Appendix H

Preliminary Water Quality Management Plan

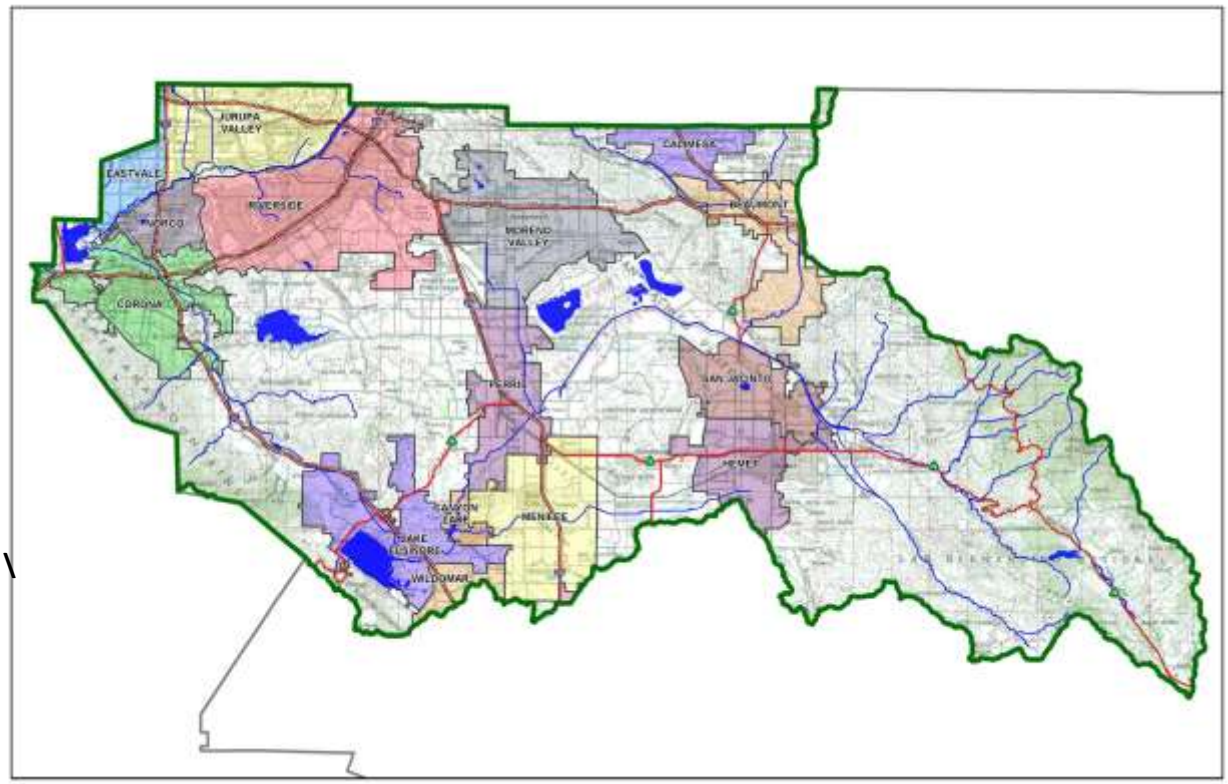
Project Specific Water Quality Management Plan

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

Project Title: JD Fields Hemet

Development No: TBD

Design Review/Case No: TBD



☒ **Preliminary**

☐ **Final**

Original Date Prepared: 4/19/2022
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Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**
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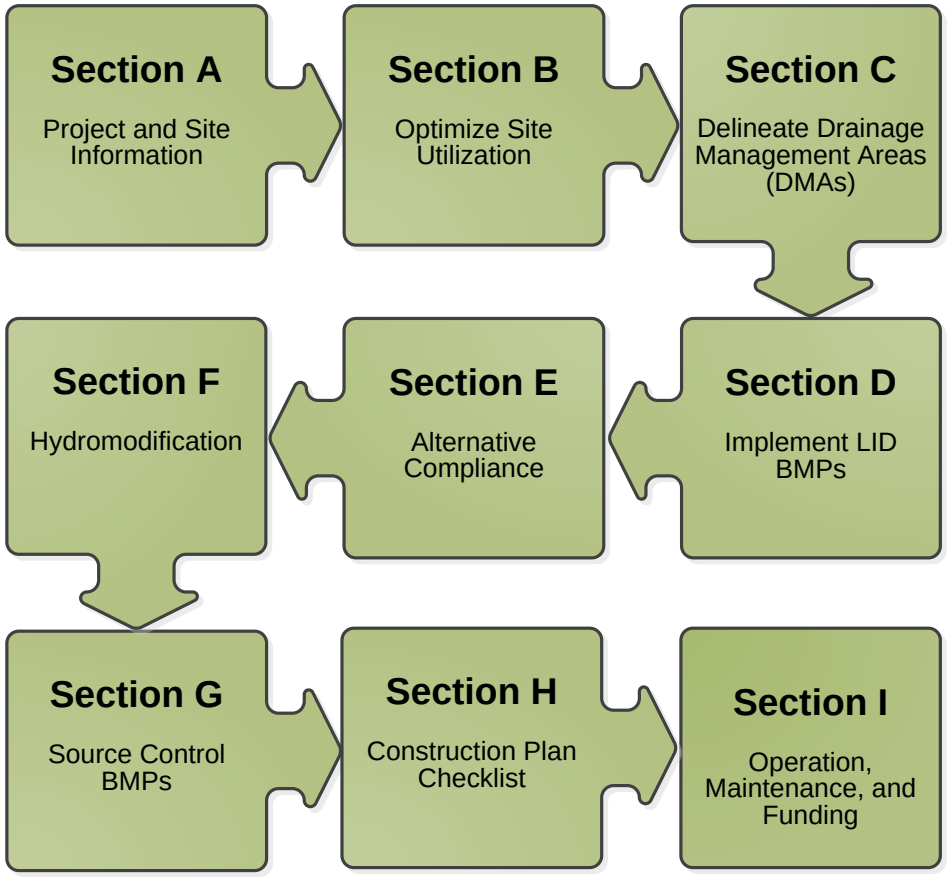
Prepared for:
Terence Cooper
Foxgate Capital
55 Waugh Ste. 1250
Houston, TX 77007
(281)558-7199 x312

Prepared by:
John Pollock, P.E.
Kimley-Horn and Associates
3880 Lemon Street Suite 420
Riverside, CA 92501
(951)543-9868

A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for **Foxgate Capital** by **Kimley-Horn and Associates** for the **JD Field Hemet** project.

This WQMP is intended to comply with the requirements of **City of Hemet** for Ordinance No. R8-2002-0011 which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under City of Hemet Water Quality Ordinance (Municipal Code Section 14-471).

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

Owner's Signature	Date
Terence Cooper	Director of Investments
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

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

Preparer's Signature	Date
John Pollock	Senior Project Manager
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure: C86160

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Manufacturing Warehouse
Planning Area:	M-2 (General Manufacturing)
Community Name:	Hemet, CA
Development Name:	JD Fields Hemet

PROJECT LOCATION
Latitude & Longitude (DMS): 33°44'27" N, 116°59'32.5" W
Project Watershed and Sub-Watershed: Santa Ana Watershed
Gross Acres: 9.52 APN(s): 456-140-008
Map Book and Page No.: 456-140

PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Pipe Warehouse
Proposed or Potential SIC Code(s)	1541, 3498
Area of Impervious Project Footprint (SF)	148,566 SF
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	148,566 SF
Does the project consist of offsite road improvements?	☐ Y ☒ N
Does the project propose to construct unpaved roads?	☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y ☒ N

EXISTING SITE CHARACTERISTICS	
Total area of existing Impervious Surfaces within the Project limits Footprint (SF)	0 SF
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	N/A
Are there any natural hydrologic features on the project site?	☐ Y ☒ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	Type A
What is the Water Quality Design Storm Depth for the project?	0.693

A.1 Maps and Site Plans

The proposed JD Fields Hemet development will include the construction of a proposed manufacturing warehouse. The proposed development will include a proposed 25,000 square foot building with an office. Site improvements will include landscaping, concrete hardscape, asphalt paving, and compacted soil storage areas, and unpaved compacted soil drive aisles. The associated improvements include, but are not limited to onsite grading, domestic water service, sanitary sewer service, storm drain infrastructure, concrete and asphalt pavement, landscaping, and irrigation. Offsite street improvements are not proposed as part of the project scope. The project site is approximately 9.52 acres and is located south of the intersection of West Acacia Avenue and South Gilmore Street, on the east side of the cul-de-sac located on South Gilmore Street in the City of Hemet, within Riverside County. The existing site is approximately 0% impervious. Once the site is developed, the site will be approximately 50% impervious and 50% pervious.

The existing site is currently vacant and drains in a southwest direction towards South Gilmore Street. The site land cover consists of mostly light weeds and brush. Under the existing condition, the site is not accepting any offsite flows.

The proposed site grading intends to maintain the existing flow pattern by draining in a southwest direction. All drainage will drain in the southwest direction into an infiltration basin (BMP-1). The proposed infiltration basin is proposed for water quality and storm water mitigation purposes. The infiltration basin volume was calculated using the Riverside County Infiltration Basin worksheet, which is based on the Riverside County Low Impact Development BMP Design Handbook.

The proposed infiltration basin (BMP-1) is for stormwater quality treatment and mitigation. The proposed infiltration basin was sized to treat the design capture the volume (DCV) and to retain the storm water volume required to not create any adverse impacts downstream. The required DCV for the proposed project site is approximately 12,000 cubic feet. The proposed basin has a total capacity of 80,599 cubic feet which satisfies the requirement for water quality.

The volume of storage provided in the infiltration basin along with the size of the emergency overflow under sidewalk drain are intended to restrict peak flows in the proposed condition to levels equal to or less than the existing flows. Based on the basin routing for the 3-hr, 6-hr and 24-hr durations of the 2 and 100-year storm events, it was determined that the proposed infiltration basin can treat and mitigate up to the 100-year storm events. The proposed site will be a zero-discharge project in which all drainage will be treated and infiltrated back into the soil.

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

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling
- BMP Locations (Lat/Long)

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

A.2 Identify Receiving Waters

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

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Canyon Lake	Nutrients, Pathogens	MUN, AGR, GWR, REC1, REC2, WARM, WILD	N/A; Not a RARE Water Body
Lake Elsinore	DDT, Nutrients, Organic Enrichment/Low Dissolved Oxygen, PCBs, Toxicity	MUN, AGR, IND, PROC, REC1, REC2, WARM, WILD	N/A; Not a RARE Water Body

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

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage **WDID # TBD prior to final approval**	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* City of Hemet Building Permit City of Hemet Electrical Permit City of Hemet Mechanical Permit City of Hemet Site Plan Approval City of Hemet Landscape Approval City of Hemet Fire Underground Approval City of Hemet Water System Approval	☒ Y	☐ N

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

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, **constraints** might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. **Opportunities** might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

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

Consideration of "highest and best use" of the discharge should also be considered. For example, Lake Elsinore is evaporating faster than runoff from natural precipitation can recharge it. Requiring infiltration of 85% of runoff events for projects tributary to Lake Elsinore would only exacerbate current water quality problems associated with Pollutant concentration due to lake water evaporation. In cases where rainfall events have low potential to recharge Lake Elsinore (i.e. no hydraulic connection between groundwater to Lake Elsinore, or other factors), requiring infiltration of Urban Runoff from projects is counterproductive to the overall watershed goals. Project proponents, in these cases, would be allowed to discharge Urban Runoff, provided they used equally effective filtration-based BMPs.

Site Optimization

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

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

Yes. The proposed site grading intends to maintain the existing flow pattern by predominantly draining in the southwest direction.

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

No. The existing site is currently vacant and does not have any existing vegetation, other than annual grass. The proposed development will add landscape throughout the site, making the proposed development approximately 9% pervious. Approximately 59% of the site will consist of compacted soil with a gravel top layer.

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

Yes, based on the Geotechnical Investigation and Percolation Test Results Report prepared by Partner Engineering and Science, Inc. dated July 2, 2021 (Partner Project Number: 21-324820.1) measured an average

infiltration rate of 5.17 in/hr for the site (without a factor of safety applied). Therefore, an infiltration basin is proposed.

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

Yes. The site plan was done with the intent of maximizing the pervious area on the site. This was accomplished by using landscape planters throughout the site and perimeter planter areas. All unpaved storage areas will be compacted soil with a top gravel layer.

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

Yes. All roof drains and site drainage will be routed to the proposed infiltration basin.

Section C: Delineate Drainage Management Areas (DMAs)

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

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1][2]	Area (Sq. Ft.)	DMA Type
DMA-1	**Concrete/Asphalt/Compacted Soil/Landscape Areas**	**414,481**	**Type D**

[1]*Reference Table 2-1 in the WQMP Guidance Document to populate this column*
[2]*If multi-surface provide back-up*

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

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

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

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

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

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

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

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

DMA Name or ID	BMP Name or ID
DMA 1	Infiltration Basin (BMP 1)

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

Section D: Implement LID BMPs

D.1 Infiltration Applicability

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

If yes has been checked, Infiltration BMPs shall not be used for the site; proceed to section D.3

If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

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

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

Infiltration Feasibility

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

Table D.1 Infiltration Feasibility

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

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

D.2 Harvest and Use Assessment

Please check what applies*:*

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

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

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

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If none of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

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

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

Total Area of Irrigated Landscape: **N/A**

Type of Landscaping (Conservation Design or Active Turf): **N/A**

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

Total Area of Impervious Surfaces: **N/A**

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

Enter your EIATIA factor: **N/A**

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

Minimum required irrigated area: **N/A**

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

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
N/A	**N/A**

Toilet Use Feasibility

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

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

Projected Number of Daily Toilet Users: **N/A**

Project Type: **N/A**

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

Total Area of Impervious Surfaces: **N/A**

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

Enter your TUTIA factor: **N/A**

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

Minimum number of toilet users: **N/A**

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

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

Other Non-Potable Use Feasibility

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

N/A

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

Average Daily Demand: **N/A**

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

Total Area of Impervious Surfaces: **N/A**

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-4 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-4: **N/A**

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: **N/A**

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the projected average daily use (Step 1) to the minimum required non-potable use (Step 4).

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

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment per Section 3.4.2 of the WQMP Guidance Document.

D.3 Bioretention and Biotreatment Assessment

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

Select one of the following:

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

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

D.4 Feasibility Assessment Summaries

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

Table D.2 LID Prioritization Summary Matrix

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

DMA-1 is feasible for a structural LID BMP – Infiltration Basin. The proposed infiltration basin BMP-1 will provide both water quality treatment and storm water mitigation.

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	**DMA Area (square feet)**	**Post-Project Surface Type**	**Effective Impervious Fraction, I_f**	**DMA Runoff Factor**	**DMA Areas x Runoff Factor**	*Infiltration Basin BMP 1*		
DMA-1	[A]		[B]	[C]	[A] x [C]			
1A	**148,566**	**Concrete or Asphalt**	**1.0**	**0.89**	**132,520.9**			
1B	**35,252**	**Ornamental Landscaping**	**0.1**	**0.11**	**3,893.9**			
1C	**230,663**	**Compacted Soil**	**0.4**	**0.28**	**64,519.2**			
						Design Storm Depth (in)	*Design Capture Volume,* $\mathbf{V_{BMP}}$ *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
	A_T =**414,481**				Σ = [D] =**200,934**	[E] = **0.69**	$[F] = \frac{[D]x[E]}{12}$ =**11,604**	[G] =**80,599**

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

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

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

Section E: Alternative Compliance (LID Waiver Program)

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

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

- *Or* -

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

N/A

E.1 Identify Pollutants of Concern

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

Table E.1 Potential Pollutants by Land Use Type

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

P = Potential

N = Not Potential

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

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

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

(4) Specifically petroleum hydrocarbons

(5) Specifically solvents

(6) Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

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

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
N/A	
Total Credit Percentage[1]	

[1]*Cannot Exceed 50%*
[2]*Obtain corresponding data from Table 3-8 in the WQMP Guidance Document*

E.3 Sizing Criteria

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

Table E.3 Treatment Control BMP Sizing

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

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document
[E] is for Flow-Based Treatment Control BMPs [E] = .2, for Volume-Based Control Treatment BMPs, [E] obtained from Exhibit A in the WQMP Guidance Document
[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12
[H] is from the Total Credit Percentage as Calculated from Table E.2 above
[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

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

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

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

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]
Infiltration Basin	Metals, debris, trash, nutrients, bacteria and viruses.	High and Medium (Nutrients)

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.

[2] Cross Reference Table E.1 above to populate this column.

[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

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

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

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

If Yes, HCOC criteria do not apply.

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

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

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

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	Post-condition	% Difference
Time of Concentration	**N/A**	**N/A**	**N/A**
Volume (Cubic Feet)	**N/A**	**N/A**	**N/A**

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

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

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

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

N/A

F.2 HCOC Mitigation

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

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

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

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

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

The proposed infiltration basin (BMP-1) is for stormwater quality treatment and mitigation. The proposed infiltration basin was sized to treat the design capture the volume (DCV) and to retain the storm water volume required to not create any adverse impacts downstream. The required DCV for the proposed project site is approximately 12,000 cubic feet. The proposed basin has a total capacity of 80,599 cubic feet which satisfies the requirement for water quality.

The volume of storage provided in the infiltration basin along with the size of the emergency overflow under sidewalk drain are intended to restrict peak flows in the proposed condition to levels equal to or less than the existing flows. Based on the basin routing for the 3-hr, 6-hr and 24-hr durations of the 2 and 100-year storm events, it was determined that the proposed infiltration basin can treat and mitigate up to the 100-year storm events. The proposed site will be a zero-discharge project in which

all drainage will be treated and infiltrated back into the soil. The proposed infiltration will drawdown in a maximum of 37 hours. Refer to Appendix 6 for draw down calculations.

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
On-site storm drain inlets	• Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.	N/A
Landscape/ Outdoor Pesticide Use	• Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. • Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. • Consider using pest-resistant plants, especially adjacent to hardscape. • To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	• Maintain landscaping using minimum or no pesticides. • See applicable operational BMPs in "What you should know for…..Landscape and Gardening". • Provide IPM information to new owners, lessees and operators.
Pools, spas, ponds, decorative fountains, and other water features	N/A	N/A
Vehicle and Equipment Cleaning	N/A	• Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below.
Vehicle/Equipment Repair and Maintenance	• State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.	N/A
Miscellaneous Drain or Wash Water or Other Sources: Roofing, gutters, and trim	• Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. • Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	N/A
Plazas, sidewalks, and parking lots	N/A	• Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Section H: Construction Plan Checklist

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

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)	BMP Location (Lat/Long)
BMP-1	**Basin located near the southwest corner of the project site**	**Sheet 2**	**Latitude=33°44'24"** **Longitude=116°59'35.5"**

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

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: Foxgate Capital

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

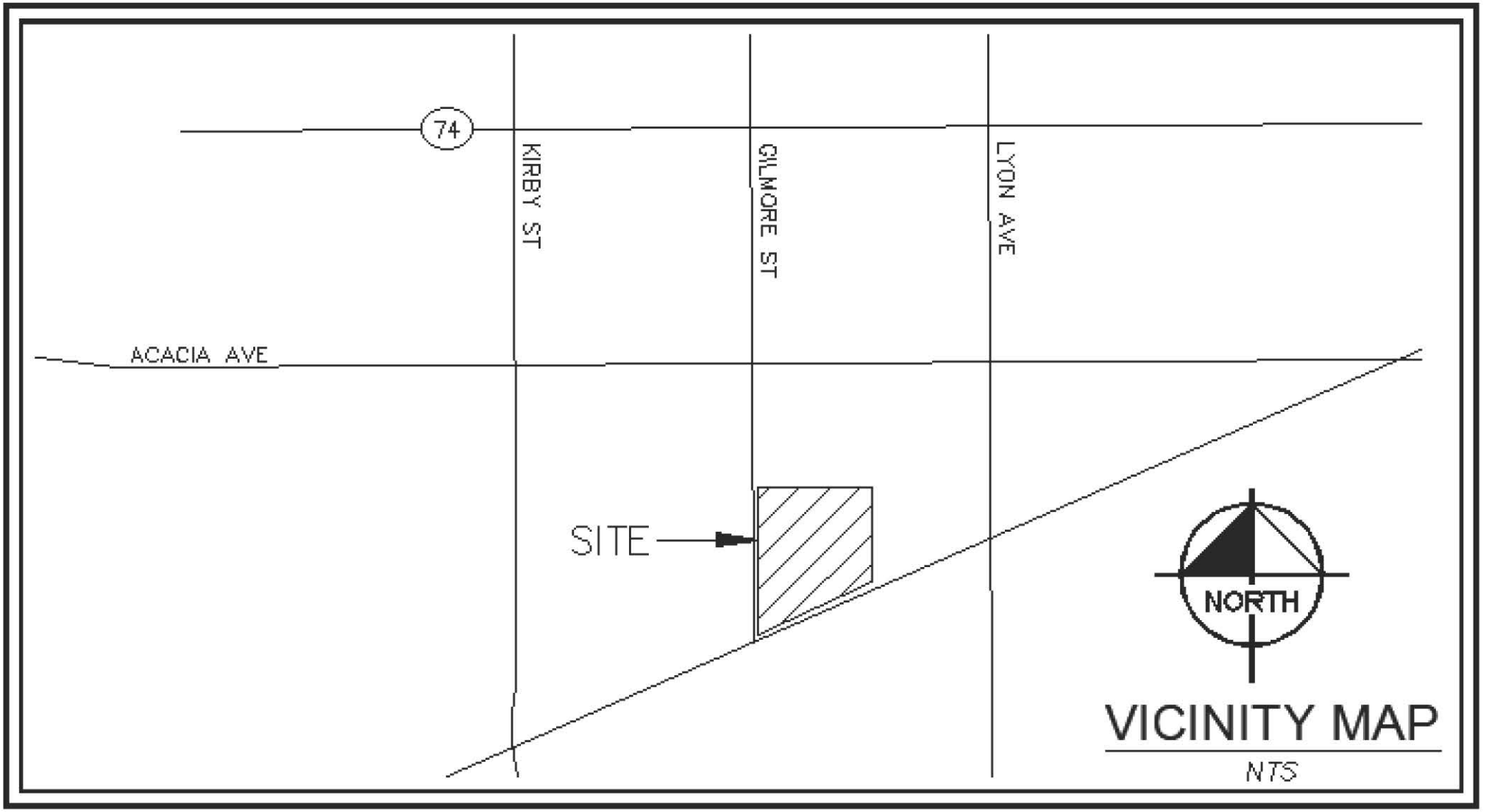
☐ Y ☒ N

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

Appendix 1: Maps and Site Plans

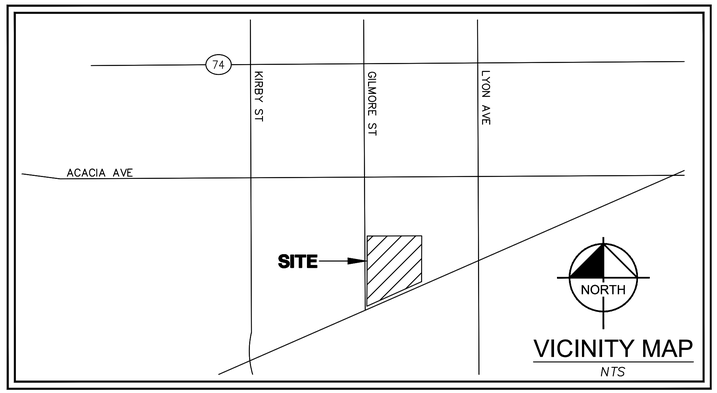
Location Map, WQMP Site Plan and Receiving Waters Map

Location Map



VICINITY MAP

NTS



VICINITY MAP
NTS

TREATMENT CONTROL & SOURCE CONTROL BMP'S	
BMP ID	BMP DESCRIPTION
TC-11	INFILTRATION BASIN
SC-44	DRAINAGE SYSTEM MAINTENANCE
SC-71	SIDEWALK CLEANING
SC-73	LANDSCAPE MAINTENANCE
SD-10	SITE DESIGN AND LANDSCAPE PLANNING
SD-11	ROOF RUNOFF CONTROL
SD-12	EFFICIENT IRRIGATION
SD-13	STORM DRAIN SIGNAGE

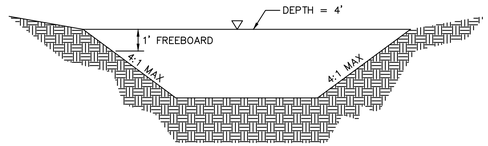
LANDSCAPE NOTE:

FINISH GRADE OF LANDSCAPE AREAS IS TO BE DEPRESSED 1-2 INCHES (MIN.) BELOW TOP OF CURB, SIDEWALK OR PAVEMENT.

LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- DRAINAGE SUBAREA BOUNDARY
- FLOW PATH
- (XXXX) EXISTING CONTOUR
- (XXXX) EXISTING MINOR CONTOUR
- XXXX PROPOSED CONTOUR
- XXXX PROPOSED MINOR CONTOUR
- DMA-# X.XX HYDROLOGY SUBAREA ACREAGE
- FLOW ARROWS
- STANDARD DUTY ASPHALT PAVEMENT
- HEAVY DUTY ASPHALT PAVEMENT
- LIGHT DUTY CONCRETE WALK
- LANDSCAPE/PLANTER AREA
- HEAVY DUTY CONCRETE
- ROUGH GRADED AREA

DMA	SURFACE TYPE	AREA (SF)	BMP ID	REQUIRED DCV (CF)	PROP VOL (CF)	MIN BOT AREA(SF)	PROP BOT AREA (SF)
DMA 1	CONC./ASPH.	148,566	BMP-1	11,604	80,599	3,997	5,646
	LANDSC.	35,252					
	COMPACTED SOIL	230,663					



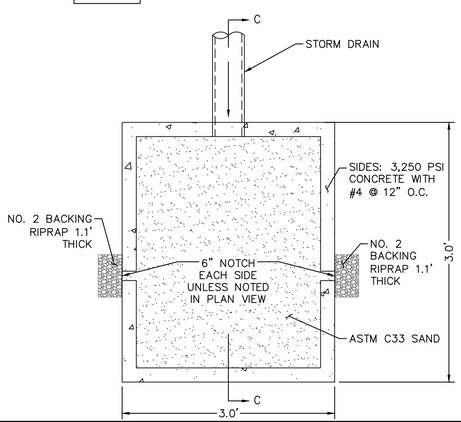
INFILTRATION BASIN
N.T.S.

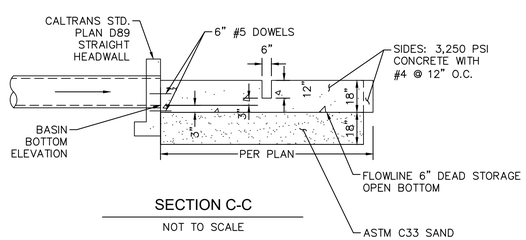
BMP MAINTENANCE:

INFILTRATION BASIN
TRASH, DEBRIS AND SEDIMENT MUST BE REMOVED FROM BASIN CURB CUT LOCATIONS, ALONG GUTTERS, AND WITHIN THE BASINS AND DISPOSED OF PER LOCAL JURISDICTION REQUIREMENTS. INSPECTION AND MAINTENANCE REQUIRED AFTER EVERY RAIN EVENT GREATER THAN 0.5". INSPECTIONS SHOULD OCCUR ON A MONTHLY BASIS TO ENSURE OPTIMUM PERFORMANCE. THE OWNER IS RESPONSIBLE FOR ALL BMP MAINTENANCE OPERATIONS.

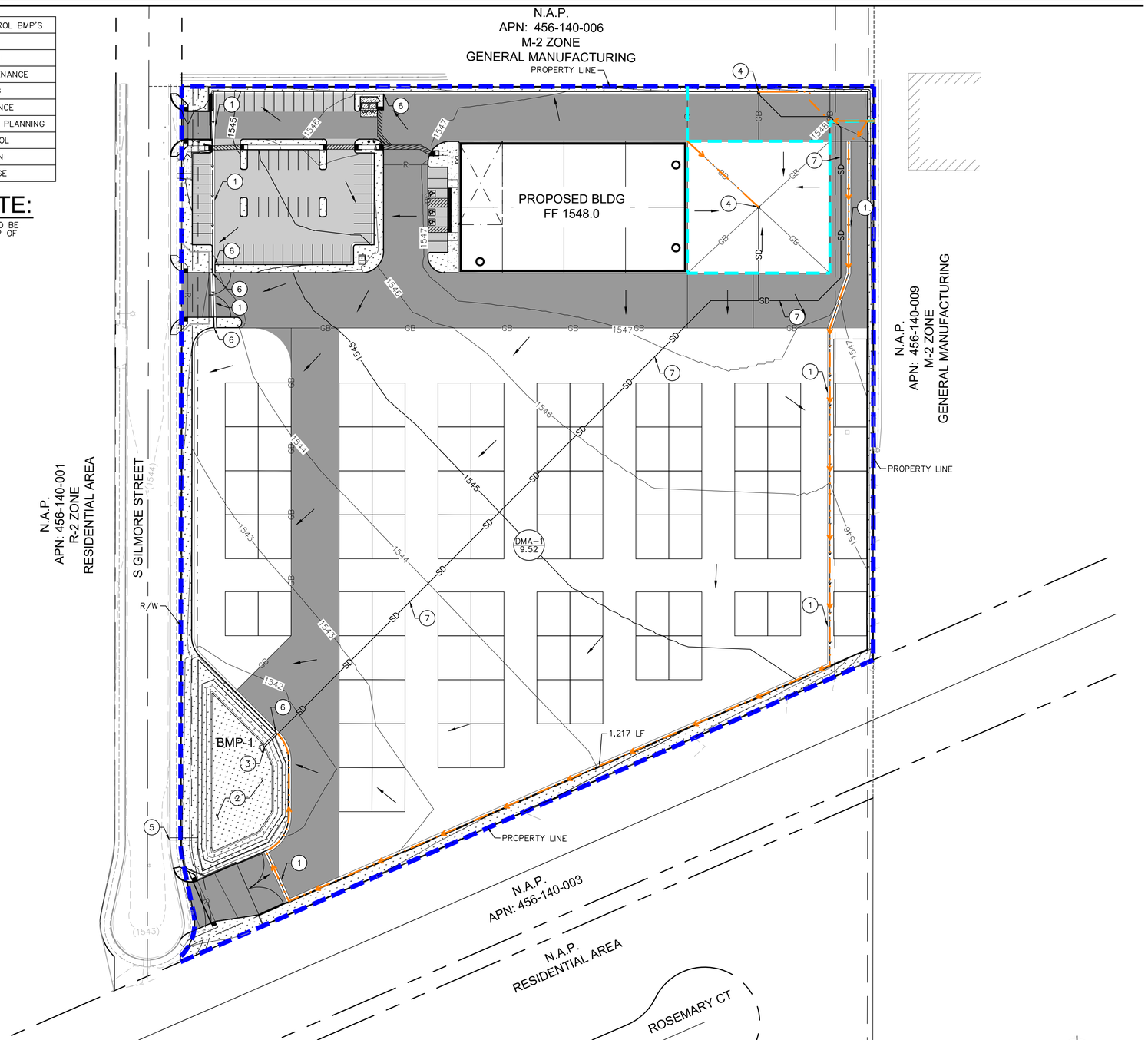
KEY NOTES:

1. PROPOSED 4' RIBBON GUTTER
2. PROPOSED INFILTRATION BASIN
3. PROPOSED SAND FOREBAY
4. PROPOSED GRATED INLET WITH FILTER INSERT
5. PROPOSED UNDER SIDEWALK OVERFLOW DRAIN WITH FILTER INSERT
6. PROPOSED 2 FOOT CURB CUT
7. PROPOSED STORM DRAIN PIPE





SECTION C-C
NOT TO SCALE



Kimley»Horn

PRELIMINARY WQMP EXHIBIT
JD FIELDS HEMET
8/1/2022

Appendix 2: Construction Plans

Grading and Drainage Plans

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

WQMP Project Report

County of Riverside Stormwater Program

Santa Ana River Watershed Geodatabase

Monday, July 26, 2021

Note: The information provided in this report and on the Stormwater Geodatabase for the County of Riverside Stormwater Program is intended to provide basic guidance in the preparation of the applicantï¿½s Water Quality Management Plan (WQMP) and should not be relied upon without independent verification.

Project Site Parcel Number(s):	456140008
Latitude/Longitude:	33.741, -116.9923
Thomas Brothers Page:	
Project Site Acreage:	8.82
Watershed(s):	SANTA ANA
This Project Site Resides in the following Hydrologic Unit(s) (HUC):	**HUC Name** - HUC Number **San Jacinto Valley** - 180702020302
The HUCs Contribute stormwater to the following 303d listed water bodies and TMDLs which may include drainage from your proposed Project Site:	**WBID Name** - WBID Number **Canyon Lake (Railroad Canyon Reservoir)** - CAL8021100019990208151525 **Elsinore, Lake** - CAL8023100019990208151100
These 303d listed Water bodies and TMDLs have the following Pollutants of Concern (POC):	**Bacterial Indicators** - Pathogens **Nutrients** - Nutrients, Organic Enrichment/Low Dissolved Oxygen **Other Organics** - PCBs (Polychlorinated biphenyls) **Toxicity** - Sediment Toxicity, Unknown Toxicity
Is the Site subject to Hydromodification:	Yes
Limitations on Infiltration:	**Project Site Onsite Soils Group(s)** - A **Known Groundwater Contamination Plumes within 1000'** - No **Adjacent Water Supply Wells(s)** - No information available please contact your local water agency for more information. Your local contact agency is EASTERN MUNICIPAL W.D.. Your local wholesaler contact agency is METROPOLITAN WATER DISTRICT.
Environmentally Sensitive Areas within 200'(Fish and Wildlife Habitat/Species):	None
	None

Environmentally Sensitive Areas within 200'(CVMSHCP):	
Environmentally Sensitive Areas within 200'(WRMSHCP):	None
Groundwater elevation from Mean Sea Level:	1325
85th Percentile Design Storm Depth (in):	0.693
Groundwater Basin:	Hemet-South
MSHCP/CVMSHCP Criteria Cell (s):	No Data
Retention Ordinance Information:	No Data
Studies and Reports Related to Project Site:	Comprehensive Nutrient Reduction Plan IBI Scores - Southern Cal Bulletin 118 - hemet valley bulletin118_4-sc water_fact_3_7.11 8039-SAR-Hydromodification Hemet MDP Hemet Regional ADP Report Salt Creek Channel ADP Map Hemet Regional ADP Map Salt Creek Channel ADP Report

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

T 01 S
T 02 S
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T 06 S
T 07 S
T 08 S

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

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

Project Site
Design Depth 0.69

Santa Ana River Watershed
Santa Margarita Watershed

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

N

Rain Gage Locations

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Isohyetal Map for the 85th Percentile 24 hour Storm Event

July 2011

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Western Riverside Area, California

July 26, 2021

Preface

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

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

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

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

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

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

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Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

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

Soil Map

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

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,480 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

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

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

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

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 13, May 27, 2020

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

Date(s) aerial images were photographed: May 15, 2018—Jun 26, 2018

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
SeA	San Emigdio fine sandy loam, 0 to 2 percent slopes, occassional frost	6.8	73.5%
SfA	San Emigdio fine sandy loam, deep, 0 to 2 percent slopes	2.5	26.5%
Totals for Area of Interest		**9.3**	**100.0%**

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the

development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Western Riverside Area, California

SeA—San Emigdio fine sandy loam, 0 to 2 percent slopes, occassional frost

Map Unit Setting

National map unit symbol: 2y8t8
Elevation: 1,440 to 1,800 feet
Mean annual precipitation: 11 to 13 inches
Mean annual air temperature: 65 to 67 degrees F
Frost-free period: 305 to 330 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

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

Description of San Emigdio

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sedimentary rock

Typical profile

A - 0 to 8 inches: fine sandy loam
C1 - 8 to 40 inches: fine sandy loam
C2 - 40 to 60 inches: stratified fine sandy loam to silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water capacity: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: A
Ecological site: R019XD029CA
Hydric soil rating: No

Minor Components

Metz

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

San timoteo

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

SfA—San Emigdio fine sandy loam, deep, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hcyv
Elevation: 10 to 700 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 270 to 350 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

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

Description of San Emigdio

Setting

Landform: Alluvial fans
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sedimentary rock

Typical profile

H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 40 inches: fine sandy loam
H3 - 40 to 60 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: R019XD029CA
Hydric soil rating: No

Minor Components

Metz

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

San timoteo

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

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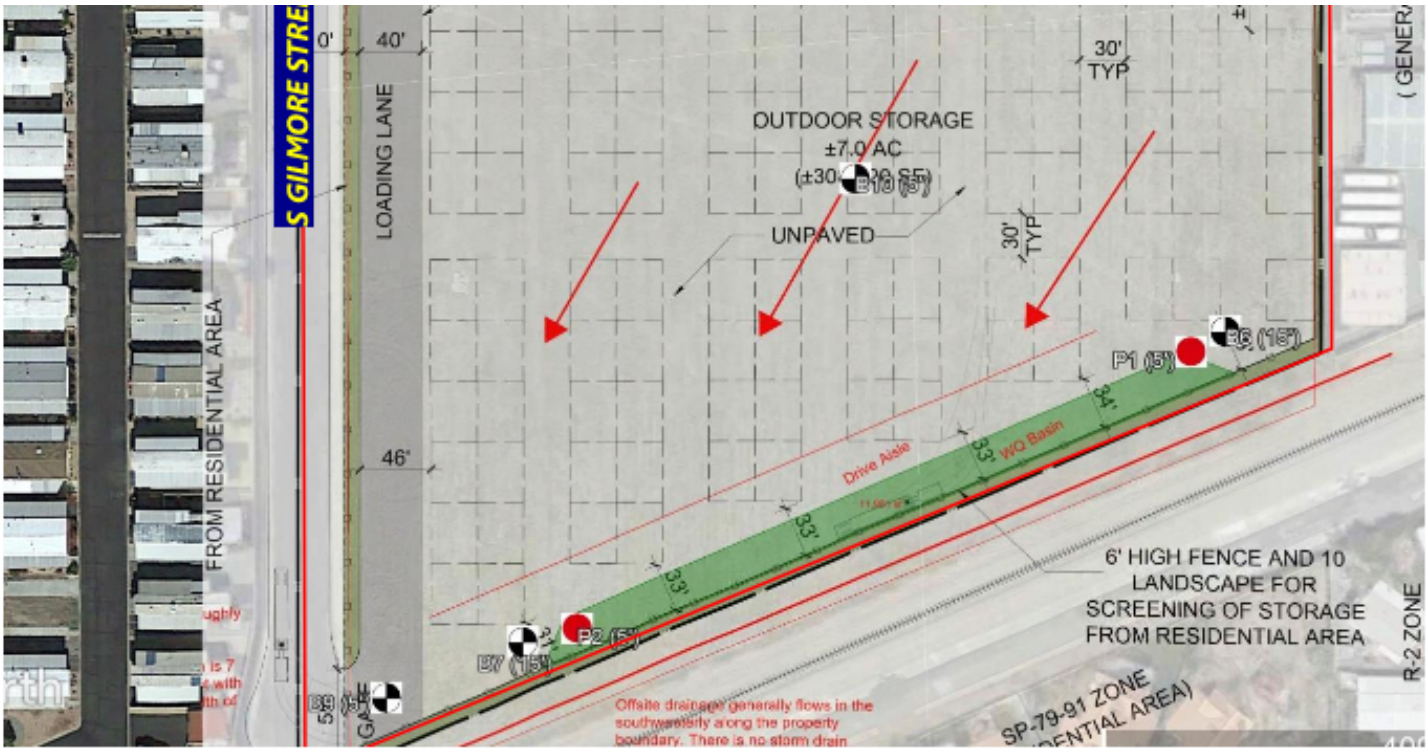
Parameter	P1	P2
Location	Southwest Lot Area	Southeast Lot Area
Elevation of Tested Area	5 ft	5 ft
Pre-soak Depth (from top of pipe)	5 in.	5 in.
Test Start Depth (from top of pipe)	30.5 in.	36 in.
Water Drop During Test	5.5 in.	6.0
Unfactored Infiltration Rate	**4.48 in./hr**	**5.87 in./hr**

average = 5.175 in/hr

NO FACTOR OF SAFETY YET



Appendix 4: Historical Site Conditions

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

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

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

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: Kimley-Horn and Associates | Date: 4/19/2021

Designed by: Leticia Alvarez | Case No:

Company Project Number/Name: JD Fields Hemet

BMP Identification

BMP NAME / ID: BMP-1 Infiltration Basin

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E: D_{85}= 0.69 inches

Drainage Management Area Tabulation

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

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
1A	*148,566*	*Mixed Surface Types*	*1*	*0.89*	*132520.9*			
1B	*35252*	*Ornamental Landscaping*	*0.1*	*0.11*	*3893.9*			
1C	*230,663*	*Compacted Soil (e.g. unpaved parking)*	*0.4*	*0.28*	*64519.2*			
	414481	***Total***			**200934**	**0.69**	***11603.9***	***80599***

Notes:

Infiltration Basin - Design Procedure (Rev. 03-2012)	BMP ID: BMP-1	Legend:	Required Entries / Calculated Cells

Company Name: Kimley-Horn and Associates — Date: 4/19/2022

Designed by: Leticia Alvarez — County/City Case No.:

Design Volume

a) Tributary area (BMP subarea)	A_T =	9.52	acres
b) Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	11,604	ft^3

Maximum Depth

a) Infiltration rate	I =	5.175	in/hr
b) Factor of Safety (See Table 1, Appendix A: "Infiltration Testing" from this BMP Handbook)	FS =	3	
c) Calculate D_1 $D_1 = \frac{I\ (in/hr) \times 72\ hrs}{12\ (in/ft) \times FS}$	D_1 =	10.4	ft
d) Enter the depth of freeboard (at least 1 ft)		1	ft
e) Enter depth to historic high ground water (measured from **top** of basin)		60	ft
f) Enter depth to top of bedrock or impermeable layer (measured from **top** of basin)		100	ft
g) D_2 is the smaller of: Depth to groundwater - (10 ft + freeboard) and Depth to impermeable layer - (5 ft + freeboard)	D_2 =	49.0	ft
h) D_{MAX} is the smaller value of D_1 and D_2 but shall not exceed 5 feet	D_{MAX} =	10.4	ft

Basin Geometry

a) Basin side slopes (no steeper than 4:1)	z =	4	:1
b) Proposed basin depth (excluding freeboard)	d_B =	3	ft
c) Minimum bottom surface area of basin ($A_S = V_{BMP}/d_B$)	A_S =	3868	ft^2
d) Proposed Design Surface Area	A_D =	5646	ft^2

Forebay

a) Forebay volume (minimum 0.5% V_{BMP})	Volume =	58	ft^3
b) Forebay depth (height of berm/splashwall. 1 foot min.)	Depth =	1	ft
c) Forebay surface area (minimum)	Area =	58	ft^2
d) Full height notch-type weir	Width (W) =		in

Notes:

Contour Elevation	Area SF	Volume	Cummulative Volume
	0	0	0
1537.70	5,646.02	-	0
1538.00	6,054.68	1,754.75	1,754.75
1539.00	7,491.43	6,760.32	8,515.07
1540.00	9,042.84	8,254.98	16,770.05
1541.00	10,902.43	9,958.16	26,728.20
1542.00	19,396.53	14,946.98	41,675.18
1543.00	62,545.87	38,924.34	80,599.53

Pond Volume Equations

*** Incremental volume computed by the Conic Method for Reservoir Volumes.**

Volume = (1/3) * (EL2 - El1) * (Area1 + Area2 + sqr(Area1 * Area2))

where:	EL1, EL2	Lower and upper elevations of the increment
	Area1, Area2	Areas computed for EL1, EL2, respectively
	Volume	Incremental volume between EL1 and EL2

Table 1 - Infiltration Testing Requirements							
Infiltration BMP	Testing Options	Ring Infiltrometer Tests[1]	Percolation Test[2]	Test Pits or Boring Logs[3]	Final Report[4]	Hydrology Manual[5]	Factor of Safety
Infiltration Trench	Option 1▶	2 tests min. with at least 1 per trench	not used	1 boring or test pit per trench	Required	not used	FS = 3
	Option 2▶	not used	4 tests min. with at least two per trench	1 boring or test pit per trench	Required	not used	FS = 3
	Option 3[7]▶	not used	not used	1 boring or test pit per trench	Required	not used	FS = 6
	Option 4▶	not used	not used	1 boring or test pit per site	not used	only	FS = 10
Infiltration Basin	Option 1▶	2 tests min. with at least 1 per basin[6]	not used	1 boring or test pit per basin	Required	not used	FS = 3
	Option 2▶	not used	4 tests min. with at least 2 per basin[6]	1 boring or test pit per trench	Required	not used	FS = 3
	Option 3[7]▶	not used	not used	1 boring or test pit per basin	Required	not used	FS = 6
	Option 4▶	not used	not used	1 boring or test pit per site	not used	only	FS = 10
Permeable Pavement	Option 1▶	2 tests min. with at least 1 every 10,000 ft^2	not used	1 boring or test pit every 10,000 ft^2	Required	not used	FS = 3
	Option 2▶	not used	4 tests min. with at least 2 every 10,000 ft^2	1 boring or test pit every 10,000 ft^2	Required	not used	FS = 3

Table Footnotes:

[1] Ring Infiltrometer tests per Section 2.2

[2] Percolation tests per Section 2.3 and Well Permeameter Test per Section 2.4

[3] Test pits or boring logs per Section 2.5

[4] Final Report per Section 1.7

[5] See Plate E-6.2 of the District's Hydrology Manual

[6] For basins in excess of 10,000 ft^2, provide one (1) ring infiltrometer test or two (2) percolation tests for each additional 10,000 ft^2

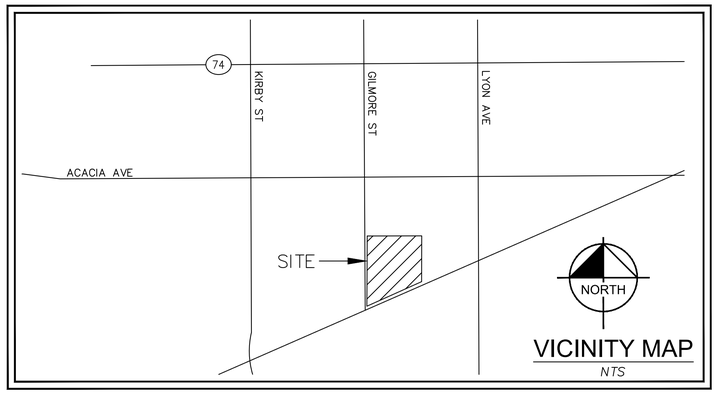
[7] This option may be used for projects with a maximum tributary area of 5 acres only.

$$Infiltration\ Rate = \frac{5.175\,\frac{in}{hr}}{3\ Factor\ of\ Safety}\,x\,\frac{1'}{12"} = 0.144\ ft/hr$$

$$Drawdown\ Time = \frac{Basin\ Depth}{Infiltration\ Rate} = \frac{5.3ft}{0.144\ ft/hr} = 37\ hrs < 48\ hrs$$

Appendix 7: Hydromodification

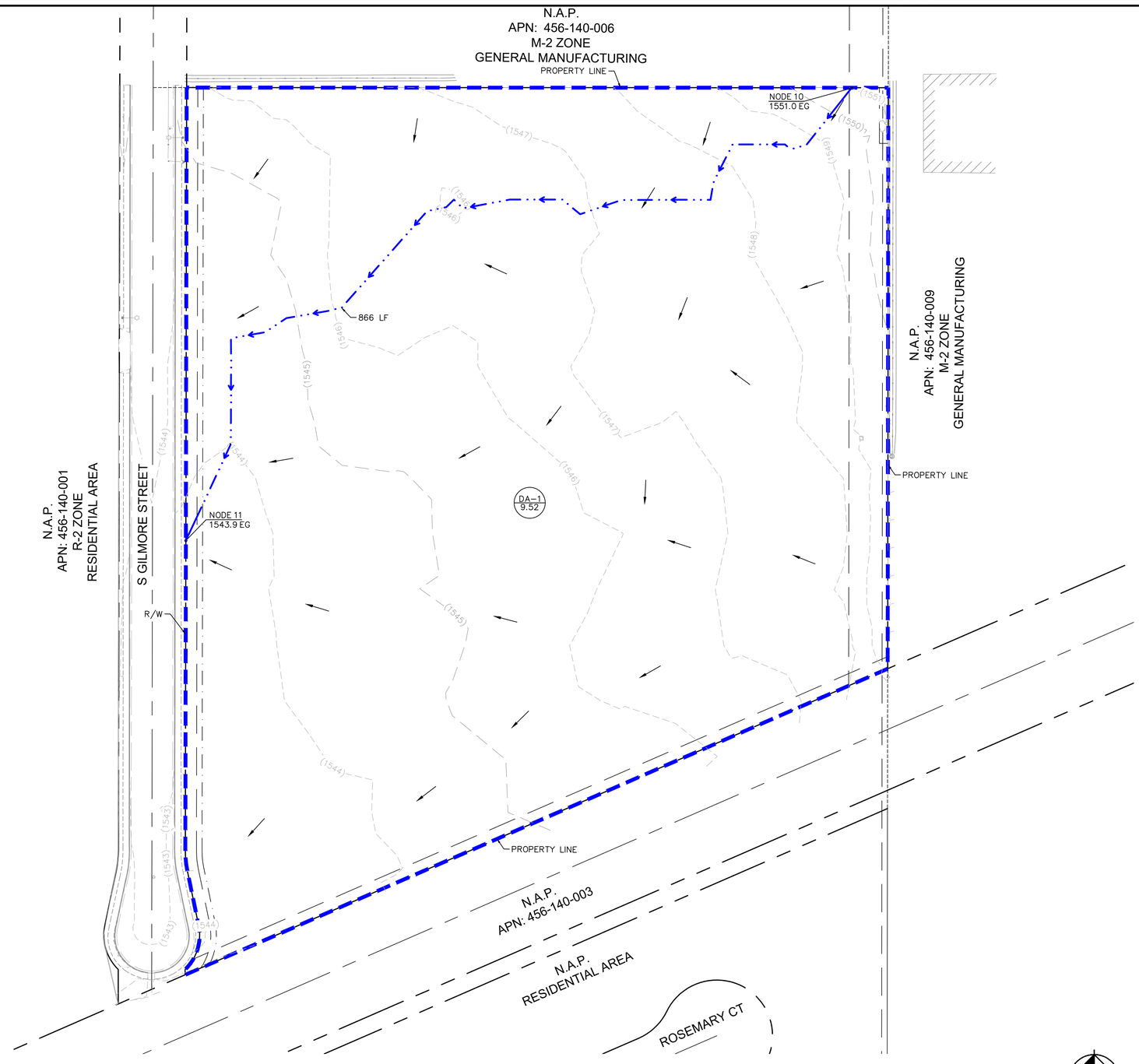
Supporting Detail Relating to Hydrologic Conditions of Concern



