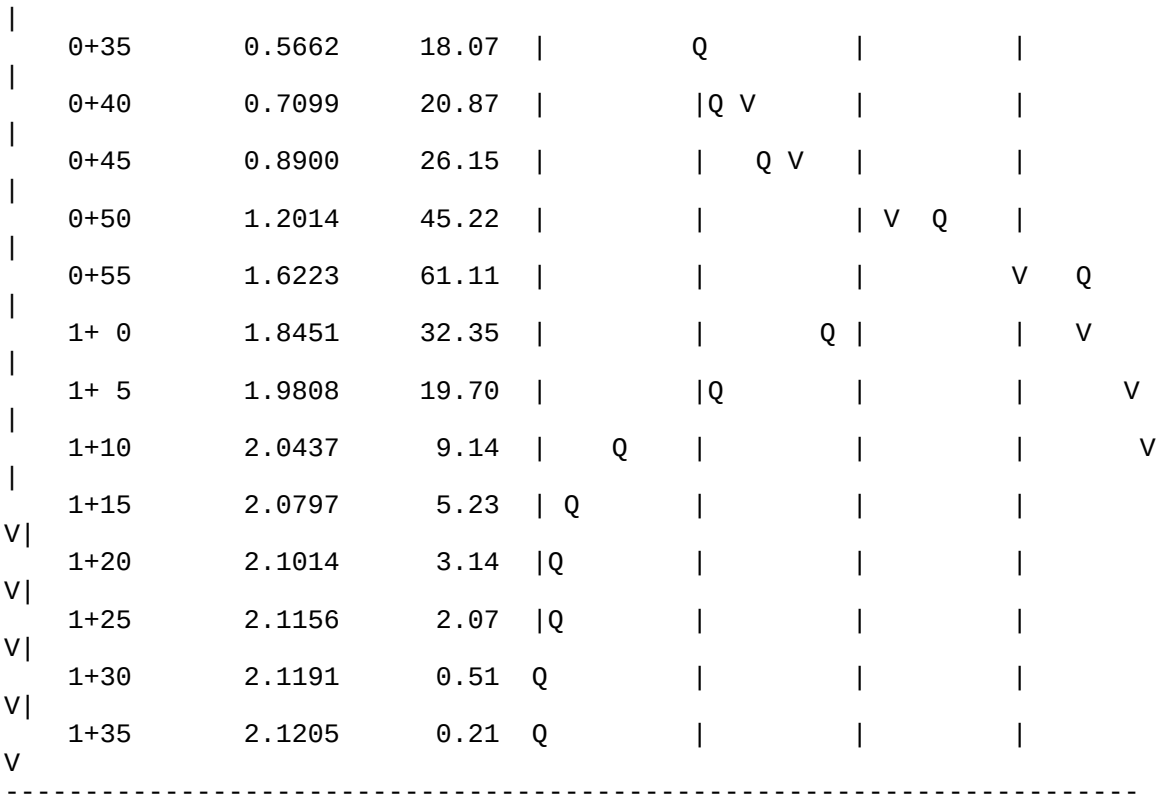
Peak flow rate of this hydrograph = 61.111(CFS)

++

1 - 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	17.5	35.0	52.5	70.0
0+ 5	0.0166	2.40	VQ				
0+10	0.0743	8.38	V Q				
0+15	0.1486	10.80	V Q				
0+20	0.2359	12.68	V Q				
0+25	0.3320	13.95	VQ				
0+30	0.4417	15.93	VQ				


0+35 0.5662 18.07
0+40 0.7099 20.87
0+45 0.8900 26.15
0+50 1.2014 45.22
0+55 1.6223 61.11
1+ 0 1.8451 32.35
1+ 5 1.9808 19.70
1+10 2.0437 9.14
1+15 2.0797 5.23
1+20 2.1014 3.14
1+25 2.1156 2.07
1+30 2.1191 0.51
1+35 2.1205 0.21

U n i t H y d r o g r a p h A n a l y s i s

Study date 02/09/22 File: NECRamonaPro35.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Proposed Condition
5yr 3hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2196.00(Ft.)
Length along longest watercourse measured to centroid = 1098.00 (Ft.)
Length along longest watercourse = 0.416 Mi.
Length along longest watercourse measured to centroid = 0.208 Mi.
Difference in elevation = 7.50(Ft.)
Slope along watercourse = 18.0328 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.082 Hr.
Lag time = 4.92 Min.
25% of lag time = 1.23 Min.
40% of lag time = 1.97 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50              0.82                    35.63

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50              2.04                    88.74

  STORM EVENT (YEAR) =    5.00
  Area Averaged 2-Year Rainfall =    0.819(In)
  Area Averaged 100-Year Rainfall =    2.040(In)

  Point rain (area averaged) =    1.105(In)
  Areal adjustment factor =   99.98 %
  Adjusted average point rain =    1.105(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           69.00          0.900
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  69.0  49.8      0.574     0.900        0.109       1.000
0.109
                                                      Sum (F) =
0.109
  Area averaged mean soil loss (F) (In/Hr) =  0.109
  Minimum soil loss rate ((In/Hr)) =  0.055
  (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       101.653         19.708             8.640
         2   0.167       203.306         48.518            21.270
         3   0.250       304.959         15.390             6.747
         4   0.333       406.613          6.976             3.058
         5   0.417       508.266          3.910             1.714
         6   0.500       609.919          2.525             1.107
         7   0.583       711.572          1.548             0.679
         8   0.667       813.225          1.424             0.624
                                  Sum = 100.000   Sum=      43.840
-----------------------------------------------------------------------

 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	1.30	0.172	(0.109)	0.031	0.141
2	0.17	1.30	0.172	(0.109)	0.031	0.141
3	0.25	1.10	0.146	(0.109)	0.026	0.120
4	0.33	1.50	0.199	(0.109)	0.036	0.163
5	0.42	1.50	0.199	(0.109)	0.036	0.163
6	0.50	1.80	0.239	(0.109)	0.043	0.196
7	0.58	1.50	0.199	(0.109)	0.036	0.163
8	0.67	1.80	0.239	(0.109)	0.043	0.196
9	0.75	1.80	0.239	(0.109)	0.043	0.196
10	0.83	1.50	0.199	(0.109)	0.036	0.163
11	0.92	1.60	0.212	(0.109)	0.038	0.174
12	1.00	1.80	0.239	(0.109)	0.043	0.196
13	1.08	2.20	0.292	(0.109)	0.052	0.239
14	1.17	2.20	0.292	(0.109)	0.052	0.239
15	1.25	2.20	0.292	(0.109)	0.052	0.239
16	1.33	2.00	0.265	(0.109)	0.048	0.217
17	1.42	2.60	0.345	(0.109)	0.062	0.283
18	1.50	2.70	0.358	(0.109)	0.064	0.294
19	1.58	2.40	0.318	(0.109)	0.057	0.261
20	1.67	2.70	0.358	(0.109)	0.064	0.294
21	1.75	3.30	0.437	(0.109)	0.079	0.359
22	1.83	3.10	0.411	(0.109)	0.074	0.337
23	1.92	2.90	0.384	(0.109)	0.069	0.315
24	2.00	3.00	0.398	(0.109)	0.072	0.326
25	2.08	3.10	0.411	(0.109)	0.074	0.337
26	2.17	4.20	0.557	(0.109)	0.100	0.457
27	2.25	5.00	0.663	0.109	(0.119)	0.554
28	2.33	3.50	0.464	(0.109)	0.084	0.380
29	2.42	6.80	0.901	0.109	(0.162)	0.792
30	2.50	7.30	0.968	0.109	(0.174)	0.859
31	2.58	8.20	1.087	0.109	(0.196)	0.978
32	2.67	5.90	0.782	0.109	(0.141)	0.673
33	2.75	2.00	0.265	(0.109)	0.048	0.217
34	2.83	1.80	0.239	(0.109)	0.043	0.196
35	2.92	1.80	0.239	(0.109)	0.043	0.196
36	3.00	0.60	0.080	(0.109)	0.014	0.065
	(Loss Rate Not Used)					
Sum =		100.0			Sum =	11.1

 Flood volume = Effective rainfall 0.93(In)
  times area 43.5(Ac.)/[(In)/(Ft.)] = 3.4(Ac.Ft)
 Total soil loss = 0.18(In)
 Total soil loss = 0.646(Ac.Ft)
 Total rainfall = 1.10(In)
 Flood volume = 146299.1 Cubic Feet
 Total soil loss = 28150.8 Cubic Feet

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  Peak flow rate of this hydrograph = 36.641(CFS)

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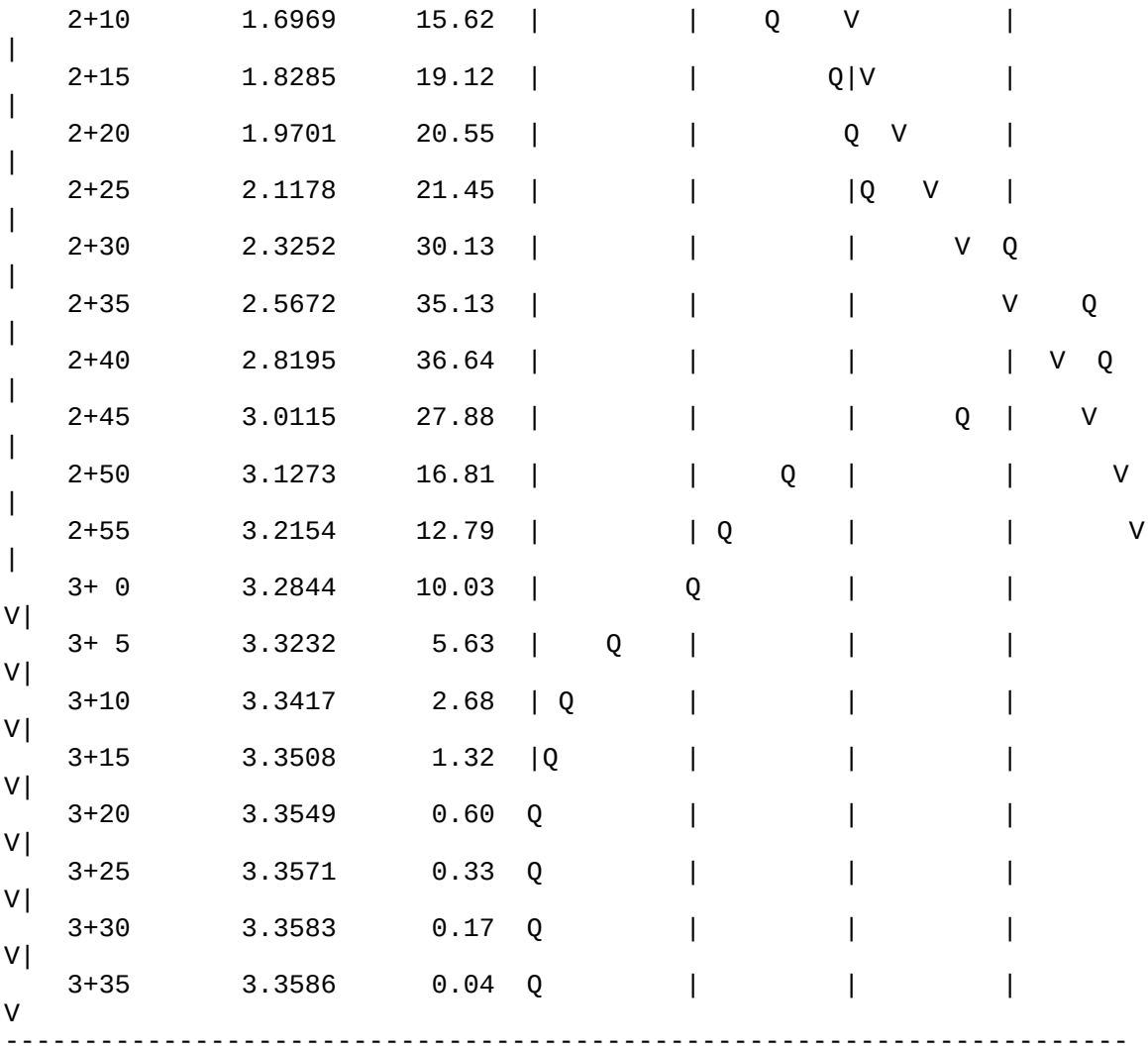
3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 10.0 20.0 30.0 40.0
0+ 5	0.0084	1.22	VQ | | |
0+10	0.0375	4.23	V Q | | |
0+15	0.0719	5.00	V Q | | |
0+20	0.1087	5.34	|V Q | | |
0+25	0.1525	6.36	|V Q | | |
0+30	0.2009	7.03	| V Q | | |
0+35	0.2535	7.63	| V Q | | |
0+40	0.3057	7.58	| V Q | | |
0+45	0.3621	8.19	| V Q | | |
0+50	0.4178	8.10	| V Q | | |
0+55	0.4702	7.60	| V Q | | |
1+ 0	0.5242	7.84	| VQ | | |
1+ 5	0.5840	8.69	| V Q | | |
1+10	0.6511	9.74	| V Q| | |
1+15	0.7207	10.10	| V Q | |
1+20	0.7901	10.08	| VQ | |
1+25	0.8608	10.26	| Q | |
1+30	0.9412	11.67	| |Q | |
1+35	1.0240	12.03	| | Q | |
1+40	1.1059	11.89	| |Q V | |
1+45	1.1957	13.04	| | QV | |
1+50	1.2952	14.44	| | QV | |
1+55	1.3938	14.32	| | Q V | |
2+ 0	1.4907	14.07	| | Q V | |
2+ 5	1.5893	14.31	| | Q V | |


2+10 1.6969 15.62
2+15 1.8285 19.12
2+20 1.9701 20.55
2+25 2.1178 21.45
2+30 2.3252 30.13
2+35 2.5672 35.13
2+40 2.8195 36.64
2+45 3.0115 27.88
2+50 3.1273 16.81
2+55 3.2154 12.79
3+ 0 3.2844 10.03
3+ 5 3.3232 5.63
3+10 3.3417 2.68
3+15 3.3508 1.32
3+20 3.3549 0.60
3+25 3.3571 0.33
3+30 3.3583 0.17
3+35 3.3586 0.04

U n i t H y d r o g r a p h A n a l y s i s

Study date 02/09/22 File: NECRamonaPro65.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Proposed Condition
5yr 6hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2196.00(Ft.)
Length along longest watercourse measured to centroid = 1098.00 (Ft.)
Length along longest watercourse = 0.416 Mi.
Length along longest watercourse measured to centroid = 0.208 Mi.
Difference in elevation = 7.50(Ft.)
Slope along watercourse = 18.0328 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.082 Hr.
Lag time = 4.92 Min.
25% of lag time = 1.23 Min.
40% of lag time = 1.97 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50              1.14                    49.59

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50              2.75                  119.63

  STORM EVENT (YEAR) =    5.00
  Area Averaged 2-Year Rainfall =    1.140(In)
  Area Averaged 100-Year Rainfall =    2.750(In)

  Point rain (area averaged) =    1.517(In)
  Areal adjustment factor =   99.99 %
  Adjusted average point rain =    1.517(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           69.00          0.900
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  69.0  49.8      0.574     0.900        0.109       1.000
0.109
                                                      Sum (F) =
0.109
  Area averaged mean soil loss (F) (In/Hr) =  0.109
  Minimum soil loss rate ((In/Hr)) =  0.055
  (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       101.653        19.708            8.640
         2   0.167       203.306        48.518           21.270
         3   0.250       304.959        15.390            6.747
         4   0.333       406.613         6.976            3.058
         5   0.417       508.266         3.910            1.714
         6   0.500       609.919         2.525            1.107
         7   0.583       711.572         1.548            0.679
         8   0.667       813.225         1.424            0.624
                                 Sum = 100.000   Sum=      43.840
-----------------------------------------------------------------------


 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	0.50	0.091	(0.109)	0.016	0.075
2	0.17	0.60	0.109	(0.109)	0.020	0.090
3	0.25	0.60	0.109	(0.109)	0.020	0.090
4	0.33	0.60	0.109	(0.109)	0.020	0.090
5	0.42	0.60	0.109	(0.109)	0.020	0.090
6	0.50	0.70	0.127	(0.109)	0.023	0.104
7	0.58	0.70	0.127	(0.109)	0.023	0.104
8	0.67	0.70	0.127	(0.109)	0.023	0.104
9	0.75	0.70	0.127	(0.109)	0.023	0.104
10	0.83	0.70	0.127	(0.109)	0.023	0.104
11	0.92	0.70	0.127	(0.109)	0.023	0.104
12	1.00	0.80	0.146	(0.109)	0.026	0.119
13	1.08	0.80	0.146	(0.109)	0.026	0.119
14	1.17	0.80	0.146	(0.109)	0.026	0.119
15	1.25	0.80	0.146	(0.109)	0.026	0.119
16	1.33	0.80	0.146	(0.109)	0.026	0.119
17	1.42	0.80	0.146	(0.109)	0.026	0.119
18	1.50	0.80	0.146	(0.109)	0.026	0.119
19	1.58	0.80	0.146	(0.109)	0.026	0.119
20	1.67	0.80	0.146	(0.109)	0.026	0.119
21	1.75	0.80	0.146	(0.109)	0.026	0.119
22	1.83	0.80	0.146	(0.109)	0.026	0.119
23	1.92	0.80	0.146	(0.109)	0.026	0.119
24	2.00	0.90	0.164	(0.109)	0.029	0.134
25	2.08	0.80	0.146	(0.109)	0.026	0.119
26	2.17	0.90	0.164	(0.109)	0.029	0.134
27	2.25	0.90	0.164	(0.109)	0.029	0.134
28	2.33	0.90	0.164	(0.109)	0.029	0.134
29	2.42	0.90	0.164	(0.109)	0.029	0.134
30	2.50	0.90	0.164	(0.109)	0.029	0.134
31	2.58	0.90	0.164	(0.109)	0.029	0.134
32	2.67	0.90	0.164	(0.109)	0.029	0.134
33	2.75	1.00	0.182	(0.109)	0.033	0.149
34	2.83	1.00	0.182	(0.109)	0.033	0.149
35	2.92	1.00	0.182	(0.109)	0.033	0.149
36	3.00	1.00	0.182	(0.109)	0.033	0.149
37	3.08	1.00	0.182	(0.109)	0.033	0.149
38	3.17	1.10	0.200	(0.109)	0.036	0.164
39	3.25	1.10	0.200	(0.109)	0.036	0.164
40	3.33	1.10	0.200	(0.109)	0.036	0.164
41	3.42	1.20	0.218	(0.109)	0.039	0.179
42	3.50	1.30	0.237	(0.109)	0.043	0.194
43	3.58	1.40	0.255	(0.109)	0.046	0.209
44	3.67	1.40	0.255	(0.109)	0.046	0.209
45	3.75	1.50	0.273	(0.109)	0.049	0.224
46	3.83	1.50	0.273	(0.109)	0.049	0.224
47	3.92	1.60	0.291	(0.109)	0.052	0.239
48	4.00	1.60	0.291	(0.109)	0.052	0.239
49	4.08	1.70	0.309	(0.109)	0.056	0.254
50	4.17	1.80	0.328	(0.109)	0.059	0.269
51	4.25	1.90	0.346	(0.109)	0.062	0.284
52	4.33	2.00	0.364	(0.109)	0.066	0.299
53	4.42	2.10	0.382	(0.109)	0.069	0.313
54	4.50	2.10	0.382	(0.109)	0.069	0.313

```
  55   4.58     2.20      0.400       (  0.109)       0.072        0.328
  56   4.67     2.30      0.419       (  0.109)       0.075        0.343
  57   4.75     2.40      0.437       (  0.109)       0.079        0.358
  58   4.83     2.40      0.437       (  0.109)       0.079        0.358
  59   4.92     2.50      0.455       (  0.109)       0.082        0.373
  60   5.00     2.60      0.473       (  0.109)       0.085        0.388
  61   5.08     3.10      0.564       (  0.109)       0.102        0.463
  62   5.17     3.60      0.655          0.109    (  0.118)       0.546
  63   5.25     3.90      0.710          0.109    (  0.128)       0.601
  64   5.33     4.20      0.765          0.109    (  0.138)       0.655
  65   5.42     4.70      0.856          0.109    (  0.154)       0.746
  66   5.50     5.60      1.019          0.109    (  0.183)       0.910
  67   5.58     1.90      0.346       (  0.109)       0.062        0.284
  68   5.67     0.90      0.164       (  0.109)       0.029        0.134
  69   5.75     0.60      0.109       (  0.109)       0.020        0.090
  70   5.83     0.50      0.091       (  0.109)       0.016        0.075
  71   5.92     0.30      0.055       (  0.109)       0.010        0.045
  72   6.00     0.20      0.036       (  0.109)       0.007        0.030
            (Loss Rate Not Used)
    Sum =     100.0                                    Sum =    15.1
     Flood volume = Effective rainfall      1.26(In)
      times area      43.5(Ac.)/[(In)/(Ft.)] =       4.6(Ac.Ft)
     Total soil loss =      0.26(In)
     Total soil loss =     0.937(Ac.Ft)
     Total rainfall =      1.52(In)
     Flood volume =      198718.2 Cubic Feet
     Total soil loss =       40803.9 Cubic Feet
     ------------------------------------------------------------------
--
      Peak flow rate of this hydrograph =     31.964(CFS)
     ------------------------------------------------------------------
--
     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                          6 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
     ------------------------------------------------------------------
--
                  Hydrograph in   5   Minute intervals ((CFS))

     ------------------------------------------------------------------
--
  Time(h+m) Volume Ac.Ft   Q(CFS)  0       10.0      20.0      30.0
40.0

-------------------------------------------------------------------------
    0+ 5       0.0044      0.65  Q         |         |         |
|
    0+10       0.0207      2.36  V Q       |         |         |
|
    0+15       0.0426      3.18  V  Q      |         |         |
|
    0+20       0.0668      3.51  V  Q      |         |         |
|
    0+25       0.0922      3.69  V  Q      |         |         |
|
    0+30       0.1192      3.92  |V Q      |         |         |
|
    0+35       0.1489      4.31  |V  Q     |         |         |
|
```

0+40	0.1797	4.47	|V Q |		
0+45	0.2108	4.52	|V Q |		
0+50	0.2421	4.55	| V Q |		
0+55	0.2736	4.56	| V Q |		
1+ 0	0.3059	4.70	| V Q |		
1+ 5	0.3406	5.03	| V Q |		
1+10	0.3759	5.13	| V Q |		
1+15	0.4116	5.18	| V Q |		
1+20	0.4474	5.20	| V Q |		
1+25	0.4833	5.22	| VQ |		
1+30	0.5193	5.23	| VQ |		
1+35	0.5554	5.24	| VQ |		
1+40	0.5915	5.24	| Q |		
1+45	0.6275	5.24	| Q |		
1+50	0.6636	5.24	| Q |		
1+55	0.6997	5.24	| QV |		
2+ 0	0.7367	5.37	| QV |		
2+ 5	0.7749	5.56	| QV |		
2+10	0.8126	5.47	| Q V |		
2+15	0.8520	5.73	| Q V |		
2+20	0.8920	5.81	| Q V |		
2+25	0.9323	5.85	| Q V |		
2+30	0.9727	5.87	| Q V |		
2+35	1.0132	5.88	| Q V |		
2+40	1.0537	5.88	| Q V|		
2+45	1.0952	6.02	| Q V|		
2+50	1.1389	6.34	| Q V|		
2+55	1.1832	6.44	| Q V |		
3+ 0	1.2279	6.49	| Q V |		
3+ 5	1.2727	6.51	| Q |V |		

3+10	1.3186	6.66	Q	V			
3+15	1.3667	6.98	Q	V			
3+20	1.4155	7.09	Q	V			
3+25	1.4656	7.27	Q	V			
3+30	1.5189	7.74	Q	V			
3+35	1.5761	8.31	Q	V			
3+40	1.6366	8.78	Q	V			
3+45	1.6992	9.09	Q	V			
3+50	1.7646	9.50	Q	V			
3+55	1.8319	9.78	Q	V			
4+ 0	1.9020	10.18	Q	V			
4+ 5	1.9740	10.45	Q	V			
4+10	2.0495	10.97	Q	V			
4+15	2.1291	11.55	Q	V			
4+20	2.2129	12.17	Q	V			
4+25	2.3011	12.80	Q	V			
4+30	2.3928	13.32	Q	V			
4+35	2.4868	13.64	Q	V			
4+40	2.5845	14.20	Q	V			
4+45	2.6865	14.81	Q	V			
4+50	2.7919	15.31	Q	V			
4+55	2.8996	15.63	Q	V			
5+ 0	3.0109	16.17	Q	V			
5+ 5	3.1300	17.29	Q	V			
5+10	3.2662	19.78	Q	V			
5+15	3.4220	22.62	Q	V			
5+20	3.5949	25.10	Q	V			
5+25	3.7866	27.83	Q	V			
5+30	4.0067	31.96	Q	V			
5+35	4.2206	31.06	Q	V			

```
    5+40       4.3451     18.08  |          |       Q |          |       V
|
    5+45       4.4215     11.09  |          |Q        |          |       V
|
    5+50       4.4734      7.53  |      Q   |         |          |
V|
    5+55       4.5106      5.40  |    Q     |         |          |
V|
    6+ 0       4.5355      3.62  |  Q       |         |          |
V|
    6+ 5       4.5508      2.23  | Q        |         |          |
V|
    6+10       4.5566      0.83  Q          |         |          |
V|
    6+15       4.5593      0.40  Q          |         |          |
V|
    6+20       4.5607      0.21  Q          |         |          |
V|
    6+25       4.5615      0.11  Q          |         |          |
V|
    6+30       4.5618      0.05  Q          |         |          |
V|
    6+35       4.5619      0.02  Q          |         |          |
V
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Study date 02/09/22 File: NECRamonaPro245.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Proposed Condition
5yr 24hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2196.00(Ft.)
Length along longest watercourse measured to centroid = 1098.00 (Ft.)
Length along longest watercourse = 0.416 Mi.
Length along longest watercourse measured to centroid = 0.208 Mi.
Difference in elevation = 7.50(Ft.)
Slope along watercourse = 18.0328 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.082 Hr.
Lag time = 4.92 Min.
25% of lag time = 1.23 Min.
40% of lag time = 1.97 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]

```
       43.50             1.97                   85.69

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50              5.02                 218.37

  STORM EVENT (YEAR) =    5.00
  Area Averaged 2-Year Rainfall =    1.970(In)
  Area Averaged 100-Year Rainfall =    5.020(In)

  Point rain (area averaged) =    2.684(In)
  Areal adjustment factor =   99.99 %
  Adjusted average point rain =    2.684(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           69.00          0.900
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  69.0  49.8      0.574     0.900        0.109       1.000
0.109
                                                      Sum (F) =
0.109
  Area averaged mean soil loss (F) (In/Hr) =  0.109
  Minimum soil loss rate ((In/Hr)) =  0.055
  (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       101.653         19.708             8.640
         2   0.167       203.306         48.518            21.270
         3   0.250       304.959         15.390             6.747
         4   0.333       406.613          6.976             3.058
         5   0.417       508.266          3.910             1.714
         6   0.500       609.919          2.525             1.107
         7   0.583       711.572          1.548             0.679
         8   0.667       813.225          1.424             0.624
                                  Sum = 100.000   Sum=      43.840
-----------------------------------------------------------------------

 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	0.021	(0.193)	0.004	0.018
2	0.17	0.07	0.021	(0.193)	0.004	0.018
3	0.25	0.07	0.021	(0.192)	0.004	0.018
4	0.33	0.10	0.032	(0.191)	0.006	0.026
5	0.42	0.10	0.032	(0.190)	0.006	0.026
6	0.50	0.10	0.032	(0.190)	0.006	0.026
7	0.58	0.10	0.032	(0.189)	0.006	0.026
8	0.67	0.10	0.032	(0.188)	0.006	0.026
9	0.75	0.10	0.032	(0.187)	0.006	0.026
10	0.83	0.13	0.043	(0.187)	0.008	0.035
11	0.92	0.13	0.043	(0.186)	0.008	0.035
12	1.00	0.13	0.043	(0.185)	0.008	0.035
13	1.08	0.10	0.032	(0.184)	0.006	0.026
14	1.17	0.10	0.032	(0.184)	0.006	0.026
15	1.25	0.10	0.032	(0.183)	0.006	0.026
16	1.33	0.10	0.032	(0.182)	0.006	0.026
17	1.42	0.10	0.032	(0.182)	0.006	0.026
18	1.50	0.10	0.032	(0.181)	0.006	0.026
19	1.58	0.10	0.032	(0.180)	0.006	0.026
20	1.67	0.10	0.032	(0.179)	0.006	0.026
21	1.75	0.10	0.032	(0.179)	0.006	0.026
22	1.83	0.13	0.043	(0.178)	0.008	0.035
23	1.92	0.13	0.043	(0.177)	0.008	0.035
24	2.00	0.13	0.043	(0.176)	0.008	0.035
25	2.08	0.13	0.043	(0.176)	0.008	0.035
26	2.17	0.13	0.043	(0.175)	0.008	0.035
27	2.25	0.13	0.043	(0.174)	0.008	0.035
28	2.33	0.13	0.043	(0.174)	0.008	0.035
29	2.42	0.13	0.043	(0.173)	0.008	0.035
30	2.50	0.13	0.043	(0.172)	0.008	0.035
31	2.58	0.17	0.054	(0.172)	0.010	0.044
32	2.67	0.17	0.054	(0.171)	0.010	0.044
33	2.75	0.17	0.054	(0.170)	0.010	0.044
34	2.83	0.17	0.054	(0.169)	0.010	0.044
35	2.92	0.17	0.054	(0.169)	0.010	0.044
36	3.00	0.17	0.054	(0.168)	0.010	0.044
37	3.08	0.17	0.054	(0.167)	0.010	0.044
38	3.17	0.17	0.054	(0.167)	0.010	0.044
39	3.25	0.17	0.054	(0.166)	0.010	0.044
40	3.33	0.17	0.054	(0.165)	0.010	0.044
41	3.42	0.17	0.054	(0.165)	0.010	0.044
42	3.50	0.17	0.054	(0.164)	0.010	0.044
43	3.58	0.17	0.054	(0.163)	0.010	0.044
44	3.67	0.17	0.054	(0.162)	0.010	0.044
45	3.75	0.17	0.054	(0.162)	0.010	0.044
46	3.83	0.20	0.064	(0.161)	0.012	0.053
47	3.92	0.20	0.064	(0.160)	0.012	0.053
48	4.00	0.20	0.064	(0.160)	0.012	0.053
49	4.08	0.20	0.064	(0.159)	0.012	0.053
50	4.17	0.20	0.064	(0.158)	0.012	0.053
51	4.25	0.20	0.064	(0.158)	0.012	0.053
52	4.33	0.23	0.075	(0.157)	0.014	0.062
53	4.42	0.23	0.075	(0.156)	0.014	0.062
54	4.50	0.23	0.075	(0.156)	0.014	0.062

55	4.58	0.23	0.075	(0.155)	0.014	0.062
56	4.67	0.23	0.075	(0.154)	0.014	0.062
57	4.75	0.23	0.075	(0.154)	0.014	0.062
58	4.83	0.27	0.086	(0.153)	0.015	0.070
59	4.92	0.27	0.086	(0.152)	0.015	0.070
60	5.00	0.27	0.086	(0.152)	0.015	0.070
61	5.08	0.20	0.064	(0.151)	0.012	0.053
62	5.17	0.20	0.064	(0.150)	0.012	0.053
63	5.25	0.20	0.064	(0.150)	0.012	0.053
64	5.33	0.23	0.075	(0.149)	0.014	0.062
65	5.42	0.23	0.075	(0.148)	0.014	0.062
66	5.50	0.23	0.075	(0.148)	0.014	0.062
67	5.58	0.27	0.086	(0.147)	0.015	0.070
68	5.67	0.27	0.086	(0.147)	0.015	0.070
69	5.75	0.27	0.086	(0.146)	0.015	0.070
70	5.83	0.27	0.086	(0.145)	0.015	0.070
71	5.92	0.27	0.086	(0.145)	0.015	0.070
72	6.00	0.27	0.086	(0.144)	0.015	0.070
73	6.08	0.30	0.097	(0.143)	0.017	0.079
74	6.17	0.30	0.097	(0.143)	0.017	0.079
75	6.25	0.30	0.097	(0.142)	0.017	0.079
76	6.33	0.30	0.097	(0.141)	0.017	0.079
77	6.42	0.30	0.097	(0.141)	0.017	0.079
78	6.50	0.30	0.097	(0.140)	0.017	0.079
79	6.58	0.33	0.107	(0.140)	0.019	0.088
80	6.67	0.33	0.107	(0.139)	0.019	0.088
81	6.75	0.33	0.107	(0.138)	0.019	0.088
82	6.83	0.33	0.107	(0.138)	0.019	0.088
83	6.92	0.33	0.107	(0.137)	0.019	0.088
84	7.00	0.33	0.107	(0.136)	0.019	0.088
85	7.08	0.33	0.107	(0.136)	0.019	0.088
86	7.17	0.33	0.107	(0.135)	0.019	0.088
87	7.25	0.33	0.107	(0.135)	0.019	0.088
88	7.33	0.37	0.118	(0.134)	0.021	0.097
89	7.42	0.37	0.118	(0.133)	0.021	0.097
90	7.50	0.37	0.118	(0.133)	0.021	0.097
91	7.58	0.40	0.129	(0.132)	0.023	0.106
92	7.67	0.40	0.129	(0.131)	0.023	0.106
93	7.75	0.40	0.129	(0.131)	0.023	0.106
94	7.83	0.43	0.140	(0.130)	0.025	0.114
95	7.92	0.43	0.140	(0.130)	0.025	0.114
96	8.00	0.43	0.140	(0.129)	0.025	0.114
97	8.08	0.50	0.161	(0.128)	0.029	0.132
98	8.17	0.50	0.161	(0.128)	0.029	0.132
99	8.25	0.50	0.161	(0.127)	0.029	0.132
100	8.33	0.50	0.161	(0.127)	0.029	0.132
101	8.42	0.50	0.161	(0.126)	0.029	0.132
102	8.50	0.50	0.161	(0.125)	0.029	0.132
103	8.58	0.53	0.172	(0.125)	0.031	0.141
104	8.67	0.53	0.172	(0.124)	0.031	0.141
105	8.75	0.53	0.172	(0.124)	0.031	0.141
106	8.83	0.57	0.183	(0.123)	0.033	0.150
107	8.92	0.57	0.183	(0.123)	0.033	0.150
108	9.00	0.57	0.183	(0.122)	0.033	0.150
109	9.08	0.63	0.204	(0.121)	0.037	0.167
110	9.17	0.63	0.204	(0.121)	0.037	0.167
111	9.25	0.63	0.204	(0.120)	0.037	0.167
112	9.33	0.67	0.215	(0.120)	0.039	0.176
113	9.42	0.67	0.215	(0.119)	0.039	0.176
114	9.50	0.67	0.215	(0.119)	0.039	0.176

115	9.58	0.70	0.225	(0.118)	0.041	0.185
116	9.67	0.70	0.225	(0.117)	0.041	0.185
117	9.75	0.70	0.225	(0.117)	0.041	0.185
118	9.83	0.73	0.236	(0.116)	0.043	0.194
119	9.92	0.73	0.236	(0.116)	0.043	0.194
120	10.00	0.73	0.236	(0.115)	0.043	0.194
121	10.08	0.50	0.161	(0.115)	0.029	0.132
122	10.17	0.50	0.161	(0.114)	0.029	0.132
123	10.25	0.50	0.161	(0.113)	0.029	0.132
124	10.33	0.50	0.161	(0.113)	0.029	0.132
125	10.42	0.50	0.161	(0.112)	0.029	0.132
126	10.50	0.50	0.161	(0.112)	0.029	0.132
127	10.58	0.67	0.215	(0.111)	0.039	0.176
128	10.67	0.67	0.215	(0.111)	0.039	0.176
129	10.75	0.67	0.215	(0.110)	0.039	0.176
130	10.83	0.67	0.215	(0.110)	0.039	0.176
131	10.92	0.67	0.215	(0.109)	0.039	0.176
132	11.00	0.67	0.215	(0.109)	0.039	0.176
133	11.08	0.63	0.204	(0.108)	0.037	0.167
134	11.17	0.63	0.204	(0.108)	0.037	0.167
135	11.25	0.63	0.204	(0.107)	0.037	0.167
136	11.33	0.63	0.204	(0.106)	0.037	0.167
137	11.42	0.63	0.204	(0.106)	0.037	0.167
138	11.50	0.63	0.204	(0.105)	0.037	0.167
139	11.58	0.57	0.183	(0.105)	0.033	0.150
140	11.67	0.57	0.183	(0.104)	0.033	0.150
141	11.75	0.57	0.183	(0.104)	0.033	0.150
142	11.83	0.60	0.193	(0.103)	0.035	0.158
143	11.92	0.60	0.193	(0.103)	0.035	0.158
144	12.00	0.60	0.193	(0.102)	0.035	0.158
145	12.08	0.83	0.268	(0.102)	0.048	0.220
146	12.17	0.83	0.268	(0.101)	0.048	0.220
147	12.25	0.83	0.268	(0.101)	0.048	0.220
148	12.33	0.87	0.279	(0.100)	0.050	0.229
149	12.42	0.87	0.279	(0.100)	0.050	0.229
150	12.50	0.87	0.279	(0.099)	0.050	0.229
151	12.58	0.93	0.301	(0.099)	0.054	0.247
152	12.67	0.93	0.301	(0.098)	0.054	0.247
153	12.75	0.93	0.301	(0.098)	0.054	0.247
154	12.83	0.97	0.311	(0.097)	0.056	0.255
155	12.92	0.97	0.311	(0.097)	0.056	0.255
156	13.00	0.97	0.311	(0.096)	0.056	0.255
157	13.08	1.13	0.365	(0.096)	0.066	0.299
158	13.17	1.13	0.365	(0.095)	0.066	0.299
159	13.25	1.13	0.365	(0.095)	0.066	0.299
160	13.33	1.13	0.365	(0.094)	0.066	0.299
161	13.42	1.13	0.365	(0.094)	0.066	0.299
162	13.50	1.13	0.365	(0.093)	0.066	0.299
163	13.58	0.77	0.247	(0.093)	0.044	0.202
164	13.67	0.77	0.247	(0.092)	0.044	0.202
165	13.75	0.77	0.247	(0.092)	0.044	0.202
166	13.83	0.77	0.247	(0.092)	0.044	0.202
167	13.92	0.77	0.247	(0.091)	0.044	0.202
168	14.00	0.77	0.247	(0.091)	0.044	0.202
169	14.08	0.90	0.290	(0.090)	0.052	0.238
170	14.17	0.90	0.290	(0.090)	0.052	0.238
171	14.25	0.90	0.290	(0.089)	0.052	0.238
172	14.33	0.87	0.279	(0.089)	0.050	0.229
173	14.42	0.87	0.279	(0.088)	0.050	0.229
174	14.50	0.87	0.279	(0.088)	0.050	0.229

175	14.58	0.87	0.279	(0.087)	0.050	0.229
176	14.67	0.87	0.279	(0.087)	0.050	0.229
177	14.75	0.87	0.279	(0.086)	0.050	0.229
178	14.83	0.83	0.268	(0.086)	0.048	0.220
179	14.92	0.83	0.268	(0.086)	0.048	0.220
180	15.00	0.83	0.268	(0.085)	0.048	0.220
181	15.08	0.80	0.258	(0.085)	0.046	0.211
182	15.17	0.80	0.258	(0.084)	0.046	0.211
183	15.25	0.80	0.258	(0.084)	0.046	0.211
184	15.33	0.77	0.247	(0.083)	0.044	0.202
185	15.42	0.77	0.247	(0.083)	0.044	0.202
186	15.50	0.77	0.247	(0.083)	0.044	0.202
187	15.58	0.63	0.204	(0.082)	0.037	0.167
188	15.67	0.63	0.204	(0.082)	0.037	0.167
189	15.75	0.63	0.204	(0.081)	0.037	0.167
190	15.83	0.63	0.204	(0.081)	0.037	0.167
191	15.92	0.63	0.204	(0.080)	0.037	0.167
192	16.00	0.63	0.204	(0.080)	0.037	0.167
193	16.08	0.13	0.043	(0.080)	0.008	0.035
194	16.17	0.13	0.043	(0.079)	0.008	0.035
195	16.25	0.13	0.043	(0.079)	0.008	0.035
196	16.33	0.13	0.043	(0.078)	0.008	0.035
197	16.42	0.13	0.043	(0.078)	0.008	0.035
198	16.50	0.13	0.043	(0.078)	0.008	0.035
199	16.58	0.10	0.032	(0.077)	0.006	0.026
200	16.67	0.10	0.032	(0.077)	0.006	0.026
201	16.75	0.10	0.032	(0.076)	0.006	0.026
202	16.83	0.10	0.032	(0.076)	0.006	0.026
203	16.92	0.10	0.032	(0.076)	0.006	0.026
204	17.00	0.10	0.032	(0.075)	0.006	0.026
205	17.08	0.17	0.054	(0.075)	0.010	0.044
206	17.17	0.17	0.054	(0.075)	0.010	0.044
207	17.25	0.17	0.054	(0.074)	0.010	0.044
208	17.33	0.17	0.054	(0.074)	0.010	0.044
209	17.42	0.17	0.054	(0.073)	0.010	0.044
210	17.50	0.17	0.054	(0.073)	0.010	0.044
211	17.58	0.17	0.054	(0.073)	0.010	0.044
212	17.67	0.17	0.054	(0.072)	0.010	0.044
213	17.75	0.17	0.054	(0.072)	0.010	0.044
214	17.83	0.13	0.043	(0.072)	0.008	0.035
215	17.92	0.13	0.043	(0.071)	0.008	0.035
216	18.00	0.13	0.043	(0.071)	0.008	0.035
217	18.08	0.13	0.043	(0.071)	0.008	0.035
218	18.17	0.13	0.043	(0.070)	0.008	0.035
219	18.25	0.13	0.043	(0.070)	0.008	0.035
220	18.33	0.13	0.043	(0.070)	0.008	0.035
221	18.42	0.13	0.043	(0.069)	0.008	0.035
222	18.50	0.13	0.043	(0.069)	0.008	0.035
223	18.58	0.10	0.032	(0.069)	0.006	0.026
224	18.67	0.10	0.032	(0.068)	0.006	0.026
225	18.75	0.10	0.032	(0.068)	0.006	0.026
226	18.83	0.07	0.021	(0.068)	0.004	0.018
227	18.92	0.07	0.021	(0.067)	0.004	0.018
228	19.00	0.07	0.021	(0.067)	0.004	0.018
229	19.08	0.10	0.032	(0.067)	0.006	0.026
230	19.17	0.10	0.032	(0.066)	0.006	0.026
231	19.25	0.10	0.032	(0.066)	0.006	0.026
232	19.33	0.13	0.043	(0.066)	0.008	0.035
233	19.42	0.13	0.043	(0.065)	0.008	0.035
234	19.50	0.13	0.043	(0.065)	0.008	0.035

235	19.58	0.10	0.032	(0.065)	0.006	0.026
236	19.67	0.10	0.032	(0.064)	0.006	0.026
237	19.75	0.10	0.032	(0.064)	0.006	0.026
238	19.83	0.07	0.021	(0.064)	0.004	0.018
239	19.92	0.07	0.021	(0.064)	0.004	0.018
240	20.00	0.07	0.021	(0.063)	0.004	0.018
241	20.08	0.10	0.032	(0.063)	0.006	0.026
242	20.17	0.10	0.032	(0.063)	0.006	0.026
243	20.25	0.10	0.032	(0.062)	0.006	0.026
244	20.33	0.10	0.032	(0.062)	0.006	0.026
245	20.42	0.10	0.032	(0.062)	0.006	0.026
246	20.50	0.10	0.032	(0.062)	0.006	0.026
247	20.58	0.10	0.032	(0.061)	0.006	0.026
248	20.67	0.10	0.032	(0.061)	0.006	0.026
249	20.75	0.10	0.032	(0.061)	0.006	0.026
250	20.83	0.07	0.021	(0.061)	0.004	0.018
251	20.92	0.07	0.021	(0.060)	0.004	0.018
252	21.00	0.07	0.021	(0.060)	0.004	0.018
253	21.08	0.10	0.032	(0.060)	0.006	0.026
254	21.17	0.10	0.032	(0.060)	0.006	0.026
255	21.25	0.10	0.032	(0.059)	0.006	0.026
256	21.33	0.07	0.021	(0.059)	0.004	0.018
257	21.42	0.07	0.021	(0.059)	0.004	0.018
258	21.50	0.07	0.021	(0.059)	0.004	0.018
259	21.58	0.10	0.032	(0.059)	0.006	0.026
260	21.67	0.10	0.032	(0.058)	0.006	0.026
261	21.75	0.10	0.032	(0.058)	0.006	0.026
262	21.83	0.07	0.021	(0.058)	0.004	0.018
263	21.92	0.07	0.021	(0.058)	0.004	0.018
264	22.00	0.07	0.021	(0.058)	0.004	0.018
265	22.08	0.10	0.032	(0.057)	0.006	0.026
266	22.17	0.10	0.032	(0.057)	0.006	0.026
267	22.25	0.10	0.032	(0.057)	0.006	0.026
268	22.33	0.07	0.021	(0.057)	0.004	0.018
269	22.42	0.07	0.021	(0.057)	0.004	0.018
270	22.50	0.07	0.021	(0.057)	0.004	0.018
271	22.58	0.07	0.021	(0.056)	0.004	0.018
272	22.67	0.07	0.021	(0.056)	0.004	0.018
273	22.75	0.07	0.021	(0.056)	0.004	0.018
274	22.83	0.07	0.021	(0.056)	0.004	0.018
275	22.92	0.07	0.021	(0.056)	0.004	0.018
276	23.00	0.07	0.021	(0.056)	0.004	0.018
277	23.08	0.07	0.021	(0.055)	0.004	0.018
278	23.17	0.07	0.021	(0.055)	0.004	0.018
279	23.25	0.07	0.021	(0.055)	0.004	0.018
280	23.33	0.07	0.021	(0.055)	0.004	0.018
281	23.42	0.07	0.021	(0.055)	0.004	0.018
282	23.50	0.07	0.021	(0.055)	0.004	0.018
283	23.58	0.07	0.021	(0.055)	0.004	0.018
284	23.67	0.07	0.021	(0.055)	0.004	0.018
285	23.75	0.07	0.021	(0.055)	0.004	0.018
286	23.83	0.07	0.021	(0.055)	0.004	0.018
287	23.92	0.07	0.021	(0.055)	0.004	0.018
288	24.00	0.07	0.021	(0.055)	0.004	0.018

(Loss Rate Not Used)

Sum = 100.0 Sum = 26.4

Flood volume = Effective rainfall 2.20(In)
times area 43.5(Ac.)/[(In)/(Ft.)] = 8.0(Ac.Ft)
Total soil loss = 0.48(In)
Total soil loss = 1.751(Ac.Ft)

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      Total rainfall =      2.68(In)
      Flood volume =      347550.1 Cubic Feet
      Total soil loss =       76291.5 Cubic Feet
      ---------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =     13.072(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        5.0      10.0      15.0
20.0

-------------------------------------------------------------------------
    0+ 5       0.0010      0.15  Q         |         |         |
|
    0+10       0.0047      0.53  VQ        |         |         |
|
    0+15       0.0091      0.65  VQ        |         |         |
|
    0+20       0.0145      0.78  VQ        |         |         |
|
    0+25       0.0213      0.99  VQ        |         |         |
|
    0+30       0.0287      1.07  V Q       |         |         |
|
    0+35       0.0363      1.11  V Q       |         |         |
|
    0+40       0.0442      1.14  V Q       |         |         |
|
    0+45       0.0521      1.15  V Q       |         |         |
|
    0+50       0.0605      1.23  V Q       |         |         |
|
    0+55       0.0703      1.42  V Q       |         |         |
|
    1+ 0       0.0805      1.48  V Q       |         |         |
|
    1+ 5       0.0904      1.43  V Q       |         |         |
|
    1+10       0.0991      1.26  V Q       |         |         |
|
    1+15       0.1074      1.21  V Q       |         |         |
|
    1+20       0.1156      1.19  V Q       |         |         |
|
    1+25       0.1237      1.18  V Q       |         |         |
|
    1+30       0.1318      1.17  V Q       |         |         |
|
    1+35       0.1398      1.16  V Q       |         |         |
|
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1+40	0.1478	1.16	V Q	|	|	|
1+45	0.1558	1.16	V Q	|	|	|
1+50	0.1643	1.23	V Q	|	|	|
1+55	0.1741	1.42	V Q	|	|	|
2+ 0	0.1843	1.48	V Q	|	|	|
2+ 5	0.1946	1.51	V Q	|	|	|
2+10	0.2051	1.52	|V Q	|	|	|
2+15	0.2157	1.53	|V Q	|	|	|
2+20	0.2263	1.54	|V Q	|	|	|
2+25	0.2369	1.54	|V Q	|	|	|
2+30	0.2476	1.54	|V Q	|	|	|
2+35	0.2587	1.62	|V Q	|	|	|
2+40	0.2712	1.81	|V Q	|	|	|
2+45	0.2841	1.87	|V Q	|	|	|
2+50	0.2971	1.89	|V Q	|	|	|
2+55	0.3103	1.91	|V Q	|	|	|
3+ 0	0.3235	1.92	|V Q	|	|	|
3+ 5	0.3367	1.93	|V Q	|	|	|
3+10	0.3500	1.93	|V Q	|	|	|
3+15	0.3633	1.93	|V Q	|	|	|
3+20	0.3766	1.93	|V Q	|	|	|
3+25	0.3899	1.93	|V Q	|	|	|
3+30	0.4032	1.93	| VQ	|	|	|
3+35	0.4165	1.93	| VQ	|	|	|
3+40	0.4298	1.93	| VQ	|	|	|
3+45	0.4431	1.93	| VQ	|	|	|
3+50	0.4569	2.01	| V Q	|	|	|
3+55	0.4720	2.19	| V Q	|	|	|
4+ 0	0.4876	2.25	| V Q	|	|	|
4+ 5	0.5033	2.28	| V Q	|	|	|

4+10	0.5191	2.30	V Q			
4+15	0.5350	2.31	V Q			
4+20	0.5514	2.39	V Q			
4+25	0.5692	2.58	V Q			
4+30	0.5874	2.64	V Q			
4+35	0.6057	2.67	V Q			
4+40	0.6242	2.68	V Q			
4+45	0.6427	2.69	V Q			
4+50	0.6618	2.77	V Q			
4+55	0.6823	2.97	V Q			
5+ 0	0.7031	3.03	V Q			
5+ 5	0.7231	2.90	V Q			
5+10	0.7406	2.54	V Q			
5+15	0.7573	2.43	VQ			
5+20	0.7743	2.46	VQ			
5+25	0.7924	2.62	V Q			
5+30	0.8107	2.66	VQ			
5+35	0.8297	2.75	VQ			
5+40	0.8499	2.95	VQ			
5+45	0.8707	3.01	V Q			
5+50	0.8917	3.05	V Q			
5+55	0.9128	3.07	V Q			
6+ 0	0.9340	3.08	V Q			
6+ 5	0.9558	3.16	V Q			
6+10	0.9789	3.35	V Q			
6+15	1.0024	3.41	VQ			
6+20	1.0261	3.44	VQ			
6+25	1.0498	3.45	VQ			
6+30	1.0737	3.46	VQ			
6+35	1.0981	3.55	V Q			

6+40	1.1239	3.74	V Q			
6+45	1.1500	3.80	V Q			
6+50	1.1764	3.83	V Q			
6+55	1.2028	3.84	VQ			
7+ 0	1.2293	3.85	VQ			
7+ 5	1.2559	3.86	VQ			
7+10	1.2825	3.86	VQ			
7+15	1.3091	3.86	VQ			
7+20	1.3362	3.94	VQ			
7+25	1.3646	4.13	V Q			
7+30	1.3934	4.18	V Q			
7+35	1.4230	4.29	VQ			
7+40	1.4539	4.49	VQ			
7+45	1.4853	4.56	V Q			
7+50	1.5174	4.67	V Q			
7+55	1.5510	4.88	V Q			
8+ 0	1.5851	4.95	V Q			
8+ 5	1.6204	5.13	V Q			
8+10	1.6585	5.53	V Q			
8+15	1.6974	5.65	V Q			
8+20	1.7368	5.71	V Q			
8+25	1.7764	5.75	V Q			
8+30	1.8161	5.77	VQ			
8+35	1.8565	5.86	VQ			
8+40	1.8982	6.06	V Q			
8+45	1.9403	6.12	V Q			
8+50	1.9831	6.22	V Q			
8+55	2.0273	6.42	V Q			
9+ 0	2.0720	6.49	V Q			
9+ 5	2.1180	6.68	V Q			

9+10	2.1667	7.07		V Q	
9+15	2.2163	7.20		V Q	
9+20	2.2668	7.34		V Q	
9+25	2.3188	7.56		V Q	
9+30	2.3714	7.64		V Q	
9+35	2.4248	7.75		V Q	
9+40	2.4797	7.97		V Q	
9+45	2.5350	8.03		V Q	
9+50	2.5911	8.14		V Q	
9+55	2.6486	8.35		V Q	
10+ 0	2.7066	8.42		V Q	
10+ 5	2.7612	7.92		V Q	
10+10	2.8068	6.63		QV	
10+15	2.8497	6.22		Q V	
10+20	2.8913	6.04		Q V	
10+25	2.9322	5.94		Q V	
10+30	2.9727	5.87		Q V	
10+35	3.0155	6.21		Q V	
10+40	3.0644	7.11		QV	
10+45	3.1154	7.41		QV	
10+50	3.1674	7.54		Q	
10+55	3.2198	7.62		QV	
11+ 0	3.2726	7.67		QV	
11+ 5	3.3251	7.62		QV	
11+10	3.3765	7.46		Q V	
11+15	3.4275	7.40		Q V	
11+20	3.4782	7.37		Q V	
11+25	3.5289	7.36		Q V	
11+30	3.5795	7.35		Q V	
11+35	3.6290	7.19		Q V	

11+40	3.6759	6.81		Q	V	
11+45	3.7220	6.69		Q	V	
11+50	3.7683	6.71		Q	V	
11+55	3.8156	6.87		Q	V	
12+ 0	3.8632	6.91		Q	V	
12+ 5	3.9145	7.46		Q	V	
12+10	3.9750	8.77		Q	V	
12+15	4.0383	9.20		Q	V	
12+20	4.1036	9.47		Q	V	
12+25	4.1708	9.77		QV		
12+30	4.2390	9.90		Q	V	
12+35	4.3087	10.12		QV		
12+40	4.3813	10.55		Q		
12+45	4.4548	10.67		QV		
12+50	4.5293	10.81		QV		
12+55	4.6053	11.03		QV		
13+ 0	4.6818	11.11		QV		
13+ 5	4.7612	11.53		Q		
13+10	4.8473	12.49		Q		
13+15	4.9354	12.80		VQ		
13+20	5.0246	12.94		Q		
13+25	5.1143	13.02		VQ		
13+30	5.2043	13.07		Q		
13+35	5.2888	12.27		Q	V	
13+40	5.3592	10.23		Q	V	
13+45	5.4252	9.58		Q	V	
13+50	5.4891	9.28		Q	V	
13+55	5.5519	9.12		Q	V	
14+ 0	5.6139	9.01		Q	V	
14+ 5	5.6776	9.25		Q	V	

14+10	5.7461	9.94				Q		V		
14+15	5.8161	10.17				Q		V		
14+20	5.8864	10.21				Q		V		
14+25	5.9558	10.08				Q		V		
14+30	6.0251	10.06				Q		V		
14+35	6.0943	10.05				Q		V		
14+40	6.1636	10.06				Q		V		
14+45	6.2328	10.05				Q			V	
14+50	6.3015	9.97				Q			V	
14+55	6.3688	9.78				Q			V	
15+ 0	6.4358	9.72				Q			V	
15+ 5	6.5020	9.61				Q			V	
15+10	6.5668	9.41				Q			V	
15+15	6.6311	9.34				Q			V	
15+20	6.6947	9.23				Q			V	
15+25	6.7569	9.03				Q			V	
15+30	6.8186	8.96				Q			V	
15+35	6.8779	8.62				Q			V	
15+40	6.9320	7.85			Q				V	
15+45	6.9844	7.60			Q				V	
15+50	7.0359	7.49			Q				V	
15+55	7.0870	7.42			Q				V	
16+ 0	7.1379	7.38			Q				V	
16+ 5	7.1807	6.22		Q					V	
16+10	7.2040	3.39		Q					V	
16+15	7.2212	2.49		Q					V	
16+20	7.2356	2.09		Q					V	
16+25	7.2484	1.86	Q						V	
16+30	7.2602	1.72	Q						V	
16+35	7.2709	1.55	Q						V	

16+40	7.2798	1.28	Q				V
16+45	7.2882	1.22	Q				V
16+50	7.2964	1.19	Q				V
16+55	7.3045	1.18	Q				V
17+ 0	7.3126	1.17	Q				V
17+ 5	7.3216	1.32	Q				V
17+10	7.3333	1.69	Q				V
17+15	7.3457	1.80	Q				V
17+20	7.3585	1.86	Q				V
17+25	7.3715	1.89	Q				V
17+30	7.3846	1.91	Q				V
17+35	7.3978	1.92	Q				V
17+40	7.4111	1.93	Q				V
17+45	7.4244	1.93	Q				V
17+50	7.4372	1.85	Q				V
17+55	7.4487	1.67	Q				V
18+ 0	7.4598	1.61	Q				V
18+ 5	7.4707	1.58	Q				V
18+10	7.4814	1.57	Q				V
18+15	7.4922	1.56	Q				V
18+20	7.5028	1.55	Q				V
18+25	7.5135	1.54	Q				V
18+30	7.5241	1.54	Q				V
18+35	7.5342	1.47	Q				V
18+40	7.5430	1.28	Q				V
18+45	7.5515	1.22	Q				V
18+50	7.5592	1.12	Q				V
18+55	7.5655	0.92	Q				V
19+ 0	7.5713	0.85	Q				V
19+ 5	7.5774	0.89	Q				V

19+10	7.5847	1.06	| Q	|	|	|	V |
19+15	7.5923	1.11	| Q	|	|	|	V |
19+20	7.6006	1.20	| Q	|	|	|	V |
19+25	7.6103	1.40	| Q	|	|	|	V |
19+30	7.6204	1.47	| Q	|	|	|	V |
19+35	7.6302	1.43	| Q	|	|	|	V |
19+40	7.6389	1.26	| Q	|	|	|	V |
19+45	7.6472	1.21	| Q	|	|	|	V |
19+50	7.6549	1.11	| Q	|	|	|	V |
19+55	7.6612	0.92	|Q	|	|	|	V |
20+ 0	7.6671	0.85	|Q	|	|	|	V |
20+ 5	7.6732	0.89	|Q	|	|	|	V |
20+10	7.6805	1.06	| Q	|	|	|	V |
20+15	7.6881	1.11	| Q	|	|	|	V |
20+20	7.6959	1.13	| Q	|	|	|	V |
20+25	7.7037	1.14	| Q	|	|	|	V |
20+30	7.7116	1.15	| Q	|	|	|	V |
20+35	7.7195	1.15	| Q	|	|	|	V |
20+40	7.7275	1.16	| Q	|	|	|	V |
20+45	7.7355	1.16	| Q	|	|	|	V |
20+50	7.7429	1.08	| Q	|	|	|	V |
20+55	7.7491	0.90	|Q	|	|	|	V |
21+ 0	7.7549	0.84	|Q	|	|	|	V |
21+ 5	7.7610	0.88	|Q	|	|	|	V |
21+10	7.7682	1.06	| Q	|	|	|	V |
21+15	7.7759	1.11	| Q	|	|	|	V |
21+20	7.7831	1.05	| Q	|	|	|	V |
21+25	7.7891	0.87	|Q	|	|	|	V |
21+30	7.7948	0.82	|Q	|	|	|	V |
21+35	7.8008	0.88	|Q	|	|	|	V |

```
   21+40       7.8081      1.06  | Q       |         |         |
V|
   21+45       7.8157      1.11  | Q       |         |         |
V|
   21+50       7.8230      1.05  | Q       |         |         |
V|
   21+55       7.8290      0.87  |Q        |         |         |
V|
   22+ 0       7.8347      0.82  |Q        |         |         |
V|
   22+ 5       7.8407      0.88  |Q        |         |         |
V|
   22+10       7.8480      1.06  | Q       |         |         |
V|
   22+15       7.8556      1.11  | Q       |         |         |
V|
   22+20       7.8629      1.05  | Q       |         |         |
V|
   22+25       7.8689      0.87  |Q        |         |         |
V|
   22+30       7.8746      0.82  |Q        |         |         |
V|
   22+35       7.8801      0.80  |Q        |         |         |
V|
   22+40       7.8856      0.79  |Q        |         |         |
V|
   22+45       7.8910      0.78  |Q        |         |         |
V|
   22+50       7.8963      0.78  |Q        |         |         |
V|
   22+55       7.9016      0.77  |Q        |         |         |
V|
   23+ 0       7.9070      0.77  |Q        |         |         |
V|
   23+ 5       7.9123      0.77  |Q        |         |         |
V|
   23+10       7.9176      0.77  |Q        |         |         |
V|
   23+15       7.9229      0.77  |Q        |         |         |
V|
   23+20       7.9282      0.77  |Q        |         |         |
V|
   23+25       7.9336      0.77  |Q        |         |         |
V|
   23+30       7.9389      0.77  |Q        |         |         |
V|
   23+35       7.9442      0.77  |Q        |         |         |
V|
   23+40       7.9495      0.77  |Q        |         |         |
V|
   23+45       7.9548      0.77  |Q        |         |         |
V|
   23+50       7.9602      0.77  |Q        |         |         |
V|
   23+55       7.9655      0.77  |Q        |         |         |
V|
   24+ 0       7.9708      0.77  |Q        |         |         |
V|
   24+ 5       7.9751      0.62  |Q        |         |         |
V|
```

```
   24+10       7.9768      0.25  Q         |         |         |
V|
   24+15       7.9776      0.13  Q         |         |         |
V|
   24+20       7.9781      0.07  Q         |         |         |
V|
   24+25       7.9784      0.04  Q         |         |         |
V|
   24+30       7.9786      0.02  Q         |         |         |
V|
   24+35       7.9787      0.01  Q         |         |         |
V
-----------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Study date 02/09/22 File: NECRamonaPro110.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Proposed Condition
10yr 1hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2196.00(Ft.)
Length along longest watercourse measured to centroid = 1098.00 (Ft.)
Length along longest watercourse = 0.416 Mi.
Length along longest watercourse measured to centroid = 0.208 Mi.
Difference in elevation = 7.50(Ft.)
Slope along watercourse = 18.0328 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.082 Hr.
Lag time = 4.92 Min.
25% of lag time = 1.23 Min.
40% of lag time = 1.97 Min.
Unit time = 5.00 Min.
Duration of storm = 1 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50             0.47                  20.27

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50             1.35                  58.73

  STORM EVENT (YEAR) =   10.00
  Area Averaged 2-Year Rainfall =    0.466(In)
  Area Averaged 100-Year Rainfall =    1.350(In)

  Point rain (area averaged) =    0.830(In)
  Areal adjustment factor =   99.96 %
  Adjusted average point rain =    0.829(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           69.00          0.900
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  69.0  69.0      0.373     0.900        0.071       1.000
0.071
                                                      Sum (F) =
0.071
  Area averaged mean soil loss (F) (In/Hr) =  0.071
  Minimum soil loss rate ((In/Hr)) =  0.035
  (for 24 hour storm duration)
  Soil low loss rate (decimal) =   0.180
  ------------------------------------------------------------------
---
  Slope of intensity-duration curve for a 1 hour storm =0.5000
  ------------------------------------------------------------------
----

              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        101.653         19.708             8.640
         2   0.167        203.306         48.518            21.270
         3   0.250        304.959         15.390             6.747
         4   0.333        406.613          6.976             3.058
         5   0.417        508.266          3.910             1.714
         6   0.500        609.919          2.525             1.107
         7   0.583        711.572          1.548             0.679
         8   0.667        813.225          1.424             0.624
                                  Sum = 100.000   Sum=      43.840
-----------------------------------------------------------------------
```

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	4.20	0.418	0.071	(0.075)	0.347
2	0.17	4.30	0.428	0.071	(0.077)	0.357
3	0.25	5.00	0.498	0.071	(0.090)	0.427
4	0.33	5.00	0.498	0.071	(0.090)	0.427
5	0.42	5.80	0.577	0.071	(0.104)	0.506
6	0.50	6.50	0.647	0.071	(0.116)	0.576
7	0.58	7.40	0.736	0.071	(0.133)	0.666
8	0.67	8.60	0.856	0.071	(0.154)	0.785
9	0.75	12.30	1.224	0.071	(0.220)	1.153
10	0.83	29.10	2.896	0.071	(0.521)	2.825
11	0.92	6.80	0.677	0.071	(0.122)	0.606
12	1.00	5.00	0.498	0.071	(0.090)	0.427
	(Loss Rate Not Used)					
	Sum =	100.0			Sum =	9.1

Flood volume = Effective rainfall 0.76(In)
times area 43.5(Ac.)/[(In)/(Ft.)] = 2.7(Ac.Ft)
Total soil loss = 0.07(In)
Total soil loss = 0.257(Ac.Ft)
Total rainfall = 0.83(In)
Flood volume = 119775.0 Cubic Feet
Total soil loss = 11184.7 Cubic Feet

Peak flow rate of this hydrograph = 77.941(CFS)

++

1 - 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	20.0	40.0	60.0	80.0
0+ 5	0.0207	3.00	VQ				
0+10	0.0928	10.48	V Q				
0+15	0.1867	13.63	V Q				
0+20	0.2986	16.24	V Q				
0+25	0.4227	18.03	V Q				
0+30	0.5670	20.94	V Q				

```
|
    0+35       0.7330     24.10  |         V Q       |         |
|
    0+40       0.9262     28.05  |         |  VQ     |         |
|
    0+45       1.1657     34.79  |         |     VQ  |         |
|
    0+50       1.5680     58.41  |         |         | V      Q|
|
    0+55       2.1048     77.94  |         |         |         V       Q
|
    1+ 0       2.3939     41.98  |         |         Q         |   V
|
    1+ 5       2.5693     25.48  |         | Q       |         |      V
|
    1+10       2.6507     11.81  |    Q    |         |         |       V
|
    1+15       2.6971      6.75  |  Q      |         |         |
V|
    1+20       2.7250      4.04  | Q       |         |         |
V|
    1+25       2.7432      2.65  |Q        |         |         |
V|
    1+30       2.7478      0.67  Q         |         |         |
V|
    1+35       2.7497      0.27  Q         |         |         |
V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Study date 02/09/22 File: NECRamonaPro610.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Proposed Condition
10yr 6hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2196.00(Ft.)
Length along longest watercourse measured to centroid = 1098.00 (Ft.)
Length along longest watercourse = 0.416 Mi.
Length along longest watercourse measured to centroid = 0.208 Mi.
Difference in elevation = 7.50(Ft.)
Slope along watercourse = 18.0328 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.082 Hr.
Lag time = 4.92 Min.
25% of lag time = 1.23 Min.
40% of lag time = 1.97 Min.
Unit time = 5.00 Min.
Duration of storm = 6 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50             1.14                   49.59

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50              2.75                 119.63

  STORM EVENT (YEAR) =   10.00
  Area Averaged 2-Year Rainfall =    1.140(In)
  Area Averaged 100-Year Rainfall =    2.750(In)

  Point rain (area averaged) =    1.802(In)
  Areal adjustment factor =   99.99 %
  Adjusted average point rain =    1.802(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           69.00          0.900
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  69.0  69.0      0.373     0.900        0.071       1.000
0.071
                                                      Sum (F) =
0.071
  Area averaged mean soil loss (F) (In/Hr) =  0.071
  Minimum soil loss rate ((In/Hr)) =  0.035
  (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       101.653         19.708             8.640
        2   0.167       203.306         48.518            21.270
        3   0.250       304.959         15.390             6.747
        4   0.333       406.613          6.976             3.058
        5   0.417       508.266          3.910             1.714
        6   0.500       609.919          2.525             1.107
        7   0.583       711.572          1.548             0.679
        8   0.667       813.225          1.424             0.624
                                  Sum = 100.000   Sum=      43.840
-----------------------------------------------------------------------

 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	0.50	0.108	(0.071)	0.019	0.089
2	0.17	0.60	0.130	(0.071)	0.023	0.106
3	0.25	0.60	0.130	(0.071)	0.023	0.106
4	0.33	0.60	0.130	(0.071)	0.023	0.106
5	0.42	0.60	0.130	(0.071)	0.023	0.106
6	0.50	0.70	0.151	(0.071)	0.027	0.124
7	0.58	0.70	0.151	(0.071)	0.027	0.124
8	0.67	0.70	0.151	(0.071)	0.027	0.124
9	0.75	0.70	0.151	(0.071)	0.027	0.124
10	0.83	0.70	0.151	(0.071)	0.027	0.124
11	0.92	0.70	0.151	(0.071)	0.027	0.124
12	1.00	0.80	0.173	(0.071)	0.031	0.142
13	1.08	0.80	0.173	(0.071)	0.031	0.142
14	1.17	0.80	0.173	(0.071)	0.031	0.142
15	1.25	0.80	0.173	(0.071)	0.031	0.142
16	1.33	0.80	0.173	(0.071)	0.031	0.142
17	1.42	0.80	0.173	(0.071)	0.031	0.142
18	1.50	0.80	0.173	(0.071)	0.031	0.142
19	1.58	0.80	0.173	(0.071)	0.031	0.142
20	1.67	0.80	0.173	(0.071)	0.031	0.142
21	1.75	0.80	0.173	(0.071)	0.031	0.142
22	1.83	0.80	0.173	(0.071)	0.031	0.142
23	1.92	0.80	0.173	(0.071)	0.031	0.142
24	2.00	0.90	0.195	(0.071)	0.035	0.160
25	2.08	0.80	0.173	(0.071)	0.031	0.142
26	2.17	0.90	0.195	(0.071)	0.035	0.160
27	2.25	0.90	0.195	(0.071)	0.035	0.160
28	2.33	0.90	0.195	(0.071)	0.035	0.160
29	2.42	0.90	0.195	(0.071)	0.035	0.160
30	2.50	0.90	0.195	(0.071)	0.035	0.160
31	2.58	0.90	0.195	(0.071)	0.035	0.160
32	2.67	0.90	0.195	(0.071)	0.035	0.160
33	2.75	1.00	0.216	(0.071)	0.039	0.177
34	2.83	1.00	0.216	(0.071)	0.039	0.177
35	2.92	1.00	0.216	(0.071)	0.039	0.177
36	3.00	1.00	0.216	(0.071)	0.039	0.177
37	3.08	1.00	0.216	(0.071)	0.039	0.177
38	3.17	1.10	0.238	(0.071)	0.043	0.195
39	3.25	1.10	0.238	(0.071)	0.043	0.195
40	3.33	1.10	0.238	(0.071)	0.043	0.195
41	3.42	1.20	0.260	(0.071)	0.047	0.213
42	3.50	1.30	0.281	(0.071)	0.051	0.231
43	3.58	1.40	0.303	(0.071)	0.054	0.248
44	3.67	1.40	0.303	(0.071)	0.054	0.248
45	3.75	1.50	0.324	(0.071)	0.058	0.266
46	3.83	1.50	0.324	(0.071)	0.058	0.266
47	3.92	1.60	0.346	(0.071)	0.062	0.284
48	4.00	1.60	0.346	(0.071)	0.062	0.284
49	4.08	1.70	0.368	(0.071)	0.066	0.301
50	4.17	1.80	0.389	(0.071)	0.070	0.319
51	4.25	1.90	0.411	0.071	(0.074)	0.340
52	4.33	2.00	0.433	0.071	(0.078)	0.362
53	4.42	2.10	0.454	0.071	(0.082)	0.383
54	4.50	2.10	0.454	0.071	(0.082)	0.383