VICINITY MAP
NTS

LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW PATH
- (XXXX) EXISTING CONTOUR
- (XXXX) EXISTING MINOR CONTOUR
- DA–# / X.XX HYDROLOGY SUBAREA / ACREAGE
- FLOW ARROWS

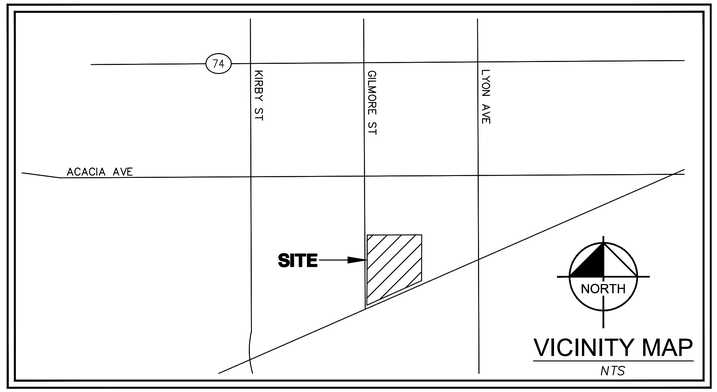


Kimley»Horn

EXISTING DRAINAGE PLAN
JD FIELDS HEMET
10/14/2021

```
******************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2011 Advanced Engineering Software (aes)
                    (Rational Tabling Version 18.0)
                Release Date: 07/01/2011  License ID 1499

                          Analysis prepared by:

                      Kimley-Horn and Associates, Inc.
                             765 The City Drive
                                 Suite 200
                              Orange, CA 92868

 ************************* DESCRIPTION OF STUDY *************************
* JD FIELDS HEMET                                                      *
* EXISTING 2 YEAR                                                      *
* 10/14/2021 LA                                                        *
 ************************************************************************

  FILE NAME: JDH2E.DAT
  TIME/DATE OF STUDY: 22:06 10/13/2021
------------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   8.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 1.00
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  1.960
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.760
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  3.050
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.180
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5287434
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5299969
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =    2.00   1-HOUR INTENSITY(INCH/HOUR) =   0.466
  SLOPE OF INTENSITY DURATION CURVE = 0.5287
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

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

******************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   866.00
```

```
  UPSTREAM ELEVATION(FEET) =   1551.00
  DOWNSTREAM ELEVATION(FEET) =   1543.90
  ELEVATION DIFFERENCE(FEET) =      7.10
  TC = 0.533*[(  866.00**3)/(     7.10)]**.2 =   20.829
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  0.816
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .2013
  SOIL CLASSIFICATION IS "A"
  SUBAREA RUNOFF(CFS) =      1.56
  TOTAL AREA(ACRES) =      9.52   TOTAL RUNOFF(CFS) =      1.56
================================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =         9.5  TC(MIN.) =     20.83
  PEAK FLOW RATE(CFS)   =      1.56
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```



VICINITY MAP
NTS

KEY NOTES:

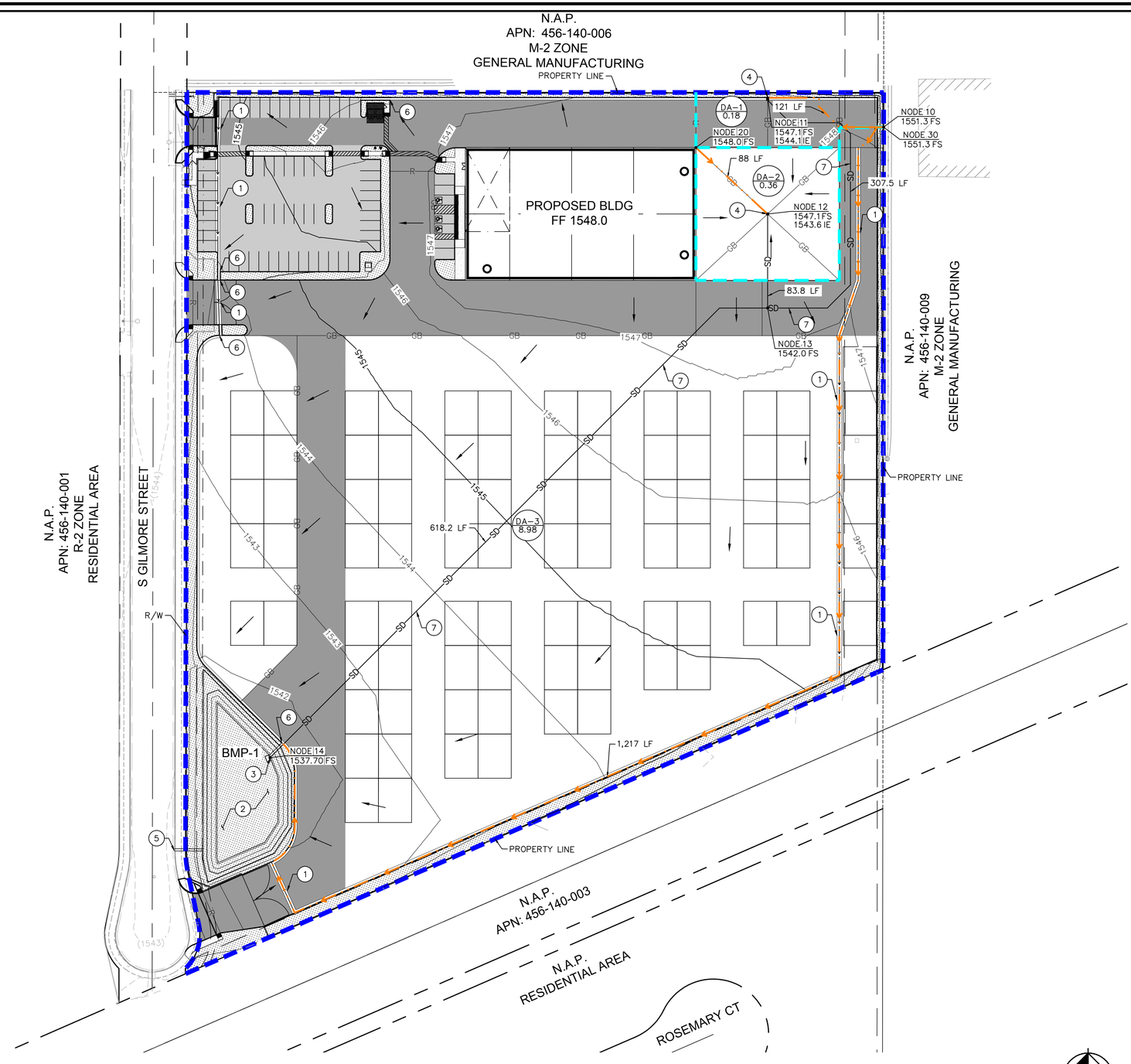
1. PROPOSED 4' RIBBON GUTTER
2. PROPOSED INFILTRATION BASIN
3. PROPOSED SAND FOREBAY
4. PROPOSED GRATED INLET WITH FILTER INSERT
5. PROPOSED UNDER SIDEWALK OVERFLOW DRAIN WITH FILTER INSERT
6. PROPOSED 2 FOOT CURB CUT
7. PROPOSED STORM DRAIN PIPE

LANDSCAPE NOTE:

FINISH GRADE OF LANDSCAPE AREAS IS TO BE DEPRESSED 1–2 INCHES (MIN.) BELOW TOP OF CURB, SIDEWALK OR PAVEMENT.

LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- DRAINAGE SUBAREA BOUNDARY
- FLOW PATH
- (XXXX) EXISTING CONTOUR
- (XXXX) EXISTING MINOR CONTOUR
- XXXX PROPOSED CONTOUR
- XXXX PROPOSED MINOR CONTOUR
- DA–# / X.XX HYDROLOGY SUBAREA ACREAGE
- FLOW ARROWS



Kimley»Horn

PROPOSED DRAINAGE PLAN
JD FIELDS HEMET
4/19/2022

```
******************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
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                Release Date: 07/01/2011  License ID 1499

                          Analysis prepared by:

                      Kimley-Horn and Associates, Inc.
                             765 The City Drive
                                 Suite 200
                              Orange, CA 92868

 ************************* DESCRIPTION OF STUDY *************************
* JD FIELD HEMET                                                        *
* PROPOSED 2 YEAR                                                       *
* 10/14/2021 LA                                                         *
 ************************************************************************

  FILE NAME: JDH2P.DAT
  TIME/DATE OF STUDY: 14:38 10/14/2021
------------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
------------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =    2.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   8.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 1.00
  10-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  1.960
  10-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  0.760
  100-YEAR STORM 10-MINUTE INTENSITY(INCH/HOUR) =  3.050
  100-YEAR STORM 60-MINUTE INTENSITY(INCH/HOUR) =  1.180
  SLOPE OF 10-YEAR INTENSITY-DURATION CURVE =  0.5287434
  SLOPE OF 100-YEAR INTENSITY-DURATION CURVE =  0.5299969
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =    2.00   1-HOUR INTENSITY(INCH/HOUR) =   0.466
  SLOPE OF INTENSITY DURATION CURVE = 0.5287
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

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

******************************************************************************
  FLOW PROCESS FROM NODE     10.00 TO NODE     11.00 IS CODE =  21
------------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   121.00
```

```
  UPSTREAM ELEVATION(FEET) =   1551.30
  DOWNSTREAM ELEVATION(FEET) =   1547.10
  ELEVATION DIFFERENCE(FEET) =      4.20
  TC = 0.393*[(  121.00**3)/(     4.20)]**.2 =    5.236
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.694
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6184
  SOIL CLASSIFICATION IS "A"
  SUBAREA RUNOFF(CFS) =      0.19
  TOTAL AREA(ACRES) =      0.18   TOTAL RUNOFF(CFS) =      0.19

****************************************************************************
  FLOW PROCESS FROM NODE     11.00 TO NODE     12.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1544.10  DOWNSTREAM(FEET) =  1542.00
  FLOW LENGTH(FEET) =   307.50   MANNING'S N =  0.013
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO  8.000
  DEPTH OF FLOW IN   8.0 INCH PIPE IS   2.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.18
  ESTIMATED PIPE DIAMETER(INCH) =   8.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.19
  PIPE TRAVEL TIME(MIN.) =   2.35    Tc(MIN.) =    7.58
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     12.00 =     428.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     12.00 TO NODE     12.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    7.58
  RAINFALL INTENSITY(INCH/HR) =   1.39
  TOTAL STREAM AREA(ACRES) =     0.18
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.19

****************************************************************************
  FLOW PROCESS FROM NODE     20.00 TO NODE     12.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    88.00
  UPSTREAM ELEVATION(FEET) =   1548.00
  DOWNSTREAM ELEVATION(FEET) =   1547.10
  ELEVATION DIFFERENCE(FEET) =      0.90
  TC = 0.393*[(   88.00**3)/(     0.90)]**.2 =    5.886
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.592
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .6119
  SOIL CLASSIFICATION IS "A"
  SUBAREA RUNOFF(CFS) =      0.35
  TOTAL AREA(ACRES) =      0.36   TOTAL RUNOFF(CFS) =      0.35

****************************************************************************
  FLOW PROCESS FROM NODE     12.00 TO NODE     13.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1543.60  DOWNSTREAM(FEET) =  1542.00
  FLOW LENGTH(FEET) =    83.80   MANNING'S N =  0.013
```

```
  ESTIMATED PIPE DIAMETER(INCH) INCREASED TO  8.000
  DEPTH OF FLOW IN   8.0 INCH PIPE IS   2.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.77
  ESTIMATED PIPE DIAMETER(INCH) =   8.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.35
  PIPE TRAVEL TIME(MIN.) =   0.37    Tc(MIN.) =    6.26
  LONGEST FLOWPATH FROM NODE     20.00 TO NODE     13.00 =     171.80 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     13.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    6.26
  RAINFALL INTENSITY(INCH/HR) =   1.54
  TOTAL STREAM AREA(ACRES) =     0.36
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.35

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        0.19     7.58        1.392          0.18
      2        0.35     6.26        1.541          0.36

 **********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1        0.51     6.26       1.541
      2        0.51     7.58       1.392

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       0.51   Tc(MIN.) =    6.26
  TOTAL AREA(ACRES) =        0.5
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     13.00 =     428.50 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     13.00 TO NODE     14.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1542.00  DOWNSTREAM(FEET) =  1537.70
  FLOW LENGTH(FEET) =   618.20   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.8 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   2.89
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.51
  PIPE TRAVEL TIME(MIN.) =   3.56    Tc(MIN.) =    9.82
  LONGEST FLOWPATH FROM NODE     10.00 TO NODE     14.00 =    1046.70 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE     14.00 TO NODE     14.00 IS CODE =   1
----------------------------------------------------------------------------
```

```
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.82
  RAINFALL INTENSITY(INCH/HR) =   1.21
  TOTAL STREAM AREA(ACRES) =     0.54
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      0.51

****************************************************************************
  FLOW PROCESS FROM NODE     30.00 TO NODE     14.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS SINGLE FAMILY (1/4 ACRE)
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1217.00
  UPSTREAM ELEVATION(FEET) =   1551.30
  DOWNSTREAM ELEVATION(FEET) =   1537.70
  ELEVATION DIFFERENCE(FEET) =     13.60
  TC = 0.393*[( 1217.00**3)/(    13.60)]**.2 =   16.535
     2 YEAR RAINFALL INTENSITY(INCH/HOUR) =  0.922
  SINGLE-FAMILY(1/4 ACRE LOT) RUNOFF COEFFICIENT = .5605
  SOIL CLASSIFICATION IS "A"
  SUBAREA RUNOFF(CFS) =      4.64
  TOTAL AREA(ACRES) =      8.98   TOTAL RUNOFF(CFS) =      4.64

****************************************************************************
  FLOW PROCESS FROM NODE     14.00 TO NODE     14.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   16.54
  RAINFALL INTENSITY(INCH/HR) =   0.92
  TOTAL STREAM AREA(ACRES) =     8.98
  PEAK FLOW RATE(CFS) AT CONFLUENCE =      4.64

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1        0.51     9.82        1.215          0.54
      2        4.64    16.54        0.922          8.98

 **********************************WARNING*********************************
  IN THIS COMPUTER PROGRAM, THE CONFLUENCE VALUE USED IS BASED
  ON THE RCFC&WCD FORMULA OF PLATE D-1 AS DEFAULT VALUE. THIS FORMULA
  WILL NOT NECESSARILY RESULT IN THE MAXIMUM VALUE OF PEAK FLOW.
 ****************************************************************************

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)
      1        3.26     9.82       1.215
      2        5.03    16.54       0.922

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.03   Tc(MIN.) =   16.54
  TOTAL AREA(ACRES) =        9.5
```