```
  55   4.58     2.20      0.476          0.071    (  0.086)        0.405
  56   4.67     2.30      0.497          0.071    (  0.090)        0.427
  57   4.75     2.40      0.519          0.071    (  0.093)        0.448
  58   4.83     2.40      0.519          0.071    (  0.093)        0.448
  59   4.92     2.50      0.541          0.071    (  0.097)        0.470
  60   5.00     2.60      0.562          0.071    (  0.101)        0.491
  61   5.08     3.10      0.670          0.071    (  0.121)        0.600
  62   5.17     3.60      0.779          0.071    (  0.140)        0.708
  63   5.25     3.90      0.843          0.071    (  0.152)        0.773
  64   5.33     4.20      0.908          0.071    (  0.163)        0.837
  65   5.42     4.70      1.016          0.071    (  0.183)        0.946
  66   5.50     5.60      1.211          0.071    (  0.218)        1.140
  67   5.58     1.90      0.411          0.071    (  0.074)        0.340
  68   5.67     0.90      0.195       (  0.071)       0.035        0.160
  69   5.75     0.60      0.130       (  0.071)       0.023        0.106
  70   5.83     0.50      0.108       (  0.071)       0.019        0.089
  71   5.92     0.30      0.065       (  0.071)       0.012        0.053
  72   6.00     0.20      0.043       (  0.071)       0.008        0.035
             (Loss Rate Not Used)
    Sum =     100.0                                    Sum =    18.5
     Flood volume = Effective rainfall      1.54(In)
      times area      43.5(Ac.)/[(In)/(Ft.)] =       5.6(Ac.Ft)
     Total soil loss =      0.26(In)
     Total soil loss =     0.958(Ac.Ft)
     Total rainfall =      1.80(In)
     Flood volume =      242848.7 Cubic Feet
     Total soil loss =       41711.6 Cubic Feet
     ---------------------------------------------------------------------
--
      Peak flow rate of this hydrograph =     40.501(CFS)
     ---------------------------------------------------------------------
--
     +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++
                         6 - H O U R    S T O R M
                    R u n o f f      H y d r o g r a p h
     ---------------------------------------------------------------------
--
                  Hydrograph in   5   Minute intervals ((CFS))

     ---------------------------------------------------------------------
--
  Time(h+m) Volume Ac.Ft   Q(CFS)  0       12.5      25.0      37.5
50.0

-------------------------------------------------------------------------
    0+ 5       0.0053      0.77  Q         |         |         |
|
    0+10       0.0246      2.81  V Q       |         |         |
|
    0+15       0.0507      3.78  V  Q      |         |         |
|
    0+20       0.0794      4.17  V  Q      |         |         |
|
    0+25       0.1096      4.38  V  Q      |         |         |
|
    0+30       0.1417      4.66  |V Q      |         |         |
|
    0+35       0.1769      5.12  |V  Q     |         |         |
|
```

0+40	0.2135	5.31	|V Q |			
0+45	0.2505	5.37	|V Q |			
0+50	0.2877	5.40	| V Q |			
0+55	0.3250	5.42	| V Q |			
1+ 0	0.3635	5.59	| V Q |			
1+ 5	0.4046	5.98	| V Q |			
1+10	0.4466	6.09	| VQ |			
1+15	0.4890	6.15	| VQ |			
1+20	0.5315	6.18	| VQ |			
1+25	0.5742	6.20	| Q |			
1+30	0.6170	6.21	| Q |			
1+35	0.6598	6.22	| Q |			
1+40	0.7027	6.22	| QV |			
1+45	0.7455	6.22	| QV |			
1+50	0.7884	6.22	| QV |			
1+55	0.8313	6.22	| QV |			
2+ 0	0.8752	6.38	| QV |			
2+ 5	0.9206	6.60	| QV |			
2+10	0.9654	6.50	| QV |			
2+15	1.0122	6.81	| Q V |			
2+20	1.0598	6.90	| Q V |			
2+25	1.1076	6.95	| Q V |			
2+30	1.1556	6.97	| Q V |			
2+35	1.2037	6.99	| Q V |			
2+40	1.2519	6.99	| Q V |			
2+45	1.3011	7.15	| Q V|			
2+50	1.3530	7.53	| Q V|			
2+55	1.4057	7.65	| Q V |			
3+ 0	1.4588	7.70	| Q V |			
3+ 5	1.5120	7.74	| Q V |			

3+10	1.5665	7.91	Q	V			
3+15	1.6236	8.30	Q	V			
3+20	1.6817	8.43	Q	V			
3+25	1.7412	8.64	Q	V			
3+30	1.8045	9.20	Q	V			
3+35	1.8725	9.87	Q	V			
3+40	1.9443	10.43	Q	V			
3+45	2.0187	10.80	Q	V			
3+50	2.0964	11.28	Q	V			
3+55	2.1764	11.62	Q	V			
4+ 0	2.2596	12.09	Q	V			
4+ 5	2.3451	12.42	Q	V			
4+10	2.4349	13.03	Q	V			
4+15	2.5296	13.75	Q	V			
4+20	2.6301	14.59	Q	V			
4+25	2.7366	15.47	Q	V			
4+30	2.8482	16.20	Q	V			
4+35	2.9630	16.67	Q	V			
4+40	3.0833	17.47	Q	V			
4+45	3.2097	18.35	Q	V			
4+50	3.3410	19.07	Q	V			
4+55	3.4756	19.53	Q	V			
5+ 0	3.6155	20.32	Q	V			
5+ 5	3.7666	21.94	Q	V			
5+10	3.9418	25.44	Q	V			
5+15	4.1427	29.16	Q	V			
5+20	4.3647	32.24	Q	V			
5+25	4.6095	35.55	Q	V			
5+30	4.8884	40.50	Q	V			
5+35	5.1568	38.97	Q	V			

```
    5+40       5.3108     22.35  |         |      Q  |         |       V
|
    5+45       5.4046     13.62  |         Q         |         |       V
|
    5+50       5.4679      9.20  |      Q  |         |         |
V|
    5+55       5.5132      6.56  |    Q    |         |         |
V|
    6+ 0       5.5433      4.38  |  Q      |         |         |
V|
    6+ 5       5.5618      2.69  | Q       |         |         |
V|
    6+10       5.5687      0.99  Q         |         |         |
V|
    6+15       5.5719      0.47  Q         |         |         |
V|
    6+20       5.5736      0.25  Q         |         |         |
V|
    6+25       5.5745      0.13  Q         |         |         |
V|
    6+30       5.5749      0.06  Q         |         |         |
V|
    6+35       5.5750      0.02  Q         |         |         |
V|
-------------------------------------------------------------------------
```

U n i t H y d r o g r a p h A n a l y s i s

Study date 02/09/22 File: NECRamonaPro310.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Proposed Condition
10yr 3hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2196.00(Ft.)
Length along longest watercourse measured to centroid = 1098.00 (Ft.)
Length along longest watercourse = 0.416 Mi.
Length along longest watercourse measured to centroid = 0.208 Mi.
Difference in elevation = 7.50(Ft.)
Slope along watercourse = 18.0328 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.082 Hr.
Lag time = 4.92 Min.
25% of lag time = 1.23 Min.
40% of lag time = 1.97 Min.
Unit time = 5.00 Min.
Duration of storm = 3 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

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

```
       43.50              0.82                    35.63

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50              2.04                    88.74

  STORM EVENT (YEAR) =   10.00
  Area Averaged 2-Year Rainfall =    0.819(In)
  Area Averaged 100-Year Rainfall =    2.040(In)

  Point rain (area averaged) =    1.321(In)
  Areal adjustment factor =   99.98 %
  Adjusted average point rain =    1.321(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           69.00          0.900
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  69.0  69.0      0.373     0.900        0.071       1.000
0.071
                                                      Sum (F) =
0.071
  Area averaged mean soil loss (F) (In/Hr) =  0.071
  Minimum soil loss rate ((In/Hr)) =  0.035
  (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        101.653         19.708              8.640
       2   0.167        203.306         48.518             21.270
       3   0.250        304.959         15.390              6.747
       4   0.333        406.613          6.976              3.058
       5   0.417        508.266          3.910              1.714
       6   0.500        609.919          2.525              1.107
       7   0.583        711.572          1.548              0.679
       8   0.667        813.225          1.424              0.624
                                 Sum = 100.000   Sum=      43.840
-----------------------------------------------------------------------

 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	1.30	0.206	(0.071)	0.037	0.169
2	0.17	1.30	0.206	(0.071)	0.037	0.169
3	0.25	1.10	0.174	(0.071)	0.031	0.143
4	0.33	1.50	0.238	(0.071)	0.043	0.195
5	0.42	1.50	0.238	(0.071)	0.043	0.195
6	0.50	1.80	0.285	(0.071)	0.051	0.234
7	0.58	1.50	0.238	(0.071)	0.043	0.195
8	0.67	1.80	0.285	(0.071)	0.051	0.234
9	0.75	1.80	0.285	(0.071)	0.051	0.234
10	0.83	1.50	0.238	(0.071)	0.043	0.195
11	0.92	1.60	0.254	(0.071)	0.046	0.208
12	1.00	1.80	0.285	(0.071)	0.051	0.234
13	1.08	2.20	0.349	(0.071)	0.063	0.286
14	1.17	2.20	0.349	(0.071)	0.063	0.286
15	1.25	2.20	0.349	(0.071)	0.063	0.286
16	1.33	2.00	0.317	(0.071)	0.057	0.260
17	1.42	2.60	0.412	0.071	(0.074)	0.341
18	1.50	2.70	0.428	0.071	(0.077)	0.357
19	1.58	2.40	0.380	(0.071)	0.068	0.312
20	1.67	2.70	0.428	0.071	(0.077)	0.357
21	1.75	3.30	0.523	0.071	(0.094)	0.452
22	1.83	3.10	0.491	0.071	(0.088)	0.421
23	1.92	2.90	0.460	0.071	(0.083)	0.389
24	2.00	3.00	0.476	0.071	(0.086)	0.405
25	2.08	3.10	0.491	0.071	(0.088)	0.421
26	2.17	4.20	0.666	0.071	(0.120)	0.595
27	2.25	5.00	0.793	0.071	(0.143)	0.722
28	2.33	3.50	0.555	0.071	(0.100)	0.484
29	2.42	6.80	1.078	0.071	(0.194)	1.007
30	2.50	7.30	1.157	0.071	(0.208)	1.086
31	2.58	8.20	1.300	0.071	(0.234)	1.229
32	2.67	5.90	0.935	0.071	(0.168)	0.864
33	2.75	2.00	0.317	(0.071)	0.057	0.260
34	2.83	1.80	0.285	(0.071)	0.051	0.234
35	2.92	1.80	0.285	(0.071)	0.051	0.234
36	3.00	0.60	0.095	(0.071)	0.017	0.078
	(Loss Rate Not Used)					
Sum =		100.0				Sum = 13.8

 Flood volume = Effective rainfall 1.15(In)
  times area 43.5(Ac.)/[(In)/(Ft.)] = 4.2(Ac.Ft)
 Total soil loss = 0.17(In)
 Total soil loss = 0.629(Ac.Ft)
 Total rainfall = 1.32(In)
 Flood volume = 181218.9 Cubic Feet
 Total soil loss = 27385.9 Cubic Feet

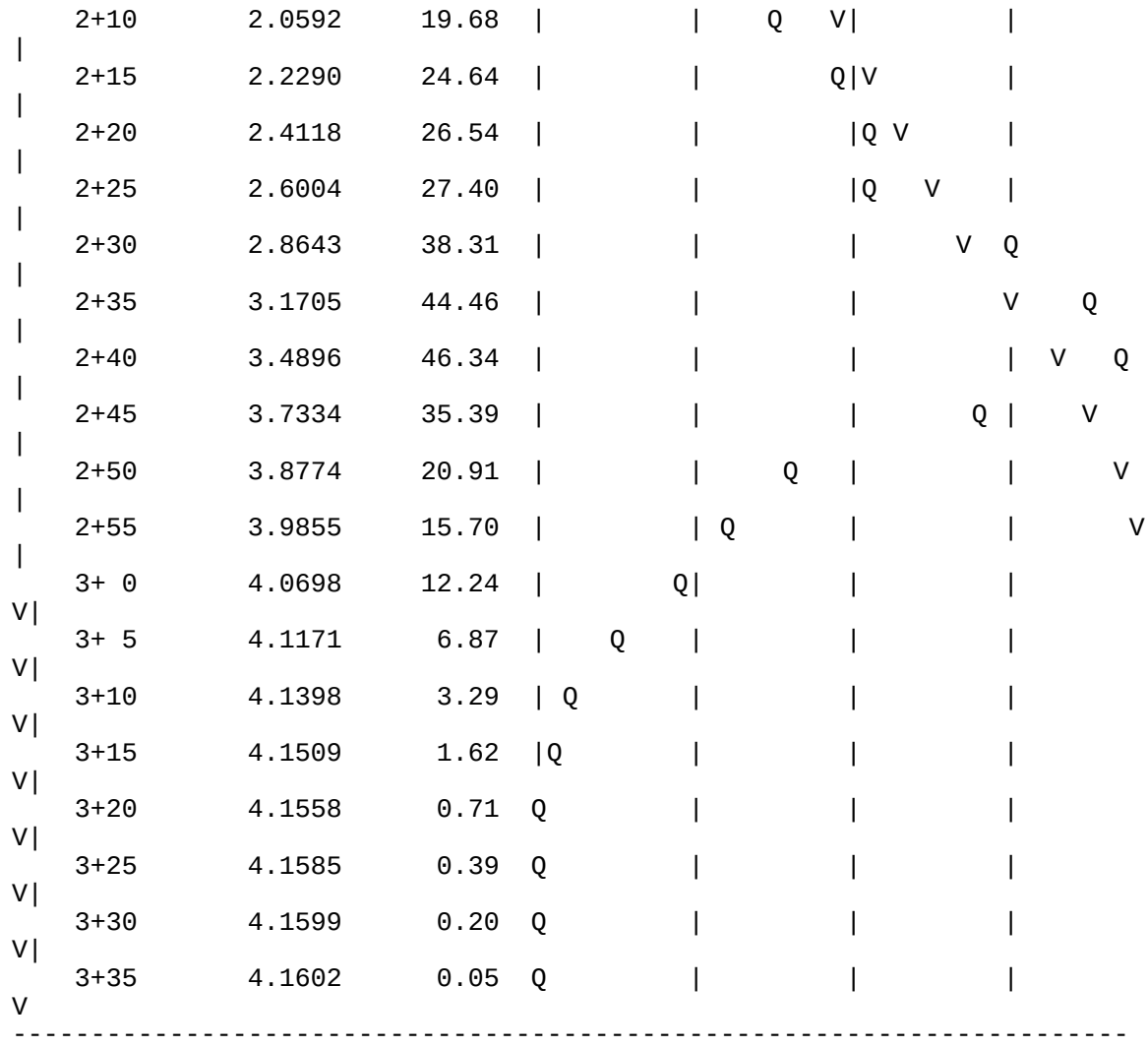
 Peak flow rate of this hydrograph = 46.342(CFS)

 ++

3 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0 12.5 25.0 37.5 50.0
0+ 5	0.0101	1.46	VQ | | |
0+10	0.0449	5.06	V Q | | |
0+15	0.0860	5.97	V Q | | |
0+20	0.1300	6.39	|V Q | | |
0+25	0.1824	7.61	|V Q | | |
0+30	0.2403	8.40	| V Q | | |
0+35	0.3031	9.13	| V Q | | |
0+40	0.3655	9.06	| V Q | | |
0+45	0.4329	9.79	| V Q | | |
0+50	0.4996	9.68	| V Q | | |
0+55	0.5622	9.09	| V Q | | |
1+ 0	0.6268	9.38	| VQ | | |
1+ 5	0.6984	10.39	| V Q | | |
1+10	0.7786	11.65	| V Q| | |
1+15	0.8618	12.08	| VQ| | |
1+20	0.9448	12.05	| Q| | |
1+25	1.0295	12.30	| Q| | |
1+30	1.1265	14.08	| VQ | |
1+35	1.2267	14.55	| |Q | |
1+40	1.3253	14.32	| |QV | |
1+45	1.4352	15.96	| | QV | |
1+50	1.5590	17.97	| | Q | |
1+55	1.6814	17.78	| | Q V | |
2+ 0	1.8014	17.41	| | Q V | |
2+ 5	1.9237	17.77	| | Q V | |


2+10 2.0592 19.68
2+15 2.2290 24.64
2+20 2.4118 26.54
2+25 2.6004 27.40
2+30 2.8643 38.31
2+35 3.1705 44.46
2+40 3.4896 46.34
2+45 3.7334 35.39
2+50 3.8774 20.91
2+55 3.9855 15.70
3+ 0 4.0698 12.24
3+ 5 4.1171 6.87
3+10 4.1398 3.29
3+15 4.1509 1.62
3+20 4.1558 0.71
3+25 4.1585 0.39
3+30 4.1599 0.20
3+35 4.1602 0.05

U n i t H y d r o g r a p h A n a l y s i s

Study date 02/09/22 File: NECRamonaPro2410.out

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

Program License Serial Number 6232

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

English Units used in output format

NEC Ramona & Perris
Proposed Condition
10yr 24hr

Drainage Area = 43.50(Ac.) = 0.068 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 43.50(Ac.) = 0.068 Sq. Mi.
Length along longest watercourse = 2196.00(Ft.)
Length along longest watercourse measured to centroid = 1098.00 (Ft.)
Length along longest watercourse = 0.416 Mi.
Length along longest watercourse measured to centroid = 0.208 Mi.
Difference in elevation = 7.50(Ft.)
Slope along watercourse = 18.0328 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.082 Hr.
Lag time = 4.92 Min.
25% of lag time = 1.23 Min.
40% of lag time = 1.97 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]

```
       43.50              1.97                    85.69

  100 YEAR Area rainfall data:


  Area(Ac.)[1]       Rainfall(In)[2]      Weighting[1*2]
       43.50              5.02                  218.37

  STORM EVENT (YEAR) =   10.00
  Area Averaged 2-Year Rainfall =    1.970(In)
  Area Averaged 100-Year Rainfall =    5.020(In)

  Point rain (area averaged) =    3.225(In)
  Areal adjustment factor =   99.99 %
  Adjusted average point rain =    3.225(In)

  Sub-Area Data:
  Area(Ac.)         Runoff Index   Impervious %
      43.500           69.00          0.900
   Total Area Entered =     43.50(Ac.)


  RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
  AMC2 AMC-2     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)
(In/Hr)
  69.0  69.0      0.373     0.900        0.071       1.000
0.071
                                                      Sum (F) =
0.071
  Area averaged mean soil loss (F) (In/Hr) =  0.071
  Minimum soil loss rate ((In/Hr)) =  0.035
  (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       101.653         19.708             8.640
        2   0.167       203.306         48.518            21.270
        3   0.250       304.959         15.390             6.747
        4   0.333       406.613          6.976             3.058
        5   0.417       508.266          3.910             1.714
        6   0.500       609.919          2.525             1.107
        7   0.583       711.572          1.548             0.679
        8   0.667       813.225          1.424             0.624
                                  Sum = 100.000   Sum=      43.840
-------------------------------------------------------------------


 The following loss rate calculations reflect use of the minimum
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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	0.026	(0.126)	0.005	0.021
2	0.17	0.07	0.026	(0.125)	0.005	0.021
3	0.25	0.07	0.026	(0.125)	0.005	0.021
4	0.33	0.10	0.039	(0.124)	0.007	0.032
5	0.42	0.10	0.039	(0.124)	0.007	0.032
6	0.50	0.10	0.039	(0.123)	0.007	0.032
7	0.58	0.10	0.039	(0.123)	0.007	0.032
8	0.67	0.10	0.039	(0.122)	0.007	0.032
9	0.75	0.10	0.039	(0.122)	0.007	0.032
10	0.83	0.13	0.052	(0.121)	0.009	0.042
11	0.92	0.13	0.052	(0.121)	0.009	0.042
12	1.00	0.13	0.052	(0.120)	0.009	0.042
13	1.08	0.10	0.039	(0.120)	0.007	0.032
14	1.17	0.10	0.039	(0.119)	0.007	0.032
15	1.25	0.10	0.039	(0.119)	0.007	0.032
16	1.33	0.10	0.039	(0.118)	0.007	0.032
17	1.42	0.10	0.039	(0.118)	0.007	0.032
18	1.50	0.10	0.039	(0.117)	0.007	0.032
19	1.58	0.10	0.039	(0.117)	0.007	0.032
20	1.67	0.10	0.039	(0.117)	0.007	0.032
21	1.75	0.10	0.039	(0.116)	0.007	0.032
22	1.83	0.13	0.052	(0.116)	0.009	0.042
23	1.92	0.13	0.052	(0.115)	0.009	0.042
24	2.00	0.13	0.052	(0.115)	0.009	0.042
25	2.08	0.13	0.052	(0.114)	0.009	0.042
26	2.17	0.13	0.052	(0.114)	0.009	0.042
27	2.25	0.13	0.052	(0.113)	0.009	0.042
28	2.33	0.13	0.052	(0.113)	0.009	0.042
29	2.42	0.13	0.052	(0.112)	0.009	0.042
30	2.50	0.13	0.052	(0.112)	0.009	0.042
31	2.58	0.17	0.064	(0.111)	0.012	0.053
32	2.67	0.17	0.064	(0.111)	0.012	0.053
33	2.75	0.17	0.064	(0.110)	0.012	0.053
34	2.83	0.17	0.064	(0.110)	0.012	0.053
35	2.92	0.17	0.064	(0.110)	0.012	0.053
36	3.00	0.17	0.064	(0.109)	0.012	0.053
37	3.08	0.17	0.064	(0.109)	0.012	0.053
38	3.17	0.17	0.064	(0.108)	0.012	0.053
39	3.25	0.17	0.064	(0.108)	0.012	0.053
40	3.33	0.17	0.064	(0.107)	0.012	0.053
41	3.42	0.17	0.064	(0.107)	0.012	0.053
42	3.50	0.17	0.064	(0.106)	0.012	0.053
43	3.58	0.17	0.064	(0.106)	0.012	0.053
44	3.67	0.17	0.064	(0.106)	0.012	0.053
45	3.75	0.17	0.064	(0.105)	0.012	0.053
46	3.83	0.20	0.077	(0.105)	0.014	0.063
47	3.92	0.20	0.077	(0.104)	0.014	0.063
48	4.00	0.20	0.077	(0.104)	0.014	0.063
49	4.08	0.20	0.077	(0.103)	0.014	0.063
50	4.17	0.20	0.077	(0.103)	0.014	0.063
51	4.25	0.20	0.077	(0.102)	0.014	0.063
52	4.33	0.23	0.090	(0.102)	0.016	0.074
53	4.42	0.23	0.090	(0.102)	0.016	0.074
54	4.50	0.23	0.090	(0.101)	0.016	0.074

55	4.58	0.23	0.090	(0.101)	0.016	0.074
56	4.67	0.23	0.090	(0.100)	0.016	0.074
57	4.75	0.23	0.090	(0.100)	0.016	0.074
58	4.83	0.27	0.103	(0.099)	0.019	0.085
59	4.92	0.27	0.103	(0.099)	0.019	0.085
60	5.00	0.27	0.103	(0.099)	0.019	0.085
61	5.08	0.20	0.077	(0.098)	0.014	0.063
62	5.17	0.20	0.077	(0.098)	0.014	0.063
63	5.25	0.20	0.077	(0.097)	0.014	0.063
64	5.33	0.23	0.090	(0.097)	0.016	0.074
65	5.42	0.23	0.090	(0.096)	0.016	0.074
66	5.50	0.23	0.090	(0.096)	0.016	0.074
67	5.58	0.27	0.103	(0.096)	0.019	0.085
68	5.67	0.27	0.103	(0.095)	0.019	0.085
69	5.75	0.27	0.103	(0.095)	0.019	0.085
70	5.83	0.27	0.103	(0.094)	0.019	0.085
71	5.92	0.27	0.103	(0.094)	0.019	0.085
72	6.00	0.27	0.103	(0.093)	0.019	0.085
73	6.08	0.30	0.116	(0.093)	0.021	0.095
74	6.17	0.30	0.116	(0.093)	0.021	0.095
75	6.25	0.30	0.116	(0.092)	0.021	0.095
76	6.33	0.30	0.116	(0.092)	0.021	0.095
77	6.42	0.30	0.116	(0.091)	0.021	0.095
78	6.50	0.30	0.116	(0.091)	0.021	0.095
79	6.58	0.33	0.129	(0.091)	0.023	0.106
80	6.67	0.33	0.129	(0.090)	0.023	0.106
81	6.75	0.33	0.129	(0.090)	0.023	0.106
82	6.83	0.33	0.129	(0.089)	0.023	0.106
83	6.92	0.33	0.129	(0.089)	0.023	0.106
84	7.00	0.33	0.129	(0.089)	0.023	0.106
85	7.08	0.33	0.129	(0.088)	0.023	0.106
86	7.17	0.33	0.129	(0.088)	0.023	0.106
87	7.25	0.33	0.129	(0.087)	0.023	0.106
88	7.33	0.37	0.142	(0.087)	0.026	0.116
89	7.42	0.37	0.142	(0.087)	0.026	0.116
90	7.50	0.37	0.142	(0.086)	0.026	0.116
91	7.58	0.40	0.155	(0.086)	0.028	0.127
92	7.67	0.40	0.155	(0.085)	0.028	0.127
93	7.75	0.40	0.155	(0.085)	0.028	0.127
94	7.83	0.43	0.168	(0.085)	0.030	0.137
95	7.92	0.43	0.168	(0.084)	0.030	0.137
96	8.00	0.43	0.168	(0.084)	0.030	0.137
97	8.08	0.50	0.193	(0.083)	0.035	0.159
98	8.17	0.50	0.193	(0.083)	0.035	0.159
99	8.25	0.50	0.193	(0.083)	0.035	0.159
100	8.33	0.50	0.193	(0.082)	0.035	0.159
101	8.42	0.50	0.193	(0.082)	0.035	0.159
102	8.50	0.50	0.193	(0.082)	0.035	0.159
103	8.58	0.53	0.206	(0.081)	0.037	0.169
104	8.67	0.53	0.206	(0.081)	0.037	0.169
105	8.75	0.53	0.206	(0.080)	0.037	0.169
106	8.83	0.57	0.219	(0.080)	0.039	0.180
107	8.92	0.57	0.219	(0.080)	0.039	0.180
108	9.00	0.57	0.219	(0.079)	0.039	0.180
109	9.08	0.63	0.245	(0.079)	0.044	0.201
110	9.17	0.63	0.245	(0.078)	0.044	0.201
111	9.25	0.63	0.245	(0.078)	0.044	0.201
112	9.33	0.67	0.258	(0.078)	0.046	0.212
113	9.42	0.67	0.258	(0.077)	0.046	0.212
114	9.50	0.67	0.258	(0.077)	0.046	0.212

115	9.58	0.70	0.271	(0.077)	0.049	0.222
116	9.67	0.70	0.271	(0.076)	0.049	0.222
117	9.75	0.70	0.271	(0.076)	0.049	0.222
118	9.83	0.73	0.284	(0.076)	0.051	0.233
119	9.92	0.73	0.284	(0.075)	0.051	0.233
120	10.00	0.73	0.284	(0.075)	0.051	0.233
121	10.08	0.50	0.193	(0.074)	0.035	0.159
122	10.17	0.50	0.193	(0.074)	0.035	0.159
123	10.25	0.50	0.193	(0.074)	0.035	0.159
124	10.33	0.50	0.193	(0.073)	0.035	0.159
125	10.42	0.50	0.193	(0.073)	0.035	0.159
126	10.50	0.50	0.193	(0.073)	0.035	0.159
127	10.58	0.67	0.258	(0.072)	0.046	0.212
128	10.67	0.67	0.258	(0.072)	0.046	0.212
129	10.75	0.67	0.258	(0.072)	0.046	0.212
130	10.83	0.67	0.258	(0.071)	0.046	0.212
131	10.92	0.67	0.258	(0.071)	0.046	0.212
132	11.00	0.67	0.258	(0.071)	0.046	0.212
133	11.08	0.63	0.245	(0.070)	0.044	0.201
134	11.17	0.63	0.245	(0.070)	0.044	0.201
135	11.25	0.63	0.245	(0.069)	0.044	0.201
136	11.33	0.63	0.245	(0.069)	0.044	0.201
137	11.42	0.63	0.245	(0.069)	0.044	0.201
138	11.50	0.63	0.245	(0.068)	0.044	0.201
139	11.58	0.57	0.219	(0.068)	0.039	0.180
140	11.67	0.57	0.219	(0.068)	0.039	0.180
141	11.75	0.57	0.219	(0.067)	0.039	0.180
142	11.83	0.60	0.232	(0.067)	0.042	0.190
143	11.92	0.60	0.232	(0.067)	0.042	0.190
144	12.00	0.60	0.232	(0.066)	0.042	0.190
145	12.08	0.83	0.322	(0.066)	0.058	0.264
146	12.17	0.83	0.322	(0.066)	0.058	0.264
147	12.25	0.83	0.322	(0.065)	0.058	0.264
148	12.33	0.87	0.335	(0.065)	0.060	0.275
149	12.42	0.87	0.335	(0.065)	0.060	0.275
150	12.50	0.87	0.335	(0.064)	0.060	0.275
151	12.58	0.93	0.361	0.064	(0.065)	0.297
152	12.67	0.93	0.361	0.064	(0.065)	0.297
153	12.75	0.93	0.361	0.064	(0.065)	0.298
154	12.83	0.97	0.374	0.063	(0.067)	0.311
155	12.92	0.97	0.374	0.063	(0.067)	0.311
156	13.00	0.97	0.374	0.063	(0.067)	0.311
157	13.08	1.13	0.439	0.062	(0.079)	0.376
158	13.17	1.13	0.439	0.062	(0.079)	0.377
159	13.25	1.13	0.439	0.062	(0.079)	0.377
160	13.33	1.13	0.439	0.061	(0.079)	0.377
161	13.42	1.13	0.439	0.061	(0.079)	0.378
162	13.50	1.13	0.439	0.061	(0.079)	0.378
163	13.58	0.77	0.297	(0.060)	0.053	0.243
164	13.67	0.77	0.297	(0.060)	0.053	0.243
165	13.75	0.77	0.297	(0.060)	0.053	0.243
166	13.83	0.77	0.297	(0.059)	0.053	0.243
167	13.92	0.77	0.297	(0.059)	0.053	0.243
168	14.00	0.77	0.297	(0.059)	0.053	0.243
169	14.08	0.90	0.348	0.059	(0.063)	0.290
170	14.17	0.90	0.348	0.058	(0.063)	0.290
171	14.25	0.90	0.348	0.058	(0.063)	0.290
172	14.33	0.87	0.335	0.058	(0.060)	0.278
173	14.42	0.87	0.335	0.057	(0.060)	0.278
174	14.50	0.87	0.335	0.057	(0.060)	0.278

175	14.58	0.87	0.335	0.057	(0.060)	0.279
176	14.67	0.87	0.335	0.056	(0.060)	0.279
177	14.75	0.87	0.335	0.056	(0.060)	0.279
178	14.83	0.83	0.322	0.056	(0.058)	0.267
179	14.92	0.83	0.322	0.056	(0.058)	0.267
180	15.00	0.83	0.322	0.055	(0.058)	0.267
181	15.08	0.80	0.310	0.055	(0.056)	0.255
182	15.17	0.80	0.310	0.055	(0.056)	0.255
183	15.25	0.80	0.310	0.054	(0.056)	0.255
184	15.33	0.77	0.297	(0.054)	0.053	0.243
185	15.42	0.77	0.297	(0.054)	0.053	0.243
186	15.50	0.77	0.297	(0.054)	0.053	0.243
187	15.58	0.63	0.245	(0.053)	0.044	0.201
188	15.67	0.63	0.245	(0.053)	0.044	0.201
189	15.75	0.63	0.245	(0.053)	0.044	0.201
190	15.83	0.63	0.245	(0.053)	0.044	0.201
191	15.92	0.63	0.245	(0.052)	0.044	0.201
192	16.00	0.63	0.245	(0.052)	0.044	0.201
193	16.08	0.13	0.052	(0.052)	0.009	0.042
194	16.17	0.13	0.052	(0.051)	0.009	0.042
195	16.25	0.13	0.052	(0.051)	0.009	0.042
196	16.33	0.13	0.052	(0.051)	0.009	0.042
197	16.42	0.13	0.052	(0.051)	0.009	0.042
198	16.50	0.13	0.052	(0.050)	0.009	0.042
199	16.58	0.10	0.039	(0.050)	0.007	0.032
200	16.67	0.10	0.039	(0.050)	0.007	0.032
201	16.75	0.10	0.039	(0.050)	0.007	0.032
202	16.83	0.10	0.039	(0.049)	0.007	0.032
203	16.92	0.10	0.039	(0.049)	0.007	0.032
204	17.00	0.10	0.039	(0.049)	0.007	0.032
205	17.08	0.17	0.064	(0.049)	0.012	0.053
206	17.17	0.17	0.064	(0.048)	0.012	0.053
207	17.25	0.17	0.064	(0.048)	0.012	0.053
208	17.33	0.17	0.064	(0.048)	0.012	0.053
209	17.42	0.17	0.064	(0.048)	0.012	0.053
210	17.50	0.17	0.064	(0.047)	0.012	0.053
211	17.58	0.17	0.064	(0.047)	0.012	0.053
212	17.67	0.17	0.064	(0.047)	0.012	0.053
213	17.75	0.17	0.064	(0.047)	0.012	0.053
214	17.83	0.13	0.052	(0.047)	0.009	0.042
215	17.92	0.13	0.052	(0.046)	0.009	0.042
216	18.00	0.13	0.052	(0.046)	0.009	0.042
217	18.08	0.13	0.052	(0.046)	0.009	0.042
218	18.17	0.13	0.052	(0.046)	0.009	0.042
219	18.25	0.13	0.052	(0.045)	0.009	0.042
220	18.33	0.13	0.052	(0.045)	0.009	0.042
221	18.42	0.13	0.052	(0.045)	0.009	0.042
222	18.50	0.13	0.052	(0.045)	0.009	0.042
223	18.58	0.10	0.039	(0.045)	0.007	0.032
224	18.67	0.10	0.039	(0.044)	0.007	0.032
225	18.75	0.10	0.039	(0.044)	0.007	0.032
226	18.83	0.07	0.026	(0.044)	0.005	0.021
227	18.92	0.07	0.026	(0.044)	0.005	0.021
228	19.00	0.07	0.026	(0.043)	0.005	0.021
229	19.08	0.10	0.039	(0.043)	0.007	0.032
230	19.17	0.10	0.039	(0.043)	0.007	0.032
231	19.25	0.10	0.039	(0.043)	0.007	0.032
232	19.33	0.13	0.052	(0.043)	0.009	0.042
233	19.42	0.13	0.052	(0.042)	0.009	0.042
234	19.50	0.13	0.052	(0.042)	0.009	0.042

235	19.58	0.10	0.039	(0.042)	0.007	0.032
236	19.67	0.10	0.039	(0.042)	0.007	0.032
237	19.75	0.10	0.039	(0.042)	0.007	0.032
238	19.83	0.07	0.026	(0.041)	0.005	0.021
239	19.92	0.07	0.026	(0.041)	0.005	0.021
240	20.00	0.07	0.026	(0.041)	0.005	0.021
241	20.08	0.10	0.039	(0.041)	0.007	0.032
242	20.17	0.10	0.039	(0.041)	0.007	0.032
243	20.25	0.10	0.039	(0.041)	0.007	0.032
244	20.33	0.10	0.039	(0.040)	0.007	0.032
245	20.42	0.10	0.039	(0.040)	0.007	0.032
246	20.50	0.10	0.039	(0.040)	0.007	0.032
247	20.58	0.10	0.039	(0.040)	0.007	0.032
248	20.67	0.10	0.039	(0.040)	0.007	0.032
249	20.75	0.10	0.039	(0.040)	0.007	0.032
250	20.83	0.07	0.026	(0.039)	0.005	0.021
251	20.92	0.07	0.026	(0.039)	0.005	0.021
252	21.00	0.07	0.026	(0.039)	0.005	0.021
253	21.08	0.10	0.039	(0.039)	0.007	0.032
254	21.17	0.10	0.039	(0.039)	0.007	0.032
255	21.25	0.10	0.039	(0.039)	0.007	0.032
256	21.33	0.07	0.026	(0.038)	0.005	0.021
257	21.42	0.07	0.026	(0.038)	0.005	0.021
258	21.50	0.07	0.026	(0.038)	0.005	0.021
259	21.58	0.10	0.039	(0.038)	0.007	0.032
260	21.67	0.10	0.039	(0.038)	0.007	0.032
261	21.75	0.10	0.039	(0.038)	0.007	0.032
262	21.83	0.07	0.026	(0.038)	0.005	0.021
263	21.92	0.07	0.026	(0.038)	0.005	0.021
264	22.00	0.07	0.026	(0.037)	0.005	0.021
265	22.08	0.10	0.039	(0.037)	0.007	0.032
266	22.17	0.10	0.039	(0.037)	0.007	0.032
267	22.25	0.10	0.039	(0.037)	0.007	0.032
268	22.33	0.07	0.026	(0.037)	0.005	0.021
269	22.42	0.07	0.026	(0.037)	0.005	0.021
270	22.50	0.07	0.026	(0.037)	0.005	0.021
271	22.58	0.07	0.026	(0.037)	0.005	0.021
272	22.67	0.07	0.026	(0.036)	0.005	0.021
273	22.75	0.07	0.026	(0.036)	0.005	0.021
274	22.83	0.07	0.026	(0.036)	0.005	0.021
275	22.92	0.07	0.026	(0.036)	0.005	0.021
276	23.00	0.07	0.026	(0.036)	0.005	0.021
277	23.08	0.07	0.026	(0.036)	0.005	0.021
278	23.17	0.07	0.026	(0.036)	0.005	0.021
279	23.25	0.07	0.026	(0.036)	0.005	0.021
280	23.33	0.07	0.026	(0.036)	0.005	0.021
281	23.42	0.07	0.026	(0.036)	0.005	0.021
282	23.50	0.07	0.026	(0.036)	0.005	0.021
283	23.58	0.07	0.026	(0.036)	0.005	0.021
284	23.67	0.07	0.026	(0.036)	0.005	0.021
285	23.75	0.07	0.026	(0.036)	0.005	0.021
286	23.83	0.07	0.026	(0.035)	0.005	0.021
287	23.92	0.07	0.026	(0.035)	0.005	0.021
288	24.00	0.07	0.026	(0.035)	0.005	0.021

(Loss Rate Not Used)

Sum = 100.0 Sum = 31.9

Flood volume = Effective rainfall 2.66(In)
times area 43.5(Ac.)/[(In)/(Ft.)] = 9.6(Ac.Ft)
Total soil loss = 0.57(In)
Total soil loss = 2.054(Ac.Ft)