```
 LONGEST FLOWPATH FROM NODE     30.00 TO NODE     14.00 =    1217.00 FEET.
============================================================================
 END OF STUDY SUMMARY:
 TOTAL AREA(ACRES)      =         9.5  TC(MIN.) =     16.54
 PEAK FLOW RATE(CFS)    =        5.03
============================================================================
============================================================================
 END OF RATIONAL METHOD ANALYSIS
```

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

Study date 10/14/21 File: jdhu32.out

++

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

Program License Serial Number 6443

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

English Units used in output format

JD FIELDS HEMET
UNIT HYDROGRAPHS 2 YEAR
10/14/2021 LA

Drainage Area = 9.52(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.52(Ac.) = 0.015 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.221 Hr.
Lag time = 13.26 Min.
25% of lag time = 3.31 Min.
40% of lag time = 5.30 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]
9.52	0.83	7.90

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.52	2.19	20.85

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 0.830(In)
Area Averaged 100-Year Rainfall = 2.190(In)

Point rain (area averaged) = 0.830(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 0.830(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
9.520	32.00	0.500

Total Area Entered = 9.52(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	16.2	0.870	0.500	0.479	1.000	0.479
					Sum (F) =	0.479

Area averaged mean soil loss (F) (In/Hr) = 0.479
Minimum soil loss rate ((In/Hr)) = 0.239
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	37.707	3.990	0.383
2	0.167	75.415	16.108	1.545
3	0.250	113.122	25.333	2.431
4	0.333	150.830	18.548	1.780
5	0.417	188.537	9.265	0.889
6	0.500	226.244	5.593	0.537
7	0.583	263.952	4.141	0.397
8	0.667	301.659	3.257	0.312
9	0.750	339.367	2.495	0.239
10	0.833	377.074	2.107	0.202
11	0.917	414.781	1.648	0.158
12	1.000	452.489	1.290	0.124
13	1.083	490.196	1.164	0.112
14	1.167	527.903	1.049	0.101
15	1.250	565.611	0.827	0.079
16	1.333	603.318	0.704	0.068
17	1.417	641.026	0.591	0.057
18	1.500	678.733	0.484	0.046
19	1.583	716.440	0.381	0.037
20	1.667	754.148	0.377	0.036
21	1.750	791.855	0.377	0.036
22	1.833	829.563	0.270	0.026
			Sum = 100.000	Sum= 9.594

Storm Event 5 Effective Rainfall = 0.083(In)

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	0.013	(0.479)	0.012	0.001
2	0.17	1.30	0.013	(0.479)	0.012	0.001
3	0.25	1.10	0.011	(0.479)	0.010	0.001
4	0.33	1.50	0.015	(0.479)	0.013	0.001
5	0.42	1.50	0.015	(0.479)	0.013	0.001

6	0.50	1.80	0.018	(0.479)	0.016	0.002
7	0.58	1.50	0.015	(0.479)	0.013	0.001
8	0.67	1.80	0.018	(0.479)	0.016	0.002
9	0.75	1.80	0.018	(0.479)	0.016	0.002
10	0.83	1.50	0.015	(0.479)	0.013	0.001
11	0.92	1.60	0.016	(0.479)	0.014	0.002
12	1.00	1.80	0.018	(0.479)	0.016	0.002
13	1.08	2.20	0.022	(0.479)	0.020	0.002
14	1.17	2.20	0.022	(0.479)	0.020	0.002
15	1.25	2.20	0.022	(0.479)	0.020	0.002
16	1.33	2.00	0.020	(0.479)	0.018	0.002
17	1.42	2.60	0.026	(0.479)	0.023	0.003
18	1.50	2.70	0.027	(0.479)	0.024	0.003
19	1.58	2.40	0.024	(0.479)	0.022	0.002
20	1.67	2.70	0.027	(0.479)	0.024	0.003
21	1.75	3.30	0.033	(0.479)	0.030	0.003
22	1.83	3.10	0.031	(0.479)	0.028	0.003
23	1.92	2.90	0.029	(0.479)	0.026	0.003
24	2.00	3.00	0.030	(0.479)	0.027	0.003
25	2.08	3.10	0.031	(0.479)	0.028	0.003
26	2.17	4.20	0.042	(0.479)	0.038	0.004
27	2.25	5.00	0.050	(0.479)	0.045	0.005
28	2.33	3.50	0.035	(0.479)	0.031	0.003
29	2.42	6.80	0.068	(0.479)	0.061	0.007
30	2.50	7.30	0.073	(0.479)	0.065	0.007
31	2.58	8.20	0.082	(0.479)	0.074	0.008
32	2.67	5.90	0.059	(0.479)	0.053	0.006
33	2.75	2.00	0.020	(0.479)	0.018	0.002
34	2.83	1.80	0.018	(0.479)	0.016	0.002
35	2.92	1.80	0.018	(0.479)	0.016	0.002
36	3.00	0.60	0.006	(0.479)	0.005	0.001

(Loss Rate Not Used)

Sum = 100.0 Sum = 0.1

Flood volume = Effective rainfall 0.01(In)
times area 9.5(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.07(In)
Total soil loss = 0.059(Ac.Ft)
Total rainfall = 0.08(In)
Flood volume = 286.8 Cubic Feet
Total soil loss = 2581.3 Cubic Feet

Storm Event 4 Effective Rainfall = 0.124(In)

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	0.019	(0.479)	0.017	0.002
2	0.17	1.30	0.019	(0.479)	0.017	0.002
3	0.25	1.10	0.016	(0.479)	0.015	0.002
4	0.33	1.50	0.022	(0.479)	0.020	0.002
5	0.42	1.50	0.022	(0.479)	0.020	0.002
6	0.50	1.80	0.027	(0.479)	0.024	0.003
7	0.58	1.50	0.022	(0.479)	0.020	0.002
8	0.67	1.80	0.027	(0.479)	0.024	0.003
9	0.75	1.80	0.027	(0.479)	0.024	0.003
10	0.83	1.50	0.022	(0.479)	0.020	0.002
11	0.92	1.60	0.024	(0.479)	0.022	0.002
12	1.00	1.80	0.027	(0.479)	0.024	0.003
13	1.08	2.20	0.033	(0.479)	0.030	0.003
14	1.17	2.20	0.033	(0.479)	0.030	0.003

15	1.25	2.20	0.033	(0.479)	0.030	0.003
16	1.33	2.00	0.030	(0.479)	0.027	0.003
17	1.42	2.60	0.039	(0.479)	0.035	0.004
18	1.50	2.70	0.040	(0.479)	0.036	0.004
19	1.58	2.40	0.036	(0.479)	0.032	0.004
20	1.67	2.70	0.040	(0.479)	0.036	0.004
21	1.75	3.30	0.049	(0.479)	0.044	0.005
22	1.83	3.10	0.046	(0.479)	0.042	0.005
23	1.92	2.90	0.043	(0.479)	0.039	0.004
24	2.00	3.00	0.045	(0.479)	0.040	0.004
25	2.08	3.10	0.046	(0.479)	0.042	0.005
26	2.17	4.20	0.063	(0.479)	0.056	0.006
27	2.25	5.00	0.075	(0.479)	0.067	0.007
28	2.33	3.50	0.052	(0.479)	0.047	0.005
29	2.42	6.80	0.102	(0.479)	0.091	0.010
30	2.50	7.30	0.109	(0.479)	0.098	0.011
31	2.58	8.20	0.123	(0.479)	0.110	0.012
32	2.67	5.90	0.088	(0.479)	0.079	0.009
33	2.75	2.00	0.030	(0.479)	0.027	0.003
34	2.83	1.80	0.027	(0.479)	0.024	0.003
35	2.92	1.80	0.027	(0.479)	0.024	0.003
36	3.00	0.60	0.009	(0.479)	0.008	0.001

(Loss Rate Not Used)

Sum = 100.0 Sum = 0.1

Flood volume = Effective rainfall 0.01(In)
times area 9.5(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.11(In)
Total soil loss = 0.089(Ac.Ft)
Total rainfall = 0.12(In)
Flood volume = 430.2 Cubic Feet
Total soil loss = 3872.0 Cubic Feet

Storm Event 3 Effective Rainfall = 0.158(In)

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	0.025	(0.479)	0.022	0.002
2	0.17	1.30	0.025	(0.479)	0.022	0.002
3	0.25	1.10	0.021	(0.479)	0.019	0.002
4	0.33	1.50	0.028	(0.479)	0.026	0.003
5	0.42	1.50	0.028	(0.479)	0.026	0.003
6	0.50	1.80	0.034	(0.479)	0.031	0.003
7	0.58	1.50	0.028	(0.479)	0.026	0.003
8	0.67	1.80	0.034	(0.479)	0.031	0.003
9	0.75	1.80	0.034	(0.479)	0.031	0.003
10	0.83	1.50	0.028	(0.479)	0.026	0.003
11	0.92	1.60	0.030	(0.479)	0.027	0.003
12	1.00	1.80	0.034	(0.479)	0.031	0.003
13	1.08	2.20	0.042	(0.479)	0.037	0.004
14	1.17	2.20	0.042	(0.479)	0.037	0.004
15	1.25	2.20	0.042	(0.479)	0.037	0.004
16	1.33	2.00	0.038	(0.479)	0.034	0.004
17	1.42	2.60	0.049	(0.479)	0.044	0.005
18	1.50	2.70	0.051	(0.479)	0.046	0.005
19	1.58	2.40	0.045	(0.479)	0.041	0.005
20	1.67	2.70	0.051	(0.479)	0.046	0.005
21	1.75	3.30	0.062	(0.479)	0.056	0.006
22	1.83	3.10	0.059	(0.479)	0.053	0.006
23	1.92	2.90	0.055	(0.479)	0.049	0.005

24	2.00	3.00	0.057	(0.479)	0.051	0.006
25	2.08	3.10	0.059	(0.479)	0.053	0.006
26	2.17	4.20	0.079	(0.479)	0.072	0.008
27	2.25	5.00	0.095	(0.479)	0.085	0.009
28	2.33	3.50	0.066	(0.479)	0.060	0.007
29	2.42	6.80	0.129	(0.479)	0.116	0.013
30	2.50	7.30	0.138	(0.479)	0.124	0.014
31	2.58	8.20	0.155	(0.479)	0.140	0.016
32	2.67	5.90	0.112	(0.479)	0.100	0.011
33	2.75	2.00	0.038	(0.479)	0.034	0.004
34	2.83	1.80	0.034	(0.479)	0.031	0.003
35	2.92	1.80	0.034	(0.479)	0.031	0.003
36	3.00	0.60	0.011	(0.479)	0.010	0.001

(Loss Rate Not Used)

Sum = 100.0 Sum = 0.2

Flood volume = Effective rainfall 0.02(In)
times area 9.5(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.14(In)
Total soil loss = 0.113(Ac.Ft)
Total rainfall = 0.16(In)
Flood volume = 545.0 Cubic Feet
Total soil loss = 4904.6 Cubic Feet

Storm Event 2 Effective Rainfall = 0.299(In)

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	0.047	(0.479)	0.042	0.005
2	0.17	1.30	0.047	(0.479)	0.042	0.005
3	0.25	1.10	0.039	(0.479)	0.035	0.004
4	0.33	1.50	0.054	(0.479)	0.048	0.005
5	0.42	1.50	0.054	(0.479)	0.048	0.005
6	0.50	1.80	0.065	(0.479)	0.058	0.006
7	0.58	1.50	0.054	(0.479)	0.048	0.005
8	0.67	1.80	0.065	(0.479)	0.058	0.006
9	0.75	1.80	0.065	(0.479)	0.058	0.006
10	0.83	1.50	0.054	(0.479)	0.048	0.005
11	0.92	1.60	0.057	(0.479)	0.052	0.006
12	1.00	1.80	0.065	(0.479)	0.058	0.006
13	1.08	2.20	0.079	(0.479)	0.071	0.008
14	1.17	2.20	0.079	(0.479)	0.071	0.008
15	1.25	2.20	0.079	(0.479)	0.071	0.008
16	1.33	2.00	0.072	(0.479)	0.065	0.007
17	1.42	2.60	0.093	(0.479)	0.084	0.009
18	1.50	2.70	0.097	(0.479)	0.087	0.010
19	1.58	2.40	0.086	(0.479)	0.077	0.009
20	1.67	2.70	0.097	(0.479)	0.087	0.010
21	1.75	3.30	0.118	(0.479)	0.106	0.012
22	1.83	3.10	0.111	(0.479)	0.100	0.011
23	1.92	2.90	0.104	(0.479)	0.094	0.010
24	2.00	3.00	0.108	(0.479)	0.097	0.011
25	2.08	3.10	0.111	(0.479)	0.100	0.011
26	2.17	4.20	0.151	(0.479)	0.136	0.015
27	2.25	5.00	0.179	(0.479)	0.161	0.018
28	2.33	3.50	0.125	(0.479)	0.113	0.013
29	2.42	6.80	0.244	(0.479)	0.219	0.024
30	2.50	7.30	0.262	(0.479)	0.236	0.026
31	2.58	8.20	0.294	(0.479)	0.265	0.029
32	2.67	5.90	0.212	(0.479)	0.190	0.021

33	2.75	2.00	0.072	(0.479)	0.065	0.007
34	2.83	1.80	0.065	(0.479)	0.058	0.006
35	2.92	1.80	0.065	(0.479)	0.058	0.006
36	3.00	0.60	0.022	(0.479)	0.019	0.002

(Loss Rate Not Used)

Sum = 100.0 Sum = 0.4

Flood volume = Effective rainfall 0.03(In)
times area 9.5(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.27(In)
Total soil loss = 0.213(Ac.Ft)
Total rainfall = 0.30(In)
Flood volume = 1032.5 Cubic Feet
Total soil loss = 9292.8 Cubic Feet

Storm Event 1 Effective Rainfall = 0.830(In)

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	0.129	(0.479)	0.117	0.013
2	0.17	1.30	0.129	(0.479)	0.117	0.013
3	0.25	1.10	0.110	(0.479)	0.099	0.011
4	0.33	1.50	0.149	(0.479)	0.134	0.015
5	0.42	1.50	0.149	(0.479)	0.134	0.015
6	0.50	1.80	0.179	(0.479)	0.161	0.018
7	0.58	1.50	0.149	(0.479)	0.134	0.015
8	0.67	1.80	0.179	(0.479)	0.161	0.018
9	0.75	1.80	0.179	(0.479)	0.161	0.018
10	0.83	1.50	0.149	(0.479)	0.134	0.015
11	0.92	1.60	0.159	(0.479)	0.143	0.016
12	1.00	1.80	0.179	(0.479)	0.161	0.018
13	1.08	2.20	0.219	(0.479)	0.197	0.022
14	1.17	2.20	0.219	(0.479)	0.197	0.022
15	1.25	2.20	0.219	(0.479)	0.197	0.022
16	1.33	2.00	0.199	(0.479)	0.179	0.020
17	1.42	2.60	0.259	(0.479)	0.233	0.026
18	1.50	2.70	0.269	(0.479)	0.242	0.027
19	1.58	2.40	0.239	(0.479)	0.215	0.024
20	1.67	2.70	0.269	(0.479)	0.242	0.027
21	1.75	3.30	0.329	(0.479)	0.296	0.033
22	1.83	3.10	0.309	(0.479)	0.278	0.031
23	1.92	2.90	0.289	(0.479)	0.260	0.029
24	2.00	3.00	0.299	(0.479)	0.269	0.030
25	2.08	3.10	0.309	(0.479)	0.278	0.031
26	2.17	4.20	0.418	(0.479)	0.376	0.042
27	2.25	5.00	0.498	(0.479)	0.448	0.050
28	2.33	3.50	0.349	(0.479)	0.314	0.035
29	2.42	6.80	0.677	0.479	(0.610)	0.199
30	2.50	7.30	0.727	0.479	(0.654)	0.248
31	2.58	8.20	0.817	0.479	(0.735)	0.338
32	2.67	5.90	0.588	0.479	(0.529)	0.109
33	2.75	2.00	0.199	(0.479)	0.179	0.020
34	2.83	1.80	0.179	(0.479)	0.161	0.018
35	2.92	1.80	0.179	(0.479)	0.161	0.018
36	3.00	0.60	0.060	(0.479)	0.054	0.006

(Loss Rate Not Used)

Sum = 100.0 Sum = 1.6

Flood volume = Effective rainfall 0.13(In)
times area 9.5(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 0.70(In)

Total soil loss = 0.552(Ac.Ft)
Total rainfall = 0.83(In)
Flood volume = 4633.1 Cubic Feet
Total soil loss = 24048.5 Cubic Feet

Peak flow rate of this hydrograph = 1.705(CFS)

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TOTAL OF: 5 3 - H O U R S T O R M E V E N T S

R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q				
0+10	0.0000	0.00	Q				
0+15	0.0001	0.01	Q				
0+20	0.0001	0.01	Q				
0+25	0.0002	0.01	Q				
0+30	0.0002	0.01	Q				
0+35	0.0003	0.01	Q				
0+40	0.0004	0.01	Q				
0+45	0.0005	0.01	Q				
0+50	0.0006	0.01	Q				
0+55	0.0007	0.01	Q				
1+ 0	0.0008	0.01	Q				
1+ 5	0.0009	0.01	Q				
1+10	0.0010	0.02	Q				
1+15	0.0011	0.02	Q				
1+20	0.0013	0.02	Q				
1+25	0.0014	0.02	Q				
1+30	0.0015	0.02	Q				
1+35	0.0017	0.02	Q				
1+40	0.0018	0.02	Q				
1+45	0.0020	0.02	Q				
1+50	0.0022	0.02	Q				
1+55	0.0024	0.03	Q				
2+ 0	0.0025	0.03	Q				
2+ 5	0.0027	0.03	Q				
2+10	0.0029	0.03	Q				
2+15	0.0031	0.03	Q				
2+20	0.0034	0.03	Q				
2+25	0.0036	0.04	Q				
2+30	0.0039	0.04	QV				
2+35	0.0043	0.05	QV				
2+40	0.0046	0.06	QV				
2+45	0.0050	0.06	QV				
2+50	0.0054	0.05	QV				
2+55	0.0056	0.04	QV				
3+ 0	0.0058	0.03	QV				
3+ 5	0.0059	0.00	QV				
3+10	0.0059	0.00	QV				
3+15	0.0059	0.01	QV				
3+20	0.0060	0.01	QV				
3+25	0.0061	0.01	QV				
3+30	0.0062	0.02	QV				
3+35	0.0063	0.02	QV				
3+40	0.0065	0.02	QV				
3+45	0.0066	0.02	QV				
3+50	0.0068	0.02	QV				
3+55	0.0069	0.02	QV				

4+ 0	0.0071	0.02	QV	|	|	|	|
4+ 5	0.0072	0.02	QV	|	|	|	|
4+10	0.0074	0.02	QV	|	|	|	|
4+15	0.0076	0.03	QV	|	|	|	|
4+20	0.0078	0.03	Q V	|	|	|	|
4+25	0.0080	0.03	Q V	|	|	|	|
4+30	0.0082	0.03	Q V	|	|	|	|
4+35	0.0084	0.03	Q V	|	|	|	|
4+40	0.0086	0.03	Q V	|	|	|	|
4+45	0.0089	0.03	Q V	|	|	|	|
4+50	0.0091	0.04	Q V	|	|	|	|
4+55	0.0094	0.04	Q V	|	|	|	|
5+ 0	0.0097	0.04	Q V	|	|	|	|
5+ 5	0.0099	0.04	Q V	|	|	|	|
5+10	0.0102	0.04	Q V	|	|	|	|
5+15	0.0105	0.05	Q V	|	|	|	|
5+20	0.0109	0.05	Q V	|	|	|	|
5+25	0.0113	0.06	Q V	|	|	|	|
5+30	0.0117	0.06	Q V	|	|	|	|
5+35	0.0122	0.07	Q V	|	|	|	|
5+40	0.0128	0.08	Q V	|	|	|	|
5+45	0.0134	0.09	Q V	|	|	|	|
5+50	0.0139	0.07	Q V	|	|	|	|
5+55	0.0143	0.06	Q V	|	|	|	|
6+ 0	0.0146	0.05	Q V	|	|	|	|
6+ 5	0.0146	0.00	Q V	|	|	|	|
6+10	0.0147	0.00	Q V	|	|	|	|
6+15	0.0147	0.01	Q V	|	|	|	|
6+20	0.0148	0.01	Q V	|	|	|	|
6+25	0.0150	0.02	Q V	|	|	|	|
6+30	0.0151	0.02	Q V	|	|	|	|
6+35	0.0152	0.02	Q V	|	|	|	|
6+40	0.0154	0.02	Q V	|	|	|	|
6+45	0.0156	0.03	Q V	|	|	|	|
6+50	0.0158	0.03	Q V	|	|	|	|
6+55	0.0160	0.03	Q V	|	|	|	|
7+ 0	0.0162	0.03	Q V	|	|	|	|
7+ 5	0.0164	0.03	Q V	|	|	|	|
7+10	0.0166	0.03	Q V	|	|	|	|
7+15	0.0168	0.03	Q V	|	|	|	|
7+20	0.0170	0.04	Q V	|	|	|	|
7+25	0.0173	0.04	Q V	|	|	|	|
7+30	0.0176	0.04	Q V	|	|	|	|
7+35	0.0178	0.04	Q V	|	|	|	|
7+40	0.0181	0.04	Q V	|	|	|	|
7+45	0.0184	0.04	Q V	|	|	|	|
7+50	0.0188	0.05	Q V	|	|	|	|
7+55	0.0191	0.05	Q V	|	|	|	|
8+ 0	0.0195	0.05	Q V	|	|	|	|
8+ 5	0.0198	0.05	Q V	|	|	|	|
8+10	0.0202	0.05	Q V	|	|	|	|
8+15	0.0206	0.06	Q V	|	|	|	|
8+20	0.0210	0.06	Q V	|	|	|	|
8+25	0.0215	0.07	Q V	|	|	|	|
8+30	0.0221	0.08	Q V	|	|	|	|
8+35	0.0227	0.09	Q V	|	|	|	|
8+40	0.0234	0.11	Q V	|	|	|	|
8+45	0.0242	0.11	Q V	|	|	|	|
8+50	0.0248	0.09	Q V	|	|	|	|
8+55	0.0253	0.07	Q V	|	|	|	|
9+ 0	0.0257	0.06	Q V	|	|	|	|
9+ 5	0.0258	0.00	Q V	|	|	|	|
9+10	0.0258	0.01	Q V	|	|	|	|

9+15	0.0260	0.02	Q	V	|	|	|	|
9+20	0.0261	0.03	Q	V	|	|	|	|
9+25	0.0264	0.03	Q	V	|	|	|	|
9+30	0.0266	0.04	Q	V	|	|	|	|
9+35	0.0269	0.04	Q	V	|	|	|	|
9+40	0.0272	0.05	Q	V	|	|	|	|
9+45	0.0276	0.05	Q	V	|	|	|	|
9+50	0.0279	0.05	Q	V	|	|	|	|
9+55	0.0283	0.05	Q	V	|	|	|	|
10+ 0	0.0286	0.05	Q	V	|	|	|	|
10+ 5	0.0290	0.05	Q	V	|	|	|	|
10+10	0.0294	0.06	Q	V	|	|	|	|
10+15	0.0299	0.06	Q	V	|	|	|	|
10+20	0.0303	0.07	Q	V	|	|	|	|
10+25	0.0308	0.07	Q	V	|	|	|	|
10+30	0.0313	0.07	Q	V	|	|	|	|
10+35	0.0318	0.08	Q	V	|	|	|	|
10+40	0.0324	0.08	Q	V	|	|	|	|
10+45	0.0330	0.08	Q	V	|	|	|	|
10+50	0.0336	0.09	Q	V	|	|	|	|
10+55	0.0342	0.09	Q	V	|	|	|	|
11+ 0	0.0349	0.10	Q	V	|	|	|	|
11+ 5	0.0356	0.10	Q	V	|	|	|	|
11+10	0.0363	0.10	Q	V	|	|	|	|
11+15	0.0370	0.11	Q	V	|	|	|	|
11+20	0.0379	0.12	Q	V	|	|	|	|
11+25	0.0388	0.13	Q	V	|	|	|	|
11+30	0.0398	0.15	Q	V	|	|	|	|
11+35	0.0410	0.18	Q	V	|	|	|	|
11+40	0.0424	0.20	Q	|	V	|	|	|
11+45	0.0439	0.21	Q	|	V	|	|	|
11+50	0.0451	0.18	Q	|	V	|	|	|
11+55	0.0461	0.14	Q	|	V	|	|	|
12+ 0	0.0468	0.11	Q	|	V	|	|	|
12+ 5	0.0468	0.00	Q	|	V	|	|	|
12+10	0.0470	0.02	Q	|	V	|	|	|
12+15	0.0474	0.06	Q	|	V	|	|	|
12+20	0.0479	0.08	Q	|	V	|	|	|
12+25	0.0485	0.09	Q	|	V	|	|	|
12+30	0.0493	0.10	Q	|	V	|	|	|
12+35	0.0501	0.12	Q	|	V	|	|	|
12+40	0.0510	0.13	Q	|	V	|	|	|
12+45	0.0519	0.14	Q	|	V	|	|	|
12+50	0.0529	0.14	Q	|	V	|	|	|
12+55	0.0539	0.15	Q	|	V	|	|	|
13+ 0	0.0549	0.14	Q	|	V	|	|	|
13+ 5	0.0559	0.15	Q	|	V	|	|	|
13+10	0.0570	0.16	Q	|	V	|	|	|
13+15	0.0583	0.18	Q	|	V	|	|	|
13+20	0.0595	0.19	Q	|	V	|	|	|
13+25	0.0609	0.19	Q	|	V	|	|	|
13+30	0.0622	0.20	Q	|	V	|	|	|
13+35	0.0637	0.21	Q	|	V	|	|	|
13+40	0.0652	0.22	Q	|	V	|	|	|
13+45	0.0668	0.23	Q	|	V	|	|	|
13+50	0.0685	0.25	Q	|	V	|	|	|
13+55	0.0704	0.26	|Q	|	V	|	|	|
14+ 0	0.0722	0.27	|Q	|	V	|	|	|
14+ 5	0.0741	0.27	|Q	|	V	|	|	|
14+10	0.0760	0.28	|Q	|	V	|	|	|
14+15	0.0781	0.31	|Q	|	V	|	|	|
14+20	0.0805	0.34	|Q	|	V	|	|	|
14+25	0.0834	0.42	|Q	|	V	|	|	|

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14+30       0.0881      0.68  | Q       |         |  V      |         |
14+35       0.0962      1.18  |   Q     |         |    V    |         |
14+40       0.1076      1.64  |     Q   |         |       V |         |
14+45       0.1193      1.71  |     Q   |         |         |V        |
14+50       0.1283      1.30  |    Q    |         |         |  V      |
14+55       0.1341      0.85  |  Q      |         |         |    V    |
15+ 0       0.1382      0.59  | Q       |         |         |     V   |
15+ 5       0.1413      0.46  |Q        |         |         |     V   |
15+10       0.1438      0.35  |Q        |         |         |      V  |
15+15       0.1456      0.27  |Q        |         |         |       V |
15+20       0.1470      0.21  Q         |         |         |       V |
15+25       0.1482      0.17  Q         |         |         |       V |
15+30       0.1491      0.14  Q         |         |         |       V |
15+35       0.1499      0.12  Q         |         |
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U n i t H y d r o g r a p h A n a l y s i s

Study date 10/14/21 File: jdhu62.out

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

Program License Serial Number 6443

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

English Units used in output format

JD FIELDS HEMET
UNIT HYDROGRAPHS 2 YEAR
10/14/2021 LA

Drainage Area = 9.52(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.52(Ac.) = 0.015 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.221 Hr.
Lag time = 13.26 Min.
25% of lag time = 3.31 Min.
40% of lag time = 5.30 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]
9.52	1.15	10.95

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.52	2.87	27.32

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.150(In)
Area Averaged 100-Year Rainfall = 2.870(In)

Point rain (area averaged) = 1.150(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 1.150(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
9.520	32.00	0.500

Total Area Entered = 9.52(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	16.2	0.870	0.500	0.479	1.000	0.479
					Sum (F) =	0.479

Area averaged mean soil loss (F) (In/Hr) = 0.479
Minimum soil loss rate ((In/Hr)) = 0.239
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	37.707	3.990	0.383
2	0.167	75.415	16.108	1.545
3	0.250	113.122	25.333	2.431
4	0.333	150.830	18.548	1.780
5	0.417	188.537	9.265	0.889
6	0.500	226.244	5.593	0.537
7	0.583	263.952	4.141	0.397
8	0.667	301.659	3.257	0.312
9	0.750	339.367	2.495	0.239
10	0.833	377.074	2.107	0.202
11	0.917	414.781	1.648	0.158
12	1.000	452.489	1.290	0.124
13	1.083	490.196	1.164	0.112
14	1.167	527.903	1.049	0.101
15	1.250	565.611	0.827	0.079
16	1.333	603.318	0.704	0.068
17	1.417	641.026	0.591	0.057
18	1.500	678.733	0.484	0.046
19	1.583	716.440	0.381	0.037
20	1.667	754.148	0.377	0.036
21	1.750	791.855	0.377	0.036
22	1.833	829.563	0.270	0.026
			Sum = 100.000	Sum= 9.594

Storm Event 5 Effective Rainfall = 0.115(In)

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	0.007	(0.479)	0.006	0.001
2	0.17	0.60	0.008	(0.479)	0.007	0.001
3	0.25	0.60	0.008	(0.479)	0.007	0.001
4	0.33	0.60	0.008	(0.479)	0.007	0.001
5	0.42	0.60	0.008	(0.479)	0.007	0.001

6	0.50	0.70	0.010	(0.479)	0.009	0.001
7	0.58	0.70	0.010	(0.479)	0.009	0.001
8	0.67	0.70	0.010	(0.479)	0.009	0.001
9	0.75	0.70	0.010	(0.479)	0.009	0.001
10	0.83	0.70	0.010	(0.479)	0.009	0.001
11	0.92	0.70	0.010	(0.479)	0.009	0.001
12	1.00	0.80	0.011	(0.479)	0.010	0.001
13	1.08	0.80	0.011	(0.479)	0.010	0.001
14	1.17	0.80	0.011	(0.479)	0.010	0.001
15	1.25	0.80	0.011	(0.479)	0.010	0.001
16	1.33	0.80	0.011	(0.479)	0.010	0.001
17	1.42	0.80	0.011	(0.479)	0.010	0.001
18	1.50	0.80	0.011	(0.479)	0.010	0.001
19	1.58	0.80	0.011	(0.479)	0.010	0.001
20	1.67	0.80	0.011	(0.479)	0.010	0.001
21	1.75	0.80	0.011	(0.479)	0.010	0.001
22	1.83	0.80	0.011	(0.479)	0.010	0.001
23	1.92	0.80	0.011	(0.479)	0.010	0.001
24	2.00	0.90	0.012	(0.479)	0.011	0.001
25	2.08	0.80	0.011	(0.479)	0.010	0.001
26	2.17	0.90	0.012	(0.479)	0.011	0.001
27	2.25	0.90	0.012	(0.479)	0.011	0.001
28	2.33	0.90	0.012	(0.479)	0.011	0.001
29	2.42	0.90	0.012	(0.479)	0.011	0.001
30	2.50	0.90	0.012	(0.479)	0.011	0.001
31	2.58	0.90	0.012	(0.479)	0.011	0.001
32	2.67	0.90	0.012	(0.479)	0.011	0.001
33	2.75	1.00	0.014	(0.479)	0.012	0.001
34	2.83	1.00	0.014	(0.479)	0.012	0.001
35	2.92	1.00	0.014	(0.479)	0.012	0.001
36	3.00	1.00	0.014	(0.479)	0.012	0.001
37	3.08	1.00	0.014	(0.479)	0.012	0.001
38	3.17	1.10	0.015	(0.479)	0.014	0.002
39	3.25	1.10	0.015	(0.479)	0.014	0.002
40	3.33	1.10	0.015	(0.479)	0.014	0.002
41	3.42	1.20	0.017	(0.479)	0.015	0.002
42	3.50	1.30	0.018	(0.479)	0.016	0.002
43	3.58	1.40	0.019	(0.479)	0.017	0.002
44	3.67	1.40	0.019	(0.479)	0.017	0.002
45	3.75	1.50	0.021	(0.479)	0.019	0.002
46	3.83	1.50	0.021	(0.479)	0.019	0.002
47	3.92	1.60	0.022	(0.479)	0.020	0.002
48	4.00	1.60	0.022	(0.479)	0.020	0.002
49	4.08	1.70	0.023	(0.479)	0.021	0.002
50	4.17	1.80	0.025	(0.479)	0.022	0.002
51	4.25	1.90	0.026	(0.479)	0.024	0.003
52	4.33	2.00	0.028	(0.479)	0.025	0.003
53	4.42	2.10	0.029	(0.479)	0.026	0.003
54	4.50	2.10	0.029	(0.479)	0.026	0.003
55	4.58	2.20	0.030	(0.479)	0.027	0.003
56	4.67	2.30	0.032	(0.479)	0.029	0.003
57	4.75	2.40	0.033	(0.479)	0.030	0.003
58	4.83	2.40	0.033	(0.479)	0.030	0.003
59	4.92	2.50	0.034	(0.479)	0.031	0.003
60	5.00	2.60	0.036	(0.479)	0.032	0.004
61	5.08	3.10	0.043	(0.479)	0.039	0.004
62	5.17	3.60	0.050	(0.479)	0.045	0.005
63	5.25	3.90	0.054	(0.479)	0.048	0.005
64	5.33	4.20	0.058	(0.479)	0.052	0.006
65	5.42	4.70	0.065	(0.479)	0.058	0.006
66	5.50	5.60	0.077	(0.479)	0.070	0.008
67	5.58	1.90	0.026	(0.479)	0.024	0.003
68	5.67	0.90	0.012	(0.479)	0.011	0.001

69	5.75	0.60	0.008	(0.479)	0.007	0.001
70	5.83	0.50	0.007	(0.479)	0.006	0.001
71	5.92	0.30	0.004	(0.479)	0.004	0.000
72	6.00	0.20	0.003	(0.479)	0.002	0.000

(Loss Rate Not Used)

Sum = 100.0 Sum = 0.1

Flood volume = Effective rainfall 0.01(In)
times area 9.5(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.10(In)
Total soil loss = 0.082(Ac.Ft)
Total rainfall = 0.11(In)
Flood volume = 397.4 Cubic Feet
Total soil loss = 3576.6 Cubic Feet

Storm Event 4 Effective Rainfall = 0.172(In)

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	0.010	(0.479)	0.009	0.001
2	0.17	0.60	0.012	(0.479)	0.011	0.001
3	0.25	0.60	0.012	(0.479)	0.011	0.001
4	0.33	0.60	0.012	(0.479)	0.011	0.001
5	0.42	0.60	0.012	(0.479)	0.011	0.001
6	0.50	0.70	0.014	(0.479)	0.013	0.001
7	0.58	0.70	0.014	(0.479)	0.013	0.001
8	0.67	0.70	0.014	(0.479)	0.013	0.001
9	0.75	0.70	0.014	(0.479)	0.013	0.001
10	0.83	0.70	0.014	(0.479)	0.013	0.001
11	0.92	0.70	0.014	(0.479)	0.013	0.001
12	1.00	0.80	0.017	(0.479)	0.015	0.002
13	1.08	0.80	0.017	(0.479)	0.015	0.002
14	1.17	0.80	0.017	(0.479)	0.015	0.002
15	1.25	0.80	0.017	(0.479)	0.015	0.002
16	1.33	0.80	0.017	(0.479)	0.015	0.002
17	1.42	0.80	0.017	(0.479)	0.015	0.002
18	1.50	0.80	0.017	(0.479)	0.015	0.002
19	1.58	0.80	0.017	(0.479)	0.015	0.002
20	1.67	0.80	0.017	(0.479)	0.015	0.002
21	1.75	0.80	0.017	(0.479)	0.015	0.002
22	1.83	0.80	0.017	(0.479)	0.015	0.002
23	1.92	0.80	0.017	(0.479)	0.015	0.002
24	2.00	0.90	0.019	(0.479)	0.017	0.002
25	2.08	0.80	0.017	(0.479)	0.015	0.002
26	2.17	0.90	0.019	(0.479)	0.017	0.002
27	2.25	0.90	0.019	(0.479)	0.017	0.002
28	2.33	0.90	0.019	(0.479)	0.017	0.002
29	2.42	0.90	0.019	(0.479)	0.017	0.002
30	2.50	0.90	0.019	(0.479)	0.017	0.002
31	2.58	0.90	0.019	(0.479)	0.017	0.002
32	2.67	0.90	0.019	(0.479)	0.017	0.002
33	2.75	1.00	0.021	(0.479)	0.019	0.002
34	2.83	1.00	0.021	(0.479)	0.019	0.002
35	2.92	1.00	0.021	(0.479)	0.019	0.002
36	3.00	1.00	0.021	(0.479)	0.019	0.002
37	3.08	1.00	0.021	(0.479)	0.019	0.002
38	3.17	1.10	0.023	(0.479)	0.020	0.002
39	3.25	1.10	0.023	(0.479)	0.020	0.002
40	3.33	1.10	0.023	(0.479)	0.020	0.002
41	3.42	1.20	0.025	(0.479)	0.022	0.002

42	3.50	1.30	0.027	(0.479)	0.024	0.003
43	3.58	1.40	0.029	(0.479)	0.026	0.003
44	3.67	1.40	0.029	(0.479)	0.026	0.003
45	3.75	1.50	0.031	(0.479)	0.028	0.003
46	3.83	1.50	0.031	(0.479)	0.028	0.003
47	3.92	1.60	0.033	(0.479)	0.030	0.003
48	4.00	1.60	0.033	(0.479)	0.030	0.003
49	4.08	1.70	0.035	(0.479)	0.032	0.004
50	4.17	1.80	0.037	(0.479)	0.034	0.004
51	4.25	1.90	0.039	(0.479)	0.035	0.004
52	4.33	2.00	0.041	(0.479)	0.037	0.004
53	4.42	2.10	0.043	(0.479)	0.039	0.004
54	4.50	2.10	0.043	(0.479)	0.039	0.004
55	4.58	2.20	0.046	(0.479)	0.041	0.005
56	4.67	2.30	0.048	(0.479)	0.043	0.005
57	4.75	2.40	0.050	(0.479)	0.045	0.005
58	4.83	2.40	0.050	(0.479)	0.045	0.005
59	4.92	2.50	0.052	(0.479)	0.047	0.005
60	5.00	2.60	0.054	(0.479)	0.048	0.005
61	5.08	3.10	0.064	(0.479)	0.058	0.006
62	5.17	3.60	0.075	(0.479)	0.067	0.007
63	5.25	3.90	0.081	(0.479)	0.073	0.008
64	5.33	4.20	0.087	(0.479)	0.078	0.009
65	5.42	4.70	0.097	(0.479)	0.088	0.010
66	5.50	5.60	0.116	(0.479)	0.104	0.012
67	5.58	1.90	0.039	(0.479)	0.035	0.004
68	5.67	0.90	0.019	(0.479)	0.017	0.002
69	5.75	0.60	0.012	(0.479)	0.011	0.001
70	5.83	0.50	0.010	(0.479)	0.009	0.001
71	5.92	0.30	0.006	(0.479)	0.006	0.001
72	6.00	0.20	0.004	(0.479)	0.004	0.000

(Loss Rate Not Used)

Sum = 100.0 Sum = 0.2

Flood volume = Effective rainfall 0.02(In)
times area 9.5(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.16(In)
Total soil loss = 0.123(Ac.Ft)
Total rainfall = 0.17(In)
Flood volume = 596.1 Cubic Feet
Total soil loss = 5364.9 Cubic Feet

Storm Event 3 Effective Rainfall = 0.218(In)

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	0.013	(0.479)	0.012	0.001
2	0.17	0.60	0.016	(0.479)	0.014	0.002
3	0.25	0.60	0.016	(0.479)	0.014	0.002
4	0.33	0.60	0.016	(0.479)	0.014	0.002
5	0.42	0.60	0.016	(0.479)	0.014	0.002
6	0.50	0.70	0.018	(0.479)	0.017	0.002
7	0.58	0.70	0.018	(0.479)	0.017	0.002
8	0.67	0.70	0.018	(0.479)	0.017	0.002
9	0.75	0.70	0.018	(0.479)	0.017	0.002
10	0.83	0.70	0.018	(0.479)	0.017	0.002
11	0.92	0.70	0.018	(0.479)	0.017	0.002
12	1.00	0.80	0.021	(0.479)	0.019	0.002
13	1.08	0.80	0.021	(0.479)	0.019	0.002
14	1.17	0.80	0.021	(0.479)	0.019	0.002

15	1.25	0.80	0.021	(0.479)	0.019	0.002
16	1.33	0.80	0.021	(0.479)	0.019	0.002
17	1.42	0.80	0.021	(0.479)	0.019	0.002
18	1.50	0.80	0.021	(0.479)	0.019	0.002
19	1.58	0.80	0.021	(0.479)	0.019	0.002
20	1.67	0.80	0.021	(0.479)	0.019	0.002
21	1.75	0.80	0.021	(0.479)	0.019	0.002
22	1.83	0.80	0.021	(0.479)	0.019	0.002
23	1.92	0.80	0.021	(0.479)	0.019	0.002
24	2.00	0.90	0.024	(0.479)	0.021	0.002
25	2.08	0.80	0.021	(0.479)	0.019	0.002
26	2.17	0.90	0.024	(0.479)	0.021	0.002
27	2.25	0.90	0.024	(0.479)	0.021	0.002
28	2.33	0.90	0.024	(0.479)	0.021	0.002
29	2.42	0.90	0.024	(0.479)	0.021	0.002
30	2.50	0.90	0.024	(0.479)	0.021	0.002
31	2.58	0.90	0.024	(0.479)	0.021	0.002
32	2.67	0.90	0.024	(0.479)	0.021	0.002
33	2.75	1.00	0.026	(0.479)	0.024	0.003
34	2.83	1.00	0.026	(0.479)	0.024	0.003
35	2.92	1.00	0.026	(0.479)	0.024	0.003
36	3.00	1.00	0.026	(0.479)	0.024	0.003
37	3.08	1.00	0.026	(0.479)	0.024	0.003
38	3.17	1.10	0.029	(0.479)	0.026	0.003
39	3.25	1.10	0.029	(0.479)	0.026	0.003
40	3.33	1.10	0.029	(0.479)	0.026	0.003
41	3.42	1.20	0.031	(0.479)	0.028	0.003
42	3.50	1.30	0.034	(0.479)	0.031	0.003
43	3.58	1.40	0.037	(0.479)	0.033	0.004
44	3.67	1.40	0.037	(0.479)	0.033	0.004
45	3.75	1.50	0.039	(0.479)	0.035	0.004
46	3.83	1.50	0.039	(0.479)	0.035	0.004
47	3.92	1.60	0.042	(0.479)	0.038	0.004
48	4.00	1.60	0.042	(0.479)	0.038	0.004
49	4.08	1.70	0.045	(0.479)	0.040	0.004
50	4.17	1.80	0.047	(0.479)	0.042	0.005
51	4.25	1.90	0.050	(0.479)	0.045	0.005
52	4.33	2.00	0.052	(0.479)	0.047	0.005
53	4.42	2.10	0.055	(0.479)	0.050	0.006
54	4.50	2.10	0.055	(0.479)	0.050	0.006
55	4.58	2.20	0.058	(0.479)	0.052	0.006
56	4.67	2.30	0.060	(0.479)	0.054	0.006
57	4.75	2.40	0.063	(0.479)	0.057	0.006
58	4.83	2.40	0.063	(0.479)	0.057	0.006
59	4.92	2.50	0.066	(0.479)	0.059	0.007
60	5.00	2.60	0.068	(0.479)	0.061	0.007
61	5.08	3.10	0.081	(0.479)	0.073	0.008
62	5.17	3.60	0.094	(0.479)	0.085	0.009
63	5.25	3.90	0.102	(0.479)	0.092	0.010
64	5.33	4.20	0.110	(0.479)	0.099	0.011
65	5.42	4.70	0.123	(0.479)	0.111	0.012
66	5.50	5.60	0.147	(0.479)	0.132	0.015
67	5.58	1.90	0.050	(0.479)	0.045	0.005
68	5.67	0.90	0.024	(0.479)	0.021	0.002
69	5.75	0.60	0.016	(0.479)	0.014	0.002
70	5.83	0.50	0.013	(0.479)	0.012	0.001
71	5.92	0.30	0.008	(0.479)	0.007	0.001
72	6.00	0.20	0.005	(0.479)	0.005	0.001

(Loss Rate Not Used)

Sum = 100.0 Sum = 0.3

Flood volume = Effective rainfall 0.02(In)
times area 9.5(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.20(In)

Total soil loss = 0.156(Ac.Ft)
Total rainfall = 0.22(In)
Flood volume = 755.1 Cubic Feet
Total soil loss = 6795.5 Cubic Feet

Storm Event 2 Effective Rainfall = 0.414(In)

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	0.025	(0.479)	0.022	0.002
2	0.17	0.60	0.030	(0.479)	0.027	0.003
3	0.25	0.60	0.030	(0.479)	0.027	0.003
4	0.33	0.60	0.030	(0.479)	0.027	0.003
5	0.42	0.60	0.030	(0.479)	0.027	0.003
6	0.50	0.70	0.035	(0.479)	0.031	0.003
7	0.58	0.70	0.035	(0.479)	0.031	0.003
8	0.67	0.70	0.035	(0.479)	0.031	0.003
9	0.75	0.70	0.035	(0.479)	0.031	0.003
10	0.83	0.70	0.035	(0.479)	0.031	0.003
11	0.92	0.70	0.035	(0.479)	0.031	0.003
12	1.00	0.80	0.040	(0.479)	0.036	0.004
13	1.08	0.80	0.040	(0.479)	0.036	0.004
14	1.17	0.80	0.040	(0.479)	0.036	0.004
15	1.25	0.80	0.040	(0.479)	0.036	0.004
16	1.33	0.80	0.040	(0.479)	0.036	0.004
17	1.42	0.80	0.040	(0.479)	0.036	0.004
18	1.50	0.80	0.040	(0.479)	0.036	0.004
19	1.58	0.80	0.040	(0.479)	0.036	0.004
20	1.67	0.80	0.040	(0.479)	0.036	0.004
21	1.75	0.80	0.040	(0.479)	0.036	0.004
22	1.83	0.80	0.040	(0.479)	0.036	0.004
23	1.92	0.80	0.040	(0.479)	0.036	0.004
24	2.00	0.90	0.045	(0.479)	0.040	0.004
25	2.08	0.80	0.040	(0.479)	0.036	0.004
26	2.17	0.90	0.045	(0.479)	0.040	0.004
27	2.25	0.90	0.045	(0.479)	0.040	0.004
28	2.33	0.90	0.045	(0.479)	0.040	0.004
29	2.42	0.90	0.045	(0.479)	0.040	0.004
30	2.50	0.90	0.045	(0.479)	0.040	0.004
31	2.58	0.90	0.045	(0.479)	0.040	0.004
32	2.67	0.90	0.045	(0.479)	0.040	0.004
33	2.75	1.00	0.050	(0.479)	0.045	0.005
34	2.83	1.00	0.050	(0.479)	0.045	0.005
35	2.92	1.00	0.050	(0.479)	0.045	0.005
36	3.00	1.00	0.050	(0.479)	0.045	0.005
37	3.08	1.00	0.050	(0.479)	0.045	0.005
38	3.17	1.10	0.055	(0.479)	0.049	0.005
39	3.25	1.10	0.055	(0.479)	0.049	0.005
40	3.33	1.10	0.055	(0.479)	0.049	0.005
41	3.42	1.20	0.060	(0.479)	0.054	0.006
42	3.50	1.30	0.065	(0.479)	0.058	0.006
43	3.58	1.40	0.070	(0.479)	0.063	0.007
44	3.67	1.40	0.070	(0.479)	0.063	0.007
45	3.75	1.50	0.075	(0.479)	0.067	0.007
46	3.83	1.50	0.075	(0.479)	0.067	0.007
47	3.92	1.60	0.079	(0.479)	0.072	0.008
48	4.00	1.60	0.079	(0.479)	0.072	0.008
49	4.08	1.70	0.084	(0.479)	0.076	0.008
50	4.17	1.80	0.089	(0.479)	0.080	0.009

51	4.25	1.90	0.094	(0.479)	0.085	0.009
52	4.33	2.00	0.099	(0.479)	0.089	0.010
53	4.42	2.10	0.104	(0.479)	0.094	0.010
54	4.50	2.10	0.104	(0.479)	0.094	0.010
55	4.58	2.20	0.109	(0.479)	0.098	0.011
56	4.67	2.30	0.114	(0.479)	0.103	0.011
57	4.75	2.40	0.119	(0.479)	0.107	0.012
58	4.83	2.40	0.119	(0.479)	0.107	0.012
59	4.92	2.50	0.124	(0.479)	0.112	0.012
60	5.00	2.60	0.129	(0.479)	0.116	0.013
61	5.08	3.10	0.154	(0.479)	0.139	0.015
62	5.17	3.60	0.179	(0.479)	0.161	0.018
63	5.25	3.90	0.194	(0.479)	0.174	0.019
64	5.33	4.20	0.209	(0.479)	0.188	0.021
65	5.42	4.70	0.233	(0.479)	0.210	0.023
66	5.50	5.60	0.278	(0.479)	0.250	0.028
67	5.58	1.90	0.094	(0.479)	0.085	0.009
68	5.67	0.90	0.045	(0.479)	0.040	0.004
69	5.75	0.60	0.030	(0.479)	0.027	0.003
70	5.83	0.50	0.025	(0.479)	0.022	0.002
71	5.92	0.30	0.015	(0.479)	0.013	0.001
72	6.00	0.20	0.010	(0.479)	0.009	0.001

(Loss Rate Not Used)

Sum = 100.0 Sum = 0.5

Flood volume = Effective rainfall 0.04(In)
times area 9.5(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.37(In)
Total soil loss = 0.296(Ac.Ft)
Total rainfall = 0.41(In)
Flood volume = 1430.6 Cubic Feet
Total soil loss = 12875.7 Cubic Feet

Storm Event 1 Effective Rainfall = 1.150(In)

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	0.069	(0.479)	0.062	0.007
2	0.17	0.60	0.083	(0.479)	0.075	0.008
3	0.25	0.60	0.083	(0.479)	0.075	0.008
4	0.33	0.60	0.083	(0.479)	0.075	0.008
5	0.42	0.60	0.083	(0.479)	0.075	0.008
6	0.50	0.70	0.097	(0.479)	0.087	0.010
7	0.58	0.70	0.097	(0.479)	0.087	0.010
8	0.67	0.70	0.097	(0.479)	0.087	0.010
9	0.75	0.70	0.097	(0.479)	0.087	0.010
10	0.83	0.70	0.097	(0.479)	0.087	0.010
11	0.92	0.70	0.097	(0.479)	0.087	0.010
12	1.00	0.80	0.110	(0.479)	0.099	0.011
13	1.08	0.80	0.110	(0.479)	0.099	0.011
14	1.17	0.80	0.110	(0.479)	0.099	0.011
15	1.25	0.80	0.110	(0.479)	0.099	0.011
16	1.33	0.80	0.110	(0.479)	0.099	0.011
17	1.42	0.80	0.110	(0.479)	0.099	0.011
18	1.50	0.80	0.110	(0.479)	0.099	0.011
19	1.58	0.80	0.110	(0.479)	0.099	0.011
20	1.67	0.80	0.110	(0.479)	0.099	0.011
21	1.75	0.80	0.110	(0.479)	0.099	0.011
22	1.83	0.80	0.110	(0.479)	0.099	0.011
23	1.92	0.80	0.110	(0.479)	0.099	0.011

24	2.00	0.90	0.124	(0.479)	0.112	0.012
25	2.08	0.80	0.110	(0.479)	0.099	0.011
26	2.17	0.90	0.124	(0.479)	0.112	0.012
27	2.25	0.90	0.124	(0.479)	0.112	0.012
28	2.33	0.90	0.124	(0.479)	0.112	0.012
29	2.42	0.90	0.124	(0.479)	0.112	0.012
30	2.50	0.90	0.124	(0.479)	0.112	0.012
31	2.58	0.90	0.124	(0.479)	0.112	0.012
32	2.67	0.90	0.124	(0.479)	0.112	0.012
33	2.75	1.00	0.138	(0.479)	0.124	0.014
34	2.83	1.00	0.138	(0.479)	0.124	0.014
35	2.92	1.00	0.138	(0.479)	0.124	0.014
36	3.00	1.00	0.138	(0.479)	0.124	0.014
37	3.08	1.00	0.138	(0.479)	0.124	0.014
38	3.17	1.10	0.152	(0.479)	0.137	0.015
39	3.25	1.10	0.152	(0.479)	0.137	0.015
40	3.33	1.10	0.152	(0.479)	0.137	0.015
41	3.42	1.20	0.166	(0.479)	0.149	0.017
42	3.50	1.30	0.179	(0.479)	0.161	0.018
43	3.58	1.40	0.193	(0.479)	0.174	0.019
44	3.67	1.40	0.193	(0.479)	0.174	0.019
45	3.75	1.50	0.207	(0.479)	0.186	0.021
46	3.83	1.50	0.207	(0.479)	0.186	0.021
47	3.92	1.60	0.221	(0.479)	0.199	0.022
48	4.00	1.60	0.221	(0.479)	0.199	0.022
49	4.08	1.70	0.235	(0.479)	0.211	0.023
50	4.17	1.80	0.248	(0.479)	0.224	0.025
51	4.25	1.90	0.262	(0.479)	0.236	0.026
52	4.33	2.00	0.276	(0.479)	0.248	0.028
53	4.42	2.10	0.290	(0.479)	0.261	0.029
54	4.50	2.10	0.290	(0.479)	0.261	0.029
55	4.58	2.20	0.304	(0.479)	0.273	0.030
56	4.67	2.30	0.317	(0.479)	0.286	0.032
57	4.75	2.40	0.331	(0.479)	0.298	0.033
58	4.83	2.40	0.331	(0.479)	0.298	0.033
59	4.92	2.50	0.345	(0.479)	0.310	0.034
60	5.00	2.60	0.359	(0.479)	0.323	0.036