```
      Total rainfall =      3.22(In)
      Flood volume =      419703.1 Cubic Feet
      Total soil loss =       89464.8 Cubic Feet
      ---------------------------------------------------------------------
--
       Peak flow rate of this hydrograph =     16.470(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        5.0      10.0      15.0
20.0

-------------------------------------------------------------------------
    0+ 5       0.0013      0.18  Q         |         |         |
|
    0+10       0.0056      0.63  VQ        |         |         |
|
    0+15       0.0110      0.78  VQ        |         |         |
|
    0+20       0.0174      0.93  VQ        |         |         |
|
    0+25       0.0256      1.19  V Q       |         |         |
|
    0+30       0.0345      1.29  V Q       |         |         |
|
    0+35       0.0437      1.33  V Q       |         |         |
|
    0+40       0.0531      1.37  V Q       |         |         |
|
    0+45       0.0626      1.38  V Q       |         |         |
|
    0+50       0.0727      1.48  V Q       |         |         |
|
    0+55       0.0845      1.71  V  Q      |         |         |
|
    1+ 0       0.0968      1.78  V  Q      |         |         |
|
    1+ 5       0.1086      1.72  V  Q      |         |         |
|
    1+10       0.1190      1.51  V  Q      |         |         |
|
    1+15       0.1290      1.45  V Q       |         |         |
|
    1+20       0.1389      1.43  V Q       |         |         |
|
    1+25       0.1486      1.42  V Q       |         |         |
|
    1+30       0.1583      1.41  V Q       |         |         |
|
    1+35       0.1680      1.40  V Q       |         |         |
|
```

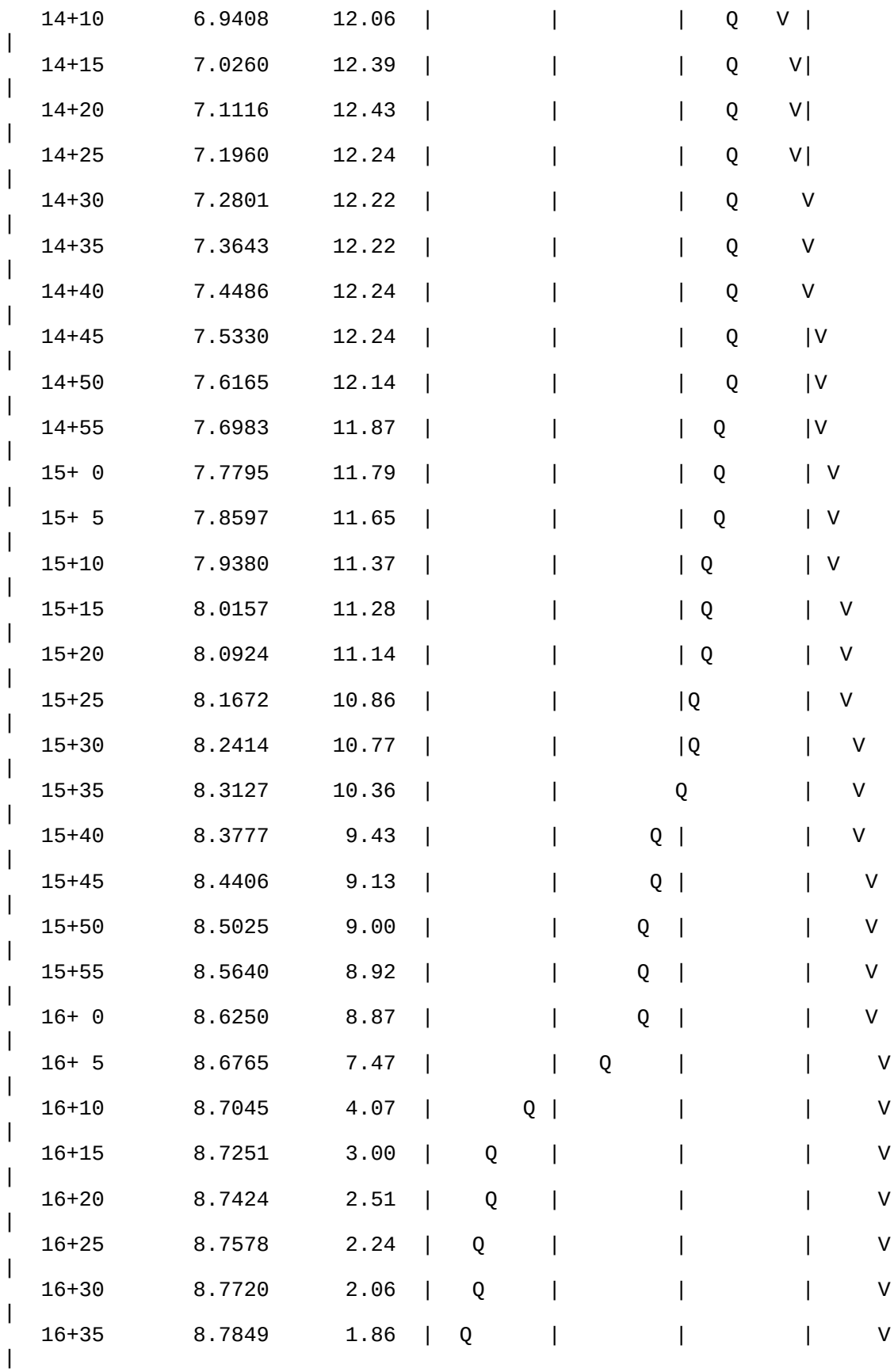
1+40	0.1775	1.39	V Q	|	|	|
1+45	0.1871	1.39	V Q	|	|	|
1+50	0.1973	1.48	V Q	|	|	|
1+55	0.2091	1.71	V Q	|	|	|
2+ 0	0.2214	1.78	V Q	|	|	|
2+ 5	0.2338	1.81	V Q	|	|	|
2+10	0.2464	1.83	|V Q	|	|	|
2+15	0.2591	1.84	|V Q	|	|	|
2+20	0.2719	1.85	|V Q	|	|	|
2+25	0.2846	1.86	|V Q	|	|	|
2+30	0.2974	1.86	|V Q	|	|	|
2+35	0.3108	1.95	|V Q	|	|	|
2+40	0.3258	2.17	|V Q	|	|	|
2+45	0.3412	2.24	|V Q	|	|	|
2+50	0.3569	2.28	|V Q	|	|	|
2+55	0.3727	2.29	|V Q	|	|	|
3+ 0	0.3886	2.31	|V Q	|	|	|
3+ 5	0.4045	2.31	|V Q	|	|	|
3+10	0.4205	2.32	|V Q	|	|	|
3+15	0.4365	2.32	|V Q	|	|	|
3+20	0.4524	2.32	|V Q	|	|	|
3+25	0.4684	2.32	|V Q	|	|	|
3+30	0.4844	2.32	| V Q	|	|	|
3+35	0.5004	2.32	| V Q	|	|	|
3+40	0.5163	2.32	| V Q	|	|	|
3+45	0.5323	2.32	| V Q	|	|	|
3+50	0.5489	2.41	| V Q	|	|	|
3+55	0.5671	2.64	| V Q	|	|	|
4+ 0	0.5857	2.71	| V Q	|	|	|
4+ 5	0.6046	2.74	| V Q	|	|	|

4+10	0.6236	2.76	V Q			
4+15	0.6427	2.77	V Q			
4+20	0.6624	2.87	V Q			
4+25	0.6838	3.10	V Q			
4+30	0.7056	3.17	V Q			
4+35	0.7277	3.20	V Q			
4+40	0.7499	3.22	V Q			
4+45	0.7721	3.23	V Q			
4+50	0.7951	3.33	V Q			
4+55	0.8196	3.56	V Q			
5+ 0	0.8447	3.64	V Q			
5+ 5	0.8687	3.48	V Q			
5+10	0.8897	3.05	V Q			
5+15	0.9098	2.92	V Q			
5+20	0.9302	2.96	V Q			
5+25	0.9519	3.15	V Q			
5+30	0.9739	3.20	V Q			
5+35	0.9967	3.31	V Q			
5+40	1.0210	3.54	V Q			
5+45	1.0460	3.62	V Q			
5+50	1.0712	3.66	V Q			
5+55	1.0966	3.69	V Q			
6+ 0	1.1221	3.70	V Q			
6+ 5	1.1482	3.80	V Q			
6+10	1.1759	4.03	V Q			
6+15	1.2042	4.10	V Q			
6+20	1.2326	4.13	V Q			
6+25	1.2612	4.15	V Q			
6+30	1.2899	4.16	V Q			
6+35	1.3192	4.26	V Q			

6+40	1.3501	4.49	| V Q |	|	|
6+45	1.3816	4.56	| V Q|	|	|
6+50	1.4132	4.60	| V Q|	|	|
6+55	1.4450	4.61	| V Q|	|	|
7+ 0	1.4768	4.63	| V Q|	|	|
7+ 5	1.5087	4.63	| V Q|	|	|
7+10	1.5407	4.64	| V Q|	|	|
7+15	1.5726	4.64	| V Q|	|	|
7+20	1.6052	4.73	| V Q|	|	|
7+25	1.6393	4.96	| V Q|	|	|
7+30	1.6740	5.03	| V Q	|	|
7+35	1.7094	5.15	| V Q	|	|
7+40	1.7466	5.39	| V Q	|	|
7+45	1.7843	5.48	| V Q	|	|
7+50	1.8229	5.61	| V |Q	|	|
7+55	1.8633	5.86	| V |Q	|	|
8+ 0	1.9042	5.94	| V |Q	|	|
8+ 5	1.9466	6.16	| V | Q	|	|
8+10	1.9924	6.64	| V | Q	|	|
8+15	2.0391	6.79	| V | Q	|	|
8+20	2.0864	6.86	| V | Q	|	|
8+25	2.1340	6.91	| V | Q	|	|
8+30	2.1817	6.93	| V| Q	|	|
8+35	2.2302	7.04	| V| Q	|	|
8+40	2.2803	7.28	| V| Q	|	|
8+45	2.3309	7.35	| V| Q	|	|
8+50	2.3823	7.47	| V| Q	|	|
8+55	2.4355	7.71	| V Q	|	|
9+ 0	2.4892	7.80	| V Q	|	|
9+ 5	2.5444	8.02	| V Q	|	|

9+10	2.6029	8.49	|	V Q	|
9+15	2.6625	8.65	|	|V Q |	|
9+20	2.7231	8.81	|	|V Q |	|
9+25	2.7857	9.08	|	|V Q |	|
9+30	2.8489	9.17	|	|V Q |	|
9+35	2.9130	9.31	|	| V Q |	|
9+40	2.9789	9.57	|	| V Q|	|
9+45	3.0454	9.65	|	| V Q|	|
9+50	3.1128	9.78	|	| V Q|	|
9+55	3.1818	10.03	|	| V Q	|
10+ 0	3.2515	10.12	|	| V Q	|
10+ 5	3.3171	9.52	|	| V Q|	|
10+10	3.3719	7.96	|	| V Q |	|
10+15	3.4234	7.48	|	| Q |	|
10+20	3.4734	7.26	|	| Q |	|
10+25	3.5225	7.14	|	| Q |	|
10+30	3.5711	7.06	|	| Q |	|
10+35	3.6225	7.46	|	| QV |	|
10+40	3.6813	8.54	|	| V Q |	|
10+45	3.7426	8.90	|	| V Q |	|
10+50	3.8050	9.06	|	| V Q |	|
10+55	3.8680	9.15	|	| V Q |	|
11+ 0	3.9315	9.21	|	| V Q |	|
11+ 5	3.9945	9.15	|	| V Q |	|
11+10	4.0562	8.96	|	| VQ |	|
11+15	4.1175	8.89	|	| Q |	|
11+20	4.1785	8.86	|	| Q |	|
11+25	4.2393	8.84	|	| Q |	|
11+30	4.3001	8.83	|	| Q |	|
11+35	4.3596	8.64	|	| QV |	|

11+40	4.4160	8.18			Q V	
11+45	4.4713	8.04			Q V	
11+50	4.5269	8.07			Q V	
11+55	4.5837	8.25			Q V	
12+ 0	4.6409	8.30			Q V	
12+ 5	4.7026	8.96			Q V	
12+10	4.7752	10.54			V	Q
12+15	4.8513	11.05			V Q	
12+20	4.9297	11.38			V Q	
12+25	5.0105	11.74			V Q	
12+30	5.0924	11.89			V Q	
12+35	5.1761	12.16			V Q	
12+40	5.2636	12.70			V Q	
12+45	5.3522	12.87			V Q	
12+50	5.4422	13.07			V Q	
12+55	5.5345	13.40			V Q	
13+ 0	5.6276	13.52			V Q	
13+ 5	5.7250	14.15			V Q	
13+10	5.8322	15.57			V	Q
13+15	5.9426	16.03			V	Q
13+20	6.0546	16.25			V	Q
13+25	6.1674	16.38			V	Q
13+30	6.2808	16.47			V	Q
13+35	6.3866	15.36			V	Q
13+40	6.4730	12.54			QV	
13+45	6.5531	11.63			Q V	
13+50	6.6304	11.22			Q V	
13+55	6.7062	10.99			Q V	
14+ 0	6.7808	10.85			Q V	
14+ 5	6.8577	11.16			Q V	



16+40	8.7955	1.54	Q				V
16+45	8.8056	1.47	Q				V
16+50	8.8154	1.44	Q				V
16+55	8.8252	1.42	Q				V
17+ 0	8.8349	1.41	Q				V
17+ 5	8.8458	1.58	Q				V
17+10	8.8597	2.02	Q				V
17+15	8.8747	2.17	Q				V
17+20	8.8900	2.23	Q				V
17+25	8.9056	2.27	Q				V
17+30	8.9214	2.29	Q				V
17+35	8.9373	2.31	Q				V
17+40	8.9533	2.32	Q				V
17+45	8.9693	2.32	Q				V
17+50	8.9846	2.23	Q				V
17+55	8.9984	2.00	Q				V
18+ 0	9.0117	1.93	Q				V
18+ 5	9.0248	1.90	Q				V
18+10	9.0377	1.88	Q				V
18+15	9.0506	1.87	Q				V
18+20	9.0634	1.86	Q				V
18+25	9.0762	1.86	Q				V
18+30	9.0890	1.86	Q				V
18+35	9.1012	1.76	Q				V
18+40	9.1118	1.54	Q				V
18+45	9.1219	1.47	Q				V
18+50	9.1311	1.34	Q				V
18+55	9.1387	1.10	Q				V
19+ 0	9.1457	1.02	Q				V
19+ 5	9.1531	1.07	Q				V

19+10	9.1618	1.27	Q				V
19+15	9.1710	1.33	Q				V
19+20	9.1809	1.45	Q				V
19+25	9.1925	1.68	Q				V
19+30	9.2047	1.77	Q				V
19+35	9.2165	1.71	Q				V
19+40	9.2269	1.51	Q				V
19+45	9.2369	1.45	Q				V
19+50	9.2461	1.34	Q				V
19+55	9.2537	1.10	Q				V
20+ 0	9.2607	1.02	Q				V
20+ 5	9.2681	1.07	Q				V
20+10	9.2768	1.27	Q				V
20+15	9.2860	1.33	Q				V
20+20	9.2953	1.35	Q				V
20+25	9.3047	1.37	Q				V
20+30	9.3142	1.38	Q				V
20+35	9.3238	1.39	Q				V
20+40	9.3333	1.39	Q				V
20+45	9.3429	1.39	Q				V
20+50	9.3519	1.30	Q				V
20+55	9.3593	1.08	Q				V
21+ 0	9.3662	1.00	Q				V
21+ 5	9.3735	1.06	Q				V
21+10	9.3823	1.27	Q				V
21+15	9.3914	1.33	Q				V
21+20	9.4001	1.26	Q				V
21+25	9.4074	1.05	Q				V
21+30	9.4142	0.99	Q				V
21+35	9.4215	1.06	Q				V

21+40	9.4302	1.27	| Q	|	|	| V|
21+45	9.4394	1.33	| Q	|	|	| V|
21+50	9.4481	1.26	| Q	|	|	| V|
21+55	9.4553	1.05	| Q	|	|	| V|
22+ 0	9.4621	0.99	|Q	|	|	| V|
22+ 5	9.4694	1.06	| Q	|	|	| V|
22+10	9.4781	1.27	| Q	|	|	| V|
22+15	9.4873	1.33	| Q	|	|	| V|
22+20	9.4960	1.26	| Q	|	|	| V|
22+25	9.5032	1.05	| Q	|	|	| V|
22+30	9.5100	0.99	|Q	|	|	| V|
22+35	9.5167	0.96	|Q	|	|	| V|
22+40	9.5232	0.95	|Q	|	|	| V|
22+45	9.5297	0.94	|Q	|	|	| V|
22+50	9.5362	0.93	|Q	|	|	| V|
22+55	9.5425	0.93	|Q	|	|	| V|
23+ 0	9.5489	0.93	|Q	|	|	| V|
23+ 5	9.5553	0.93	|Q	|	|	| V|
23+10	9.5617	0.93	|Q	|	|	| V|
23+15	9.5681	0.93	|Q	|	|	| V|
23+20	9.5745	0.93	|Q	|	|	| V|
23+25	9.5809	0.93	|Q	|	|	| V|
23+30	9.5873	0.93	|Q	|	|	| V|
23+35	9.5937	0.93	|Q	|	|	| V|
23+40	9.6001	0.93	|Q	|	|	| V|
23+45	9.6064	0.93	|Q	|	|	| V|
23+50	9.6128	0.93	|Q	|	|	| V|
23+55	9.6192	0.93	|Q	|	|	| V|
24+ 0	9.6256	0.93	|Q	|	|	| V|
24+ 5	9.6307	0.74	|Q	|	|	| V|

```
   24+10       9.6328      0.29  Q         |         |         |
V|
   24+15       9.6338      0.15  Q         |         |         |
V|
   24+20       9.6344      0.09  Q         |         |         |
V|
   24+25       9.6348      0.05  Q         |         |         |
V|
   24+30       9.6350      0.03  Q         |         |         |
V|
   24+35       9.6351      0.01  Q         |         |         |
V
-----------------------------------------------------------------------
```

Appendix B

```
                Riverside County Rational Hydrology Program

     CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version
8.0
           Rational Hydrology Study        Date: 02/10/22
File:NECRamonaA.out
     ---------------------------------------------------------------
------
     NEC Ramona Perris Industrial
     Rationale
     100yr Stormdrain Sizing
     Area A
     ---------------------------------------------------------------
------
      *********   Hydrology Study Control Information **********

      English (in-lb) Units used in input data file

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


     Program License Serial Number 6232

     ---------------------------------------------------------------
------
     Rational Method Hydrology Program based on
     Riverside County Flood Control & Water Conservation District
     1978 hydrology manual

     Storm event (year) =  100.00 Antecedent Moisture Condition = 3

     Standard intensity-duration curves data (Plate D-4.1)
     For the [ Perris Valley ] area used.
     10 year storm 10 minute intensity =  1.880(In/Hr)
     10 year storm 60 minute intensity =  0.780(In/Hr)
     100 year storm 10 minute intensity =  2.690(In/Hr)
     100 year storm 60 minute intensity =  1.120(In/Hr)

     Storm event year = 100.0
     Calculated rainfall intensity data:
     1 hour intensity =  1.120(In/Hr)
     Slope of intensity duration curve = 0.4900




     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
     Process from Point/Station      101.000 to Point/Station
102.000
     **** INITIAL AREA EVALUATION ****
     ____________________________________________________________________
____
     Initial area flow distance =   400.000(Ft.)
     Top (of initial area) elevation =    10.000(Ft.)
     Bottom (of initial area) elevation =     8.000(Ft.)
     Difference in elevation =     2.000(Ft.)
```

```
      Slope =    0.00500  s(percent)=       0.50
      TC = k(0.300)*[(length^3)/(elevation change)]^0.2
      Initial area time of concentration =    9.509 min.
      Rainfall intensity =      2.762(In/Hr) for a   100.0 year storm
      COMMERCIAL subarea type
      Runoff Coefficient = 0.893
      Decimal fraction soil group A = 0.000
      Decimal fraction soil group B = 0.000
      Decimal fraction soil group C = 1.000
      Decimal fraction soil group D = 0.000
      RI index for soil(AMC 3)  =  84.40
      Pervious area fraction =  0.100; Impervious fraction =  0.900
      Initial subarea runoff =      4.684(CFS)
      Total initial stream area =        1.900(Ac.)
      Pervious area fraction = 0.100


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
      Process from Point/Station      102.000 to Point/Station
103.000
      **** PIPEFLOW TRAVEL TIME (Program estimated size) ****
      ------------------------------------------------------------------------
____
      Upstream point/station elevation =     8.000(Ft.)
      Downstream point/station elevation =     6.200(Ft.)
      Pipe length  =   360.00(Ft.)   Manning's N = 0.012
      No. of pipes = 1  Required pipe flow  =     4.684(CFS)
      Nearest computed pipe diameter  =     15.00(In.)
      Calculated individual pipe flow  =     4.684(CFS)
      Normal flow depth in pipe =   11.63(In.)
      Flow top width inside pipe =   12.53(In.)
      Critical Depth =   10.54(In.)
      Pipe flow velocity =      4.59(Ft/s)
      Travel time through pipe =    1.31 min.
      Time of concentration (TC) =    10.82 min.


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
      Process from Point/Station      102.000 to Point/Station
103.000
      **** SUBAREA FLOW ADDITION ****
      ------------------------------------------------------------------------
____
      COMMERCIAL subarea type
      Runoff Coefficient = 0.892
      Decimal fraction soil group A = 0.000
      Decimal fraction soil group B = 0.000
      Decimal fraction soil group C = 1.000
      Decimal fraction soil group D = 0.000
      RI index for soil(AMC 3)  =  84.40
      Pervious area fraction =  0.100; Impervious fraction =  0.900
      Time of concentration =    10.82 min.
      Rainfall intensity =      2.593(In/Hr) for a   100.0 year storm
      Subarea runoff =      3.470(CFS) for      1.500(Ac.)
      Total runoff =      8.154(CFS)      Total area =       3.400(Ac.)


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
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++++
      Process from Point/Station      103.000 to Point/Station
104.000
      **** PIPEFLOW TRAVEL TIME (Program estimated size) ****
      ------------------------------------------------------------------------
____
      Upstream point/station elevation =     6.200(Ft.)
      Downstream point/station elevation =     6.000(Ft.)
      Pipe length  =    40.00(Ft.)   Manning's N = 0.012
      No. of pipes = 1  Required pipe flow  =     8.154(CFS)
      Nearest computed pipe diameter  =     18.00(In.)
      Calculated individual pipe flow  =     8.154(CFS)
      Normal flow depth in pipe =   14.98(In.)
      Flow top width inside pipe =   13.46(In.)
      Critical Depth =   13.27(In.)
      Pipe flow velocity =      5.19(Ft/s)
      Travel time through pipe =    0.13 min.
      Time of concentration (TC) =    10.95 min.


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
      Process from Point/Station      103.000 to Point/Station
104.000
      **** SUBAREA FLOW ADDITION ****
      ------------------------------------------------------------------------
____
      COMMERCIAL subarea type
      Runoff Coefficient = 0.892
      Decimal fraction soil group A = 0.000
      Decimal fraction soil group B = 0.000
      Decimal fraction soil group C = 1.000
      Decimal fraction soil group D = 0.000
      RI index for soil(AMC 3)  =  84.40
      Pervious area fraction =  0.100; Impervious fraction =  0.900
      Time of concentration =    10.95 min.
      Rainfall intensity =      2.578(In/Hr) for a   100.0 year storm
      Subarea runoff =      6.509(CFS) for      2.830(Ac.)
      Total runoff =     14.663(CFS)      Total area =       6.230(Ac.)


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
      Process from Point/Station      104.000 to Point/Station
105.000
      **** PIPEFLOW TRAVEL TIME (Program estimated size) ****
      ------------------------------------------------------------------------
____
      Upstream point/station elevation =     6.000(Ft.)
      Downstream point/station elevation =     5.800(Ft.)
      Pipe length  =    40.00(Ft.)   Manning's N = 0.012
      No. of pipes = 1  Required pipe flow  =    14.663(CFS)
      Nearest computed pipe diameter  =     24.00(In.)
      Calculated individual pipe flow  =    14.663(CFS)
      Normal flow depth in pipe =   16.95(In.)
      Flow top width inside pipe =   21.87(In.)
      Critical Depth =   16.56(In.)
      Pipe flow velocity =      6.19(Ft/s)
      Travel time through pipe =    0.11 min.
      Time of concentration (TC) =    11.05 min.
```

End of computations, total study area = 6.23 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number = 69.0

```
                Riverside County Rational Hydrology Program

     CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version
8.0
           Rational Hydrology Study        Date: 02/10/22
File:NECRamona.out
     ---------------------------------------------------------------
------
     NEC Ramona Perris Industrial
     Rationale
     100yr Prelim Pipe Sizing
     Area B
     ---------------------------------------------------------------
------
      *********   Hydrology Study Control Information **********

      English (in-lb) Units used in input data file

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


     Program License Serial Number 6232

     ---------------------------------------------------------------
------
     Rational Method Hydrology Program based on
     Riverside County Flood Control & Water Conservation District
     1978 hydrology manual

     Storm event (year) =  100.00 Antecedent Moisture Condition = 3

     Standard intensity-duration curves data (Plate D-4.1)
     For the [ Perris Valley ] area used.
     10 year storm 10 minute intensity =  1.880(In/Hr)
     10 year storm 60 minute intensity =  0.780(In/Hr)
     100 year storm 10 minute intensity =  2.690(In/Hr)
     100 year storm 60 minute intensity =  1.120(In/Hr)

     Storm event year = 100.0
     Calculated rainfall intensity data:
     1 hour intensity =  1.120(In/Hr)
     Slope of intensity duration curve = 0.4900




     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
     Process from Point/Station      101.000 to Point/Station
102.000
     **** INITIAL AREA EVALUATION ****
     ____________________________________________________________________
____
     Initial area flow distance =   432.000(Ft.)
     Top (of initial area) elevation =     5.190(Ft.)
     Bottom (of initial area) elevation =     3.030(Ft.)
     Difference in elevation =     2.160(Ft.)
```

```
      Slope =    0.00500  s(percent)=       0.50
      TC = k(0.300)*[(length^3)/(elevation change)]^0.2
      Initial area time of concentration =    9.807 min.
      Rainfall intensity =      2.721(In/Hr) for a   100.0 year storm
      COMMERCIAL subarea type
      Runoff Coefficient = 0.893
      Decimal fraction soil group A = 0.000
      Decimal fraction soil group B = 0.000
      Decimal fraction soil group C = 1.000
      Decimal fraction soil group D = 0.000
      RI index for soil(AMC 3)  =  84.40
      Pervious area fraction =  0.100; Impervious fraction =  0.900
      Initial subarea runoff =      5.099(CFS)
      Total initial stream area =        2.100(Ac.)
      Pervious area fraction = 0.100


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
      Process from Point/Station      102.000 to Point/Station
103.000
      **** PIPEFLOW TRAVEL TIME (Program estimated size) ****
      ------------------------------------------------------------------------
____
      Upstream point/station elevation =     3.030(Ft.)
      Downstream point/station elevation =     0.000(Ft.)
      Pipe length  =   605.00(Ft.)   Manning's N = 0.012
      No. of pipes = 1  Required pipe flow  =     5.099(CFS)
      Nearest computed pipe diameter  =     18.00(In.)
      Calculated individual pipe flow  =     5.099(CFS)
      Normal flow depth in pipe =   10.39(In.)
      Flow top width inside pipe =   17.78(In.)
      Critical Depth =   10.42(In.)
      Pipe flow velocity =      4.82(Ft/s)
      Travel time through pipe =    2.09 min.
      Time of concentration (TC) =    11.90 min.


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
      Process from Point/Station      102.000 to Point/Station
103.000
      **** SUBAREA FLOW ADDITION ****
      ------------------------------------------------------------------------
____
      COMMERCIAL subarea type
      Runoff Coefficient = 0.892
      Decimal fraction soil group A = 0.000
      Decimal fraction soil group B = 0.000
      Decimal fraction soil group C = 1.000
      Decimal fraction soil group D = 0.000
      RI index for soil(AMC 3)  =  84.40
      Pervious area fraction =  0.100; Impervious fraction =  0.900
      Time of concentration =    11.90 min.
      Rainfall intensity =      2.475(In/Hr) for a   100.0 year storm
      Subarea runoff =      9.711(CFS) for      4.400(Ac.)
      Total runoff =     14.811(CFS)      Total area =       6.500(Ac.)


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

```
++++
      Process from Point/Station      103.000 to Point/Station
104.000
      **** PIPEFLOW TRAVEL TIME (Program estimated size) ****
      ------------------------------------------------------------------------
____
      Upstream point/station elevation =     0.000(Ft.)
      Downstream point/station elevation =    -0.216(Ft.)
      Pipe length  =    43.00(Ft.)   Manning's N = 0.012
      No. of pipes = 1  Required pipe flow  =    14.811(CFS)
      Nearest computed pipe diameter  =     24.00(In.)
      Calculated individual pipe flow  =    14.811(CFS)
      Normal flow depth in pipe =   17.04(In.)
      Flow top width inside pipe =   21.78(In.)
      Critical Depth =   16.63(In.)
      Pipe flow velocity =      6.21(Ft/s)
      Travel time through pipe =    0.12 min.
      Time of concentration (TC) =    12.01 min.


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
      Process from Point/Station      501.000 to Point/Station
104.000
      **** SUBAREA FLOW ADDITION ****
      ------------------------------------------------------------------------
____
      COMMERCIAL subarea type
      Runoff Coefficient = 0.892
      Decimal fraction soil group A = 0.000
      Decimal fraction soil group B = 0.000
      Decimal fraction soil group C = 1.000
      Decimal fraction soil group D = 0.000
      RI index for soil(AMC 3)  =  84.40
      Pervious area fraction =  0.100; Impervious fraction =  0.900
      Time of concentration =    12.01 min.
      Rainfall intensity =      2.463(In/Hr) for a   100.0 year storm
      Subarea runoff =     11.423(CFS) for      5.200(Ac.)
      Total runoff =     26.233(CFS)      Total area =      11.700(Ac.)


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
      Process from Point/Station      104.000 to Point/Station
105.000
      **** PIPEFLOW TRAVEL TIME (Program estimated size) ****
      ------------------------------------------------------------------------
____
      Upstream point/station elevation =    -0.216(Ft.)
      Downstream point/station elevation =    -0.466(Ft.)
      Pipe length  =    50.00(Ft.)   Manning's N = 0.012
      No. of pipes = 1  Required pipe flow  =    26.233(CFS)
      Nearest computed pipe diameter  =     30.00(In.)
      Calculated individual pipe flow  =    26.233(CFS)
      Normal flow depth in pipe =   20.95(In.)
      Flow top width inside pipe =   27.54(In.)
      Critical Depth =   20.95(In.)
      Pipe flow velocity =      7.16(Ft/s)
      Travel time through pipe =    0.12 min.
      Time of concentration (TC) =    12.13 min.
```

End of computations, total study area = 11.70 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number = 69.0

```
                Riverside County Rational Hydrology Program

     CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2012 Version
8.0
           Rational Hydrology Study        Date: 02/10/22
File:NECRamonaC.out
     ---------------------------------------------------------------
------
     NEC Ramona Perris Industrial
     Rationale
     100yr Storm Drain Sizing
     Area C
     ---------------------------------------------------------------
------
      *********   Hydrology Study Control Information **********

      English (in-lb) Units used in input data file

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


     Program License Serial Number 6232

     ---------------------------------------------------------------
------
     Rational Method Hydrology Program based on
     Riverside County Flood Control & Water Conservation District
     1978 hydrology manual

     Storm event (year) =  100.00 Antecedent Moisture Condition = 3

     Standard intensity-duration curves data (Plate D-4.1)
     For the [ Perris Valley ] area used.
     10 year storm 10 minute intensity =  1.880(In/Hr)
     10 year storm 60 minute intensity =  0.780(In/Hr)
     100 year storm 10 minute intensity =  2.690(In/Hr)
     100 year storm 60 minute intensity =  1.120(In/Hr)

     Storm event year = 100.0
     Calculated rainfall intensity data:
     1 hour intensity =  1.120(In/Hr)
     Slope of intensity duration curve = 0.4900




     ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
     Process from Point/Station      101.000 to Point/Station
102.000
     **** INITIAL AREA EVALUATION ****
     ____________________________________________________________________
____
     Initial area flow distance =   718.000(Ft.)
     Top (of initial area) elevation =     3.600(Ft.)
     Bottom (of initial area) elevation =     0.000(Ft.)
     Difference in elevation =     3.600(Ft.)
```

```
      Slope =    0.00501  s(percent)=       0.50
      TC = k(0.300)*[(length^3)/(elevation change)]^0.2
      Initial area time of concentration =   12.010 min.
      Rainfall intensity =      2.463(In/Hr) for a   100.0 year storm
      COMMERCIAL subarea type
      Runoff Coefficient = 0.892
      Decimal fraction soil group A = 0.000
      Decimal fraction soil group B = 0.000
      Decimal fraction soil group C = 1.000
      Decimal fraction soil group D = 0.000
      RI index for soil(AMC 3)  =  84.40
      Pervious area fraction =  0.100; Impervious fraction =  0.900
      Initial subarea runoff =      9.447(CFS)
      Total initial stream area =        4.300(Ac.)
      Pervious area fraction = 0.100


      ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
++++
      Process from Point/Station      102.000 to Point/Station
103.000
      **** PIPEFLOW TRAVEL TIME (Program estimated size) ****
      ------------------------------------------------------------------------
____
      Upstream point/station elevation =     0.000(Ft.)
      Downstream point/station elevation =    -0.200(Ft.)
      Pipe length  =    40.00(Ft.)   Manning's N = 0.012
      No. of pipes = 1  Required pipe flow  =     9.447(CFS)
      Nearest computed pipe diameter  =     21.00(In.)
      Calculated individual pipe flow  =     9.447(CFS)
      Normal flow depth in pipe =   13.92(In.)
      Flow top width inside pipe =   19.85(In.)
      Critical Depth =   13.73(In.)
      Pipe flow velocity =      5.58(Ft/s)
      Travel time through pipe =    0.12 min.
      Time of concentration (TC) =    12.13 min.
      End of computations, total study area =            4.30 (Ac.)
      The following figures may
      be used for a unit hydrograph study of the same area.

      Area averaged pervious area fraction(Ap) = 0.100
      Area averaged RI index number =  69.0
```

Appendix C

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH STORMWATER SOLUTIONS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com

Project Summary

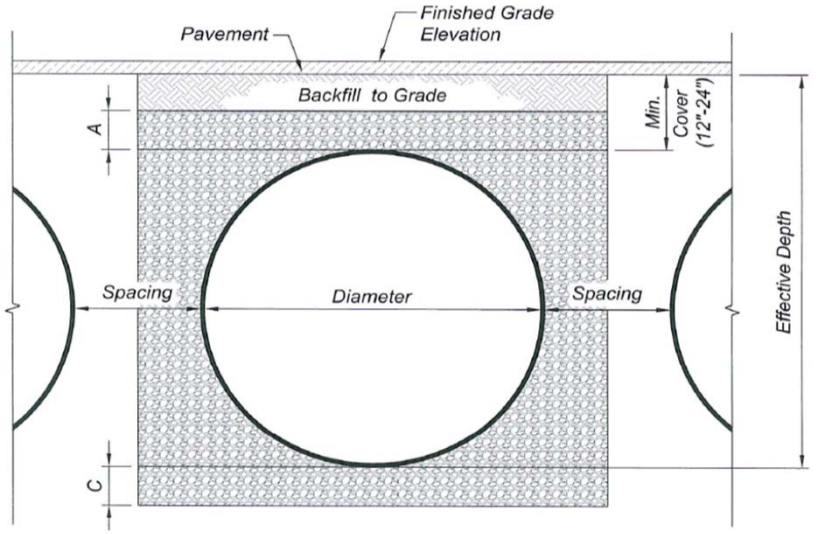
Date:	2/9/2022
Project Name:	NEC Ramona & Perris
City / County:	Perris
State:	CA
Designed By:	CM
Company:	United Engineering
Telephone:	

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	24,619
Limiting Width (ft):	24.00
Invert Depth Below Asphalt (ft):	10.50
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	2
Depth A: Porous Stone Above Pipe (in):	6
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	17,342	cf	
Porous Stone Storage:	7,553	cf	
Total Storage Provided:	24,895	cf	101.1% Of Required Storage
Number of Barrels:	2	barrels	
Length per Barrel:	163.0	ft	
Length Per Header:	19.0	ft	
Rectangular Footprint (W x L):	23. ft x 175. ft		

CONTECH Materials

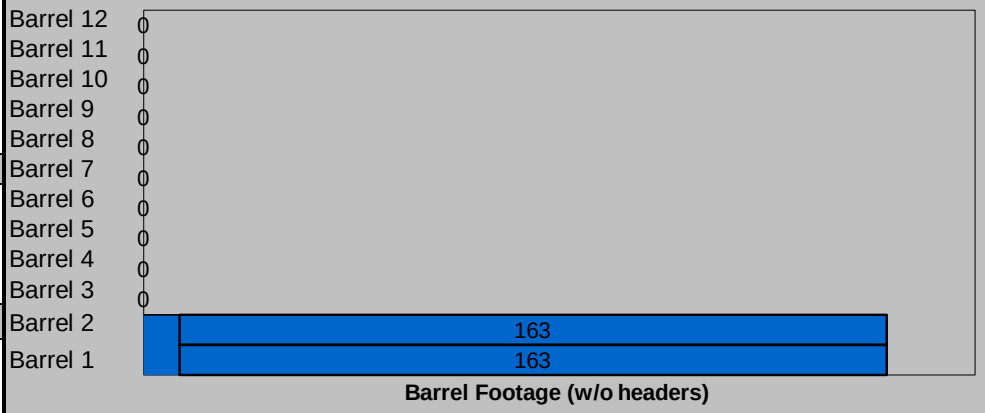
Total CMP Footage:	345	ft
Approximate Total Pieces:	15	pcs
Approximate Coupling Bands:	14	bands
Approximate Truckloads:	8	trucks

Construction Quantities**

Total Excavation:	1566	cy
Porous Stone Backfill For Storage:	699	cy stone
Backfill to Grade Excluding Stone:	224	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



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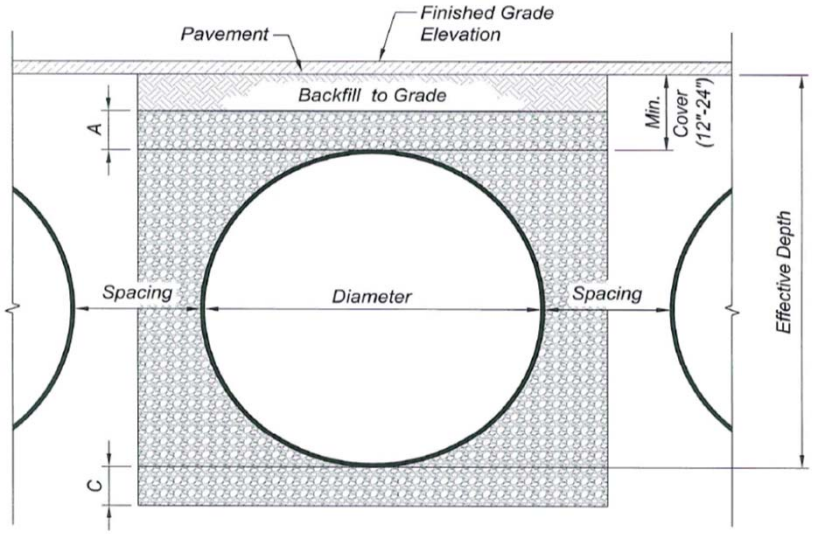
Date:	2/9/2022
Project Name:	NEC Ramona & Perris
City / County:	Perris
State:	CA
Designed By:	CM
Company:	United Engineering
Telephone:	

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	89,237
Limiting Width (ft):	45.00
Invert Depth Below Asphalt (ft):	10.50
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	2
Depth A: Porous Stone Above Pipe (in):	6
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

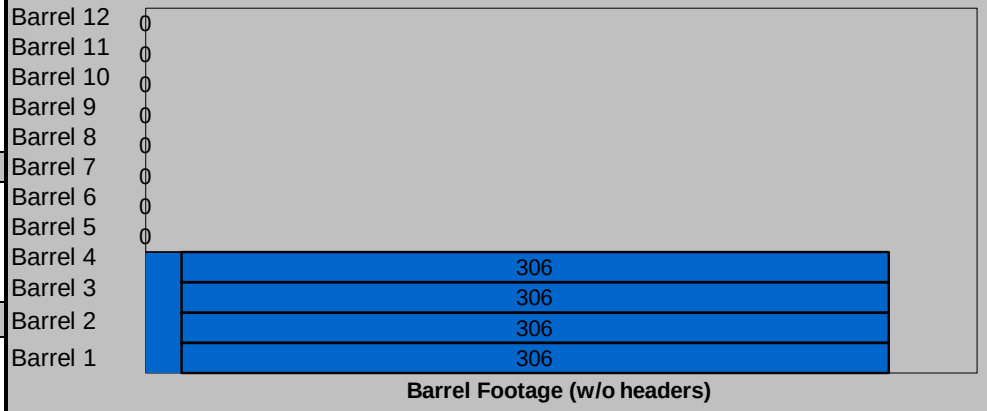
50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	63,586	cf	
Porous Stone Storage:	26,082	cf	
Total Storage Provided:	89,668	cf	100.5% Of Required Storage
Number of Barrels:	4	barrels	
Length per Barrel:	306.0	ft	
Length Per Header:	41.0	ft	
Rectangular Footprint (W x L):	45. ft x 318. ft		

System Layout



CONTECH Materials

Total CMP Footage:	1,265	ft
Approximate Total Pieces:	54	pcs
Approximate Coupling Bands:	53	bands
Approximate Truckloads:	27	trucks

Construction Quantities**

Total Excavation:	5565	cy
Porous Stone Backfill For Storage:	2415	cy stone
Backfill to Grade Excluding Stone:	795	cy fill

***Construction quantities are approximate and should be verified upon final design*

DYODS™
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CONTECH CMP DETENTION SYSTEMS

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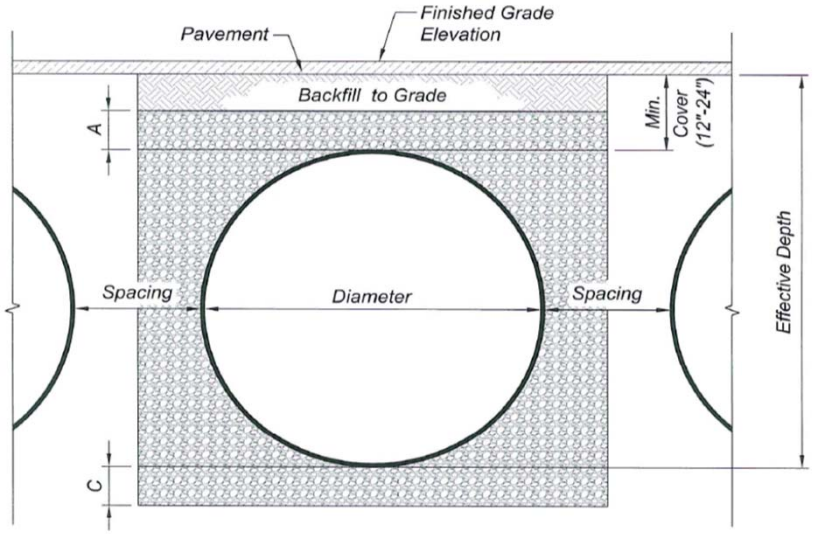
Project Name:	NEC Ramona & Perris
City / County:	Perris
State:	CA
Designed By:	CM
Company:	United Engineering
Telephone:	

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	96,511
Limiting Width (ft):	45.00
Invert Depth Below Asphalt (ft):	10.50
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	2
Depth A: Porous Stone Above Pipe (in):	6
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

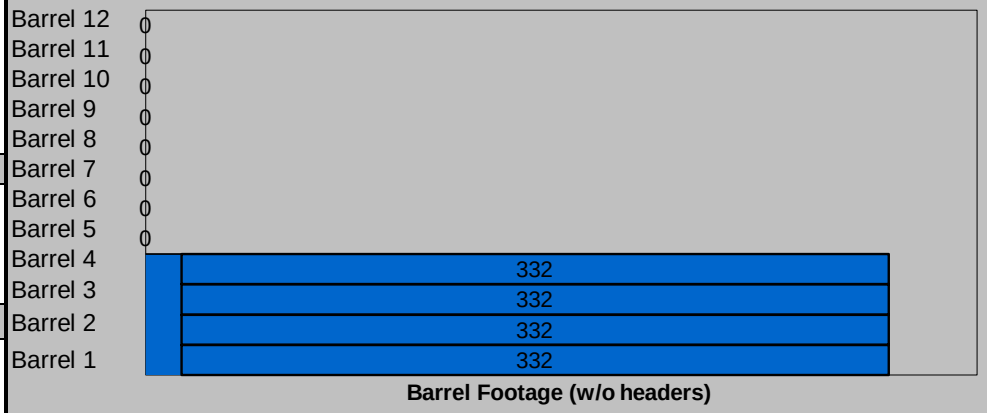
50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	68,813	cf	
Porous Stone Storage:	28,203	cf	
Total Storage Provided:	97,016	cf	100.5% Of Required Storage
Number of Barrels:	4	barrels	
Length per Barrel:	332.0	ft	
Length Per Header:	41.0	ft	
Rectangular Footprint (W x L):	45. ft x 344. ft		

System Layout



CONTECH Materials

Total CMP Footage:	1,369	ft
Approximate Total Pieces:	58	pcs
Approximate Coupling Bands:	57	bands
Approximate Truckloads:	29	trucks

Construction Quantities**

Total Excavation:	6020	cy
Porous Stone Backfill For Storage:	2611	cy stone
Backfill to Grade Excluding Stone:	860	cy fill

***Construction quantities are approximate and should be verified upon final design*

DYODS™
Design Your Own Detention System

CONTECH CMP DETENTION SYSTEMS

CONTECH STORMWATER SOLUTIONS INC.

For design assistance, drawings, and pricing send completed worksheet to:
dyods@contech-cpi.com

Project Summary

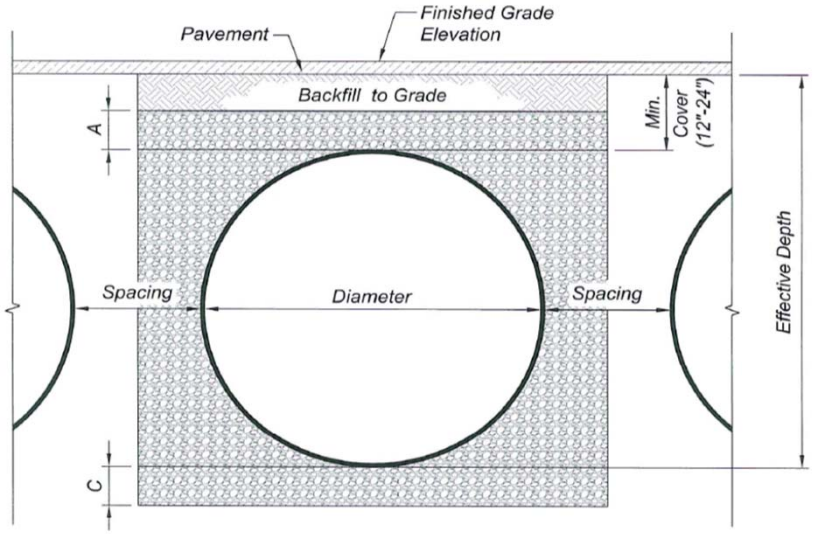
Date:	2/9/2022
Project Name:	NEC Ramona & Perris
City / County:	Perris
State:	CA
Designed By:	CM
Company:	United Engineering
Telephone:	

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	46,064
Limiting Width (ft):	24.00
Invert Depth Below Asphalt (ft):	10.50
Solid or Perforated Pipe:	Perforated
Shape Or Diameter (in):	96
Number Of Headers:	1
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	2
Depth A: Porous Stone Above Pipe (in):	6
Depth C: Porous Stone Below Pipe (in):	6
Stone Porosity (0 to 40%):	40

50.27 ft^2 Pipe Area



System Sizing

Pipe Storage:	32,421	cf	
Porous Stone Storage:	13,942	cf	
Total Storage Provided:	46,363	cf	100.6% Of Required Storage
Number of Barrels:	2	barrels	
Length per Barrel:	313.0	ft	
Length Per Header:	19.0	ft	
Rectangular Footprint (W x L):	23. ft x 325. ft		

CONTECH Materials

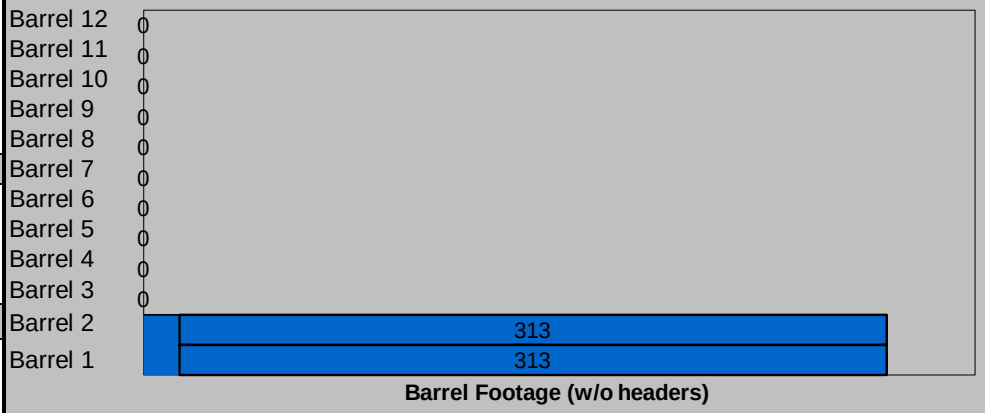
Total CMP Footage:	645	ft
Approximate Total Pieces:	29	pcs
Approximate Coupling Bands:	28	bands
Approximate Truckloads:	15	trucks

Construction Quantities**

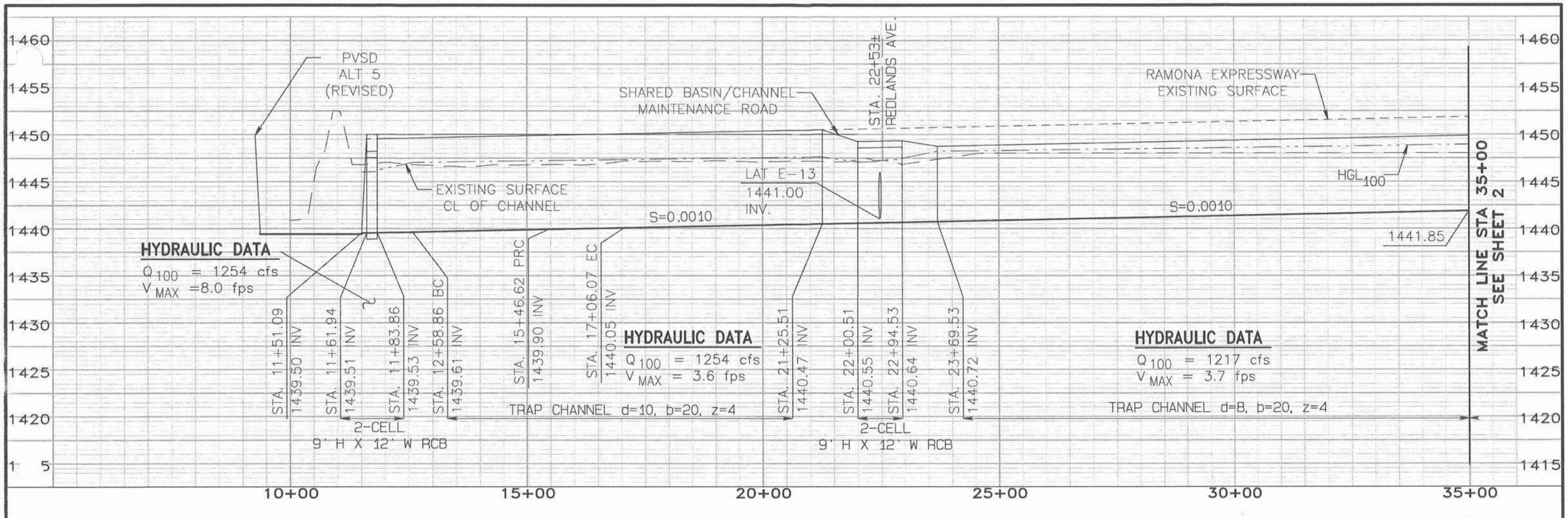
Total Excavation:	2907	cy
Porous Stone Backfill For Storage:	1291	cy stone
Backfill to Grade Excluding Stone:	415	cy fill

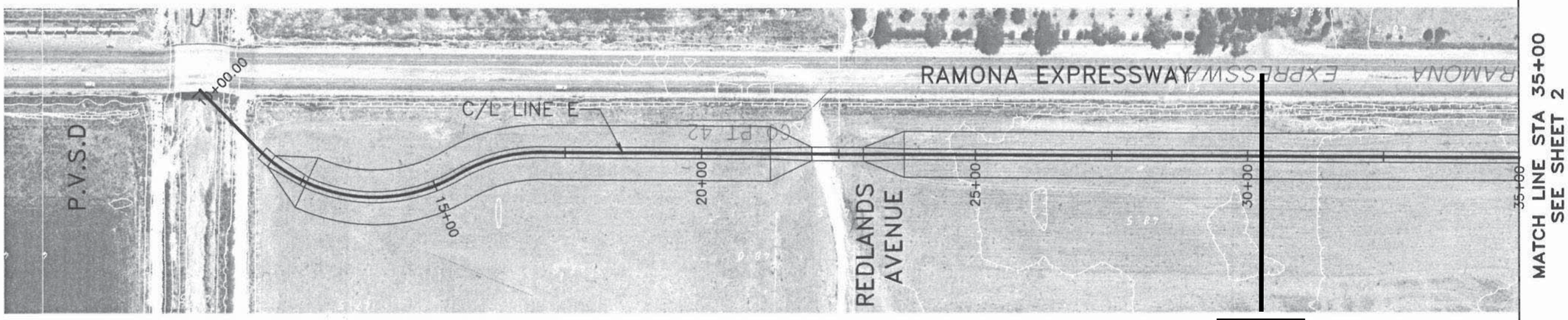
***Construction quantities are approximate and should be verified upon final design*

System Layout



Appendix D





PROFILE
HORIZ 1" =200'
VERT 1" = 10'
PLAN 1" = 200'

LEGEND

= 800-180-000

GRAPHIC SCALE 1"=200'

0 200 400

VERTICAL DATUM: NGVD 29

UNDERGROUND SERVICE ALERT
CALL: TOLL FREE
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TWO WORKING DAYS BEFORE YOU DIG

PERRIS VALLEY COMMERCIAL CENTER SPECIFIC PLAN

SEAL
REGISTERED PROFESSIONAL ENGINEER
SCOTT R. HILGENBERG
NO. C44762
CIVIL
STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET, RIVERSIDE, CA 92506
PH. (951) 686-1070 FAX (951) 788-1256

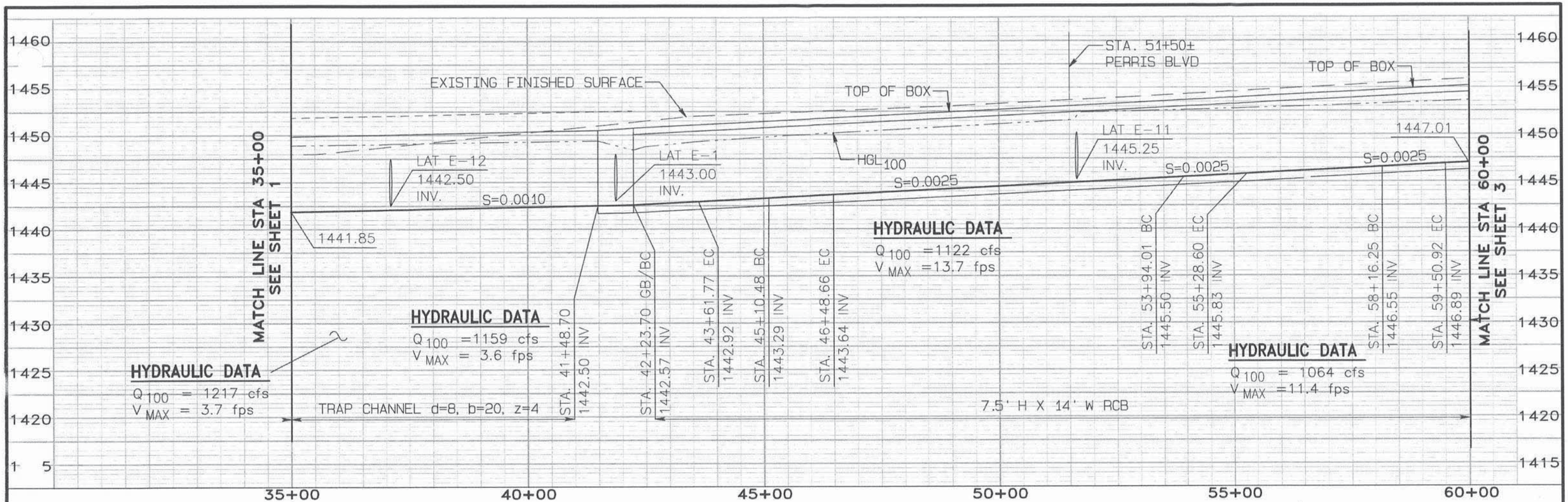
APPROVED BY: _____ DATE: _____
R.C.E. NO. C44762 EXP. DATE: 3/12/2014

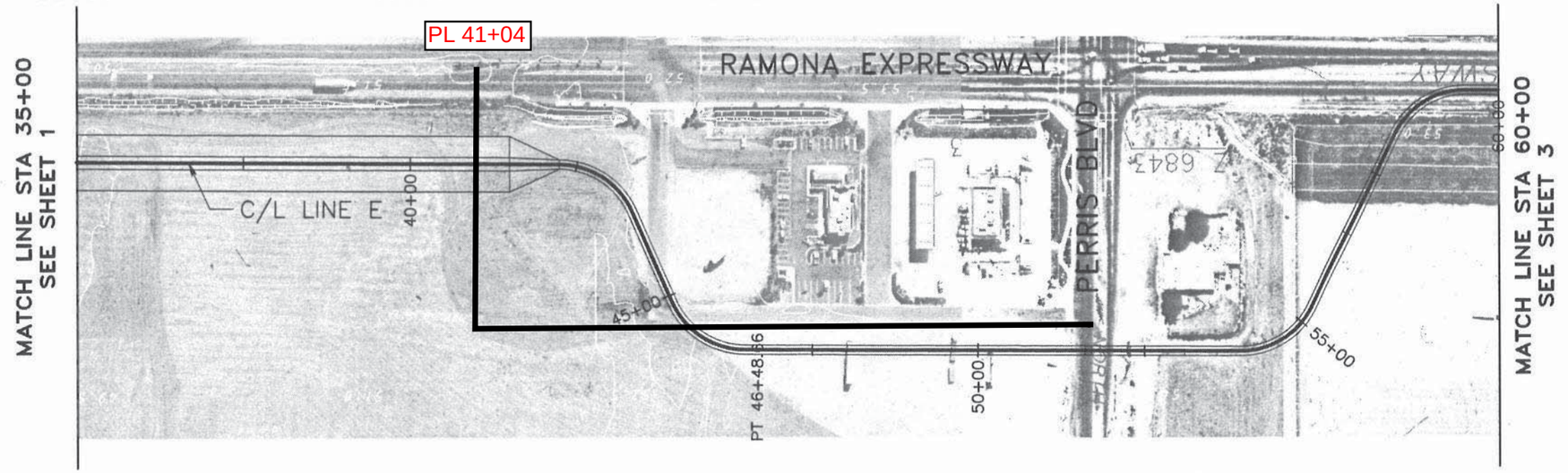
DESIGNED BY: JCC
DRAWN BY: MLA
CHECKED BY: SRH

REF.	REVISIONS	APPR.	DATE

PRELIMINARY PROFILE
PERRIS VALLEY
MASTER
DRAINAGE PLAN
LINE E
STA 10+00.00 to STA 35+00.00

PROJECT NO.
DRAWING NO.
SHEET NO. 1 OF 5





PROFILE
HORIZ 1" =200'
VERT 1" = 10'

PLAN 1" = 200'

LEGEND

GRAPHIC SCALE 1"=200'

0 200 400

VERTICAL DATUM: NGVD 29

UNDERGROUND SERVICE ALERT
CALL: TOLL FREE
1-800
227-2600
TWO WORKING DAYS BEFORE YOU DIG

PERRIS VALLEY COMMERCIAL CENTER SPECIFIC PLAN

SEAL
REGISTERED PROFESSIONAL ENGINEER
SCOTT R. HILDEBRANDT
NO. C44762
CIVIL
STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET, RIVERSIDE, CA 92506
PH. (951) 686-1070 FAX (951) 788-1256

APPROVED BY: _____ DATE: _____
R.C.E. NO. C44762 EXP. DATE: 3/12/2014

DESIGNED BY: JCC
DRAWN BY: MLA
CHECKED BY: SRH

REF.	REVISIONS	APPR.	DATE

PRELIMINARY PROFILE
PERRIS VALLEY
MASTER
DRAINAGE PLAN
LINE E
STA 35+00.00 to STA 60+00.00

PROJECT NO.
DRAWING NO.
SHEET NO. 2 OF 5

Cost Estimate

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
2010 PROJECT PLANNING COSTS

PROJECT DESCRIPTION: Perris Valley Commercial Center Specific Plan - Line E

ITEM	UNIT	QUANTITY	CRITERIA	2009 COST	TOTAL
TRAP. CHANNEL EXCAVATION	CY	58627	b > 8	$9.00	$527,643
		9152	b ≤ 8	$12.60	$115,315
RCB & RECT. CHAN. EXCAVATION	CY	28206	b > 12	$11.70	$330,010
		3730	b ≤ 12	$16.20	$60,426
COMPACTED FILL	CY		EXC > FILL	$3.25	
			EXC < FILL	$7.30	
STRUCTURAL BACKFILL	CY	9567		$10.40	$99,497
TRAP. CHANNEL CONCRETE	CY		b > 8*	$380.00	
		869	b ≤ 8	$480.00	$417,120
R.C.B. CONCRETE (INCLUDING STEEL)	CY	5683	L > 150	$590.00	$3,352,970
		539	L < 150	$820.00	$441,980
RECT. CHAN. CONC. (INCLUDING STEEL)	CY		L > 150	$440.00	
			L < 150	$615.00	
CUTOFF WALL (2' TYP.)	LF	2130		$13.50	$28,755
SUBDRAIN	LF	1065	6 < b ≤ 16	$12.50	$13,313
			b > 16	$25.00	
FENCING (6' TYP.)	LF	8024		$16.00	$128,384
CATCH BASINS	LF			$560.00	
MANHOLES (PIPE)	EA	5	FOR MAINLINE	$5,600.00	$28,000
		2	FOR JUNCTION	$6,500.00	$13,000
MANHOLES (RCB)	EA	11		$2,100.00	$23,100
A.C. PAVING & BASE	SF			$4.50	
CLASS 2 BASE (3" THICK)	SF			$0.70	
ROCK SLOPE PROTECTION***	CY**			$100.00	
CONC.-ROCK SLOPE PROTECTION				$150.00	
STORM DRAINS	SEE STORM DRAIN COST SHEET				$1,442,933
SLAB BRIDGES	LBS	SEE BRIDGE COST SHEET	REBAR	$1.10	
	CY		CONCRETE	$540.00	
ENV./ REGULATORY COSTS	LS		MITIGATION / E.A./ ALT STUDY, ETC.		
MISCELLANEOUS COSTS	SEE MISCELLANEOUS COST SHEET				

* No.4 bars at 18 inches
** 1.9 tons/cy
*** Use 75% for large installations (>1000cy)
**** Use 25% of rock slope protection quantity to determine concreted-rock quantity.

" i.e. Mobilization, Water Control, etc.
"" Connector pipe, etc.

SUBTOTAL	$7,022,446
SUBTOTAL (DAM & BASIN)	$0
LUMP SUM ITEMS (22%)"	$1,544,938
CONTINGENCIES (12%)""	$1,028,086
ENG & ADMIN. (25%) MITIGATION (3%) ? ☑ ON FOR YES	$2,686,732
SUBTOTAL (AS-BUILT)	
SUBTOTAL	$12,282,201
R/W (FROM R/W SHEET)	$1,030,000
R/W (FROM DAM & BASIN SHEET)	$0
TOTAL	**$13,312,201**

2008 base index = 9894.94 (E.N.R./OCT 2008)
2009 base index = 9760.69 (E.N.R./OCT 2009)
Ratio increase = 0.986432

rev. 11/07/09

NAME & DATE
JCC 01/30/14

PROJECT DESCRIPTION: Perris Valley Commercial Center Specific Plan - Line E

STORM DRAIN COSTS FOR: WESTERN DISTRICT

INSIDE DIA. (INCHES)	AC COVER? ENTER Y or N	LENGTH OF PIPE (FT)	PIPE ($/FT)	IN PLACE ($/FT) W/O AC	IN PLACE ($/FT) W/AC	TOTAL
90	Y	1379 FT	$403		$557	$768,103
60	Y	1225 FT	$234		$330	$404,250
48	Y	855 FT	$182		$261	$223,155
30	Y	271 FT	$119		$175	$47,425
		3730 FT				
				STORM DRAIN TOTAL		$1,442,933

MISCELLANEOUS COSTS

ITEM DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL
		MISCELLANEOUS TOTAL		

RCB QUANTITY SUMMARY SHEET

Perris Valley MDP
MDP / ADP

Perris Valley Commercial Center Specific Plan - Line E
FACILITY

1/30/14
DATE

JCC
ENGINEER

	Location	No. Cells	Cell Height (FT)	Cell Width (FT)	Concrete per Cell (CF/LF) *	Length (FT)	Depth from F.G. to Top of RCB (FT)	Avg. Overburden E.G. to F.G. (FT)	RCB Height (FT) **	RCB Width (FT) **	Concrete (CY)	Trench Depth Below F.G. (FT)	Sloped or Shored Trench	Height of Sloped Portion of Trench (FT)	Structural Excavation (CY) ***	Structural Backfill (CY) ***	R/W Width **** (FT)	R/W (AC)	With Overburden: Overburden Excavation (CY)	With Overburden: R/W Width ***** (FT)	With Overburden: R/W (AC)
1	Sta. 11+62 to Sta. 11+84	2	9.0	12.0	62.7	22.0	2.0		10.50	26.00	102.2	12.5	Shored		305.6	83.1	44.8	0.02			
2	Sta. 22+01 to Sta. 22+95	2	9.0	12.0	62.7	94.0	2.0		10.50	26.00	436.6	12.5	Shored		1305.6	355.1	44.8	0.10			
3	Sta. 42+24 to Sta 81+63	1	7.5	14.0	37.0	3939.0	1.0		9.00	15.33	5397.9	10.0	Shored		28206.2	8072.6	32.7	2.96			
4	Sta 91+96 to Sta 94+85	1	6.0	12.0	26.8	287.0	4.0		7.50	13.33	284.9	11.5	Shored		2118.9	1055.9	31.5	0.21			
5									0.00	0.00		0.0			0.0	0.0	0.0				
6									0.00	0.00		0.0			0.0	0.0	0.0				
7									0.00	0.00		0.0			0.0	0.0	0.0				
8									0.00	0.00		0.0			0.0	0.0	0.0				
9									0.00	0.00		0.0			0.0	0.0	0.0				
10									0.00	0.00		0.0			0.0	0.0	0.0				
11									0.00	0.00		0.0			0.0	0.0	0.0				
12									0.00	0.00		0.0			0.0	0.0	0.0				
13									0.00	0.00		0.0			0.0	0.0	0.0				
14									0.00	0.00		0.0			0.0	0.0	0.0				
15									0.00	0.00		0.0			0.0	0.0	0.0				
16									0.00	0.00		0.0			0.0	0.0	0.0				
17									0.00	0.00		0.0			0.0	0.0	0.0				
18									0.00	0.00		0.0			0.0	0.0	0.0				
19									0.00	0.00		0.0			0.0	0.0	0.0				
20									0.00	0.00		0.0			0.0	0.0	0.0				
rev. 11/07/09						4,342					6,222				31,936	9,567		3.3	0		0.0

* Caltrans Standard Plans, 1992, D80.

** Assumes wall thickness, t2 = 8", roof and invert slab thicknesses, t1, t3 = 9".

*** Below finish grade, per RCB pay lines (normal condition), Std. Dwg. No. M815. Refer to "Storm Drain Easement Widths," RCFC, Nov. 10, 1987 for sloped or shored trench sections.