61	5.08	3.10	0.428	(0.479)	0.385	0.043
62	5.17	3.60	0.497	(0.479)	0.447	0.050
63	5.25	3.90	0.538	0.479	(0.484)	0.059
64	5.33	4.20	0.580	0.479	(0.522)	0.101
65	5.42	4.70	0.649	0.479	(0.584)	0.170
66	5.50	5.60	0.773	0.479	(0.695)	0.294
67	5.58	1.90	0.262	(0.479)	0.236	0.026
68	5.67	0.90	0.124	(0.479)	0.112	0.012
69	5.75	0.60	0.083	(0.479)	0.075	0.008
70	5.83	0.50	0.069	(0.479)	0.062	0.007
71	5.92	0.30	0.041	(0.479)	0.037	0.004
72	6.00	0.20	0.028	(0.479)	0.025	0.003

(Loss Rate Not Used)

Sum = 100.0 Sum = 1.8

Flood volume = Effective rainfall 0.15(In)
times area 9.5(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 1.00(In)
Total soil loss = 0.797(Ac.Ft)
Total rainfall = 1.15(In)
Flood volume = 5040.5 Cubic Feet
Total soil loss = 34699.5 Cubic Feet

Peak flow rate of this hydrograph = 1.259(CFS)

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TOTAL OF: 5 6 - H O U R S T O R M E V E N T S

R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q				
0+10	0.0000	0.00	Q				
0+15	0.0000	0.00	Q				
0+20	0.0001	0.00	Q				
0+25	0.0001	0.01	Q				
0+30	0.0001	0.01	Q				
0+35	0.0002	0.01	Q				
0+40	0.0002	0.01	Q				
0+45	0.0003	0.01	Q				
0+50	0.0004	0.01	Q				
0+55	0.0004	0.01	Q				
1+ 0	0.0005	0.01	Q				
1+ 5	0.0005	0.01	Q				
1+10	0.0006	0.01	Q				
1+15	0.0007	0.01	Q				
1+20	0.0007	0.01	Q				
1+25	0.0008	0.01	Q				
1+30	0.0009	0.01	Q				
1+35	0.0009	0.01	Q				
1+40	0.0010	0.01	Q				
1+45	0.0011	0.01	Q				
1+50	0.0012	0.01	Q				
1+55	0.0012	0.01	Q				
2+ 0	0.0013	0.01	Q				
2+ 5	0.0014	0.01	Q				
2+10	0.0015	0.01	Q				
2+15	0.0015	0.01	Q				
2+20	0.0016	0.01	Q				
2+25	0.0017	0.01	Q				
2+30	0.0018	0.01	Q				
2+35	0.0018	0.01	Q				
2+40	0.0019	0.01	Q				
2+45	0.0020	0.01	Q				
2+50	0.0021	0.01	Q				
2+55	0.0022	0.01	Q				
3+ 0	0.0023	0.01	Q				
3+ 5	0.0024	0.01	Q				
3+10	0.0024	0.01	Q				
3+15	0.0025	0.01	Q				
3+20	0.0026	0.01	Q				
3+25	0.0027	0.01	Q				
3+30	0.0028	0.01	Q				
3+35	0.0029	0.02	Q				
3+40	0.0030	0.02	Q				
3+45	0.0032	0.02	Q				
3+50	0.0033	0.02	Q				
3+55	0.0034	0.02	Q				
4+ 0	0.0035	0.02	Q				
4+ 5	0.0037	0.02	Q				
4+10	0.0038	0.02	Q				
4+15	0.0039	0.02	Q				
4+20	0.0041	0.02	Q				
4+25	0.0043	0.02	Q				
4+30	0.0044	0.02	Q				
4+35	0.0046	0.03	Q				
4+40	0.0048	0.03	QV				

4+45	0.0050	0.03	QV				
4+50	0.0052	0.03	QV				
4+55	0.0054	0.03	QV				
5+ 0	0.0056	0.03	QV				
5+ 5	0.0058	0.03	QV				
5+10	0.0060	0.03	QV				
5+15	0.0063	0.04	QV				
5+20	0.0066	0.04	QV				
5+25	0.0069	0.05	QV				
5+30	0.0072	0.05	QV				
5+35	0.0076	0.05	QV				
5+40	0.0079	0.05	QV				
5+45	0.0082	0.04	QV				
5+50	0.0084	0.03	QV				
5+55	0.0086	0.02	QV				
6+ 0	0.0087	0.02	QV				
6+ 5	0.0087	0.00	QV				
6+10	0.0087	0.00	QV				
6+15	0.0087	0.00	QV				
6+20	0.0088	0.01	QV				
6+25	0.0088	0.01	QV				
6+30	0.0089	0.01	QV				
6+35	0.0090	0.01	QV				
6+40	0.0090	0.01	QV				
6+45	0.0091	0.01	QV				
6+50	0.0092	0.01	QV				
6+55	0.0093	0.01	Q V				
7+ 0	0.0094	0.01	Q V				
7+ 5	0.0095	0.01	Q V				
7+10	0.0096	0.01	Q V				
7+15	0.0097	0.01	Q V				
7+20	0.0098	0.01	Q V				
7+25	0.0099	0.02	Q V				
7+30	0.0100	0.02	Q V				
7+35	0.0101	0.02	Q V				
7+40	0.0102	0.02	Q V				
7+45	0.0103	0.02	Q V				
7+50	0.0104	0.02	Q V				
7+55	0.0105	0.02	Q V				
8+ 0	0.0106	0.02	Q V				
8+ 5	0.0107	0.02	Q V				
8+10	0.0109	0.02	Q V				
8+15	0.0110	0.02	Q V				
8+20	0.0111	0.02	Q V				
8+25	0.0112	0.02	Q V				
8+30	0.0113	0.02	Q V				
8+35	0.0114	0.02	Q V				
8+40	0.0116	0.02	Q V				
8+45	0.0117	0.02	Q V				
8+50	0.0118	0.02	Q V				
8+55	0.0119	0.02	Q V				
9+ 0	0.0121	0.02	Q V				
9+ 5	0.0122	0.02	Q V				
9+10	0.0123	0.02	Q V				
9+15	0.0125	0.02	Q V				
9+20	0.0126	0.02	Q V				
9+25	0.0128	0.02	Q V				
9+30	0.0129	0.02	Q V				
9+35	0.0131	0.02	Q V				
9+40	0.0132	0.02	Q V				
9+45	0.0134	0.03	Q V				
9+50	0.0136	0.03	Q V				
9+55	0.0138	0.03	Q V				

10+ 0	0.0140	0.03	Q	V				
10+ 5	0.0142	0.03	Q	V				
10+10	0.0144	0.03	Q	V				
10+15	0.0146	0.03	Q	V				
10+20	0.0148	0.03	Q	V				
10+25	0.0151	0.03	Q	V				
10+30	0.0153	0.04	Q	V				
10+35	0.0156	0.04	Q	V				
10+40	0.0159	0.04	Q	V				
10+45	0.0161	0.04	Q	V				
10+50	0.0164	0.04	Q	V				
10+55	0.0167	0.04	Q	V				
11+ 0	0.0170	0.05	Q	V				
11+ 5	0.0174	0.05	Q	V				
11+10	0.0177	0.05	Q	V				
11+15	0.0181	0.06	Q	V				
11+20	0.0185	0.06	Q	V				
11+25	0.0190	0.07	Q	V				
11+30	0.0195	0.07	Q	V				
11+35	0.0201	0.08	Q	V				
11+40	0.0206	0.08	Q	V				
11+45	0.0210	0.06	Q	V				
11+50	0.0213	0.04	Q	V				
11+55	0.0215	0.03	Q	V				
12+ 0	0.0217	0.03	Q	V				
12+ 5	0.0217	0.00	Q	V				
12+10	0.0217	0.00	Q	V				
12+15	0.0217	0.01	Q	V				
12+20	0.0218	0.01	Q	V				
12+25	0.0219	0.01	Q	V				
12+30	0.0220	0.01	Q	V				
12+35	0.0221	0.01	Q	V				
12+40	0.0222	0.01	Q	V				
12+45	0.0223	0.01	Q	V				
12+50	0.0224	0.02	Q	V				
12+55	0.0225	0.02	Q	V				
13+ 0	0.0226	0.02	Q	V				
13+ 5	0.0227	0.02	Q	V				
13+10	0.0228	0.02	Q	V				
13+15	0.0229	0.02	Q	V				
13+20	0.0231	0.02	Q	V				
13+25	0.0232	0.02	Q	V				
13+30	0.0233	0.02	Q	V				
13+35	0.0235	0.02	Q	V				
13+40	0.0236	0.02	Q	V				
13+45	0.0238	0.02	Q	V				
13+50	0.0239	0.02	Q	V				
13+55	0.0240	0.02	Q	V				
14+ 0	0.0242	0.02	Q	V				
14+ 5	0.0243	0.02	Q	V				
14+10	0.0244	0.02	Q	V				
14+15	0.0246	0.02	Q	V				
14+20	0.0247	0.02	Q	V				
14+25	0.0249	0.02	Q	V				
14+30	0.0250	0.02	Q	V				
14+35	0.0252	0.02	Q	V				
14+40	0.0253	0.02	Q	V				
14+45	0.0255	0.02	Q	V				
14+50	0.0257	0.02	Q	V				
14+55	0.0258	0.02	Q	V				
15+ 0	0.0260	0.02	Q	V				
15+ 5	0.0262	0.02	Q	V				
15+10	0.0263	0.02	Q	V				

15+15	0.0265	0.03	Q	V				
15+20	0.0267	0.03	Q	V				
15+25	0.0269	0.03	Q	V				
15+30	0.0271	0.03	Q	V				
15+35	0.0272	0.03	Q	V				
15+40	0.0275	0.03	Q	V				
15+45	0.0277	0.03	Q	V				
15+50	0.0279	0.03	Q	V				
15+55	0.0281	0.03	Q	V				
16+ 0	0.0284	0.04	Q	V				
16+ 5	0.0286	0.04	Q	V				
16+10	0.0289	0.04	Q	V				
16+15	0.0292	0.04	Q	V				
16+20	0.0295	0.04	Q	V				
16+25	0.0298	0.04	Q	V				
16+30	0.0301	0.05	Q	V				
16+35	0.0304	0.05	Q	V				
16+40	0.0308	0.05	Q	V				
16+45	0.0311	0.05	Q	V				
16+50	0.0315	0.05	Q	V				
16+55	0.0319	0.06	Q	V				
17+ 0	0.0323	0.06	Q	V				
17+ 5	0.0327	0.06	Q	V				
17+10	0.0331	0.06	Q	V				
17+15	0.0336	0.07	Q	V				
17+20	0.0342	0.08	Q	V				
17+25	0.0348	0.09	Q	V				
17+30	0.0354	0.09	Q	V				
17+35	0.0361	0.10	Q	V				
17+40	0.0368	0.10	Q	V				
17+45	0.0373	0.07	Q	V				
17+50	0.0376	0.05	Q	V				
17+55	0.0379	0.04	Q	V				
18+ 0	0.0382	0.03	Q	V				
18+ 5	0.0382	0.00	Q	V				
18+10	0.0382	0.00	Q	V				
18+15	0.0383	0.01	Q	V				
18+20	0.0384	0.02	Q	V				
18+25	0.0385	0.02	Q	V				
18+30	0.0387	0.02	Q	V				
18+35	0.0389	0.02	Q	V				
18+40	0.0390	0.03	Q	V				
18+45	0.0392	0.03	Q	V				
18+50	0.0394	0.03	Q	V				
18+55	0.0397	0.03	Q	V				
19+ 0	0.0399	0.03	Q	V				
19+ 5	0.0401	0.03	Q	V				
19+10	0.0403	0.03	Q	V				
19+15	0.0406	0.04	Q	V				
19+20	0.0408	0.04	Q	V				
19+25	0.0411	0.04	Q	V				
19+30	0.0413	0.04	Q	V				
19+35	0.0416	0.04	Q	V				
19+40	0.0418	0.04	Q	V				
19+45	0.0421	0.04	Q	V				
19+50	0.0423	0.04	Q	V				
19+55	0.0426	0.04	Q	V				
20+ 0	0.0429	0.04	Q	V				
20+ 5	0.0431	0.04	Q	V				
20+10	0.0434	0.04	Q	V				
20+15	0.0437	0.04	Q	V				
20+20	0.0440	0.04	Q	V				
20+25	0.0442	0.04	Q	V				

20+30	0.0445	0.04	Q	V|	|	|	|
20+35	0.0448	0.04	Q	V|	|	|	|
20+40	0.0451	0.04	Q	V|	|	|	|
20+45	0.0454	0.04	Q	V|	|	|	|
20+50	0.0457	0.04	Q	V|	|	|	|
20+55	0.0460	0.04	Q	V|	|	|	|
21+ 0	0.0463	0.05	Q	V	|	|	|
21+ 5	0.0466	0.05	Q	V	|	|	|
21+10	0.0470	0.05	Q	V	|	|	|
21+15	0.0473	0.05	Q	V	|	|	|
21+20	0.0476	0.05	Q	V	|	|	|
21+25	0.0480	0.05	Q	V	|	|	|
21+30	0.0483	0.05	Q	V	|	|	|
21+35	0.0487	0.05	Q	V	|	|	|
21+40	0.0491	0.06	Q	V	|	|	|
21+45	0.0495	0.06	Q	V	|	|	|
21+50	0.0500	0.06	Q	V	|	|	|
21+55	0.0504	0.07	Q	V	|	|	|
22+ 0	0.0509	0.07	Q	V	|	|	|
22+ 5	0.0514	0.07	Q	|V	|	|	|
22+10	0.0519	0.07	Q	|V	|	|	|
22+15	0.0524	0.08	Q	|V	|	|	|
22+20	0.0529	0.08	Q	|V	|	|	|
22+25	0.0535	0.08	Q	|V	|	|	|
22+30	0.0541	0.09	Q	|V	|	|	|
22+35	0.0547	0.09	Q	|V	|	|	|
22+40	0.0554	0.09	Q	|V	|	|	|
22+45	0.0561	0.10	Q	| V	|	|	|
22+50	0.0568	0.10	Q	| V	|	|	|
22+55	0.0575	0.11	Q	| V	|	|	|
23+ 0	0.0582	0.11	Q	| V	|	|	|
23+ 5	0.0590	0.11	Q	| V	|	|	|
23+10	0.0599	0.12	Q	| V	|	|	|
23+15	0.0608	0.13	Q	| V	|	|	|
23+20	0.0618	0.15	Q	| V	|	|	|
23+25	0.0629	0.16	Q	| V	|	|	|
23+30	0.0642	0.18	Q	| V	|	|	|
23+35	0.0655	0.19	Q	| V	|	|	|
23+40	0.0667	0.18	Q	| V	|	|	|
23+45	0.0677	0.14	Q	| V	|	|	|
23+50	0.0684	0.10	Q	| V	|	|	|
23+55	0.0690	0.08	Q	| V	|	|	|
24+ 0	0.0694	0.06	Q	| V	|	|	|
24+ 5	0.0694	0.00	Q	| V	|	|	|
24+10	0.0695	0.01	Q	| V	|	|	|
24+15	0.0697	0.03	Q	| V	|	|	|
24+20	0.0701	0.05	Q	| V	|	|	|
24+25	0.0704	0.06	Q	| V	|	|	|
24+30	0.0709	0.06	Q	| V	|	|	|
24+35	0.0713	0.07	Q	| V	|	|	|
24+40	0.0719	0.07	Q	| V	|	|	|
24+45	0.0724	0.08	Q	| V	|	|	|
24+50	0.0730	0.08	Q	| V	|	|	|
24+55	0.0735	0.08	Q	| V	|	|	|
25+ 0	0.0741	0.09	Q	| V	|	|	|
25+ 5	0.0747	0.09	Q	| V	|	|	|
25+10	0.0754	0.09	Q	| V	|	|	|
25+15	0.0761	0.10	Q	| V	|	|	|
25+20	0.0767	0.10	Q	| V	|	|	|
25+25	0.0774	0.10	Q	| V	|	|	|
25+30	0.0781	0.10	Q	| V	|	|	|
25+35	0.0788	0.10	Q	| V	|	|	|
25+40	0.0796	0.10	Q	| V	|	|	|

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25+45       0.0803      0.10  Q         |      V  |         |         |
25+50       0.0810      0.10  Q         |      V  |         |         |
25+55       0.0817      0.10  Q         |      V  |         |         |
26+ 0       0.0824      0.11  Q         |      V  |         |         |
26+ 5       0.0832      0.11  Q         |      V  |         |         |
26+10       0.0839      0.11  Q         |       V |         |         |
26+15       0.0847      0.11  Q         |       V |         |         |
26+20       0.0855      0.11  Q         |       V |         |         |
26+25       0.0863      0.12  Q         |       V |         |         |
26+30       0.0871      0.12  Q         |       V |         |         |
26+35       0.0879      0.12  Q         |       V |         |         |
26+40       0.0887      0.12  Q         |        V|         |         |
26+45       0.0895      0.12  Q         |        V|         |         |
26+50       0.0903      0.12  Q         |        V|         |         |
26+55       0.0912      0.12  Q         |        V|         |         |
27+ 0       0.0921      0.13  Q         |        V|         |         |
27+ 5       0.0929      0.13  Q         |         V         |         |
27+10       0.0938      0.13  Q         |         V         |         |
27+15       0.0947      0.13  Q         |         V         |         |
27+20       0.0957      0.14  Q         |         V         |         |
27+25       0.0966      0.14  Q         |         V         |         |
27+30       0.0976      0.14  Q         |         |V        |         |
27+35       0.0987      0.15  Q         |         |V        |         |
27+40       0.0998      0.16  Q         |         |V        |         |
27+45       0.1009      0.17  Q         |         |V        |         |
27+50       0.1021      0.17  Q         |         | V       |         |
27+55       0.1034      0.18  Q         |         | V       |         |
28+ 0       0.1047      0.19  Q         |         | V       |         |
28+ 5       0.1060      0.20  Q         |         | V       |         |
28+10       0.
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U n i t H y d r o g r a p h A n a l y s i s

Study date 10/14/21 File: jdhu242.out

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

Program License Serial Number 6443

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

English Units used in output format

JD FIELDS HEMET
UNIT HYDROGRAPHS 2 YEAR
10/14/2021 LA

Drainage Area = 9.52(Ac.) = 0.015 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 9.52(Ac.) = 0.015 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.221 Hr.
Lag time = 13.26 Min.
25% of lag time = 3.31 Min.
40% of lag time = 5.30 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]
9.52	2.01	19.14

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
9.52	5.31	50.55

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.010(In)
Area Averaged 100-Year Rainfall = 5.310(In)

Point rain (area averaged) = 2.010(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 2.010(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
9.520	32.00	0.500

Total Area Entered = 9.52(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
32.0	16.2	0.870	0.500	0.479	1.000	0.479
					Sum (F) =	0.479

Area averaged mean soil loss (F) (In/Hr) = 0.479
Minimum soil loss rate ((In/Hr)) = 0.239
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	37.707	3.990	0.383
2	0.167	75.415	16.108	1.545
3	0.250	113.122	25.333	2.431
4	0.333	150.830	18.548	1.780
5	0.417	188.537	9.265	0.889
6	0.500	226.244	5.593	0.537
7	0.583	263.952	4.141	0.397
8	0.667	301.659	3.257	0.312
9	0.750	339.367	2.495	0.239
10	0.833	377.074	2.107	0.202
11	0.917	414.781	1.648	0.158
12	1.000	452.489	1.290	0.124
13	1.083	490.196	1.164	0.112
14	1.167	527.903	1.049	0.101
15	1.250	565.611	0.827	0.079
16	1.333	603.318	0.704	0.068
17	1.417	641.026	0.591	0.057
18	1.500	678.733	0.484	0.046
19	1.583	716.440	0.381	0.037
20	1.667	754.148	0.377	0.036
21	1.750	791.855	0.377	0.036
22	1.833	829.563	0.270	0.026
			Sum = 100.000	Sum= 9.594

Storm Event 5 Effective Rainfall = 0.201(In)

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	0.002	(0.849)		0.001	0.000
2	0.17	0.07	0.002	(0.845)		0.001	0.000
3	0.25	0.07	0.002	(0.842)		0.001	0.000
4	0.33	0.10	0.002	(0.839)		0.002	0.000
5	0.42	0.10	0.002	(0.836)		0.002	0.000

6	0.50	0.10	0.002	(0.832)	0.002	0.000
7	0.58	0.10	0.002	(0.829)	0.002	0.000
8	0.67	0.10	0.002	(0.826)	0.002	0.000
9	0.75	0.10	0.002	(0.823)	0.002	0.000
10	0.83	0.13	0.003	(0.819)	0.003	0.000
11	0.92	0.13	0.003	(0.816)	0.003	0.000
12	1.00	0.13	0.003	(0.813)	0.003	0.000
13	1.08	0.10	0.002	(0.810)	0.002	0.000
14	1.17	0.10	0.002	(0.806)	0.002	0.000
15	1.25	0.10	0.002	(0.803)	0.002	0.000
16	1.33	0.10	0.002	(0.800)	0.002	0.000
17	1.42	0.10	0.002	(0.797)	0.002	0.000
18	1.50	0.10	0.002	(0.794)	0.002	0.000
19	1.58	0.10	0.002	(0.791)	0.002	0.000
20	1.67	0.10	0.002	(0.787)	0.002	0.000
21	1.75	0.10	0.002	(0.784)	0.002	0.000
22	1.83	0.13	0.003	(0.781)	0.003	0.000
23	1.92	0.13	0.003	(0.778)	0.003	0.000
24	2.00	0.13	0.003	(0.775)	0.003	0.000
25	2.08	0.13	0.003	(0.772)	0.003	0.000
26	2.17	0.13	0.003	(0.769)	0.003	0.000
27	2.25	0.13	0.003	(0.765)	0.003	0.000
28	2.33	0.13	0.003	(0.762)	0.003	0.000
29	2.42	0.13	0.003	(0.759)	0.003	0.000
30	2.50	0.13	0.003	(0.756)	0.003	0.000
31	2.58	0.17	0.004	(0.753)	0.004	0.000
32	2.67	0.17	0.004	(0.750)	0.004	0.000
33	2.75	0.17	0.004	(0.747)	0.004	0.000
34	2.83	0.17	0.004	(0.744)	0.004	0.000
35	2.92	0.17	0.004	(0.741)	0.004	0.000
36	3.00	0.17	0.004	(0.738)	0.004	0.000
37	3.08	0.17	0.004	(0.735)	0.004	0.000
38	3.17	0.17	0.004	(0.731)	0.004	0.000
39	3.25	0.17	0.004	(0.728)	0.004	0.000
40	3.33	0.17	0.004	(0.725)	0.004	0.000
41	3.42	0.17	0.004	(0.722)	0.004	0.000
42	3.50	0.17	0.004	(0.719)	0.004	0.000
43	3.58	0.17	0.004	(0.716)	0.004	0.000
44	3.67	0.17	0.004	(0.713)	0.004	0.000
45	3.75	0.17	0.004	(0.710)	0.004	0.000
46	3.83	0.20	0.005	(0.707)	0.004	0.000
47	3.92	0.20	0.005	(0.704)	0.004	0.000
48	4.00	0.20	0.005	(0.701)	0.004	0.000
49	4.08	0.20	0.005	(0.698)	0.004	0.000
50	4.17	0.20	0.005	(0.695)	0.004	0.000
51	4.25	0.20	0.005	(0.692)	0.004	0.000
52	4.33	0.23	0.006	(0.690)	0.005	0.001
53	4.42	0.23	0.006	(0.687)	0.005	0.001
54	4.50	0.23	0.006	(0.684)	0.005	0.001
55	4.58	0.23	0.006	(0.681)	0.005	0.001
56	4.67	0.23	0.006	(0.678)	0.005	0.001
57	4.75	0.23	0.006	(0.675)	0.005	0.001
58	4.83	0.27	0.006	(0.672)	0.006	0.001
59	4.92	0.27	0.006	(0.669)	0.006	0.001
60	5.00	0.27	0.006	(0.666)	0.006	0.001
61	5.08	0.20	0.005	(0.663)	0.004	0.000
62	5.17	0.20	0.005	(0.660)	0.004	0.000
63	5.25	0.20	0.005	(0.657)	0.004	0.000
64	5.33	0.23	0.006	(0.655)	0.005	0.001
65	5.42	0.23	0.006	(0.652)	0.005	0.001
66	5.50	0.23	0.006	(0.649)	0.005	0.001
67	5.58	0.27	0.006	(0.646)	0.006	0.001
68	5.67	0.27	0.006	(0.643)	0.006	0.001

69	5.75	0.27	0.006	(0.640)	0.006	0.001
70	5.83	0.27	0.006	(0.638)	0.006	0.001
71	5.92	0.27	0.006	(0.635)	0.006	0.001
72	6.00	0.27	0.006	(0.632)	0.006	0.001
73	6.08	0.30	0.007	(0.629)	0.007	0.001
74	6.17	0.30	0.007	(0.626)	0.007	0.001
75	6.25	0.30	0.007	(0.624)	0.007	0.001
76	6.33	0.30	0.007	(0.621)	0.007	0.001
77	6.42	0.30	0.007	(0.618)	0.007	0.001
78	6.50	0.30	0.007	(0.615)	0.007	0.001
79	6.58	0.33	0.008	(0.612)	0.007	0.001
80	6.67	0.33	0.008	(0.610)	0.007	0.001
81	6.75	0.33	0.008	(0.607)	0.007	0.001
82	6.83	0.33	0.008	(0.604)	0.007	0.001
83	6.92	0.33	0.008	(0.601)	0.007	0.001
84	7.00	0.33	0.008	(0.599)	0.007	0.001
85	7.08	0.33	0.008	(0.596)	0.007	0.001
86	7.17	0.33	0.008	(0.593)	0.007	0.001
87	7.25	0.33	0.008	(0.591)	0.007	0.001
88	7.33	0.37	0.009	(0.588)	0.008	0.001
89	7.42	0.37	0.009	(0.585)	0.008	0.001
90	7.50	0.37	0.009	(0.582)	0.008	0.001
91	7.58	0.40	0.010	(0.580)	0.009	0.001
92	7.67	0.40	0.010	(0.577)	0.009	0.001
93	7.75	0.40	0.010	(0.574)	0.009	0.001
94	7.83	0.43	0.010	(0.572)	0.009	0.001
95	7.92	0.43	0.010	(0.569)	0.009	0.001
96	8.00	0.43	0.010	(0.567)	0.009	0.001
97	8.08	0.50	0.012	(0.564)	0.011	0.001
98	8.17	0.50	0.012	(0.561)	0.011	0.001
99	8.25	0.50	0.012	(0.559)	0.011	0.001
100	8.33	0.50	0.012	(0.556)	0.011	0.001
101	8.42	0.50	0.012	(0.553)	0.011	0.001
102	8.50	0.50	0.012	(0.551)	0.011	0.001
103	8.58	0.53	0.013	(0.548)	0.012	0.001