**** "Storm Drain Easement Widths," RCFC, Nov. 10, 1987. Assumes a minimum width of 10' for construction access, the width of the sloped excavation, or the width of the shored excavation plus 8', whichever is greater.

***** Assumes cut slopes of 0.75H:1V between overburden and finish grade.

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
- PROJECT PLANNING R/W COSTS -

PROJECT: Perris Valley Commercial Center Specific Plan - Line E

DATE: 1/30/14

(1) Raw R/W Costs (*Land Value A*) = ***$100,000*** $/acre

Total Area required = ***10.30*** acres

Total R/W Raw Costs = **$1,030,000**

(2) Number of vacant parcels = ***0*** x *$5,000* = ***$0***

Number of occupied parcels = ***0*** x *$10,000* = ***$0***

Total Parcels Affected = ***0***

Total Parcels Costs = **$0**

(3) Total acreage of Improved parcels significantly impacted by the project = ____ acres

$= \left[\left(\frac{1}{1-R}\right)-1\right]$

Improvement ratio ***R*** (*decimal*) = ***20%*** coefficient→ **0.3**

Land Value ***A*** (*per acre*) = ***$100,000***

Improvement value ***I*** (*per acre*) = ***$25,000*** ← $= A.\left[\left(\frac{1}{1-R}\right)-1\right]$

Value of Improved Land (*per acre*) = ***$125,000*** ← $= A + A.\left[\left(\frac{1}{1-R}\right)-1\right]$

Total Value of Damaged Property = ***$0***

Total Damages Costs (25%.Total Improvement value) = **$0**

(4) Number of Houses for Buyout = ____ houses

Cost per Home = ***$500,000***

Total Relocation/Buyout Costs = **$0**

Grand Total R/W Costs = $1,030,000

Run Description: PVCC - MDP - LINE E Engineer: jcc

Reach From Sta	Reach To Sta	Channel Dimensions Width FT.	Depth FT.	S/S	Top Wall IN.	Btm Wall IN.	Slab IN.	Access Road FT.	Un-Reinf Concrete C.Y.	Reinf Concrete C.Y.	General Excav C.Y.	Struct Backfill C.Y.	Cutoff Wall L.F.	Sub Drain L.F.	R/w Width FT.	R/w Area Acres
11+83.00	22+00.00	20.00	10.00	4.00	0	0	0	30	0	0	22600	0	0	0	132	3.1
22+94.00	42+24.00	20.00	9.00	4.00	0	0	0	30	0	0	36027	0	0	0	124	5.5
81+63.00	92+28.00	6.00	10.00	1.50	6	6	6	30	869	0	9152	0	2130	1065	68	1.7
					Total Quantities				869	0	67779	0	2130	1065		10.3

Total Channel Length (FT.): 4,012.00

** Cost Estimate **

Un-Reinforced Concrete	869 C.Y. @	$0.00 =	$0.
Channel Excavation	67779 C.Y. @	$0.00 =	$0.
Cutoff Wall	2130 L.F. @	$0.00 =	$0.
Sub Drain	1065 L.F. @	$0.00 =	$0.
Fencing	8024 FT. @	$0.00 =	$0.
Sub-Total			$0.
Engineering & Contingencies	@	0% =	$0.
Right of Way	10.3 Acre @	$0.00 =	$0.
Total			$0. ** Use => $0.

Perris Valley Commerce Center Specific Plan Line E & Line F Routing Summary				
Routing Node	3-Hour 100-Year	6-Hour 100-Year	24-Hour 100-Year	Descriptions
	CFS	CFS	CFS	
10	**783**	738	319	**Flow Into Line F Basin**
10-10	35	39	**43**	**Line F Basin Routing**
10-20	35	39	**43**	**Route Flow To Webster**
15	**1016**	953	404	**Flow Into Line E Basin**
15-15	73	77	**82**	**Line E Basin Routing**
15-20	73	77	**82**	**Route Flow To Webster**
20-20	108	115	**125**	**Combine Basin Flows**
20-20	**481**	430	231	**Add Area E1**
20-30	**471**	422	230	**Line E**
30-30	**1044**	944	461	**Add Area E2**
30-30	**170**	144	59	**Flow into Lowes Basin**
30-30	**22**	25	25	**Route Lowes Basin**
30-30	**1064**	967	480	**Combine Flows**
30-40	**998**	911	472	**Line E**
40-40	**1254**	1151	602	**Add Area E3**

Perris Valley Commerce Center Specific Plan
Line E and Line F - Flow Proration

Subarea		Acres	Flow	
E1	Paterson Flows (North - Line E)	20	27	
	Redirected Lat B-5 Flow at Webster & Perry	82	111	
	Webster North (Line F)	62	95	**
	Webster South (Lat E-7)	99	134	
	Total	**263**	**356**	***
E2				
	Brennan North	9	11	
	Brennan South (Lat E-6)	82	100	
	Revised Lat E-4 (450' E of Brennan)	70	86	
	Old Indian Avenue North (PVLC)	90	110	
	Barrett Avenue North (Lat E-3/PVLC)	209	256	
	Total	**460**	**563**	*
Lowes	Barrett Avenue South (Religned Indian - Lowes - Lat E-2)	**114**	**20**	*
E3				
	Perris Blvd North (Lat E-11)	81	58	
	Perris Blvd South (Lat E-1)	52	37	
	Lateral E-12	82	58	
	Redlands Ave (Lat E-13)	52	37	
	Total	**267**	**190**	*

* Flows are increases from routing study, not peak subarea flows

** In WSPG Model an additional 33 cfs is included to account for Line F Basin outflow.

*** 356 cfs is difference betweeen 481 cfs (3 hour peak at node 20-20 Add Area E1) and 125 cfs (24 Hour Peak - Combine Basin Flows) - See Routing Summary

Hydraulics

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING

Date: 3-12-2014 Time:11:17:54

Perris Valley MDP Line E Preliminary Design

Flows From Routing Model - (Yeild Flows added at intermediate locations)

jcc 12MAR2014 (Line E and Line F Basin Alt 6Crex plus Added Line D Ar

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope				SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch	
1151.090	1439.500	6.500	1446.000	1254.00	7.82	.95	1446.95	.00	4.31	24.67	9.000	24.670	.00	0 .0
10.850	.0009				.0008	.01	6.50	.54	6.15	.014	.00	.00	RECTANG	
1161.940	1439.510	6.498	1446.008	1254.00	7.82	.95	1446.96	.16	4.31	24.67	9.000	24.670	.00	0 .0
WALL	EXIT													
1161.940	1439.510	6.499	1446.009	1254.00	8.04	1.00	1447.01	.08	4.39	24.67	9.000	24.670	.00	1 .7
21.920	.0009				.0013	.03	6.58	.56	7.35	.014	.00	.00	BOX	
1183.860	1439.530	6.510	1446.040	1254.00	8.03	1.00	1447.04	.00	4.39	24.67	9.000	24.670	.00	1 .7
WALL	ENTRANCE													
1183.860	1439.530	6.658	1446.188	1254.00	7.64	.91	1447.09	.00	4.31	24.67	9.000	24.670	.00	0 .0
TRANS STR	.0011				.0005	.04	6.66	.52		.015	.00	.00	RECTANG	
1258.860	1439.610	7.413	1447.023	1254.00	3.41	.18	1447.20	.05	3.83	79.31	10.000	20.000	4.00	0 .0
287.760	.0010				.0007	.19	7.47	.28	6.64	.030	.00	4.00	TRAP	
1546.620	1439.900	7.303	1447.203	1254.00	3.49	.19	1447.39	.06	3.83	78.42	10.000	20.000	4.00	0 .0
159.450	.0009				.0007	.11	7.36	.29	6.75	.030	.00	4.00	TRAP	
1706.070	1440.050	7.257	1447.307	1254.00	3.52	.19	1447.50	.00	3.83	78.06	10.000	20.000	4.00	0 .0
419.440	.0010				.0007	.30	7.26	.29	6.65	.030	.00	4.00	TRAP	
2125.510	1440.470	7.128	1447.598	1254.00	3.63	.20	1447.80	.00	3.83	77.02	10.000	20.000	4.00	0 .0
TRANS STR	.0011				.0005	.04	7.13	.30		.015	.00	4.00	TRAP	

Perris Valley MDP Line E Preliminary Design
Flows From Routing Model - (Yeild Flows added at intermediate locations)
jcc 12MAR2014 (Line E and Line F Basin Alt 6Crex plus Added Line D Ar

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
L/Elem	Ch Slope													
2200.510	1440.550	6.490	1447.040	1254.00	7.83	.95	1447.99	.00	4.31	24.67	9.000	24.670	.00	0 .0
WALL	EXIT													
2200.510	1440.550	6.491	1447.041	1254.00	8.05	1.01	1448.05	.00	4.39	24.67	9.000	24.670	.00	1 .7
39.490	.0010					.0014	.06	6.49	.56	7.45	.015	.00	.00	BOX
2240.000	1440.590	6.515	1447.105	1254.00	8.02	1.00	1448.10	.00	4.39	24.67	9.000	24.670	.00	1 .7
JUNCT STR	.0007					.0013	.02	6.52	.56		.015	.00	.00	BOX
2255.000	1440.600	6.675	1447.275	1217.00	7.60	.90	1448.17	.00	4.31	24.67	9.000	24.670	.00	1 .7
39.530	.0010					.0011	.04	6.68	.53	6.90	.014	.00	.00	BOX
2294.530	1440.640	6.680	1447.320	1217.00	7.59	.89	1448.21	.00	4.31	24.67	9.000	24.670	.00	1 .7
WALL	ENTRANCE													
2294.530	1440.640	6.807	1447.447	1217.00	7.25	.82	1448.26	.00	4.23	24.67	9.000	24.670	.00	0 .0
TRANS STR	.0011					.0004	.03	6.81	.49		.015	.00	.00	RECTANG
2369.530	1440.720	7.476	1448.196	1217.00	3.26	.17	1448.36	.00	3.77	79.81	8.000	20.000	4.00	0 .0
523.744	.0010					.0006	.32	7.48	.27	6.56	.030	.00	4.00	TRAP
2893.274	1441.244	7.256	1448.500	1217.00	3.42	.18	1448.68	.00	3.77	78.05	8.000	20.000	4.00	0 .0
644.951	.0010					.0007	.45	7.26	.28	6.56	.030	.00	4.00	TRAP
3538.226	1441.888	7.042	1448.930	1217.00	3.59	.20	1449.13	.00	3.77	76.33	8.000	20.000	4.00	0 .0
161.774	.0010					.0008	.12	7.04	.30	6.56	.030	.00	4.00	TRAP

E PL 30+22 →

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 3-12-2014 Time:11:17:54

Perris Valley MDP Line E Preliminary Design

Flows From Routing Model - (Yeild Flows added at intermediate locations)

jcc 12MAR2014 (Line E and Line F Basin Alt 6Crex plus Added Line D Ar

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
3700.000	1442.050	6.998	1449.048	1217.00	3.62	.20	1449.25	.00	3.77	75.98	8.000	20.000	4.00	0 .0
JUNCT STR	.0010					.0007	.01	7.00	.30		.030	.00	4.00	TRAP
3710.000	1442.060	7.024	1449.084	1159.00	3.43	.18	1449.27	.00	3.67	76.19	8.000	20.000	4.00	0 .0
438.700	.0010					.0007	.31	7.02	.29	6.41	.030	.00	4.00	TRAP
4148.700	1442.500	6.883	1449.383	1159.00	3.54	.19	1449.58	.00	3.67	75.06	8.000	20.000	4.00	0 .0
JUNCT STR	.0009							6.88	.30		.015	.00	4.00	TRAP
4223.700	1442.570	5.842	1448.412	1122.00	13.72	2.92	1451.33	.68	5.84	14.00	7.500	14.000	.00	0 .0
WALL	EXIT													
4223.700	1442.570	5.842	1448.412	1122.00	13.72	2.92	1451.33	.34	5.84	14.00	7.500	14.000	.00	0 .0
23.958	.0025					.0031	.08	6.18	1.00	6.63	.014	.00	.00	BOX
4247.659	1442.631	6.127	1448.758	1122.00	13.08	2.66	1451.41	.31	5.84	14.00	7.500	14.000	.00	0 .0
114.111	.0025					.0028	.32	6.44	.93	6.63	.014	.00	.00	BOX
4361.770	1442.920	6.391	1449.311	1122.00	12.54	2.44	1451.75	.00	5.84	14.00	7.500	14.000	.00	0 .0
148.710	.0025					.0026	.39	6.39	.87	6.67	.014	.00	.00	BOX
4510.480	1443.290	6.524	1449.814	1122.00	12.28	2.34	1452.16	.27	5.84	14.00	7.500	14.000	.00	0 .0
138.180	.0025					.0026	.36	6.80	.85	6.63	.014	.00	.00	BOX
4648.660	1443.640	6.566	1450.206	1122.00	12.21	2.31	1452.52	.00	5.84	14.00	7.500	14.000	.00	0 .0
511.340	.0025					.0025	1.27	6.57	.84	6.68	.014	.00	.00	BOX

W PL 41+04 →

S PL →

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 3-12-2014 Time:11:17:54

Perris Valley MDP Line E Preliminary Design

Flows From Routing Model - (Yeild Flows added at intermediate locations)

jcc 12MAR2014 (Line E and Line F Basin Alt 6Crex plus Added Line D Ar

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
5160.000	1444.910	6.668	1451.578	1122.00	12.02	2.24	1453.82	.00	5.84	14.00	7.500	14.000	.00	0 .0
JUNCT STR	.0030					.0017	.02	6.67	.82		.014	.00	.00	BOX
5170.000	1444.940	7.432	1452.372	1064.00	10.23	1.62	1454.00	.00	5.64	14.00	7.500	14.000	.00	0 .0
W PL → 224.010	.0025					.0017	.38	7.43	.66	6.40	.014	.00	.00	BOX
				---------- WARNING - Flow depth near top of box conduit ----------										
5394.010	1445.500	7.129	1452.629	1064.00	10.66	1.76	1454.39	.21	5.64	14.00	7.500	14.000	.00	0 .0
134.590	.0025					.0019	.25	7.33	.70	6.45	.014	.00	.00	BOX
				---------- WARNING - Flow depth near top of box conduit ----------										
5528.600	1445.830	6.985	1452.815	1064.00	10.88	1.84	1454.65	.00	5.64	14.00	7.500	14.000	.00	0 .0
121.400	.0026					.0020	.24	6.99	.73	6.35	.014	.00	.00	BOX
				---------- WARNING - Flow depth near top of box conduit ----------										
5650.000	1446.140	6.847	1452.987	1064.00	11.10	1.91	1454.90	.00	5.64	14.00	7.500	14.000	.00	0 .0
TRANS STR	.0027					.0021	.03	6.85	.75		.014	.00	.00	BOX
				---------- WARNING - Flow depth near top of box conduit ----------										

Perris Valley MDP Line E Preliminary Design
Flows From Routing Model - (Yeild Flows added at intermediate locations)
jcc 12MAR2014 (Line E and Line F Basin Alt 6Crex plus Added Line D Ar

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
5665.000	1446.180	6.832	1453.012	1064.00	11.12	1.92	1454.93	.00	5.64	14.00	7.500	14.000	.00	0 .0
151.250	.0024					.0021	.32	6.83	.75	6.46	.014	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
5816.250	1446.550	6.725	1453.275	1064.00	11.30	1.98	1455.26	.23	5.64	14.00	7.500	14.000	.00	0 .0
134.670	.0025					.0022	.30	6.96	.77	6.38	.014	.00	.00	BOX
5950.920	1446.890	6.627	1453.517	1064.00	11.47	2.04	1455.56	.00	5.64	14.00	7.500	14.000	.00	0 .0
705.898	.0025					.0023	1.61	6.63	.79	6.41	.014	.00	.00	BOX
6656.818	1448.652	6.407	1455.059	1064.00	11.86	2.18	1457.24	.00	5.64	14.00	7.500	14.000	.00	0 .0
43.182	.0025					.0025	.11	6.41	.83	6.41	.014	.00	.00	BOX
6700.000	1448.760	6.407	1455.167	1064.00	11.86	2.18	1457.35	.00	5.64	14.00	7.500	14.000	.00	0 .0
JUNCT STR	.0030					.0015	.02	6.41	.83		.014	.00	.00	BOX
6710.000	1448.790	7.809	1456.599	788.00	7.50	.87	1457.47	.00	4.62	14.00	7.500	14.000	.00	0 .0
315.653	.0025					.0015	.48	7.81	.48	5.14	.014	.00	.00	BOX
7025.653	1449.579	7.500	1457.079	788.00	7.50	.87	1457.95	.00	4.62	14.00	7.500	14.000	.00	0 .0
169.911	.0025					.0009	.15	7.50	.48	5.14	.014	.00	.00	BOX
7195.564	1450.004	7.150	1457.154	788.00	7.87	.96	1458.12	.00	4.62	14.00	7.500	14.000	.00	0 .0
167.823	.0025					.0010	.17	7.15	.52	5.14	.014	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												

Perris Valley MDP Line E Preliminary Design
Flows From Routing Model - (Yeild Flows added at intermediate locations)
jcc 12MAR2014 (Line E and Line F Basin Alt 6Crex plus Added Line D Ar

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
7363.388	1450.423	6.817	1457.240	788.00	8.26	1.06	1458.30	.00	4.62	14.00	7.500	14.000	.00	0 .0
167.640	.0025					.0012	.19	6.82	.56	5.14	.014	.00	.00	BOX
		---------- WARNING - Flow depth near top of box conduit ----------												
7531.028	1450.842	6.500	1457.342	788.00	8.66	1.16	1458.51	.00	4.62	14.00	7.500	14.000	.00	0 .0
170.442	.0025					.0013	.22	6.50	.60	5.14	.014	.00	.00	BOX
7701.470	1451.268	6.198	1457.465	788.00	9.08	1.28	1458.75	.00	4.62	14.00	7.500	14.000	.00	0 .0
178.595	.0025					.0015	.27	6.20	.64	5.14	.014	.00	.00	BOX
7880.064	1451.714	5.909	1457.623	788.00	9.53	1.41	1459.03	.00	4.62	14.00	7.500	14.000	.00	0 .0
30.356	.0025					.0017	.05	5.91	.69	5.14	.014	.00	.00	BOX
7910.420	1451.790	5.864	1457.654	788.00	9.60	1.43	1459.08	.13	4.62	14.00	7.500	14.000	.00	0 .0
117.110	.0025					.0017	.20	6.00	.70	5.16	.014	.00	.00	BOX
8027.530	1452.080	5.705	1457.785	788.00	9.87	1.51	1459.30	.00	4.62	14.00	7.500	14.000	.00	0 .0
17.340	.0023					.0019	.03	5.71	.73	5.29	.014	.00	.00	BOX
8044.870	1452.120	5.690	1457.810	788.00	9.89	1.52	1459.33	.14	4.62	14.00	7.500	14.000	.00	0 .0
117.750	.0025					.0019	.22	5.83	.73	5.10	.014	.00	.00	BOX

Perris Valley MDP Line E Preliminary Design
Flows From Routing Model - (Yeild Flows added at intermediate locations)
jcc 12MAR2014 (Line E and Line F Basin Alt 6Crex plus Added Line D Ar

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
8162.620	1452.420	5.535	1457.955	788.00	10.17	1.61	1459.56	.00	4.62	14.00	7.500	14.000	.00	0 .0
JUNCT STR	.0030					.0014	.04	5.53	.76		.014	.00	.00	BOX
			WARNING - Junction Analysis - Change in Channel Type											
8192.300	1452.510	6.651	1459.161	678.00	6.38	.63	1459.79	.00	4.97	25.95	10.000	6.000	1.50	0 .0
59.595	.0030					.0008	.05	6.65	.56	4.83	.015	.00	1.50	TRAP
8251.895	1452.688	6.458	1459.147	678.00	6.69	.70	1459.84	.00	4.97	25.38	10.000	6.000	1.50	0 .0
57.431	.0030					.0009	.05	6.46	.59	4.83	.015	.00	1.50	TRAP
8309.325	1452.860	6.270	1459.131	678.00	7.02	.76	1459.90	.00	4.97	24.81	10.000	6.000	1.50	0 .0
55.183	.0030					.0011	.06	6.27	.63	4.83	.015	.00	1.50	TRAP
8364.508	1453.025	6.087	1459.113	678.00	7.36	.84	1459.95	.00	4.97	24.26	10.000	6.000	1.50	0 .0
52.799	.0030					.0012	.06	6.09	.67	4.83	.015	.00	1.50	TRAP
8417.307	1453.183	5.909	1459.092	678.00	7.72	.93	1460.02	.00	4.97	23.73	10.000	6.000	1.50	0 .0
50.196	.0030					.0014	.07	5.91	.71	4.83	.015	.00	1.50	TRAP
8467.503	1453.333	5.734	1459.068	678.00	8.10	1.02	1460.09	.00	4.97	23.20	10.000	6.000	1.50	0 .0
47.229	.0030					.0016	.07	5.73	.75	4.83	.015	.00	1.50	TRAP
8514.732	1453.475	5.565	1459.040	678.00	8.49	1.12	1460.16	.00	4.97	22.69	10.000	6.000	1.50	0 .0
43.607	.0030					.0018	.08	5.56	.80	4.83	.015	.00	1.50	TRAP

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Perris Valley MDP Line E Preliminary Design

Flows From Routing Model - (Yeild Flows added at intermediate locations)

jcc 12MAR2014 (Line E and Line F Basin Alt 6Crex plus Added Line D Ar

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
8558.340	1453.605	5.399	1459.005	678.00	8.91	1.23	1460.24	.00	4.97	22.20	10.000	6.000	1.50	0 .0
38.674	.0030					.0020	.08	5.40	.85	4.83	.015	.00	1.50	TRAP
8597.014	1453.721	5.238	1458.959	678.00	9.34	1.36	1460.31	.00	4.97	21.71	10.000	6.000	1.50	0 .0
27.215	.0030					.0023	.06	5.24	.90	4.83	.015	.00	1.50	TRAP
8624.229	1453.802	5.106	1458.908	678.00	9.72	1.47	1460.38	.00	4.97	21.32	10.000	6.000	1.50	0 .0
HYDRAULIC JUMP														
8624.229	1453.802	4.832	1458.634	678.00	10.59	1.74	1460.38	.00	4.97	20.49	10.000	6.000	1.50	0 .0
34.043	.0030					.0030	.10	4.83	1.06	4.83	.015	.00	1.50	TRAP
8658.271	1453.904	4.832	1458.736	678.00	10.59	1.74	1460.48	.00	4.97	20.49	10.000	6.000	1.50	0 .0
100.068	.0030					.0030	.30	4.83	1.06	4.83	.015	.00	1.50	TRAP
8758.340	1454.204	4.797	1459.001	678.00	10.71	1.78	1460.78	.00	4.97	20.39	10.000	6.000	1.50	0 .0
106.652	.0030					.0033	.35	4.80	1.07	4.83	.015	.00	1.50	TRAP
8864.992	1454.523	4.651	1459.174	678.00	11.23	1.96	1461.13	.00	4.97	19.95	10.000	6.000	1.50	0 .0
71.307	.0030					.0037	.27	4.65	1.14	4.83	.015	.00	1.50	TRAP
8936.299	1454.736	4.509	1459.245	678.00	11.78	2.15	1461.40	.00	4.97	19.53	10.000	6.000	1.50	0 .0
60.746	.0030					.0043	.26	4.51	1.21	4.83	.015	.00	1.50	TRAP
8997.045	1454.918	4.371	1459.289	678.00	12.36	2.37	1461.66	.00	4.97	19.11	10.000	6.000	1.50	0 .0
55.141	.0030					.0048	.27	4.37	1.28	4.83	.015	.00	1.50	TRAP

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Perris Valley MDP Line E Preliminary Design

Flows From Routing Model - (Yeild Flows added at intermediate locations)

jcc 12MAR2014 (Line E and Line F Basin Alt 6Crex plus Added Line D Ar

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
9052.186	1455.083	4.235	1459.319	678.00	12.96	2.61	1461.93	.00	4.97	18.71	10.000	6.000	1.50	0 .0
51.374	.0030					.0055	.28	4.24	1.37	4.83	.015	.00	1.50	TRAP
9103.560	1455.237	4.104	1459.341	678.00	13.59	2.87	1462.21	.00	4.97	18.31	10.000	6.000	1.50	0 .0
48.499	.0030					.0063	.30	4.10	1.45	4.83	.015	.00	1.50	TRAP
9152.059	1455.382	3.976	1459.358	678.00	14.25	3.16	1462.51	.00	4.97	17.93	10.000	6.000	1.50	0 .0
46.132	.0030					.0071	.33	3.98	1.54	4.83	.015	.00	1.50	TRAP
9198.190	1455.520	3.851	1459.371	678.00	14.95	3.47	1462.84	.00	4.97	17.55	10.000	6.000	1.50	0 .0
TRANS STR	.0217					.0051	.15	3.85	1.64		.014	.00	1.50	TRAP
9228.190	1456.170	4.628	1460.798	678.00	12.21	2.31	1463.11	.18	4.63	12.00	6.000	12.000	.00	0 .0
5.130	.0036					.0036	.02	4.81	1.00	4.64	.014	.00	.00	BOX
9233.320	1456.189	4.643	1460.832	678.00	12.17	2.30	1463.13	.18	4.63	12.00	6.000	12.000	.00	0 .0
14.069	.0036					.0036	.05	4.83	1.00	4.64	.014	.00	.00	BOX
9247.390	1456.240	4.643	1460.883	678.00	12.17	2.30	1463.18	.37	4.63	12.00	6.000	12.000	.00	0 .0
JUNCT STR	.0039					.0024	.02	5.01	1.00		.014	.00	.00	BOX
9255.000	1456.270	6.121	1462.391	592.00	8.22	1.05	1463.44	.00	4.23	12.00	6.000	12.000	.00	0 .0
91.000	.0041					.0024	.22	.00	.59	4.05	.014	.00	.00	BOX
9346.000	1456.640	6.098	1462.739	592.00	8.22	1.05	1463.79	.00	4.23	12.00	6.000	12.000	.00	0 .0
8.060	.0037					.0024	.02	6.10	.59	4.18	.014	.00	.00	BOX

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 3-12-2014 Time:11:17:54

Perris Valley MDP Line E Preliminary Design

Flows From Routing Model - (Yeild Flows added at intermediate locations)

jcc 12MAR2014 (Line E and Line F Basin Alt 6Crex plus Added Line D Ar

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
9354.060	1456.670	6.088	1462.758	592.00	8.22	1.05	1463.81	.00	4.23	12.00	6.000	12.000	.00	0 .0
114.872	.0040					.0024	.27	.00	.59	4.08	.014	.00	.00	BOX
9468.932	1457.126	6.049	1463.174	592.00	8.22	1.05	1464.22	.00	4.23	12.00	6.000	12.000	.00	0 .0
HYDRAULIC JUMP														
9468.932	1457.126	2.802	1459.928	592.00	17.61	4.81	1464.74	.77	4.23	12.00	6.000	12.000	.00	0 .0
3.588	.0040					.0117	.04	3.57	1.85	4.08	.014	.00	.00	BOX
9472.520	1457.140	2.792	1459.932	592.00	17.67	4.85	1464.78	.00	4.23	12.00	6.000	12.000	.00	0 .0
JUNCT STR	.0040					.0074	.09	2.79	1.86		.013	.00	.00	BOX

---------- WARNING - Junction Analysis - Change in Channel Type ----------

9485.000	1457.190	5.740	1462.930	492.00	13.56	2.86	1465.79	.00	5.74	6.36	7.500	.000	.00	1 .0
56.471	.0040					.0045	.25	5.74	1.00	6.24	.013	.00	.00	PIPE
9541.471	1457.416	6.027	1463.443	492.00	12.93	2.60	1466.04	.00	5.74	5.96	7.500	.000	.00	1 .0
298.529	.0040					.0041	1.24	6.03	.90	6.24	.013	.00	.00	PIPE
9840.000	1458.610	6.210	1464.820	492.00	12.58	2.46	1467.28	.00	5.74	5.66	7.500	.000	.00	1 .0
JUNCT STR	.0040					.0038	.04	6.21	.84		.013	.00	.00	PIPE
9850.000	1458.650	6.682	1465.332	481.00	11.57	2.08	1467.41	.00	5.68	4.67	7.500	.000	.00	1 .0
451.253	.0040					.0036	1.63	6.68	.68	6.08	.013	.00	.00	PIPE

Perris Valley MDP Line E Preliminary Design
Flows From Routing Model - (Yeild Flows added at intermediate locations)
jcc 12MAR2014 (Line E and Line F Basin Alt 6Crex plus Added Line D Ar

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
10301.250	1460.456	6.303	1466.759	481.00	12.14	2.29	1469.05	.00	5.68	5.49	7.500	.000	.00	1 .0
503.117	.0040					.0039	1.95	6.30	.80	6.08	.013	.00	.00	PIPE
10804.370	1462.470	6.096	1468.566	481.00	12.51	2.43	1470.99	.00	5.68	5.85	7.500	.000	.00	1 .0
JUNCT STR	.0040					.0021	.02	6.10	.86		.013	.00	.00	PIPE
10814.370	1462.510	8.999	1471.509	108.00	2.44	.09	1471.60	.00	2.62	.00	7.500	.000	.00	1 .0
40.000	.0040					.0002	.01	9.00	.00	2.40	.013	.00	.00	PIPE
10854.370	1462.670	8.847	1471.517	108.00	2.44	.09	1471.61	.00	2.62	.00	7.500	.000	.00	1 .0
TRANS STR	.0040					.0010	.01	8.85	.00		.013	.00	.00	PIPE
10864.370	1462.710	8.544	1471.254	108.00	5.50	.47	1471.72	.00	2.96	.00	5.000	.000	.00	1 .0
1215.000	.0040					.0017	2.09	8.54	.00	2.95	.013	.00	.00	PIPE
12079.370	1467.570	5.773	1473.343	108.00	5.50	.47	1473.81	.00	2.96	.00	5.000	.000	.00	1 .0
JUNCT STR	.0040					.0024	.02	.00	.00		.013	.00	.00	PIPE
12089.370	1467.610	5.793	1473.403	81.00	6.45	.65	1474.05	.00	2.73	.00	4.000	.000	.00	1 .0
140.040	.0040					.0032	.45	.00	.00	2.94	.013	.00	.00	PIPE
12229.410	1468.170	5.807	1473.977	81.00	6.45	.65	1474.62	.00	2.73	.00	4.000	.000	.00	1 .0
704.960	.0040					.0032	2.24	5.81	.00	2.95	.013	.00	.00	PIPE
12934.370	1470.980	5.239	1476.219	81.00	6.45	.65	1476.86	.00	2.73	.00	4.000	.000	.00	1 .0
TRANS STR	.0040					.0211	.21	5.24	.00		.013	.00	.00	PIPE

Perris Valley MDP Line E Preliminary Design
Flows From Routing Model - (Yeild Flows added at intermediate locations)
jcc 12MAR2014 (Line E and Line F Basin Alt 6Crex plus Added Line D Ar

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
12944.370	1471.020	2.543	1473.563	81.00	16.50	4.23	1477.79	.00	2.47	.00	2.500	.000	.00	1 .0
51.890	.0040					.0390	2.02	2.54	.00	2.50	.013	.00	.00	PIPE
12996.260	1471.230	4.357	1475.587	81.00	16.50	4.23	1479.81	.00	2.47	.00	2.500	.000	.00	1 .0
66.561	.0041					.0390	2.60	.00	.00	2.50	.013	.00	.00	PIPE
13062.820	1471.500	7.263	1478.763	81.00	16.50	4.23	1482.99	.00	2.47	.00	2.500	.000	.00	1 .0
142.630	.0040					.0390	5.56	7.26	.00	2.50	.013	.00	.00	PIPE
13205.450	1472.070	12.255	1484.325	81.00	16.50	4.23	1488.55	.00	2.47	.00	2.500	.000	.00	1 .0
WALL	ENTRANCE													
13205.450	1472.070	18.597	1490.667	81.00	.17	.00	1490.67	.00	.69	25.00	99.000	25.000	.00	0 .0
58.550	.0003					.0000	.00	18.60	.01	1.47	.015	.00	.00	RECTANG
13264.000	1472.090	18.577	1490.667	81.00	.17	.00	1490.67	.00	.69	25.00	99.000	25.000	.00	0 .0

North Perris Specific Plan - Line E and Line F Hydrology Map

Subarea - usFbasin
A - 623 Acres
L - 18,900 ft
Lc - 4,030 ft
Delta - 285 ft
n - 0.020

Subarea - E1
A - 263 Acres
L - 3,720 ft
Lc - 1,080 ft
Delta - 18 ft
n - 0.015

Subarea - E2
A - 460 Acres
L - 6,245 ft
Lc - 2,360 ft
Delta - 26 ft
n - 0.015

Subarea - E3
A - 267 Acres
L - 5,700 ft
Lc - 2,650 ft
Delta - 14 ft
n - 0.015

Subjet Site

Line E

Subarea - usEbasin
A - 806 Acres
L - 8,570 ft
Lc - 4,005 ft
Delta - 322 ft
n - 0.020

Subarea - Lowes
A - 114 Acres
L - 3,300 ft
Lc - 1,650 ft
Delta - 17 ft
n - 0.015

Legend
Centroid
Proposed Facilities
Subareas

N

0 400 800 1,600 Feet

WEBB ASSOCIATES

Appendix E

Earth Strata Geotechnical Services, Inc.
Geotechnical, Environmental and Materials Testing Consultants

December 9, 2021 Project No. 213885-12A

Optimus Building Corp.
c/o Mr. Michael Naggar at
Mike Naggar & Associates, Inc
445 S. D St.
Perris, CA 92570

Subject: **Infiltration Testing for Water Quality Treatment Areas, Proposed Commercial Warehouse, Assessor's Parcel Number 302-130-002, 302-130-008, 302-130-018, 302-130-021 through 302-130-024, and 302-130-027, Located on Ramona Expressway and Perris Boulevard, City of Perris, Riverside County, California**

INTRODUCTION

Earth Strata Geotechnical Services is pleased to present this infiltration feasibility report for the proposed commercial warehouse, Assessor Parcel Numbers 302-130-002, 302-130-008, 302-130-018, 302-130-021 through 302-130-024, and 302-130-027, located on the northeast corner of Ramona Expressway and Perris Boulevard, in the City of Perris, Riverside County, California. The purpose of our study was to determine the infiltration rates and physical characteristics of the subsurface earth materials at the approximate depth of the proposed WQMP area within the proposed development. This feasibility report provides the infiltration rates to be used for the design and the development of the water quality management plan, where applicable.

PROPERTY DESCRIPTION

The subject property is located on the northeast corner of Ramona Expressway and Perris Boulevard in the City of Perris, Riverside County, California. The approximate location of the site is shown on the Vicinity Map, Figure 1.

The subject property is comprised of approximately 48.41 acres of undeveloped land. The site has not been graded. Topographic relief at the subject property is relatively low with the terrain being generally flat. Elevations at the site range from approximately 1,450 to 1,460 feet above mean sea level (msl), for a difference of about 10± feet across the entire site. Drainage within the subject property generally flows to the southeast.

The site is currently bordered by commercial retail and commercial/industrial. Most of the vegetation on the site consists of moderate amounts of annual weeds/grasses.

PROPOSED CONSTRUCTION

Based on plans provided, the proposed development as illustrated on the conceptual grading plans will consist of a commercial warehouse development complete with utilities, driveways, and parking.

SUBSURFACE EXPLORATION

Subsurface Exploration

Subsurface exploration within the subject site was performed on December 8, 2021, for the exploratory excavations. A truck mounted hollow-stem-auger drill rig was utilized to drill five (5) borings throughout the site to a maximum depth of 16.5 feet. The exploratory holes were excavated for geotechnical evaluation purposes with respect to the proposed developments and to interpret whether groundwater or impermeable soil layers were present. An underground utilities clearance was obtained from Underground Service Alert of Southern California, prior to the subsurface exploration. The approximate locations of the exploratory excavations are shown on the attached Infiltration Location Map, Plate 1 and descriptive logs are presented in Appendix A.