104	8.67	0.53	0.013	(0.546)	0.012	0.001
105	8.75	0.53	0.013	(0.543)	0.012	0.001
106	8.83	0.57	0.014	(0.541)	0.012	0.001
107	8.92	0.57	0.014	(0.538)	0.012	0.001
108	9.00	0.57	0.014	(0.535)	0.012	0.001
109	9.08	0.63	0.015	(0.533)	0.014	0.002
110	9.17	0.63	0.015	(0.530)	0.014	0.002
111	9.25	0.63	0.015	(0.528)	0.014	0.002
112	9.33	0.67	0.016	(0.525)	0.014	0.002
113	9.42	0.67	0.016	(0.523)	0.014	0.002
114	9.50	0.67	0.016	(0.520)	0.014	0.002
115	9.58	0.70	0.017	(0.518)	0.015	0.002
116	9.67	0.70	0.017	(0.515)	0.015	0.002
117	9.75	0.70	0.017	(0.513)	0.015	0.002
118	9.83	0.73	0.018	(0.510)	0.016	0.002
119	9.92	0.73	0.018	(0.508)	0.016	0.002
120	10.00	0.73	0.018	(0.506)	0.016	0.002
121	10.08	0.50	0.012	(0.503)	0.011	0.001
122	10.17	0.50	0.012	(0.501)	0.011	0.001
123	10.25	0.50	0.012	(0.498)	0.011	0.001
124	10.33	0.50	0.012	(0.496)	0.011	0.001
125	10.42	0.50	0.012	(0.493)	0.011	0.001
126	10.50	0.50	0.012	(0.491)	0.011	0.001
127	10.58	0.67	0.016	(0.489)	0.014	0.002
128	10.67	0.67	0.016	(0.486)	0.014	0.002
129	10.75	0.67	0.016	(0.484)	0.014	0.002
130	10.83	0.67	0.016	(0.481)	0.014	0.002
131	10.92	0.67	0.016	(0.479)	0.014	0.002

132	11.00	0.67	0.016	(0.477)	0.014	0.002
133	11.08	0.63	0.015	(0.474)	0.014	0.002
134	11.17	0.63	0.015	(0.472)	0.014	0.002
135	11.25	0.63	0.015	(0.470)	0.014	0.002
136	11.33	0.63	0.015	(0.467)	0.014	0.002
137	11.42	0.63	0.015	(0.465)	0.014	0.002
138	11.50	0.63	0.015	(0.463)	0.014	0.002
139	11.58	0.57	0.014	(0.460)	0.012	0.001
140	11.67	0.57	0.014	(0.458)	0.012	0.001
141	11.75	0.57	0.014	(0.456)	0.012	0.001
142	11.83	0.60	0.014	(0.454)	0.013	0.001
143	11.92	0.60	0.014	(0.451)	0.013	0.001
144	12.00	0.60	0.014	(0.449)	0.013	0.001
145	12.08	0.83	0.020	(0.447)	0.018	0.002
146	12.17	0.83	0.020	(0.445)	0.018	0.002
147	12.25	0.83	0.020	(0.442)	0.018	0.002
148	12.33	0.87	0.021	(0.440)	0.019	0.002
149	12.42	0.87	0.021	(0.438)	0.019	0.002
150	12.50	0.87	0.021	(0.436)	0.019	0.002
151	12.58	0.93	0.023	(0.434)	0.020	0.002
152	12.67	0.93	0.023	(0.431)	0.020	0.002
153	12.75	0.93	0.023	(0.429)	0.020	0.002
154	12.83	0.97	0.023	(0.427)	0.021	0.002
155	12.92	0.97	0.023	(0.425)	0.021	0.002
156	13.00	0.97	0.023	(0.423)	0.021	0.002
157	13.08	1.13	0.027	(0.421)	0.025	0.003
158	13.17	1.13	0.027	(0.418)	0.025	0.003
159	13.25	1.13	0.027	(0.416)	0.025	0.003
160	13.33	1.13	0.027	(0.414)	0.025	0.003
161	13.42	1.13	0.027	(0.412)	0.025	0.003
162	13.50	1.13	0.027	(0.410)	0.025	0.003
163	13.58	0.77	0.018	(0.408)	0.017	0.002
164	13.67	0.77	0.018	(0.406)	0.017	0.002
165	13.75	0.77	0.018	(0.404)	0.017	0.002
166	13.83	0.77	0.018	(0.402)	0.017	0.002
167	13.92	0.77	0.018	(0.400)	0.017	0.002
168	14.00	0.77	0.018	(0.398)	0.017	0.002
169	14.08	0.90	0.022	(0.396)	0.020	0.002
170	14.17	0.90	0.022	(0.394)	0.020	0.002
171	14.25	0.90	0.022	(0.392)	0.020	0.002
172	14.33	0.87	0.021	(0.390)	0.019	0.002
173	14.42	0.87	0.021	(0.388)	0.019	0.002
174	14.50	0.87	0.021	(0.386)	0.019	0.002
175	14.58	0.87	0.021	(0.384)	0.019	0.002
176	14.67	0.87	0.021	(0.382)	0.019	0.002
177	14.75	0.87	0.021	(0.380)	0.019	0.002
178	14.83	0.83	0.020	(0.378)	0.018	0.002
179	14.92	0.83	0.020	(0.376)	0.018	0.002
180	15.00	0.83	0.020	(0.374)	0.018	0.002
181	15.08	0.80	0.019	(0.372)	0.017	0.002
182	15.17	0.80	0.019	(0.370)	0.017	0.002
183	15.25	0.80	0.019	(0.368)	0.017	0.002
184	15.33	0.77	0.018	(0.366)	0.017	0.002
185	15.42	0.77	0.018	(0.364)	0.017	0.002
186	15.50	0.77	0.018	(0.363)	0.017	0.002
187	15.58	0.63	0.015	(0.361)	0.014	0.002
188	15.67	0.63	0.015	(0.359)	0.014	0.002
189	15.75	0.63	0.015	(0.357)	0.014	0.002
190	15.83	0.63	0.015	(0.355)	0.014	0.002
191	15.92	0.63	0.015	(0.353)	0.014	0.002
192	16.00	0.63	0.015	(0.352)	0.014	0.002
193	16.08	0.13	0.003	(0.350)	0.003	0.000
194	16.17	0.13	0.003	(0.348)	0.003	0.000

195	16.25	0.13	0.003	(0.346)	0.003	0.000
196	16.33	0.13	0.003	(0.344)	0.003	0.000
197	16.42	0.13	0.003	(0.343)	0.003	0.000
198	16.50	0.13	0.003	(0.341)	0.003	0.000
199	16.58	0.10	0.002	(0.339)	0.002	0.000
200	16.67	0.10	0.002	(0.337)	0.002	0.000
201	16.75	0.10	0.002	(0.336)	0.002	0.000
202	16.83	0.10	0.002	(0.334)	0.002	0.000
203	16.92	0.10	0.002	(0.332)	0.002	0.000
204	17.00	0.10	0.002	(0.331)	0.002	0.000
205	17.08	0.17	0.004	(0.329)	0.004	0.000
206	17.17	0.17	0.004	(0.327)	0.004	0.000
207	17.25	0.17	0.004	(0.326)	0.004	0.000
208	17.33	0.17	0.004	(0.324)	0.004	0.000
209	17.42	0.17	0.004	(0.322)	0.004	0.000
210	17.50	0.17	0.004	(0.321)	0.004	0.000
211	17.58	0.17	0.004	(0.319)	0.004	0.000
212	17.67	0.17	0.004	(0.318)	0.004	0.000
213	17.75	0.17	0.004	(0.316)	0.004	0.000
214	17.83	0.13	0.003	(0.314)	0.003	0.000
215	17.92	0.13	0.003	(0.313)	0.003	0.000
216	18.00	0.13	0.003	(0.311)	0.003	0.000
217	18.08	0.13	0.003	(0.310)	0.003	0.000
218	18.17	0.13	0.003	(0.308)	0.003	0.000
219	18.25	0.13	0.003	(0.307)	0.003	0.000
220	18.33	0.13	0.003	(0.305)	0.003	0.000
221	18.42	0.13	0.003	(0.304)	0.003	0.000
222	18.50	0.13	0.003	(0.302)	0.003	0.000
223	18.58	0.10	0.002	(0.301)	0.002	0.000
224	18.67	0.10	0.002	(0.299)	0.002	0.000
225	18.75	0.10	0.002	(0.298)	0.002	0.000
226	18.83	0.07	0.002	(0.297)	0.001	0.000
227	18.92	0.07	0.002	(0.295)	0.001	0.000
228	19.00	0.07	0.002	(0.294)	0.001	0.000
229	19.08	0.10	0.002	(0.292)	0.002	0.000
230	19.17	0.10	0.002	(0.291)	0.002	0.000
231	19.25	0.10	0.002	(0.290)	0.002	0.000
232	19.33	0.13	0.003	(0.288)	0.003	0.000
233	19.42	0.13	0.003	(0.287)	0.003	0.000
234	19.50	0.13	0.003	(0.286)	0.003	0.000
235	19.58	0.10	0.002	(0.284)	0.002	0.000
236	19.67	0.10	0.002	(0.283)	0.002	0.000
237	19.75	0.10	0.002	(0.282)	0.002	0.000
238	19.83	0.07	0.002	(0.280)	0.001	0.000
239	19.92	0.07	0.002	(0.279)	0.001	0.000
240	20.00	0.07	0.002	(0.278)	0.001	0.000
241	20.08	0.10	0.002	(0.277)	0.002	0.000
242	20.17	0.10	0.002	(0.276)	0.002	0.000
243	20.25	0.10	0.002	(0.274)	0.002	0.000
244	20.33	0.10	0.002	(0.273)	0.002	0.000
245	20.42	0.10	0.002	(0.272)	0.002	0.000
246	20.50	0.10	0.002	(0.271)	0.002	0.000
247	20.58	0.10	0.002	(0.270)	0.002	0.000
248	20.67	0.10	0.002	(0.269)	0.002	0.000
249	20.75	0.10	0.002	(0.267)	0.002	0.000
250	20.83	0.07	0.002	(0.266)	0.001	0.000
251	20.92	0.07	0.002	(0.265)	0.001	0.000
252	21.00	0.07	0.002	(0.264)	0.001	0.000
253	21.08	0.10	0.002	(0.263)	0.002	0.000
254	21.17	0.10	0.002	(0.262)	0.002	0.000
255	21.25	0.10	0.002	(0.261)	0.002	0.000
256	21.33	0.07	0.002	(0.260)	0.001	0.000
257	21.42	0.07	0.002	(0.259)	0.001	0.000

258	21.50	0.07	0.002	(0.258)	0.001	0.000
259	21.58	0.10	0.002	(0.257)	0.002	0.000
260	21.67	0.10	0.002	(0.256)	0.002	0.000
261	21.75	0.10	0.002	(0.255)	0.002	0.000
262	21.83	0.07	0.002	(0.254)	0.001	0.000
263	21.92	0.07	0.002	(0.254)	0.001	0.000
264	22.00	0.07	0.002	(0.253)	0.001	0.000
265	22.08	0.10	0.002	(0.252)	0.002	0.000
266	22.17	0.10	0.002	(0.251)	0.002	0.000
267	22.25	0.10	0.002	(0.250)	0.002	0.000
268	22.33	0.07	0.002	(0.250)	0.001	0.000
269	22.42	0.07	0.002	(0.249)	0.001	0.000
270	22.50	0.07	0.002	(0.248)	0.001	0.000
271	22.58	0.07	0.002	(0.247)	0.001	0.000
272	22.67	0.07	0.002	(0.247)	0.001	0.000
273	22.75	0.07	0.002	(0.246)	0.001	0.000
274	22.83	0.07	0.002	(0.245)	0.001	0.000
275	22.92	0.07	0.002	(0.245)	0.001	0.000
276	23.00	0.07	0.002	(0.244)	0.001	0.000
277	23.08	0.07	0.002	(0.244)	0.001	0.000
278	23.17	0.07	0.002	(0.243)	0.001	0.000
279	23.25	0.07	0.002	(0.242)	0.001	0.000
280	23.33	0.07	0.002	(0.242)	0.001	0.000
281	23.42	0.07	0.002	(0.241)	0.001	0.000
282	23.50	0.07	0.002	(0.241)	0.001	0.000
283	23.58	0.07	0.002	(0.241)	0.001	0.000
284	23.67	0.07	0.002	(0.240)	0.001	0.000
285	23.75	0.07	0.002	(0.240)	0.001	0.000
286	23.83	0.07	0.002	(0.240)	0.001	0.000
287	23.92	0.07	0.002	(0.240)	0.001	0.000
288	24.00	0.07	0.002	(0.239)	0.001	0.000

(Loss Rate Not Used)

Sum = 100.0 Sum = 0.2

Flood volume = Effective rainfall 0.02(In)
times area 9.5(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.18(In)
Total soil loss = 0.144(Ac.Ft)
Total rainfall = 0.20(In)
Flood volume = 694.6 Cubic Feet
Total soil loss = 6251.4 Cubic Feet

Storm Event 4 Effective Rainfall = 0.301(In)

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	0.002	(0.849)	0.002	0.000
2	0.17	0.07	0.002	(0.845)	0.002	0.000
3	0.25	0.07	0.002	(0.842)	0.002	0.000
4	0.33	0.10	0.004	(0.839)	0.003	0.000
5	0.42	0.10	0.004	(0.836)	0.003	0.000
6	0.50	0.10	0.004	(0.832)	0.003	0.000
7	0.58	0.10	0.004	(0.829)	0.003	0.000
8	0.67	0.10	0.004	(0.826)	0.003	0.000
9	0.75	0.10	0.004	(0.823)	0.003	0.000
10	0.83	0.13	0.005	(0.819)	0.004	0.000
11	0.92	0.13	0.005	(0.816)	0.004	0.000
12	1.00	0.13	0.005	(0.813)	0.004	0.000
13	1.08	0.10	0.004	(0.810)	0.003	0.000
14	1.17	0.10	0.004	(0.806)	0.003	0.000

15	1.25	0.10	0.004	(0.803)	0.003	0.000
16	1.33	0.10	0.004	(0.800)	0.003	0.000
17	1.42	0.10	0.004	(0.797)	0.003	0.000
18	1.50	0.10	0.004	(0.794)	0.003	0.000
19	1.58	0.10	0.004	(0.791)	0.003	0.000
20	1.67	0.10	0.004	(0.787)	0.003	0.000
21	1.75	0.10	0.004	(0.784)	0.003	0.000
22	1.83	0.13	0.005	(0.781)	0.004	0.000
23	1.92	0.13	0.005	(0.778)	0.004	0.000
24	2.00	0.13	0.005	(0.775)	0.004	0.000
25	2.08	0.13	0.005	(0.772)	0.004	0.000
26	2.17	0.13	0.005	(0.769)	0.004	0.000
27	2.25	0.13	0.005	(0.765)	0.004	0.000
28	2.33	0.13	0.005	(0.762)	0.004	0.000
29	2.42	0.13	0.005	(0.759)	0.004	0.000
30	2.50	0.13	0.005	(0.756)	0.004	0.000
31	2.58	0.17	0.006	(0.753)	0.005	0.001
32	2.67	0.17	0.006	(0.750)	0.005	0.001
33	2.75	0.17	0.006	(0.747)	0.005	0.001
34	2.83	0.17	0.006	(0.744)	0.005	0.001
35	2.92	0.17	0.006	(0.741)	0.005	0.001
36	3.00	0.17	0.006	(0.738)	0.005	0.001
37	3.08	0.17	0.006	(0.735)	0.005	0.001
38	3.17	0.17	0.006	(0.731)	0.005	0.001
39	3.25	0.17	0.006	(0.728)	0.005	0.001
40	3.33	0.17	0.006	(0.725)	0.005	0.001
41	3.42	0.17	0.006	(0.722)	0.005	0.001
42	3.50	0.17	0.006	(0.719)	0.005	0.001
43	3.58	0.17	0.006	(0.716)	0.005	0.001
44	3.67	0.17	0.006	(0.713)	0.005	0.001
45	3.75	0.17	0.006	(0.710)	0.005	0.001
46	3.83	0.20	0.007	(0.707)	0.007	0.001
47	3.92	0.20	0.007	(0.704)	0.007	0.001
48	4.00	0.20	0.007	(0.701)	0.007	0.001
49	4.08	0.20	0.007	(0.698)	0.007	0.001
50	4.17	0.20	0.007	(0.695)	0.007	0.001
51	4.25	0.20	0.007	(0.692)	0.007	0.001
52	4.33	0.23	0.008	(0.690)	0.008	0.001
53	4.42	0.23	0.008	(0.687)	0.008	0.001
54	4.50	0.23	0.008	(0.684)	0.008	0.001
55	4.58	0.23	0.008	(0.681)	0.008	0.001
56	4.67	0.23	0.008	(0.678)	0.008	0.001
57	4.75	0.23	0.008	(0.675)	0.008	0.001
58	4.83	0.27	0.010	(0.672)	0.009	0.001
59	4.92	0.27	0.010	(0.669)	0.009	0.001
60	5.00	0.27	0.010	(0.666)	0.009	0.001
61	5.08	0.20	0.007	(0.663)	0.007	0.001
62	5.17	0.20	0.007	(0.660)	0.007	0.001
63	5.25	0.20	0.007	(0.657)	0.007	0.001
64	5.33	0.23	0.008	(0.655)	0.008	0.001
65	5.42	0.23	0.008	(0.652)	0.008	0.001
66	5.50	0.23	0.008	(0.649)	0.008	0.001
67	5.58	0.27	0.010	(0.646)	0.009	0.001
68	5.67	0.27	0.010	(0.643)	0.009	0.001
69	5.75	0.27	0.010	(0.640)	0.009	0.001
70	5.83	0.27	0.010	(0.638)	0.009	0.001
71	5.92	0.27	0.010	(0.635)	0.009	0.001
72	6.00	0.27	0.010	(0.632)	0.009	0.001
73	6.08	0.30	0.011	(0.629)	0.010	0.001
74	6.17	0.30	0.011	(0.626)	0.010	0.001
75	6.25	0.30	0.011	(0.624)	0.010	0.001
76	6.33	0.30	0.011	(0.621)	0.010	0.001
77	6.42	0.30	0.011	(0.618)	0.010	0.001

78	6.50	0.30	0.011	(0.615)	0.010	0.001
79	6.58	0.33	0.012	(0.612)	0.011	0.001
80	6.67	0.33	0.012	(0.610)	0.011	0.001
81	6.75	0.33	0.012	(0.607)	0.011	0.001
82	6.83	0.33	0.012	(0.604)	0.011	0.001
83	6.92	0.33	0.012	(0.601)	0.011	0.001
84	7.00	0.33	0.012	(0.599)	0.011	0.001
85	7.08	0.33	0.012	(0.596)	0.011	0.001
86	7.17	0.33	0.012	(0.593)	0.011	0.001
87	7.25	0.33	0.012	(0.591)	0.011	0.001
88	7.33	0.37	0.013	(0.588)	0.012	0.001
89	7.42	0.37	0.013	(0.585)	0.012	0.001
90	7.50	0.37	0.013	(0.582)	0.012	0.001
91	7.58	0.40	0.014	(0.580)	0.013	0.001
92	7.67	0.40	0.014	(0.577)	0.013	0.001
93	7.75	0.40	0.014	(0.574)	0.013	0.001
94	7.83	0.43	0.016	(0.572)	0.014	0.002
95	7.92	0.43	0.016	(0.569)	0.014	0.002
96	8.00	0.43	0.016	(0.567)	0.014	0.002
97	8.08	0.50	0.018	(0.564)	0.016	0.002
98	8.17	0.50	0.018	(0.561)	0.016	0.002
99	8.25	0.50	0.018	(0.559)	0.016	0.002
100	8.33	0.50	0.018	(0.556)	0.016	0.002
101	8.42	0.50	0.018	(0.553)	0.016	0.002
102	8.50	0.50	0.018	(0.551)	0.016	0.002
103	8.58	0.53	0.019	(0.548)	0.017	0.002
104	8.67	0.53	0.019	(0.546)	0.017	0.002
105	8.75	0.53	0.019	(0.543)	0.017	0.002
106	8.83	0.57	0.021	(0.541)	0.018	0.002
107	8.92	0.57	0.021	(0.538)	0.018	0.002
108	9.00	0.57	0.021	(0.535)	0.018	0.002
109	9.08	0.63	0.023	(0.533)	0.021	0.002
110	9.17	0.63	0.023	(0.530)	0.021	0.002
111	9.25	0.63	0.023	(0.528)	0.021	0.002
112	9.33	0.67	0.024	(0.525)	0.022	0.002
113	9.42	0.67	0.024	(0.523)	0.022	0.002
114	9.50	0.67	0.024	(0.520)	0.022	0.002
115	9.58	0.70	0.025	(0.518)	0.023	0.003
116	9.67	0.70	0.025	(0.515)	0.023	0.003
117	9.75	0.70	0.025	(0.513)	0.023	0.003
118	9.83	0.73	0.027	(0.510)	0.024	0.003
119	9.92	0.73	0.027	(0.508)	0.024	0.003
120	10.00	0.73	0.027	(0.506)	0.024	0.003
121	10.08	0.50	0.018	(0.503)	0.016	0.002
122	10.17	0.50	0.018	(0.501)	0.016	0.002
123	10.25	0.50	0.018	(0.498)	0.016	0.002
124	10.33	0.50	0.018	(0.496)	0.016	0.002
125	10.42	0.50	0.018	(0.493)	0.016	0.002
126	10.50	0.50	0.018	(0.491)	0.016	0.002
127	10.58	0.67	0.024	(0.489)	0.022	0.002
128	10.67	0.67	0.024	(0.486)	0.022	0.002
129	10.75	0.67	0.024	(0.484)	0.022	0.002
130	10.83	0.67	0.024	(0.481)	0.022	0.002
131	10.92	0.67	0.024	(0.479)	0.022	0.002
132	11.00	0.67	0.024	(0.477)	0.022	0.002
133	11.08	0.63	0.023	(0.474)	0.021	0.002
134	11.17	0.63	0.023	(0.472)	0.021	0.002
135	11.25	0.63	0.023	(0.470)	0.021	0.002
136	11.33	0.63	0.023	(0.467)	0.021	0.002
137	11.42	0.63	0.023	(0.465)	0.021	0.002
138	11.50	0.63	0.023	(0.463)	0.021	0.002
139	11.58	0.57	0.021	(0.460)	0.018	0.002
140	11.67	0.57	0.021	(0.458)	0.018	0.002

141	11.75	0.57	0.021	(0.456)	0.018	0.002
142	11.83	0.60	0.022	(0.454)	0.020	0.002
143	11.92	0.60	0.022	(0.451)	0.020	0.002
144	12.00	0.60	0.022	(0.449)	0.020	0.002
145	12.08	0.83	0.030	(0.447)	0.027	0.003
146	12.17	0.83	0.030	(0.445)	0.027	0.003
147	12.25	0.83	0.030	(0.442)	0.027	0.003
148	12.33	0.87	0.031	(0.440)	0.028	0.003
149	12.42	0.87	0.031	(0.438)	0.028	0.003
150	12.50	0.87	0.031	(0.436)	0.028	0.003
151	12.58	0.93	0.034	(0.434)	0.030	0.003
152	12.67	0.93	0.034	(0.431)	0.030	0.003
153	12.75	0.93	0.034	(0.429)	0.030	0.003
154	12.83	0.97	0.035	(0.427)	0.031	0.003
155	12.92	0.97	0.035	(0.425)	0.031	0.003
156	13.00	0.97	0.035	(0.423)	0.031	0.003
157	13.08	1.13	0.041	(0.421)	0.037	0.004
158	13.17	1.13	0.041	(0.418)	0.037	0.004
159	13.25	1.13	0.041	(0.416)	0.037	0.004
160	13.33	1.13	0.041	(0.414)	0.037	0.004
161	13.42	1.13	0.041	(0.412)	0.037	0.004
162	13.50	1.13	0.041	(0.410)	0.037	0.004
163	13.58	0.77	0.028	(0.408)	0.025	0.003
164	13.67	0.77	0.028	(0.406)	0.025	0.003
165	13.75	0.77	0.028	(0.404)	0.025	0.003
166	13.83	0.77	0.028	(0.402)	0.025	0.003
167	13.92	0.77	0.028	(0.400)	0.025	0.003
168	14.00	0.77	0.028	(0.398)	0.025	0.003
169	14.08	0.90	0.033	(0.396)	0.029	0.003
170	14.17	0.90	0.033	(0.394)	0.029	0.003
171	14.25	0.90	0.033	(0.392)	0.029	0.003
172	14.33	0.87	0.031	(0.390)	0.028	0.003
173	14.42	0.87	0.031	(0.388)	0.028	0.003
174	14.50	0.87	0.031	(0.386)	0.028	0.003
175	14.58	0.87	0.031	(0.384)	0.028	0.003
176	14.67	0.87	0.031	(0.382)	0.028	0.003
177	14.75	0.87	0.031	(0.380)	0.028	0.003
178	14.83	0.83	0.030	(0.378)	0.027	0.003
179	14.92	0.83	0.030	(0.376)	0.027	0.003
180	15.00	0.83	0.030	(0.374)	0.027	0.003
181	15.08	0.80	0.029	(0.372)	0.026	0.003
182	15.17	0.80	0.029	(0.370)	0.026	0.003
183	15.25	0.80	0.029	(0.368)	0.026	0.003
184	15.33	0.77	0.028	(0.366)	0.025	0.003
185	15.42	0.77	0.028	(0.364)	0.025	0.003
186	15.50	0.77	0.028	(0.363)	0.025	0.003
187	15.58	0.63	0.023	(0.361)	0.021	0.002
188	15.67	0.63	0.023	(0.359)	0.021	0.002
189	15.75	0.63	0.023	(0.357)	0.021	0.002
190	15.83	0.63	0.023	(0.355)	0.021	0.002
191	15.92	0.63	0.023	(0.353)	0.021	0.002
192	16.00	0.63	0.023	(0.352)	0.021	0.002
193	16.08	0.13	0.005	(0.350)	0.004	0.000
194	16.17	0.13	0.005	(0.348)	0.004	0.000
195	16.25	0.13	0.005	(0.346)	0.004	0.000
196	16.33	0.13	0.005	(0.344)	0.004	0.000
197	16.42	0.13	0.005	(0.343)	0.004	0.000
198	16.50	0.13	0.005	(0.341)	0.004	0.000
199	16.58	0.10	0.004	(0.339)	0.003	0.000
200	16.67	0.10	0.004	(0.337)	0.003	0.000
201	16.75	0.10	0.004	(0.336)	0.003	0.000
202	16.83	0.10	0.004	(0.334)	0.003	0.000
203	16.92	0.10	0.004	(0.332)	0.003	0.000

204	17.00	0.10	0.004	(0.331)	0.003	0.000
205	17.08	0.17	0.006	(0.329)	0.005	0.001
206	17.17	0.17	0.006	(0.327)	0.005	0.001
207	17.25	0.17	0.006	(0.326)	0.005	0.001
208	17.33	0.17	0.006	(0.324)	0.005	0.001
209	17.42	0.17	0.006	(0.322)	0.005	0.001
210	17.50	0.17	0.006	(0.321)	0.005	0.001
211	17.58	0.17	0.006	(0.319)	0.005	0.001
212	17.67	0.17	0.006	(0.318)	0.005	0.001
213	17.75	0.17	0.006	(0.316)	0.005	0.001
214	17.83	0.13	0.005	(0.314)	0.004	0.000
215	17.92	0.13	0.005	(0.313)	0.004	0.000
216	18.00	0.13	0.005	(0.311)	0.004	0.000
217	18.08	0.13	0.005	(0.310)	0.004	0.000
218	18.17	0.13	0.005	(0.308)	0.004	0.000
219	18.25	0.13	0.005	(0.307)	0.004	0.000
220	18.33	0.13	0.005	(0.305)	0.004	0.000
221	18.42	0.13	0.005	(0.304)	0.004	0.000
222	18.50	0.13	0.005	(0.302)	0.004	0.000
223	18.58	0.10	0.004	(0.301)	0.003	0.000
224	18.67	0.10	0.004	(0.299)	0.003	0.000
225	18.75	0.10	0.004	(0.298)	0.003	0.000
226	18.83	0.07	0.002	(0.297)	0.002	0.000
227	18.92	0.07	0.002	(0.295)	0.002	0.000
228	19.00	0.07	0.002	(0.294)	0.002	0.000
229	19.08	0.10	0.004	(0.292)	0.003	0.000
230	19.17	0.10	0.004	(0.291)	0.003	0.000
231	19.25	0.10	0.004	(0.290)	0.003	0.000