Earth materials encountered during exploration were classified and logged in general accordance with the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure) of ASTM D 2488. Upon completion of laboratory testing, exploratory logs and sample descriptions may have been reconciled to reflect laboratory test results with regard to ASTM D 2487.

Earth Materials

A general description of the earth materials observed on site is provided below.

- Topsoil (no map symbol): Residual topsoil, encountered in the upper 1 to 2 feet, blankets the site and underlying bedrock. These materials were noted to be generally light brown, silty sand which were very porous, dry and in a medium dense state.

- Quaternary Very Old Fan Deposits (map symbol Qvof): Quaternary very old fan deposits were encountered to the full depth of our exploration. The very old fan deposits consist predominately of light to dark brown to reddish brown, clayey sand and silty sand. These deposits were generally noted to be in a dry to moist, medium dense to very dense state.

INFILTRATION TESTING

The double ring infiltrometer test method was utilized to perform a total of four (4) infiltration tests on November 15, 2021, to evaluate near surface infiltration rates in order to estimate the amount of storm water runoff that can infiltrate into the onsite water quality treatment plan areas. The infiltration tests were performed in general accordance with the requirements of double ring infiltration testing, ASTM D3385 and Appendix A of the Riverside County Flood Control and Water Conservation District.

The infiltration tests were performed using double ring infiltrometer and Mariotte tubes at a depth of 5 feet below existing grades. The locations of the infiltration tests are indicated on the attached infiltration Location Map, Plate 1. The double ring infiltrometer tests were located by property boundary measurement on the site plan and by using geographic features. Infiltration test data recorded in the field are summarized in the following table and is included within Appendix B including the graph of Infiltration Rate versus Elapsed Time.

Infiltration Test Summary

TEST NUMBER	INFILTRATION HOLE DEPTH (ft.)	INFILTRATION RATE (in/hr)	DESCRIPTION
DR-1	5	0.79	Silty SAND
DR-2	5	0.92	Silty SAND
DR-3	5	1.00	Silty SAND
DR-4	5	0.83	Silty SAND

The infiltration test rates ranged from 0.79 to 1.00 inches per hour (in/hr).

CONCLUSIONS AND RECOMMENDATIONS

General

From geotechnical and engineering geologic points of view, the proposed WQMP areas, where tested, is considered suitable for infiltration for the proposed development, provided the following conclusions and recommendations are incorporated into the plans and are implemented during construction.

Groundwater

Groundwater was not observed during our subsurface exploration to a total depth of 16.5 feet. Potential groundwater impact is considered very low. Local well data indicates regional groundwater highs approximately 55 feet below existing surface, which meets the minimum separation of >10 feet from the bottom of infiltration facility to the groundwater mark.

Geologic/ Geotechnical Screening

The proposed structures will be supported by compacted fill and competent earth materials, with groundwater at a depth of approximately 55 feet. According to the County of Riverside reports, the subject site is located in an area where liquefaction potential is considered low to high. As such, the potential for earthquake induced liquefaction and lateral spreading beneath the proposed structures is considered low due to the recommended compacted fill, relatively low groundwater level, and the dense nature of the deeper onsite earth materials.

Preliminary laboratory test results indicate onsite earth materials exhibit an expansion potential of ***VERY LOW** as classified in accordance with 2019 CBC Section 1803.5.3 and ASTM D4829.

Therefore, infiltration within the proposed WQMP areas will not encroach on any proposed structures and will not increase the risk of geologic hazards.

Recommended Factor of Safety

The recommended factor of safety for the infiltration design is 3.

Based on the data presented in this report and the recommendations set forth herein, it is the opinion of Earth Strata Geotechnical Services that the WQMP area can be designed for an infiltration rate of 0.26 inches per hour (in/hr) in the vicinity of DR-1, 0.31 in/hr in the vicinity of DR-2, 0.33 in/hr in the vicinity of DR-3, and 0.28 in/hr in the vicinity of DR-4.

GRADING PLAN REVIEW AND CONSTRUCTION SERVICES

This report has been prepared for the exclusive use of **OPTIMUS BUILDING CORP.** and their authorized representative. It likely does not contain sufficient information for other parties or other uses. Earth Strata should be engaged to review the final design plans and specifications prior to construction. This is to verify that the recommendations contained in this report have been properly incorporated into the project plans and specifications. Should Earth Strata not be accorded the opportunity to review the project plans and specifications, we are not responsibility for misinterpretation of our recommendations.

Earth Strata should be retained to provide observations during construction to validate this report. In order to allow for design changes in the event that the subsurface conditions differ from those anticipated prior to construction.

Earth Strata should review any changes in the project and modify and approve in writing the conclusions and recommendations of this report. This report and the drawings contained within are intended for design input purposes only and are not intended to act as construction drawings or specifications. In the event that conditions encountered during grading or construction operations appear to be different than those indicated in this report, this office should be notified immediately, as revisions may be required.

REPORT LIMITATIONS

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable soils engineers and geologists, practicing at the time and location this report was prepared. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

Earth materials vary in type, strength, and other geotechnical properties between points of observation and exploration. Groundwater and moisture conditions can also vary due to natural processes or the works of man on this or adjacent properties. As a result, we do not and cannot have complete knowledge of the subsurface conditions beneath the subject property. No practical study can completely eliminate uncertainty with regard to the anticipated geotechnical conditions in connection with a subject property.

The conclusions and recommendations within this report are based upon the findings at the points of observation and are subject to confirmation by Earth Strata during construction. This report is considered valid for a period of one year from the time the report was issued.

This report was prepared with the understanding that it is the responsibility of the owner or their representative, to ensure that the conclusions and recommendations contained herein are brought to the attention of the other project consultants and are incorporated into the plans and specifications. The owners' contractor should properly implement the conclusions and recommendations during grading and construction, and notify the owner if they consider any of the recommendations presented herein to be unsafe or unsuitable.

Respectfully submitted,

EARTH STRATA GEOTECHNICAL SERVICES

Stephen M. Poole, PE 40219
President
Principal Engineer

REGISTERED PROFESSIONAL ENGINEER
STEPHEN MICHAEL POOLE
No. 40219
CIVIL
STATE OF CALIFORNIA

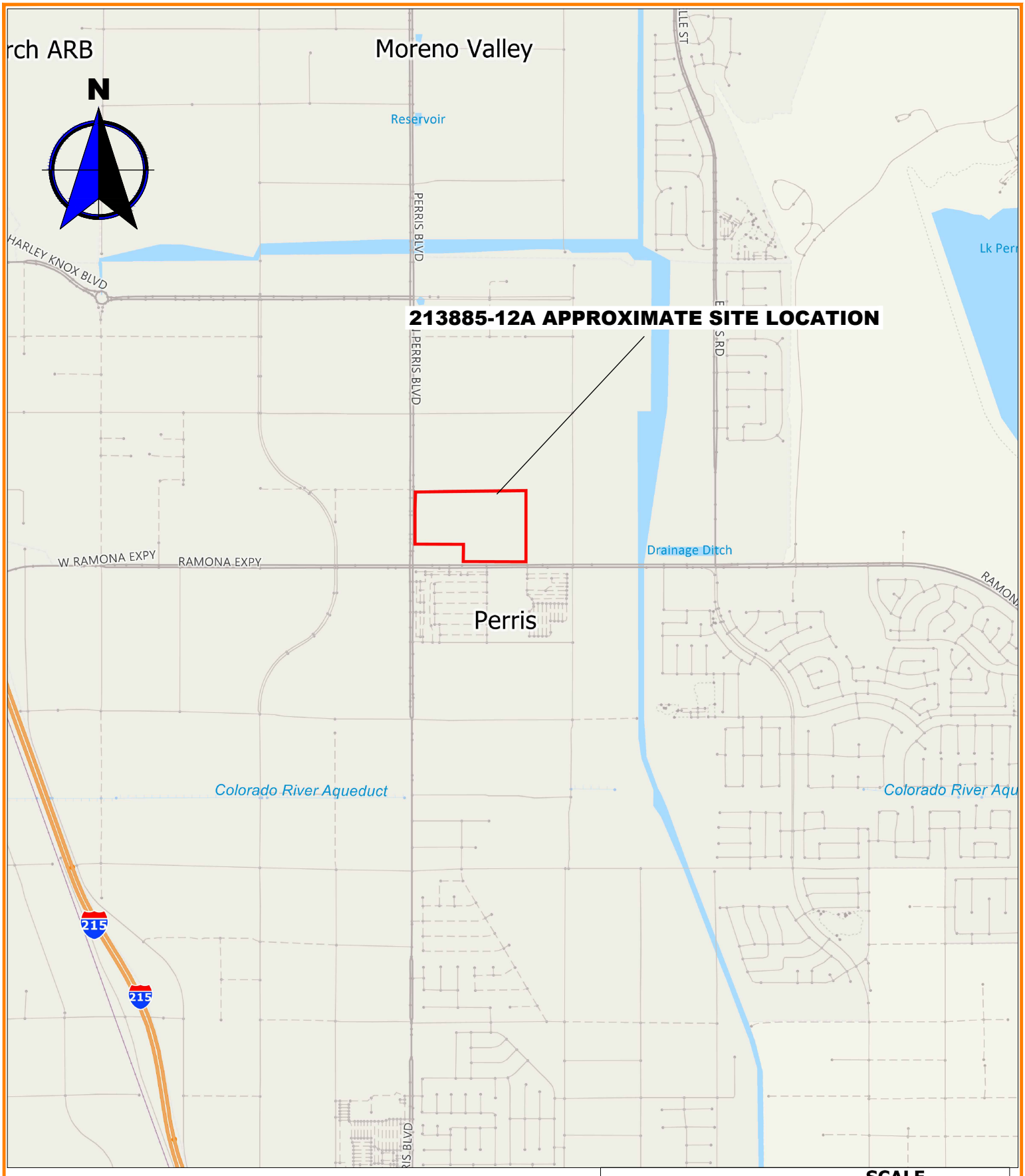
SMP/snj

Distribution: (1) Addressee

Attachments: Figure 1 – Vicinity Map *(Rear of Text)*
Appendix A – Exploratory Logs *(Rear of Text)*
Appendix B – Infiltration Test Sheets *(Rear of Text)*
Plate 1 – Infiltration Location Map *(Rear of Text)*

FIGURE 1

VICINITY MAP



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PROPOSED COMMERCIAL WAREHOUSE	213885-12A
VICINITY MAP	SEE BAR SCALE
	NOV 2021 / FIGURE 1

APPENDIX A

EXPLORATORY LOGS

Turf-Tec International - Record Chart for IN10-W - (12 & 24 Inch Infiltration Rings)

Test No.	DR-1	Location	See Map

Earth Strata Geotechnical Services, Inc.
Geotechnical, Environmental and Materials Testing Consultants
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Project Identification:	213885-12A; Perris Boulevard, Perris		**Constants**	**Area cm2**	**Depth of Liquid (cm)**	**Liquid Container Number**		**Marriotte Tube Volume**
Test Location:	DR-1		**Inner Ring**	729	10.0	1		3000
Liquid Used:	TAP WATE	**pH:** 8.0	**Annular Ring**	2189	10.0	2		10000
Tested By:	JMR2	**Date** 11/15/2021	**Liquid level maintained**	(X) Flow Valve ( ) Float Valve ( ) Mariotte Tubes				
Depth to water table:		**Depth of Test** 6'	**Penetration Depth of Outer Ring:**	9 cm				**Other**

Trial #	Start / End	Date MM/DD/YY	Time HR:MIN	Time Increment /(Total)	Elapsed Time (Min)	Flow Readings: Inner Ring Reading cm	Inner Maroitte Tube Flow (ml)	Annular Space Reading cm	Annular Space Marriotte Tube Flow (ml)	Liquid Temp °F	Infiltration Rates: Inner Infiltration Rate cm/h	Inner Infiltration Rate In/h	Annular Infiltration Rate cm/h	Annular Infiltration Rate In/h	Ground Temperature: Ground Temp Depth (cm)	Temp at Depth (c)	Remarks: Weather conditions Etc...
	Start Test	11/15/2021	11:30	0:30	30												
1	End Test	11/15/2021	12:00	0:30		6.00	1620.8	6.00	3241.63		4.45	**1.75**	2.96	**1.17**			
	Start Test	11/15/2021	12:02	0:30	60												
2	End Test	11/15/2021	12:32	1:00		6.00	1620.8	6.00	2778.5		4.45	**1.75**	2.54	**1.00**			
	Start Test	11/15/2021	12:34	0:30	90												
3	End Test	11/15/2021	13:04	1:30		6.00	1389.27	6.00	2778.5		3.81	**1.50**	2.54	**1.00**			
	Start Test	11/15/2021	13:05	0:30	120												
4	End Test	11/15/2021	13:35	2:00		6.00	1157.7	6.00	2778.5		3.18	**1.25**	2.54	**1.00**			
	Start Test	11/15/2021	13:37	0:30	150												
5	End Test	11/5/2021	14:07	2:30		6.00	1157.7	6.00	2546.9		3.18	**1.25**	2.33	**0.92**			
	Start Test	11/15/2021	14:08	0:30	180												
6	End Test	11/15/2021	14:38	3:00		6.00	1577.7	6.00	2315.4		4.33	**1.70**	2.12	**0.83**			
	Start Test	11/15/2021	14:41	0:30	210												
7	End Test	11/15/2021	15:11	3:30		6.00	926.18	6.00	2315.4		2.54	**1.00**	2.12	**0.83**			
	Start Test	11/15/2021	15:12	0:30	240												
8	End Test	11/15/2021	15:42	4:00		6.00	926.18	6.00	2199.9		2.54096022	**1.00**	2.01	**0.79**			

Turf-Tec International

Project Identification:	213885-12A; Perris Boulevard, Perris		
Test Location:	DR-1		
Liquid Used:	TAP WATE	**pH:**	8.0
Tested By:	JMR2		
Depth to water table:	0		

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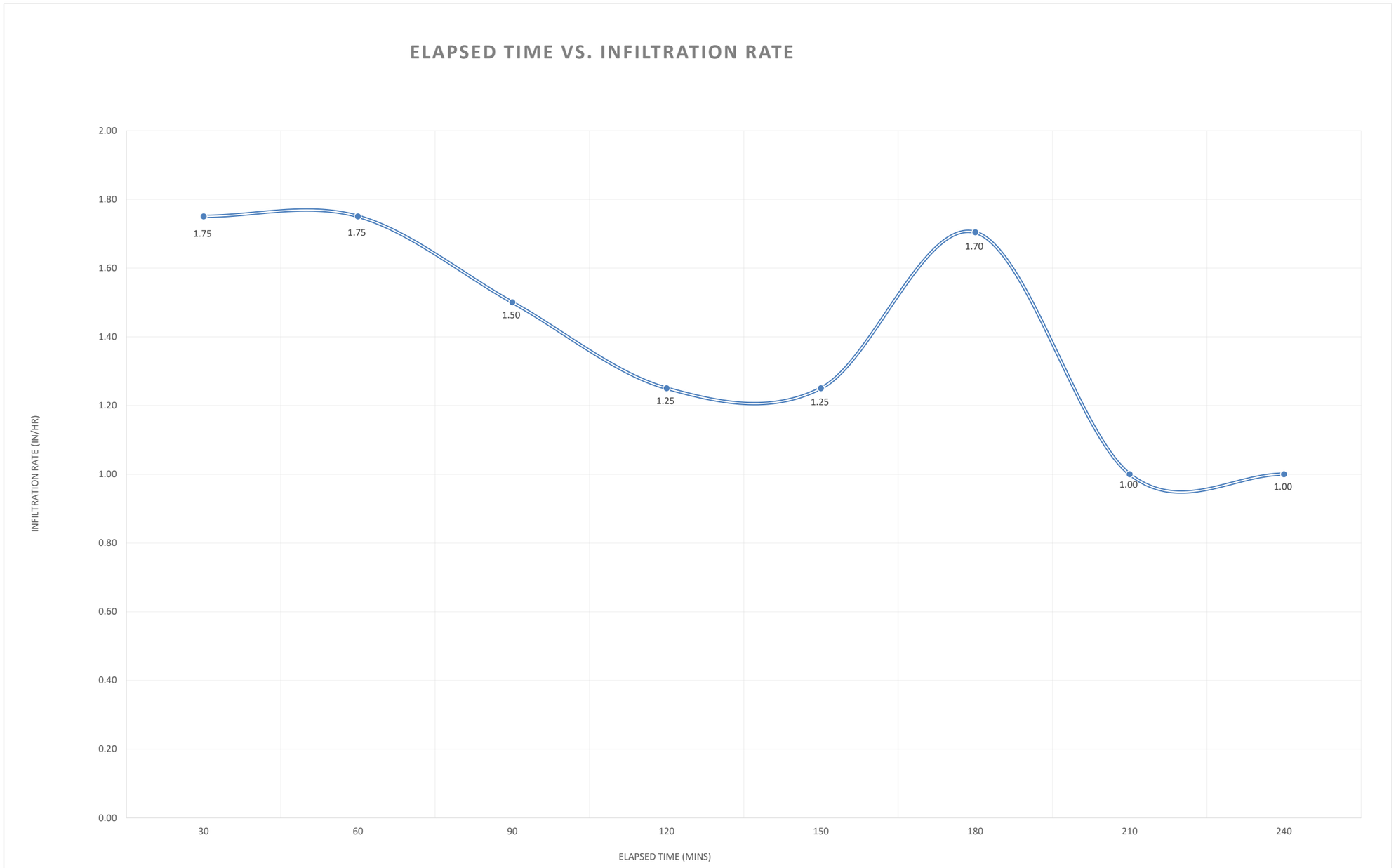

Test No.	DR-2	Location	See Map

Turf-Tec International - Record Chart for IN10-W - (12 & 24 Inch Infiltration Rings)

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Project Identification:	213885-12A; Perris Boulevard, Perris			
Test Location:	DR-2			
Liquid Used:	TAP WATE	pH:	8.0	
Tested By:	JMR2		Date	11/24/2021
Depth to water table:	> 30 Feet		Depth of Test	6'

Constants	Area cm2	Depth of Liquid (cm)	Liquid Container Number		Marriotte Tube Volume
Inner Ring	729	10.0	1		3000
Annular Ring	2189	10.0	2		10000

Liquid level maintained (X) Flow Valve ( ) Float Valve ( ) Mariotte Tubes

Penetration Depth of Outer Ring: 9 cm | Other

Trial #	Start / End	Date MM/DD/YY	Time HR:MIN	Time Increment /(Total)	Elapsed Time (Min)	Flow Readings: Inner Ring Reading cm	Inner Maroitte Tube Flow (ml)	Annular Space Reading cm	Annular Space Marriotte Tube Flow (ml)	Liquid Temp ºF	Infiltration Rates: Inner Infiltration Rate cm/h	Inner Infiltration Rate In/h	Annular Infiltration Rate cm/h	Annular Infiltration Rate In/h	Ground Temperature: Ground Temp Depth (cm)	Temp at Depth (c)	Remarks: Weather conditions Etc...
1	Start Test	11/15/2021	12:05	0:30	30	5.00		5.00									
	End Test	11/15/2021	12:35	0:30		5.00	1389	5.00	3241.63		3.81	**1.50**	2.96	**1.17**			
2	Start Test	11/15/2021	12:37	0:30	60	5.00		5.00									
	End Test	11/15/2021	13:07	1:00		6.00	1389.27	5.00	3010.8		3.81	**1.50**	2.75	**1.08**			
3	Start Test	11/15/2021	13:08	0:30	90	5.00		5.00									
	End Test	11/15/2021	13:38	1:30		5.00	926.18	5.00	3010.8		2.54	**1.00**	2.75	**1.08**			
4	Start Test	11/15/2021	13:39	0:30	120	5.00		5.00									
	End Test	11/15/2021	14:09	2:00		5.00	926.18	5.00	2778.5		2.54	**1.00**	2.54	**1.00**			
5	Start Test	11/15/2021	14:11	0:30	150	5.00		5.00									
	End Test	11/5/2021	14:41	2:30		5.00	810.4	5.00	2778.5		2.22	**0.88**	2.54	**1.00**			
6	Start Test	11/15/2021	14:42	0:30	180	5.00		5.00									
	End Test	11/15/2021	15:12	3:00		5.00	694.63	5.00	2546.9		1.91	**0.75**	2.33	**0.92**			
7	Start Test	11/15/2021	15:13	0:30	210	5.00		5.00									
	End Test	11/15/2021	15:43	3:30		5.00	694.63	5.00	2662.76		1.91	**0.75**	2.43	**0.96**			
8	Start Test	11/15/2021	15:44	0:30	240	5.00		5.00									
	End Test	11/15/2021	16:14	4:00		5.00	694.63	5.00	2546.9		1.91	**0.75**	2.33	**0.92**			

Turf-Tec International

Project Identification:	213885-12A; Perris Boulevard, Perris		
Test Location:	DR-2		
Liquid Used:	TAP WATE	**pH:**	8.0
Tested By:	JMR2		
Depth to water table:	> 30 Feet		

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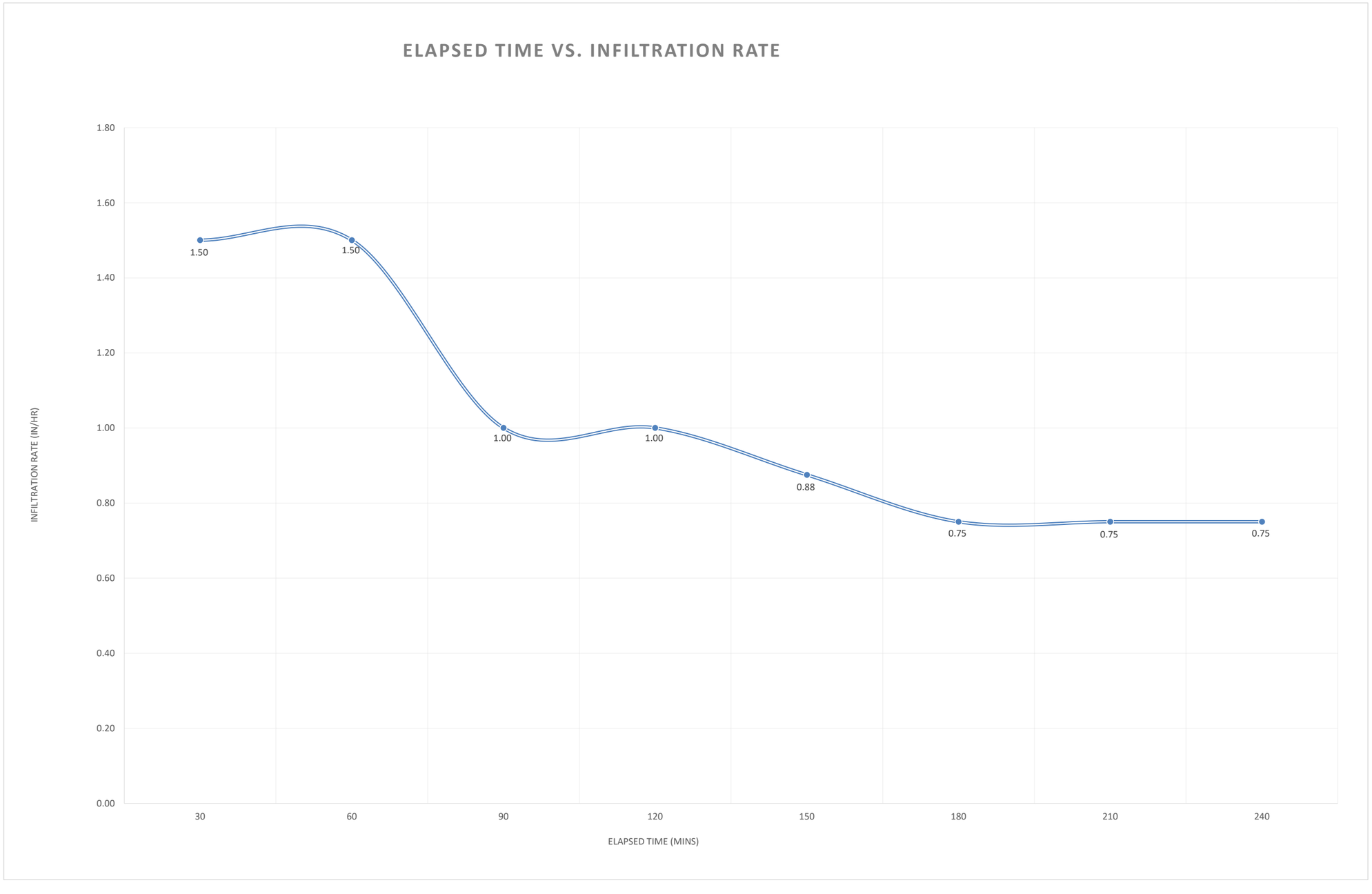

Test No.	DR-3	Location	See Map

Turf-Tec International - Record Chart for IN10-W - (12 & 24 Inch Infiltration Rings)

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Project Identification:	213885-12A; Perris Boulevard, Perris	**Constants**	**Area cm2**	**Depth of Liquid (cm)**	**Liquid Container Number**		**Marriotte Tube Volume**
Test Location:	DR-3	**Inner Ring**	729	10.0	1		3000
Liquid Used:	TAP WATE	**pH:** 8.0	**Annular Ring**	2189	10.0	2	10000
Tested By:	JMR2	**Date** 11/24/2021	**Liquid level maintained** (X) Flow Valve ( ) Float Valve ( ) Mariotte Tubes				
Depth to water table:	> 30 Feet	**Depth of Test** 6'	**Penetration Depth of Outer Ring:** 9 cm				**Other**

Trial #	Start / End	Date MM/DD/YY	Time HR:MIN	Time Increment /(Total)	Elapsed Time (Min)	Flow Readings: Inner Ring Reading cm	Inner Maroitte Tube Flow (ml)	Annular Space Reading cm	Annular Space Marriotte Tube Flow (ml)	Liquid Temp ºF	Infiltration Rates: Inner Infiltration Rate cm/h	Inner Infiltration Rate In/h	Annular Infiltration Rate cm/h	Annular Infiltration Rate In/h	Ground Temperature: Ground Temp Depth (cm)	Temp at Depth (c)	Remarks: Weather conditions Etc...
	Start Test	11/15/2021	11:00	0:30	30	5.00		5.00									
1	End Test	11/15/2021	11:30	0:30		5.00	2083.9	5.00	3704.7		5.72	**2.25**	3.38	**1.33**			
	Start Test	11/15/2021	11:32	0:30	60	5.00		5.00									
2	End Test	11/15/2021	12:02	1:00		6.00	2083.9	5.00	3704.7		5.72	**2.25**	3.38	**1.33**			
	Start Test	11/15/2021	12:04	0:30	90	5.00		5.00									
3	End Test	11/15/2021	12:34	1:30		5.00	2083.9	5.00	3473.1		5.72	**2.25**	3.17	**1.25**			
	Start Test	11/15/2021	12:36	0:30	120	5.00		5.00									
4	End Test	11/15/2021	13:06	2:00		5.00	1736.5	5.00	3010.08		4.76	**1.88**	2.75	**1.08**			
	Start Test	11/15/2021	13:08	0:30	150	5.00		5.00									
5	End Test	11/5/2021	13:38	2:30		5.00	1620.8	5.00	3010.08		4.45	**1.75**	2.75	**1.08**			
	Start Test	11/15/2021	13:39	0:30	180	5.00		5.00									
6	End Test	11/15/2021	14:09	3:00		5.00	1620.8	5.00	3010.08		4.45	**1.75**	2.75	**1.08**			
	Start Test	11/15/2021	14:11	0:30	210	5.00		5.00									
7	End Test	11/15/2021	14:41	3:30		5.00	1620.8	5.00	2778.5		4.45	**1.75**	2.54	**1.00**			
	Start Test	11/15/2021	14:42	0:30	240	5.00		5.00									
8	End Test	11/15/2021	15:12	4:00		5.00	1620.8	5.00	2778.5		4.45	**1.75**	2.54	**1.00**			

Turf-Tec International

Project Identification:	213885-12A; Perris Boulevard, Perris		
Test Location:	DR-3		
Liquid Used:	TAP WATE	**pH:**	8.0
Tested By:	JMR2		
Depth to water table:	> 30 Feet		

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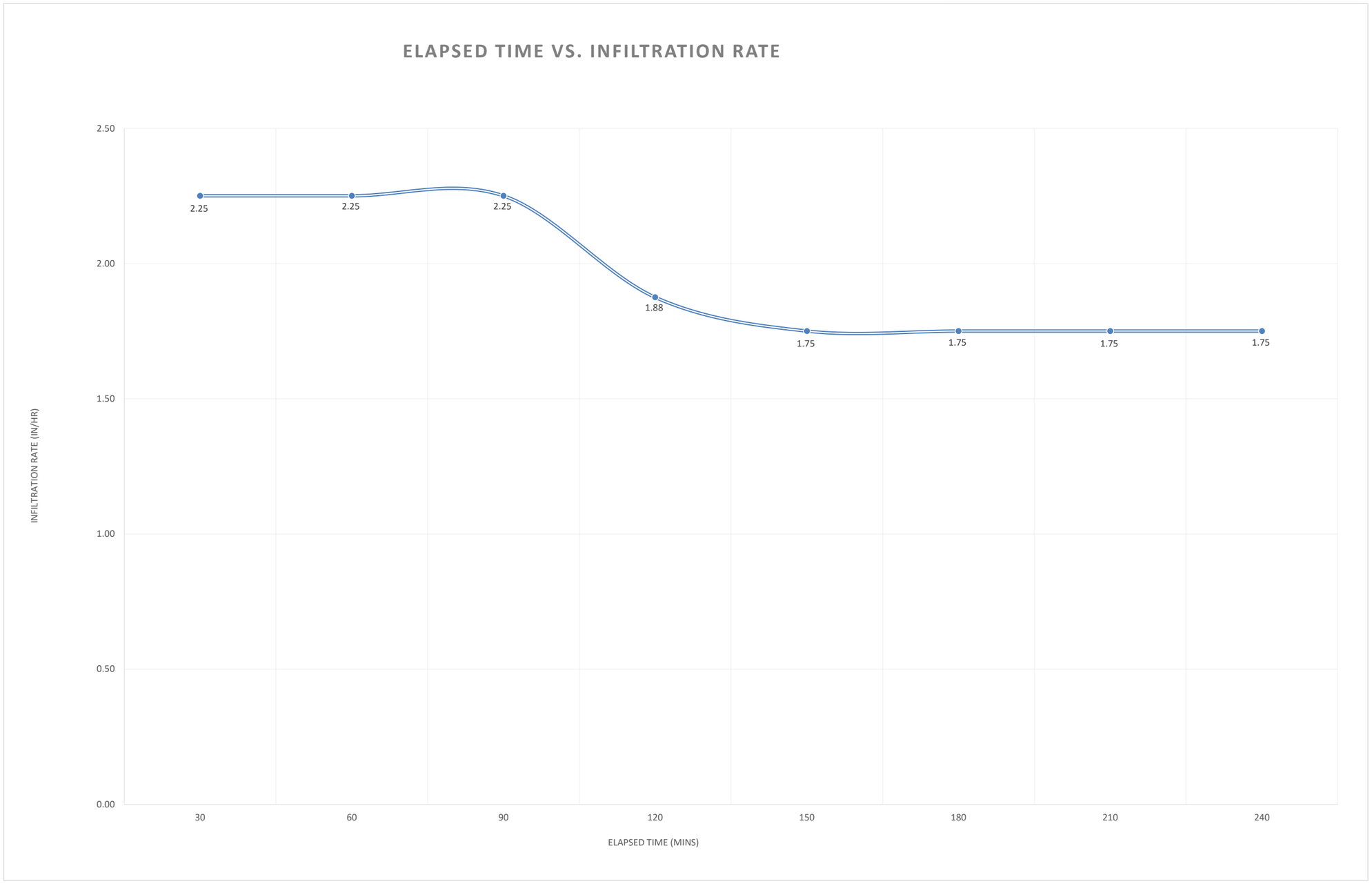

Test No.	DR-4	Location	See Map	Turf-Tec International - Record Chart for IN10-W - (12 & 24 Inch Infiltration Rings)

Earth Strata Geotechnical Services, Inc.
Geotechnical, Environmental and Materials Testing Consultants
www.ESGSINC.com (951) 397-8315

Project Identification:	213885-12A; Perris Boulevard, Perris	Constants	Area cm2	Depth of Liquid (cm)	Liquid Container Number	Marriotte Tube Volume
Test Location:	DR-4	Inner Ring	729	10.0	1	3000
Liquid Used:	TAP WATE pH: 8.0	Annular Ring	2189	10.0	2	10000
Tested By:	JMR2	Date: 11/24/2021	Liquid level maintained (X) Flow Valve ( ) Float Valve ( ) Mariotte Tubes			
Depth to water table:	> 30 Feet	Depth of Test: 6'	Penetration Depth of Outer Ring:	9 cm		Other

Trial #	Start / End	Date MM/DD/YY	Time HR:MIN	Time Increment /(Total)	Elapsed Time (Min)	Flow Readings: Inner Ring Reading cm	Inner Maroitte Tube Flow (ml)	Annular Space Reading cm	Annular Space Marriotte Tube Flow (ml)	Liquid Temp ºF	Infiltration Rates: Inner Infiltration Rate cm/h	Inner Infiltration Rate In/h	Annular Infiltration Rate cm/h	Annular Infiltration Rate In/h	Ground Temperature: Ground Temp Depth (cm)	Temp at Depth (c)	Remarks: Weather conditions Etc...
1	Start Test	11/15/2021	11:25	0:30	30	5.00		5.00									
	End Test	11/15/2021	11:55	0:30		5.00	1620.8	5.00	3704.72		4.45	**1.75**	3.38	**1.33**			
2	Start Test	11/15/2021	11:57	0:30	60	5.00		5.00									
	End Test	11/15/2021	12:27	1:00		6.00	1389.27	5.00	3125.8		3.81	**1.50**	2.86	**1.12**			
3	Start Test	11/15/2021	12:29	0:30	90	5.00		5.00									
	End Test	11/15/2021	12:59	1:30		5.00	1389.27	5.00	3010.01		3.81	**1.50**	2.75	**1.08**			
4	Start Test	11/15/2021	13:00	0:30	120	5.00		5.00									
	End Test	11/15/2021	13:30	2:00		5.00	1157.7	5.00	3010.01		3.18	**1.25**	2.75	**1.08**			
5	Start Test	11/15/2021	13:32	0:30	150	5.00		5.00									
	End Test	11/5/2021	14:02	2:30		5.00	926.18	5.00	2315.4		2.54	**1.00**	2.12	**0.83**			
6	Start Test	11/15/2021	14:03	0:30	180	5.00		5.00									
	End Test	11/15/2021	14:33	3:00		5.00	694.635	5.00	2315.4		1.91	**0.75**	2.12	**0.83**			
7	Start Test	11/15/2021	14:34	0:30	210	5.00		5.00									
	End Test	11/15/2021	15:04	3:30		5.00	694.635	5.00	2315.4		1.91	**0.75**	2.12	**0.83**			
8	Start Test	11/15/2021	15:05	0:30	240	5.00		5.00									
	End Test	11/15/2021	15:35	4:00		5.00	694.635	5.00	2315.4		1.91	**0.75**	2.12	**0.83**			

Project Identification:	213885-12A; Perris Boulevard, Perris		
Test Location:	DR-4		
Liquid Used:	TAP WATE	**pH:**	8.0
Tested By:	JMR2		
Depth to water table:	> 30 Feet		

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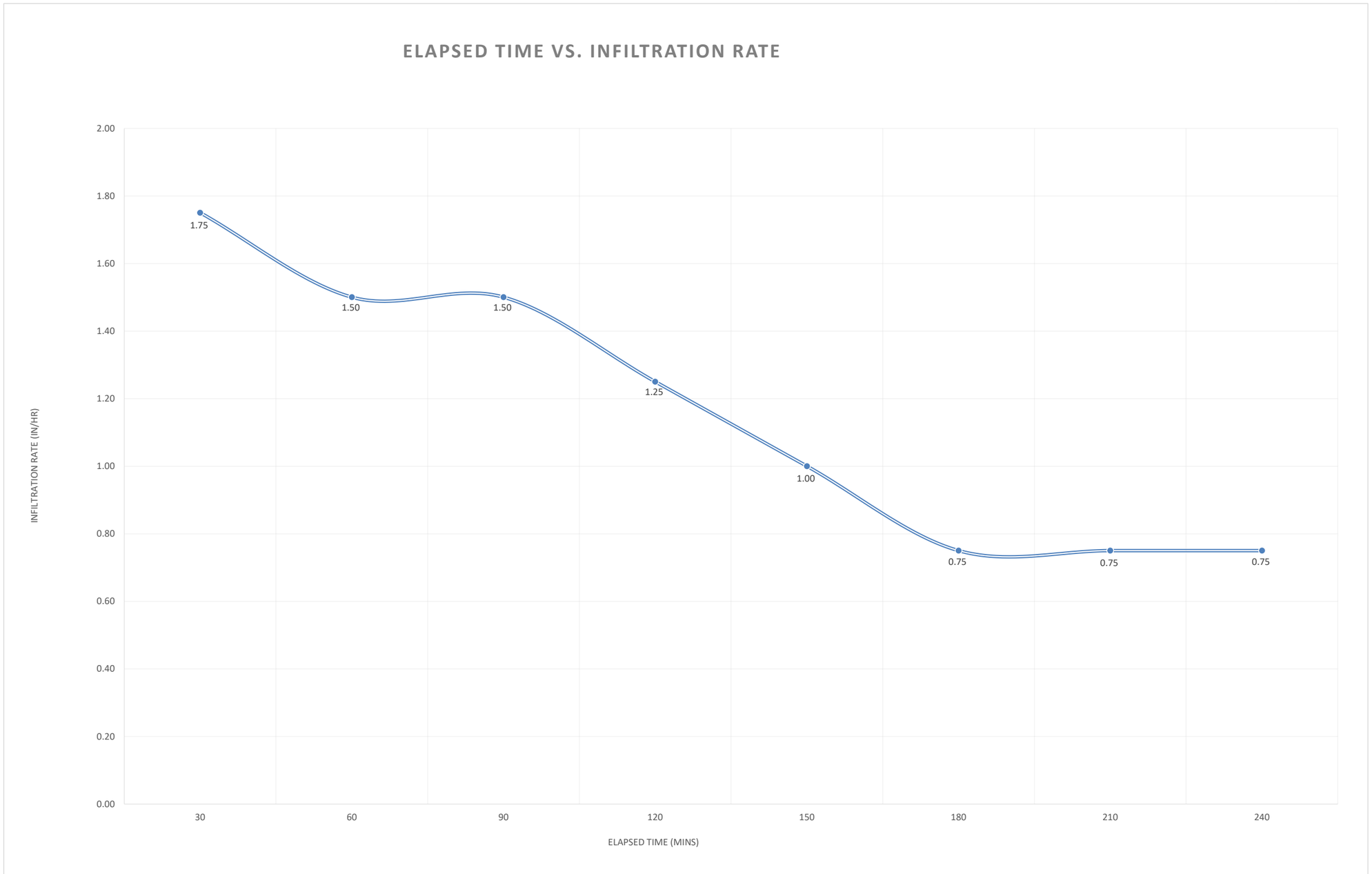

APPENDIX B

INFILTRATION TEST SHEETS

Geotechnical Boring Log B-1

Date: December 8, 2021	**Project Name: Perris Boulevard** **Page: 1 of 1**
Project Number: 213885-10A	**Logged By: JMR**
Drilling Company: Drilling It	**Type of Rig: AMS45**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Topsoil**
					SM	Silty SAND; light brown, dry, medium dense, fine to coarse sand
	16	2.5'				**Quaternary Very Old Fan Deposits (Qvof)**
					SM	Silty SAND; light brown, dry, medium dense, medium to coarse sand
5	24	5'			SC	Clayey SAND; dark brown, slightly moist, medium dense, fine to coarse sand
	36	7.5'				Becomes dense below 7 feet
10	43	10'				Moist below 10 feet
15	48	15'				
						Total Depth: 16.5 feet
						No Groundwater
20						
25						
30						

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Geotechnical Boring Log B-2

Date: December 8, 2021	**Project Name: Perris Boulevard** **Page: 1 of 1**
Project Number: 213885-10A	**Logged By: JMR**
Drilling Company: Drilling It	**Type of Rig: AMS45**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Topsoil**
					SM	Silty SAND; light brown, dry, medium dense, fine to coarse sand
	46	2.5'				**Quaternary Very Old Fan Deposits (Qvof)**
					SM	Silty SAND; reddish brown, dry, dense, fine to coarse sand
5						
	52	5'			SC	Clayey SAND; light brown, slightly moist, very dense, fine to coarse sand
	55	7.5'				Moist below 7 feet
10	88	10'				
						Total Depth: 11.5 feet
						No Groundwater
15						
20						
25						
30						

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Geotechnical Boring Log B-4

Date: December 8, 2021	**Project Name: Perris Boulevard** **Page: 1 of 1**
Project Number: 213885-10A	**Logged By: JMR**
Drilling Company: Drilling It	**Type of Rig: AMS45**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Topsoil**
					SM	Silty SAND; light brown, dry, medium dense, fine to coarse sand
	61	2.5'				**Quaternary Very Old Fan Deposits (Qvof)**
					SM	Silty SAND; light brown, dry, very dense, fine to medium sand with clay
5	47	5'				Slightly moist, dense 5 to 7 feet
	27	7.5'				Moist, medium dense 7 to 10 feet
10	58	10'			SC	Clayey SAND; light brown, moist, very dense, fine to coarse sand
						No Recovery at 10 feet
						Total Depth: 11.5 feet
						No Groundwater
15						
20						
25						
30						

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Geotechnical Boring Log B-4

Date: December 8, 2021	**Project Name: Perris Boulevard** **Page: 1 of 1**
Project Number: 213885-10A	**Logged By: JMR**
Drilling Company: Drilling It	**Type of Rig: AMS45**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Topsoil**
					SM	Silty SAND; light brown, dry, medium dense, fine to coarse sand
	32	2.5'				**Quaternary Very Old Fan Deposits (Qvof)**
					SM	Silty SAND; light brown, slightly moist, dense, fine to medium sand
5	44	5'				
	49	7.5'			SC	Clayey SAND; medium brown, slight moist, dense, fine to coarse sand
10	79	10'				Very dense below 10 feet
						Total Depth: 11.5 feet
						No Groundwater
15						
20						
25						
30						

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Geotechnical Boring Log B-5

Date: December 8, 2021	**Project Name: Perris Boulevard** **Page: 1 of 1**
Project Number: 213885-10A	**Logged By: JMR**
Drilling Company: Drilling It	**Type of Rig: AMS45**
Drive Weight (lbs): 140	**Drop (in): 30** **Hole Diameter (in): 8**
Top of Hole Elevation (ft): See Map	**Hole Location: See Geotechnical Map**

Depth (ft)	Blow Count Per Foot	Sample Depth	Dry Density (pcf)	Moisture (%)	Classification Symbol	MATERIAL DESCRIPTION
0						**Topsoil**
					SM	Silty SAND; light brown, dry, medium dense, fine to coarse sand
	88/11"	2.5'				**Quaternary Very Old Fan Deposits (Qvof)**
					SC	Clayey SAND; light to dark brown, moist, very dense, fine to medium sand
5						
	79	5'				Practical Refusal at 6 feet
						Total Depth: 6 feet
						No Groundwater
10						
15						
20						
25						
30						

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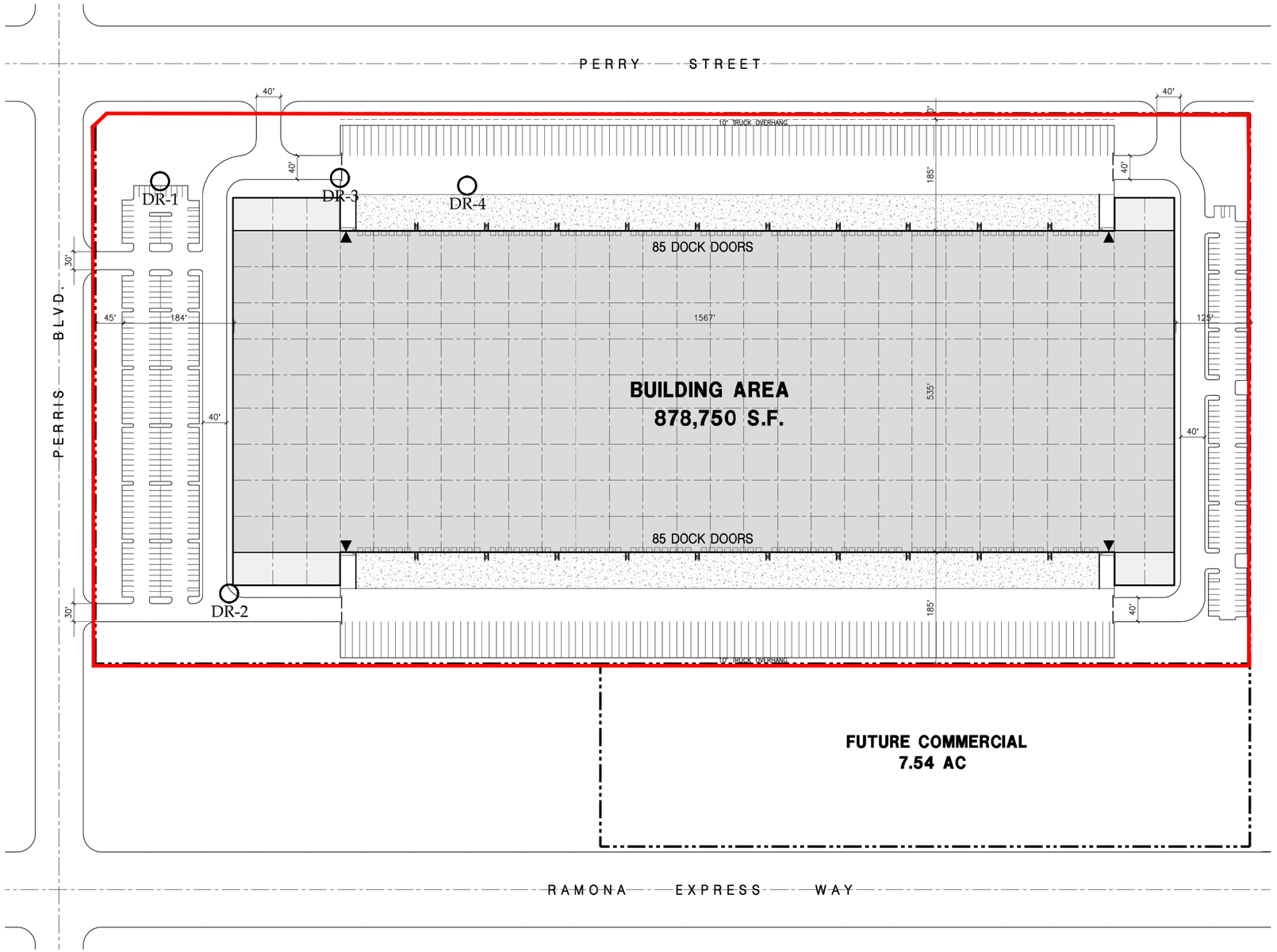

LEGEND

Locations are Approximate

Symbols

- Limits of Report

DR-4 - Percolation Test Location

NORTH

0 100 200 400

SCALE: 1" = 200'

INFILTRATION LOCATION MAP

LOCATED ON RAMONA EXPRESSWAY AND PERRIS BOULEVARD CITY OF PERRIS, RIVERSIDE COUNTY, CALIFORNIA

APN 302-130-002, 302-130-008, 302-130-018, 302-130-021 THROUGH 302-130-024, and 302-130-027

PROJECT	PROPOSED COMMERCIAL WAREHOUSE		
CLIENT	MR. MICHAEL NAGGAR		
PROJECT NO.	213885-12A		
DATE	DECEMBER 2021		
SCALE	1" = 200'		
DWG XREFS			
REVISION			
DRAWN BY	JDG	PLATE	1 OF 1

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Appendix F

Follows Conditional Case No.: 14-09-1960R

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION DETERMINATION DOCUMENT

COMMUNITY AND REVISION INFORMATION		PROJECT DESCRIPTION	BASIS OF REQUEST
COMMUNITY	City of Moreno Valley Riverside County California	CHANNELIZATION FILL	HYDRAULIC ANALYSIS NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 065074		
IDENTIFIER	Stratford Ranch Parcel Map 36469 (PVSD)	APPROXIMATE LATITUDE AND LONGITUDE: 33.850, -117.214 SOURCE: Precision Mapping Streets DATUM: NAD 83	

ANNOTATED MAPPING ENCLOSURES	ANNOTATED STUDY ENCLOSURES
TYPE: FIRM* NO.: 06065C1430H DATE: August 18, 2014	DATE OF EFFECTIVE FLOOD INSURANCE STUDY: August 18, 2014 PROFILE: 140dP

Enclosures reflect changes to flooding sources affected by this revision.
* FIRM - Flood Insurance Rate Map

FLOODING SOURCE ANDREVISED REACH

Perris Valley Storm Drain - From the upstream side of Ramona Expressway to approximately 260 feet upstream of the Perris Valley Channel Lateral B confluence.

SUMMARY OF REVISIONS

Flooding Source	Effective Flooding	Revised Flooding	Increases	Decreases
Perris Valley Storm Drain	Zone AE	Zone AE	NONE	YES
	Zone X (shaded)	Zone X (shaded)	NONE	YES
	BFEs	BFEs	NONE	YES

* BFEs - Base Flood Elevations

DETERMINATION

This document provides the determination from the Department of Homeland Security's Federal Emergency Management Agency (FEMA) regarding a request for a Letter of Map Revision (LOMR) for the area described above. Using the information submitted, we have determined that a revision to the flood hazards depicted in the Flood Insurance Study (FIS) report and/or National Flood Insurance Program (NFIP) map is warranted. This document revises the effective NFIP map, as indicated in the attached documentation. Please use the enclosed annotated map panels revised by this LOMR for floodplain management purposes and for all flood insurance policies and renewals in your community.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

OTHER COMMUNITIES AFFECTED BY THIS REVISION

CID Number: 060258 **Name:** City of Perris, California

AFFECTED MAP PANELS	AFFECTED PORTIONS OF THE FLOOD INSURANCE STUDY REPORT
TYPE: FIRM* NO.: 06065C1430H DATE: August 18, 2014	PROFILE: 140dP DATE OF EFFECTIVE FLOOD INSURANCE STUDY: August 18, 2014

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

APPLICABLE NFIP REGULATIONS/COMMUNITY OBLIGATION

We have made this determination pursuant to Section 206 of the Flood Disaster Protection Act of 1973 (P.L. 93-234) and in accordance with the National Flood Insurance Act of 1968, as amended (Title XIII of the Housing and Urban Development Act of 1968, P.L. 90-448), 42 U.S.C. 4001-4128, and 44 CFR Part 65. Pursuant to Section 1361 of the National Flood Insurance Act of 1968, as amended, communities participating in the NFIP are required to adopt and enforce floodplain management regulations that meet or exceed NFIP criteria. These criteria, including adoption of the FIS report and FIRM, and the modifications made by this LOMR, are the minimum requirements for continued NFIP participation and do not supersede more stringent State/Commonwealth or local requirements to which the regulations apply.

NFIP regulations Subparagraph 60.3(b)(7) requires communities to ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management ordinances; therefore, responsibility for maintenance of the altered or relocated watercourse, including any related appurtenances such as bridges, culverts, and other drainage structures, rests with your community. We may request that your community submit a description and schedule of maintenance activities necessary to ensure this requirement.

COMMUNITY REMINDERS

We based this determination on the 1-percent-annual-chance flood discharges computed in the FIS for your community without considering subsequent changes in watershed characteristics that could increase flood discharges. Future development of projects upstream could cause increased flood discharges, which could cause increased flood hazards. A comprehensive restudy of your community's flood hazards would consider the cumulative effects of development on flood discharges subsequent to the publication of the FIS report for your community and could, therefore, establish greater flood hazards in this area.

Your community must regulate all proposed floodplain development and ensure that permits required by Federal and/or State/Commonwealth law have been obtained. State/Commonwealth or community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction or may limit development in floodplain areas. If your State/Commonwealth or community has adopted more restrictive or comprehensive floodplain management criteria, those criteria take precedence over the minimum NFIP requirements.

We will not print and distribute this LOMR to primary users, such as local insurance agents or mortgage lenders; instead, the community will serve as a repository for the new data. We encourage you to disseminate the information in this LOMR by preparing a news release for publication in your community's newspaper that describes the revision and explains how your community will provide the data and help interpret the NFIP maps. In that way, interested persons, such as property owners, insurance agents, and mortgage lenders, can benefit from the information.

This revision has met our criteria for removing an area from the 1-percent-annual-chance floodplain to reflect the placement of fill. However, we encourage you to require that the lowest adjacent grade and lowest floor (including basement) of any structure placed within the subject area be elevated to or above the Base (1-percent-annual-chance) Flood Elevation.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Mr. Jeffrey D. Lusk
Director, Mitigation Division
Federal Emergency Management Agency, Region IX
1111 Broadway Street, Suite 1200
Oakland, CA 94607-4052
(510) 627-7175

STATUS OF THE COMMUNITY NFIP MAPS

We will not physically revise and republish the FIRM and FIS report for your community to reflect the modifications made by this LOMR at this time. When changes to the previously cited FIRM panel(s) and FIS report warrant physical revision and republication in the future, we will incorporate the modifications made by this LOMR at that time.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP REVISION
DETERMINATION DOCUMENT (CONTINUED)

PUBLIC NOTIFICATION OF REVISION

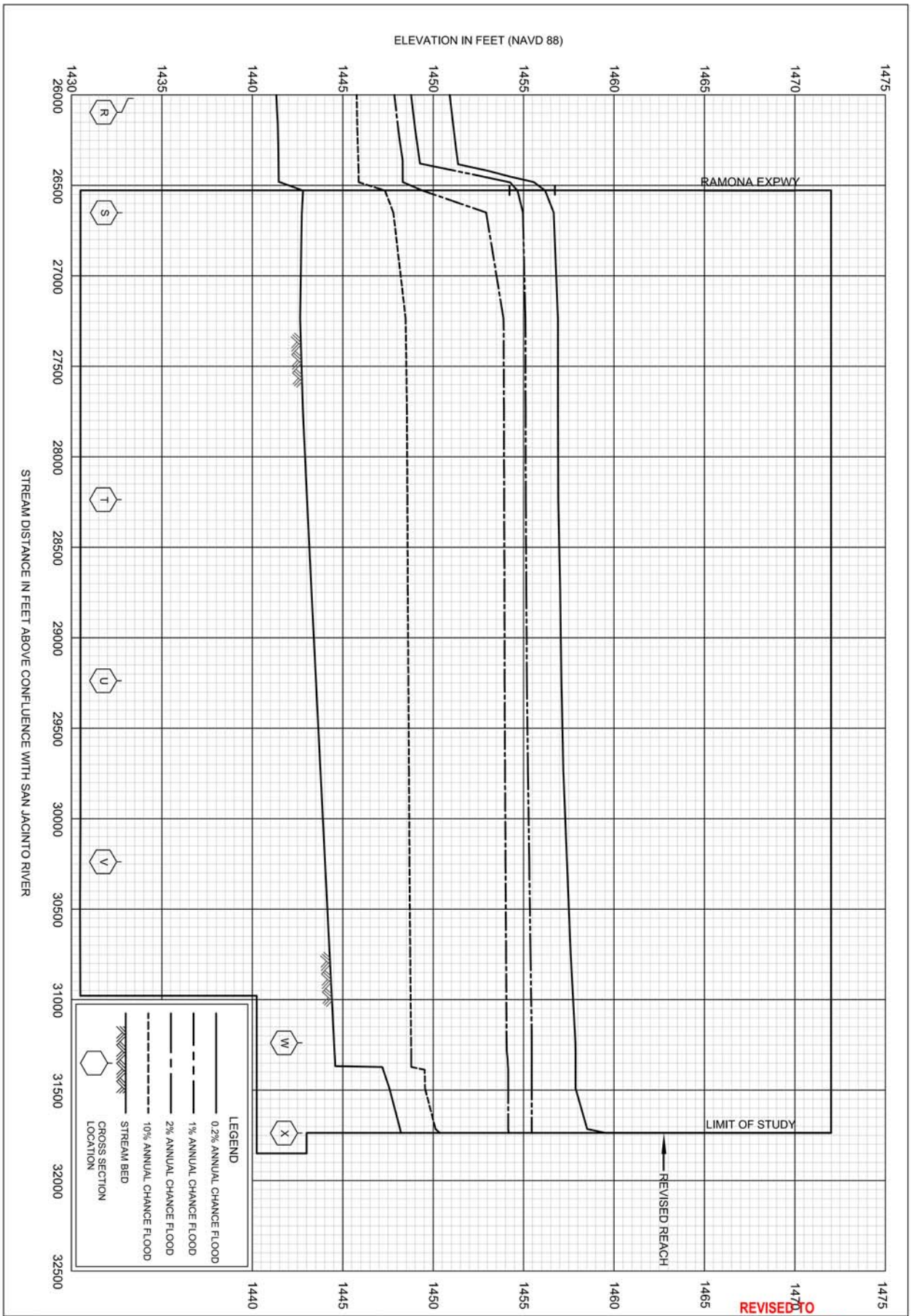
A notice of changes will be published in the Federal Register. This information also will be published in your local newspaper on or about the dates listed below and through FEMA's Flood Hazard Mapping website at https://www.floodmaps.fema.gov/fhm/Scripts/bfe_main.asp.

LOCAL NEWSPAPER Name: *The Press-Enterprise*
Dates: January 20, 2016 and January 27, 2016

Within 90 days of the second publication in the local newspaper, a citizen may request that we reconsider this determination. Any request for reconsideration must be based on scientific or technical data. Therefore, this letter will be effective only after the 90-day appeal period has elapsed and we have resolved any appeals that we receive during this appeal period. Until this LOMR is effective, the revised BFEs presented in this LOMR may be changed.

This determination is based on the flood data presently available. The enclosed documents provide additional information regarding this determination. If you have any questions about this document, please contact the FEMA Map Information eXchange toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on our website at http://www.fema.gov/nfip.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration



140dP

FEDERAL EMERGENCY MANAGEMENT AGENCY

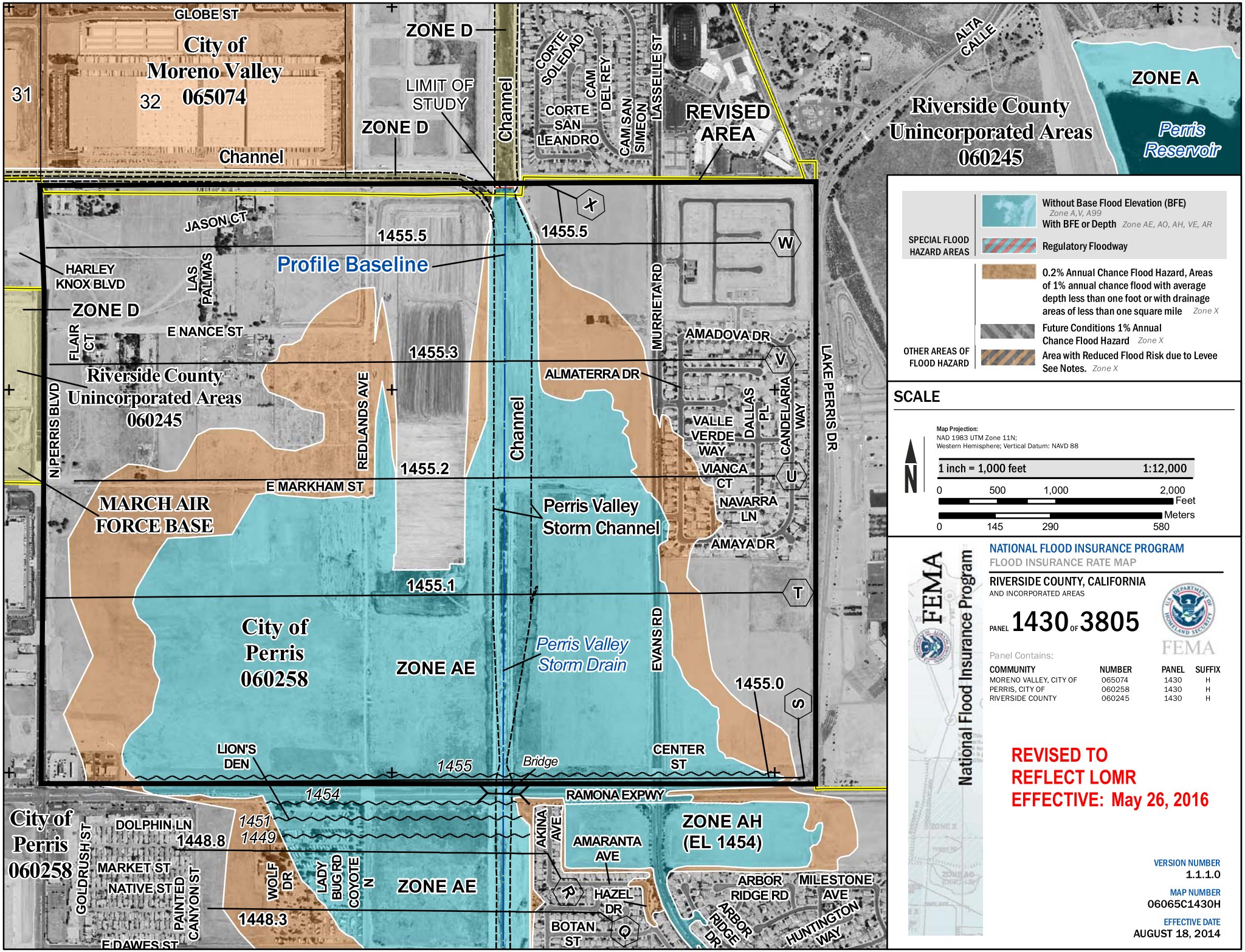
RIVERSIDE COUNTY, CA

AND INCORPORATED AREAS

FLOOD PROFILES

REVISED TO REFLECT LOMR EFFECTIVE: May 26, 2016

PERRIS VALLEY STORM DRAIN



SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee See Notes. *Zone X*

SCALE

Map Projection:
NAD 1983 UTM Zone 11N;
Western Hemisphere; Vertical Datum: NAVD 88

1 inch = 1,000 feet 1:12,000

0 500 1,000 2,000 Feet

0 145 290 580 Meters

FEMA

National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

FLOOD INSURANCE RATE MAP

RIVERSIDE COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 1430 OF 3805

Panel Contains:

COMMUNITY	NUMBER	PANEL	SUFFIX
MORENO VALLEY, CITY OF	065074	1430	H
PERRIS, CITY OF	060258	1430	H
RIVERSIDE COUNTY	060245	1430	H

REVISED TO REFLECT LOMR EFFECTIVE: May 26, 2016

VERSION NUMBER
1.1.1.0

MAP NUMBER
06065C1430H

EFFECTIVE DATE
AUGUST 18, 2014

Low-Impact Development. In recent years, Riverside County has focused on Low-Impact Development (LID), which includes techniques to filter, store and retain runoff on-site. LID BMPs retain runoff to optimize infiltration/recharge, and many promote the use of vegetation to provide for the uptake of pollutants. Although LID BMPs can provide environmental, economic and community benefits, they can retain
attract hazardous wildlife
aircraft operations and must be considered with caution within the AIA.

Aviation-Specific Stor
edges that project-related
factors, such as soil types
structability, etc. United S
and FAA have identified
be considered during BMP design and incorporated to make most BMPs less attractive to wildlife (Table 2).

ADAPTIVE MEASURES

When open water detention ponds must be used within the AIA, the ponds may be equipped with bird balls, floating covers, nets, or overhead wires to cover open water and discourage use by hazardous wildlife. For example, concrete basins are unlikely to attract wildlife, and pond liners can prevent the development of hydrophytic vegetation. These technologies must be used with caution and only in areas

Infiltration trenches detain water for brief periods. This trench at Seattle-Tacoma Airport includes vegetation appropriate for an airport environment.

Bioretention facilities can provide food and shelter for potentially hazardous wildlife, but may be suitable with modification.

Table 1. Structural Best Management Practices (BMPs) and Compatibility in an Airport Influence Area (AIA)

BMP	Compatibility within the AIA
Infiltration trenches Recommended	■ Suitable because water accumulates below ground surface. ■ Vegetation must be selected and reviewed by a FAA-qualified Airport Wildlife Hazard Biologist (qualified biologist) to discourage wildlife.
Permeable Pavement Recommended	Does not include water storage. Appropriate for parking lots and other paved surfaces that are not high-traffic areas.
Harvest and Use (RWH) Recommended	Suitable as long as water is stored in enclosed areas.
Sand Filter Basins Recommended	Desirable because standing water is treated through an underdrain system.
Vegetated Filter Strips and Vegetated Swales Recommended	Desirable because neither BMP involves ponded water. However, vegetation must be selected to discourage hazardous wildlife and reviewed by a qualified biologist.
Water Quality Inlets Recommended	Desirable because they do not provide ponded water. Associated vegetation must be selected to discourage hazardous wildlife and reviewed by a qualified biologist.
Infiltration Basins Not recommended without Modification. Suitable only if design addresses wildlife hazards	■ Unsuitable in ALUCP Compatibility Zone A. ■ Suitable in Zones B and C with appropriate modifications, such as: Drawdown within 48 hours or manufactured cover to prevent view and availability of open water; and absence of landscape or landscaping approved by a qualified biologist. ■ Steep slopes (steeper than 3:1).
Bioretention Facilities Not Recommended without Modification (also known as rain gardens bioretention basins, infiltration basins, landscaped filter basins)	Although bioretention can mask open water, BMP is not recommended for airports based on its potential to provide food, water, and shelter for hazardous wildlife. ■ Unsuitable in Compatibility Zone A. ■ Potentially suitable in Zones B and C only when small in size (e.g., parking islands, site entrances, planter boxes, etc.) and when vegetation is selected to discourage hazardous wildlife and reviewed by a qualified biologist. ■ Potentially suitable in Zones D and E when basin is less than 30 feet in length/width; and vegetation is selected to discourage hazardous wildlife and reviewed by a qualified biologist.
Extended Detention Basin Not Recommended	■ Unsuitable in Zones A through C. ■ Should be avoided in Zones D and E. If necessary, modify detention period to provide no visible water within 48 hours, provide steep slopes (1:1), provide hardscape for walls and sides; and do not provide vegetation within or adjacent to the pond.

N/A - site infiltration too low

N/A - site infiltration too low

N/A - no demand

N/A - site infiltration too low

N/A - site infiltration too low

Small bioretention facilities that provide sparse vegetation may be suitable in an aviation environment.

Extended detention basins are frequently used to serve both water quality management and to provide amenities. These basins hold water and would not be appropriate within an AIA because of the open water.

Sand filter at the base of the bioswale promotes infiltration.

Porous pavements allow water to infiltrate to a soil layer below the surface.

Adaptive measures such as liners, a concrete basin, and overhead wire grid can make extended detention strategies less attractive to hazardous wildlife.

Vegetated bioswales improve water quality and prevent water accumulation. However, dense and tall vegetation may be attractive to hazardous wildlife.

Infiltration basins with rock bottoms are less attractive to birds because they mask water and do not provide vegetation.

STORMWATER BEST MANAGEMENT PRACTICES

Riverside County and its incorporated cities require water quality/stormwater management controls for development and redevelopment projects. The Riverside Conservation District has prepared a separate Water Quality Management Plan for each watershed in the County that identifies treatment control Best Management Practices (BMPs) for improving water quality and managing stormwater volumes/flows following the design storm (i.e., 24-hour storm). Structural BMPs identified in Riverside County guidance and their compatibility within the AIA are summarized in Table 1.

ADDITIONAL RESOURCES/MORE INFORMATION:

- Riverside County Flood Control and Water Conservation District, Water Quality Management Webpage. Available at: http://rcflood.org/npdes.
- FAA Advisory Circular 150/5200-33, "Wildlife Hazard Attractants On and Near Airports": https://www.faa.gov/documentLibrary/media/advisory_circular/150-5200-33B/150_5200_33b.pdf.
- Airport Cooperative Research Program, Balancing Airport Stormwater and Bird Hazard Management: https://www.nap.edu/login.php?action=guest&record_id=22216.

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Table 2. Recommended Measures to Reduce Wildlife Attraction Associated with Stormwater BMPs

BMP Characteristic	Recommended Design Measure
Exposed Surface Water • Especially attractive to waterfowl, shorebirds, and flocking birds. • Provides source for drinking and nest building. • More attractive when constructed near other open water features or ponds.	• Reduce availability by providing 48-hour drawdown following a design storm (i.e., 24-hour storm). • Cover using bird balls. • Consider earth-bottom culverts, French drains, trench covers, and underground storage options. • Avoid within 8 km (5 miles) of other open water features or facilities.
Vegetation and Landscaping • Provides food. • Tall vegetation provides shelter and nesting opportunities. • Diverse vegetation attracts more diverse wildlife.	• Eliminate vegetation (concrete banks, steep slopes, etc.). • If necessary, provide a monoculture or decreased diversity. • Never use species that provide a food source (seeds, berries, nuts, and drupes). • Provide regular maintenance to prevent seeding and shelter.
Aspect/Geometry • Slopes can provide opportunities for nesting and loafing.	Avoid or reduce available shoreline: • Implement narrow, linear trenches rather than open water or regular circles as pond shapes. • Create steep slopes (<3:1). • Avoid irregular shapes for basins. • Avoid vegetation.

WHAT YOU CAN DO:

Airport operators, developers and communities must work together to manage stormwater in the airport vicinity to reduce hazards to air travelers and the public while addressing site-specific challenges.

- Identify whether your project is near an airport and in an AIA or critical area. (http://www.rcaluc.org/Plans/New-Compatibility-Plan).
- Work with the airport operator, ALUC, and city/county staff to identify an acceptable water quality management strategy.
- Contact the applicable airport to review your stormwater plans or request plan review by a FAA-qualified wildlife biologist. The form is available at: http://www.rcaluc.org/Portals/0/PDFGeneral/form/Wildlife%20Attractants%20-%20FAA%20Review.pdf.

AIRPORTS, WILDLIFE AND STORMWATER MANAGEMENT

GUIDANCE FOR PROPOSED PROJECTS IN AN AIRPORT INFLUENCE AREA

Riverside County includes diverse topography and is home to three watersheds and a portion of the Salton Sea, an important stop along the Pacific Flyway for migrating bird species. The County's arid climate makes water quality management and water conservation paramount.

The County is also the home to Palm Springs International Airport, 12 public use general aviation airports, and the March Air Reserve Base, whose operations can be challenged by the presence of hazardous wildlife such as raptors, water-fowl, doves/pigeons, gulls, flocking birds, and mammals (coyote and deer). Since 1990, more than 150 wildlife strikes with aircraft have occurred in Riverside County, some of which have led to substantial aircraft damage. Most strikes occur at low altitude (less than 3,500 feet above runway height). Much of the geographic area associated with these altitudes coincides with an Airport Influence Area (AIA) as defined in the Riverside County Airport Land Use Compatibility Plan (ALUCP).

AIRPORTS, WILDLIFE AND STORMWATER MANAGEMENT

The Federal Aviation Administration (FAA) identifies stormwater management facilities on and near airports as one of the greatest attractants to hazardous wildlife. Many species are attracted to open water features and associated vegetation that offers water, food, and shelter. The FAA warns against the construction of new open water bodies or mitigation sites within 10,000 feet of aircraft movement areas and within 5 miles of approach/departure surfaces (FAA Advisory Circular 150/5200-33B).

Remains of an owl ingested by an aircraft engine.

Riverside County
Airport Land Use Commission