232	19.33	0.13	0.005	(0.288)	0.004	0.000
233	19.42	0.13	0.005	(0.287)	0.004	0.000
234	19.50	0.13	0.005	(0.286)	0.004	0.000
235	19.58	0.10	0.004	(0.284)	0.003	0.000
236	19.67	0.10	0.004	(0.283)	0.003	0.000
237	19.75	0.10	0.004	(0.282)	0.003	0.000
238	19.83	0.07	0.002	(0.280)	0.002	0.000
239	19.92	0.07	0.002	(0.279)	0.002	0.000
240	20.00	0.07	0.002	(0.278)	0.002	0.000
241	20.08	0.10	0.004	(0.277)	0.003	0.000
242	20.17	0.10	0.004	(0.276)	0.003	0.000
243	20.25	0.10	0.004	(0.274)	0.003	0.000
244	20.33	0.10	0.004	(0.273)	0.003	0.000
245	20.42	0.10	0.004	(0.272)	0.003	0.000
246	20.50	0.10	0.004	(0.271)	0.003	0.000
247	20.58	0.10	0.004	(0.270)	0.003	0.000
248	20.67	0.10	0.004	(0.269)	0.003	0.000
249	20.75	0.10	0.004	(0.267)	0.003	0.000
250	20.83	0.07	0.002	(0.266)	0.002	0.000
251	20.92	0.07	0.002	(0.265)	0.002	0.000
252	21.00	0.07	0.002	(0.264)	0.002	0.000
253	21.08	0.10	0.004	(0.263)	0.003	0.000
254	21.17	0.10	0.004	(0.262)	0.003	0.000
255	21.25	0.10	0.004	(0.261)	0.003	0.000
256	21.33	0.07	0.002	(0.260)	0.002	0.000
257	21.42	0.07	0.002	(0.259)	0.002	0.000
258	21.50	0.07	0.002	(0.258)	0.002	0.000
259	21.58	0.10	0.004	(0.257)	0.003	0.000
260	21.67	0.10	0.004	(0.256)	0.003	0.000
261	21.75	0.10	0.004	(0.255)	0.003	0.000
262	21.83	0.07	0.002	(0.254)	0.002	0.000
263	21.92	0.07	0.002	(0.254)	0.002	0.000
264	22.00	0.07	0.002	(0.253)	0.002	0.000
265	22.08	0.10	0.004	(0.252)	0.003	0.000
266	22.17	0.10	0.004	(0.251)	0.003	0.000

267	22.25	0.10	0.004	(0.250)	0.003	0.000
268	22.33	0.07	0.002	(0.250)	0.002	0.000
269	22.42	0.07	0.002	(0.249)	0.002	0.000
270	22.50	0.07	0.002	(0.248)	0.002	0.000
271	22.58	0.07	0.002	(0.247)	0.002	0.000
272	22.67	0.07	0.002	(0.247)	0.002	0.000
273	22.75	0.07	0.002	(0.246)	0.002	0.000
274	22.83	0.07	0.002	(0.245)	0.002	0.000
275	22.92	0.07	0.002	(0.245)	0.002	0.000
276	23.00	0.07	0.002	(0.244)	0.002	0.000
277	23.08	0.07	0.002	(0.244)	0.002	0.000
278	23.17	0.07	0.002	(0.243)	0.002	0.000
279	23.25	0.07	0.002	(0.242)	0.002	0.000
280	23.33	0.07	0.002	(0.242)	0.002	0.000
281	23.42	0.07	0.002	(0.241)	0.002	0.000
282	23.50	0.07	0.002	(0.241)	0.002	0.000
283	23.58	0.07	0.002	(0.241)	0.002	0.000
284	23.67	0.07	0.002	(0.240)	0.002	0.000
285	23.75	0.07	0.002	(0.240)	0.002	0.000
286	23.83	0.07	0.002	(0.240)	0.002	0.000
287	23.92	0.07	0.002	(0.240)	0.002	0.000
288	24.00	0.07	0.002	(0.239)	0.002	0.000

(Loss Rate Not Used)

Sum = 100.0 Sum = 0.4

Flood volume = Effective rainfall 0.03(In)
times area 9.5(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.27(In)
Total soil loss = 0.215(Ac.Ft)
Total rainfall = 0.30(In)
Flood volume = 1041.9 Cubic Feet
Total soil loss = 9377.0 Cubic Feet

Storm Event 3 Effective Rainfall = 0.382(In)

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	0.003	(0.849)	0.003	0.000
2	0.17	0.07	0.003	(0.845)	0.003	0.000
3	0.25	0.07	0.003	(0.842)	0.003	0.000
4	0.33	0.10	0.005	(0.839)	0.004	0.000
5	0.42	0.10	0.005	(0.836)	0.004	0.000
6	0.50	0.10	0.005	(0.832)	0.004	0.000
7	0.58	0.10	0.005	(0.829)	0.004	0.000
8	0.67	0.10	0.005	(0.826)	0.004	0.000
9	0.75	0.10	0.005	(0.823)	0.004	0.000
10	0.83	0.13	0.006	(0.819)	0.005	0.001
11	0.92	0.13	0.006	(0.816)	0.005	0.001
12	1.00	0.13	0.006	(0.813)	0.005	0.001
13	1.08	0.10	0.005	(0.810)	0.004	0.000
14	1.17	0.10	0.005	(0.806)	0.004	0.000
15	1.25	0.10	0.005	(0.803)	0.004	0.000
16	1.33	0.10	0.005	(0.800)	0.004	0.000
17	1.42	0.10	0.005	(0.797)	0.004	0.000
18	1.50	0.10	0.005	(0.794)	0.004	0.000
19	1.58	0.10	0.005	(0.791)	0.004	0.000
20	1.67	0.10	0.005	(0.787)	0.004	0.000
21	1.75	0.10	0.005	(0.784)	0.004	0.000
22	1.83	0.13	0.006	(0.781)	0.005	0.001
23	1.92	0.13	0.006	(0.778)	0.005	0.001

24	2.00	0.13	0.006	(0.775)	0.005	0.001
25	2.08	0.13	0.006	(0.772)	0.005	0.001
26	2.17	0.13	0.006	(0.769)	0.005	0.001
27	2.25	0.13	0.006	(0.765)	0.005	0.001
28	2.33	0.13	0.006	(0.762)	0.005	0.001
29	2.42	0.13	0.006	(0.759)	0.005	0.001
30	2.50	0.13	0.006	(0.756)	0.005	0.001
31	2.58	0.17	0.008	(0.753)	0.007	0.001
32	2.67	0.17	0.008	(0.750)	0.007	0.001
33	2.75	0.17	0.008	(0.747)	0.007	0.001
34	2.83	0.17	0.008	(0.744)	0.007	0.001
35	2.92	0.17	0.008	(0.741)	0.007	0.001
36	3.00	0.17	0.008	(0.738)	0.007	0.001
37	3.08	0.17	0.008	(0.735)	0.007	0.001
38	3.17	0.17	0.008	(0.731)	0.007	0.001
39	3.25	0.17	0.008	(0.728)	0.007	0.001
40	3.33	0.17	0.008	(0.725)	0.007	0.001
41	3.42	0.17	0.008	(0.722)	0.007	0.001
42	3.50	0.17	0.008	(0.719)	0.007	0.001
43	3.58	0.17	0.008	(0.716)	0.007	0.001
44	3.67	0.17	0.008	(0.713)	0.007	0.001
45	3.75	0.17	0.008	(0.710)	0.007	0.001
46	3.83	0.20	0.009	(0.707)	0.008	0.001
47	3.92	0.20	0.009	(0.704)	0.008	0.001
48	4.00	0.20	0.009	(0.701)	0.008	0.001
49	4.08	0.20	0.009	(0.698)	0.008	0.001
50	4.17	0.20	0.009	(0.695)	0.008	0.001
51	4.25	0.20	0.009	(0.692)	0.008	0.001
52	4.33	0.23	0.011	(0.690)	0.010	0.001
53	4.42	0.23	0.011	(0.687)	0.010	0.001
54	4.50	0.23	0.011	(0.684)	0.010	0.001
55	4.58	0.23	0.011	(0.681)	0.010	0.001
56	4.67	0.23	0.011	(0.678)	0.010	0.001
57	4.75	0.23	0.011	(0.675)	0.010	0.001
58	4.83	0.27	0.012	(0.672)	0.011	0.001
59	4.92	0.27	0.012	(0.669)	0.011	0.001
60	5.00	0.27	0.012	(0.666)	0.011	0.001
61	5.08	0.20	0.009	(0.663)	0.008	0.001
62	5.17	0.20	0.009	(0.660)	0.008	0.001
63	5.25	0.20	0.009	(0.657)	0.008	0.001
64	5.33	0.23	0.011	(0.655)	0.010	0.001
65	5.42	0.23	0.011	(0.652)	0.010	0.001
66	5.50	0.23	0.011	(0.649)	0.010	0.001
67	5.58	0.27	0.012	(0.646)	0.011	0.001
68	5.67	0.27	0.012	(0.643)	0.011	0.001
69	5.75	0.27	0.012	(0.640)	0.011	0.001
70	5.83	0.27	0.012	(0.638)	0.011	0.001
71	5.92	0.27	0.012	(0.635)	0.011	0.001
72	6.00	0.27	0.012	(0.632)	0.011	0.001
73	6.08	0.30	0.014	(0.629)	0.012	0.001
74	6.17	0.30	0.014	(0.626)	0.012	0.001
75	6.25	0.30	0.014	(0.624)	0.012	0.001
76	6.33	0.30	0.014	(0.621)	0.012	0.001
77	6.42	0.30	0.014	(0.618)	0.012	0.001
78	6.50	0.30	0.014	(0.615)	0.012	0.001
79	6.58	0.33	0.015	(0.612)	0.014	0.002
80	6.67	0.33	0.015	(0.610)	0.014	0.002
81	6.75	0.33	0.015	(0.607)	0.014	0.002
82	6.83	0.33	0.015	(0.604)	0.014	0.002
83	6.92	0.33	0.015	(0.601)	0.014	0.002
84	7.00	0.33	0.015	(0.599)	0.014	0.002
85	7.08	0.33	0.015	(0.596)	0.014	0.002
86	7.17	0.33	0.015	(0.593)	0.014	0.002

87	7.25	0.33	0.015	(0.591)	0.014	0.002
88	7.33	0.37	0.017	(0.588)	0.015	0.002
89	7.42	0.37	0.017	(0.585)	0.015	0.002
90	7.50	0.37	0.017	(0.582)	0.015	0.002
91	7.58	0.40	0.018	(0.580)	0.016	0.002
92	7.67	0.40	0.018	(0.577)	0.016	0.002
93	7.75	0.40	0.018	(0.574)	0.016	0.002
94	7.83	0.43	0.020	(0.572)	0.018	0.002
95	7.92	0.43	0.020	(0.569)	0.018	0.002
96	8.00	0.43	0.020	(0.567)	0.018	0.002
97	8.08	0.50	0.023	(0.564)	0.021	0.002
98	8.17	0.50	0.023	(0.561)	0.021	0.002
99	8.25	0.50	0.023	(0.559)	0.021	0.002
100	8.33	0.50	0.023	(0.556)	0.021	0.002
101	8.42	0.50	0.023	(0.553)	0.021	0.002
102	8.50	0.50	0.023	(0.551)	0.021	0.002
103	8.58	0.53	0.024	(0.548)	0.022	0.002
104	8.67	0.53	0.024	(0.546)	0.022	0.002
105	8.75	0.53	0.024	(0.543)	0.022	0.002
106	8.83	0.57	0.026	(0.541)	0.023	0.003
107	8.92	0.57	0.026	(0.538)	0.023	0.003
108	9.00	0.57	0.026	(0.535)	0.023	0.003
109	9.08	0.63	0.029	(0.533)	0.026	0.003
110	9.17	0.63	0.029	(0.530)	0.026	0.003
111	9.25	0.63	0.029	(0.528)	0.026	0.003
112	9.33	0.67	0.031	(0.525)	0.027	0.003
113	9.42	0.67	0.031	(0.523)	0.027	0.003
114	9.50	0.67	0.031	(0.520)	0.027	0.003
115	9.58	0.70	0.032	(0.518)	0.029	0.003
116	9.67	0.70	0.032	(0.515)	0.029	0.003
117	9.75	0.70	0.032	(0.513)	0.029	0.003
118	9.83	0.73	0.034	(0.510)	0.030	0.003
119	9.92	0.73	0.034	(0.508)	0.030	0.003
120	10.00	0.73	0.034	(0.506)	0.030	0.003
121	10.08	0.50	0.023	(0.503)	0.021	0.002
122	10.17	0.50	0.023	(0.501)	0.021	0.002
123	10.25	0.50	0.023	(0.498)	0.021	0.002
124	10.33	0.50	0.023	(0.496)	0.021	0.002
125	10.42	0.50	0.023	(0.493)	0.021	0.002
126	10.50	0.50	0.023	(0.491)	0.021	0.002
127	10.58	0.67	0.031	(0.489)	0.027	0.003
128	10.67	0.67	0.031	(0.486)	0.027	0.003
129	10.75	0.67	0.031	(0.484)	0.027	0.003
130	10.83	0.67	0.031	(0.481)	0.027	0.003
131	10.92	0.67	0.031	(0.479)	0.027	0.003
132	11.00	0.67	0.031	(0.477)	0.027	0.003
133	11.08	0.63	0.029	(0.474)	0.026	0.003
134	11.17	0.63	0.029	(0.472)	0.026	0.003
135	11.25	0.63	0.029	(0.470)	0.026	0.003
136	11.33	0.63	0.029	(0.467)	0.026	0.003
137	11.42	0.63	0.029	(0.465)	0.026	0.003
138	11.50	0.63	0.029	(0.463)	0.026	0.003
139	11.58	0.57	0.026	(0.460)	0.023	0.003
140	11.67	0.57	0.026	(0.458)	0.023	0.003
141	11.75	0.57	0.026	(0.456)	0.023	0.003
142	11.83	0.60	0.027	(0.454)	0.025	0.003
143	11.92	0.60	0.027	(0.451)	0.025	0.003
144	12.00	0.60	0.027	(0.449)	0.025	0.003
145	12.08	0.83	0.038	(0.447)	0.034	0.004
146	12.17	0.83	0.038	(0.445)	0.034	0.004
147	12.25	0.83	0.038	(0.442)	0.034	0.004
148	12.33	0.87	0.040	(0.440)	0.036	0.004
149	12.42	0.87	0.040	(0.438)	0.036	0.004

150	12.50	0.87	0.040	(0.436)	0.036	0.004
151	12.58	0.93	0.043	(0.434)	0.038	0.004
152	12.67	0.93	0.043	(0.431)	0.038	0.004
153	12.75	0.93	0.043	(0.429)	0.038	0.004
154	12.83	0.97	0.044	(0.427)	0.040	0.004
155	12.92	0.97	0.044	(0.425)	0.040	0.004
156	13.00	0.97	0.044	(0.423)	0.040	0.004
157	13.08	1.13	0.052	(0.421)	0.047	0.005
158	13.17	1.13	0.052	(0.418)	0.047	0.005
159	13.25	1.13	0.052	(0.416)	0.047	0.005
160	13.33	1.13	0.052	(0.414)	0.047	0.005
161	13.42	1.13	0.052	(0.412)	0.047	0.005
162	13.50	1.13	0.052	(0.410)	0.047	0.005
163	13.58	0.77	0.035	(0.408)	0.032	0.004
164	13.67	0.77	0.035	(0.406)	0.032	0.004
165	13.75	0.77	0.035	(0.404)	0.032	0.004
166	13.83	0.77	0.035	(0.402)	0.032	0.004
167	13.92	0.77	0.035	(0.400)	0.032	0.004
168	14.00	0.77	0.035	(0.398)	0.032	0.004
169	14.08	0.90	0.041	(0.396)	0.037	0.004
170	14.17	0.90	0.041	(0.394)	0.037	0.004
171	14.25	0.90	0.041	(0.392)	0.037	0.004
172	14.33	0.87	0.040	(0.390)	0.036	0.004
173	14.42	0.87	0.040	(0.388)	0.036	0.004
174	14.50	0.87	0.040	(0.386)	0.036	0.004
175	14.58	0.87	0.040	(0.384)	0.036	0.004
176	14.67	0.87	0.040	(0.382)	0.036	0.004
177	14.75	0.87	0.040	(0.380)	0.036	0.004
178	14.83	0.83	0.038	(0.378)	0.034	0.004
179	14.92	0.83	0.038	(0.376)	0.034	0.004
180	15.00	0.83	0.038	(0.374)	0.034	0.004
181	15.08	0.80	0.037	(0.372)	0.033	0.004
182	15.17	0.80	0.037	(0.370)	0.033	0.004
183	15.25	0.80	0.037	(0.368)	0.033	0.004
184	15.33	0.77	0.035	(0.366)	0.032	0.004
185	15.42	0.77	0.035	(0.364)	0.032	0.004
186	15.50	0.77	0.035	(0.363)	0.032	0.004
187	15.58	0.63	0.029	(0.361)	0.026	0.003
188	15.67	0.63	0.029	(0.359)	0.026	0.003
189	15.75	0.63	0.029	(0.357)	0.026	0.003
190	15.83	0.63	0.029	(0.355)	0.026	0.003
191	15.92	0.63	0.029	(0.353)	0.026	0.003
192	16.00	0.63	0.029	(0.352)	0.026	0.003
193	16.08	0.13	0.006	(0.350)	0.005	0.001
194	16.17	0.13	0.006	(0.348)	0.005	0.001
195	16.25	0.13	0.006	(0.346)	0.005	0.001
196	16.33	0.13	0.006	(0.344)	0.005	0.001
197	16.42	0.13	0.006	(0.343)	0.005	0.001
198	16.50	0.13	0.006	(0.341)	0.005	0.001
199	16.58	0.10	0.005	(0.339)	0.004	0.000
200	16.67	0.10	0.005	(0.337)	0.004	0.000
201	16.75	0.10	0.005	(0.336)	0.004	0.000
202	16.83	0.10	0.005	(0.334)	0.004	0.000
203	16.92	0.10	0.005	(0.332)	0.004	0.000
204	17.00	0.10	0.005	(0.331)	0.004	0.000
205	17.08	0.17	0.008	(0.329)	0.007	0.001
206	17.17	0.17	0.008	(0.327)	0.007	0.001
207	17.25	0.17	0.008	(0.326)	0.007	0.001
208	17.33	0.17	0.008	(0.324)	0.007	0.001
209	17.42	0.17	0.008	(0.322)	0.007	0.001
210	17.50	0.17	0.008	(0.321)	0.007	0.001
211	17.58	0.17	0.008	(0.319)	0.007	0.001
212	17.67	0.17	0.008	(0.318)	0.007	0.001

213	17.75	0.17	0.008	(0.316)	0.007	0.001
214	17.83	0.13	0.006	(0.314)	0.005	0.001
215	17.92	0.13	0.006	(0.313)	0.005	0.001
216	18.00	0.13	0.006	(0.311)	0.005	0.001
217	18.08	0.13	0.006	(0.310)	0.005	0.001
218	18.17	0.13	0.006	(0.308)	0.005	0.001
219	18.25	0.13	0.006	(0.307)	0.005	0.001
220	18.33	0.13	0.006	(0.305)	0.005	0.001
221	18.42	0.13	0.006	(0.304)	0.005	0.001
222	18.50	0.13	0.006	(0.302)	0.005	0.001
223	18.58	0.10	0.005	(0.301)	0.004	0.000
224	18.67	0.10	0.005	(0.299)	0.004	0.000
225	18.75	0.10	0.005	(0.298)	0.004	0.000
226	18.83	0.07	0.003	(0.297)	0.003	0.000
227	18.92	0.07	0.003	(0.295)	0.003	0.000
228	19.00	0.07	0.003	(0.294)	0.003	0.000
229	19.08	0.10	0.005	(0.292)	0.004	0.000
230	19.17	0.10	0.005	(0.291)	0.004	0.000
231	19.25	0.10	0.005	(0.290)	0.004	0.000
232	19.33	0.13	0.006	(0.288)	0.005	0.001
233	19.42	0.13	0.006	(0.287)	0.005	0.001
234	19.50	0.13	0.006	(0.286)	0.005	0.001
235	19.58	0.10	0.005	(0.284)	0.004	0.000
236	19.67	0.10	0.005	(0.283)	0.004	0.000
237	19.75	0.10	0.005	(0.282)	0.004	0.000
238	19.83	0.07	0.003	(0.280)	0.003	0.000
239	19.92	0.07	0.003	(0.279)	0.003	0.000
240	20.00	0.07	0.003	(0.278)	0.003	0.000
241	20.08	0.10	0.005	(0.277)	0.004	0.000
242	20.17	0.10	0.005	(0.276)	0.004	0.000
243	20.25	0.10	0.005	(0.274)	0.004	0.000
244	20.33	0.10	0.005	(0.273)	0.004	0.000
245	20.42	0.10	0.005	(0.272)	0.004	0.000
246	20.50	0.10	0.005	(0.271)	0.004	0.000
247	20.58	0.10	0.005	(0.270)	0.004	0.000
248	20.67	0.10	0.005	(0.269)	0.004	0.000
249	20.75	0.10	0.005	(0.267)	0.004	0.000
250	20.83	0.07	0.003	(0.266)	0.003	0.000
251	20.92	0.07	0.003	(0.265)	0.003	0.000
252	21.00	0.07	0.003	(0.264)	0.003	0.000
253	21.08	0.10	0.005	(0.263)	0.004	0.000
254	21.17	0.10	0.005	(0.262)	0.004	0.000
255	21.25	0.10	0.005	(0.261)	0.004	0.000
256	21.33	0.07	0.003	(0.260)	0.003	0.000
257	21.42	0.07	0.003	(0.259)	0.003	0.000
258	21.50	0.07	0.003	(0.258)	0.003	0.000
259	21.58	0.10	0.005	(0.257)	0.004	0.000
260	21.67	0.10	0.005	(0.256)	0.004	0.000
261	21.75	0.10	0.005	(0.255)	0.004	0.000
262	21.83	0.07	0.003	(0.254)	0.003	0.000
263	21.92	0.07	0.003	(0.254)	0.003	0.000
264	22.00	0.07	0.003	(0.253)	0.003	0.000
265	22.08	0.10	0.005	(0.252)	0.004	0.000
266	22.17	0.10	0.005	(0.251)	0.004	0.000
267	22.25	0.10	0.005	(0.250)	0.004	0.000
268	22.33	0.07	0.003	(0.250)	0.003	0.000
269	22.42	0.07	0.003	(0.249)	0.003	0.000
270	22.50	0.07	0.003	(0.248)	0.003	0.000
271	22.58	0.07	0.003	(0.247)	0.003	0.000
272	22.67	0.07	0.003	(0.247)	0.003	0.000
273	22.75	0.07	0.003	(0.246)	0.003	0.000
274	22.83	0.07	0.003	(0.245)	0.003	0.000
275	22.92	0.07	0.003	(0.245)	0.003	0.000

276	23.00	0.07	0.003	(0.244)	0.003	0.000
277	23.08	0.07	0.003	(0.244)	0.003	0.000
278	23.17	0.07	0.003	(0.243)	0.003	0.000
279	23.25	0.07	0.003	(0.242)	0.003	0.000
280	23.33	0.07	0.003	(0.242)	0.003	0.000
281	23.42	0.07	0.003	(0.241)	0.003	0.000
282	23.50	0.07	0.003	(0.241)	0.003	0.000
283	23.58	0.07	0.003	(0.241)	0.003	0.000
284	23.67	0.07	0.003	(0.240)	0.003	0.000
285	23.75	0.07	0.003	(0.240)	0.003	0.000
286	23.83	0.07	0.003	(0.240)	0.003	0.000
287	23.92	0.07	0.003	(0.240)	0.003	0.000
288	24.00	0.07	0.003	(0.239)	0.003	0.000

(Loss Rate Not Used)

Sum = 100.0 Sum = 0.5

Flood volume = Effective rainfall 0.04(In)
times area 9.5(Ac.)/[(In)/(Ft.)] = 0.0(Ac.Ft)
Total soil loss = 0.34(In)
Total soil loss = 0.273(Ac.Ft)
Total rainfall = 0.38(In)
Flood volume = 1319.7 Cubic Feet
Total soil loss = 11877.6 Cubic Feet

Storm Event 2 Effective Rainfall = 0.724(In)

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	0.006	(0.849)	0.005	0.001
2	0.17	0.07	0.006	(0.845)	0.005	0.001
3	0.25	0.07	0.006	(0.842)	0.005	0.001
4	0.33	0.10	0.009	(0.839)	0.008	0.001
5	0.42	0.10	0.009	(0.836)	0.008	0.001
6	0.50	0.10	0.009	(0.832)	0.008	0.001
7	0.58	0.10	0.009	(0.829)	0.008	0.001
8	0.67	0.10	0.009	(0.826)	0.008	0.001
9	0.75	0.10	0.009	(0.823)	0.008	0.001
10	0.83	0.13	0.012	(0.819)	0.010	0.001
11	0.92	0.13	0.012	(0.816)	0.010	0.001
12	1.00	0.13	0.012	(0.813)	0.010	0.001
13	1.08	0.10	0.009	(0.810)	0.008	0.001
14	1.17	0.10	0.009	(0.806)	0.008	0.001
15	1.25	0.10	0.009	(0.803)	0.008	0.001
16	1.33	0.10	0.009	(0.800)	0.008	0.001
17	1.42	0.10	0.009	(0.797)	0.008	0.001
18	1.50	0.10	0.009	(0.794)	0.008	0.001
19	1.58	0.10	0.009	(0.791)	0.008	0.001
20	1.67	0.10	0.009	(0.787)	0.008	0.001
21	1.75	0.10	0.009	(0.784)	0.008	0.001
22	1.83	0.13	0.012	(0.781)	0.010	0.001
23	1.92	0.13	0.012	(0.778)	0.010	0.001
24	2.00	0.13	0.012	(0.775)	0.010	0.001
25	2.08	0.13	0.012	(0.772)	0.010	0.001
26	2.17	0.13	0.012	(0.769)	0.010	0.001
27	2.25	0.13	0.012	(0.765)	0.010	0.001
28	2.33	0.13	0.012	(0.762)	0.010	0.001
29	2.42	0.13	0.012	(0.759)	0.010	0.001
30	2.50	0.13	0.012	(0.756)	0.010	0.001
31	2.58	0.17	0.014	(0.753)	0.013	0.001
32	2.67	0.17	0.014	(0.750)	0.013	0.001

33	2.75	0.17	0.014	(0.747)	0.013	0.001
34	2.83	0.17	0.014	(0.744)	0.013	0.001
35	2.92	0.17	0.014	(0.741)	0.013	0.001
36	3.00	0.17	0.014	(0.738)	0.013	0.001
37	3.08	0.17	0.014	(0.735)	0.013	0.001
38	3.17	0.17	0.014	(0.731)	0.013	0.001
39	3.25	0.17	0.014	(0.728)	0.013	0.001
40	3.33	0.17	0.014	(0.725)	0.013	0.001
41	3.42	0.17	0.014	(0.722)	0.013	0.001
42	3.50	0.17	0.014	(0.719)	0.013	0.001
43	3.58	0.17	0.014	(0.716)	0.013	0.001
44	3.67	0.17	0.014	(0.713)	0.013	0.001
45	3.75	0.17	0.014	(0.710)	0.013	0.001
46	3.83	0.20	0.017	(0.707)	0.016	0.002
47	3.92	0.20	0.017	(0.704)	0.016	0.002
48	4.00	0.20	0.017	(0.701)	0.016	0.002
49	4.08	0.20	0.017	(0.698)	0.016	0.002
50	4.17	0.20	0.017	(0.695)	0.016	0.002
51	4.25	0.20	0.017	(0.692)	0.016	0.002
52	4.33	0.23	0.020	(0.690)	0.018	0.002
53	4.42	0.23	0.020	(0.687)	0.018	0.002
54	4.50	0.23	0.020	(0.684)	0.018	0.002
55	4.58	0.23	0.020	(0.681)	0.018	0.002
56	4.67	0.23	0.020	(0.678)	0.018	0.002
57	4.75	0.23	0.020	(0.675)	0.018	0.002
58	4.83	0.27	0.023	(0.672)	0.021	0.002
59	4.92	0.27	0.023	(0.669)	0.021	0.002
60	5.00	0.27	0.023	(0.666)	0.021	0.002
61	5.08	0.20	0.017	(0.663)	0.016	0.002
62	5.17	0.20	0.017	(0.660)	0.016	0.002
63	5.25	0.20	0.017	(0.657)	0.016	0.002
64	5.33	0.23	0.020	(0.655)	0.018	0.002
65	5.42	0.23	0.020	(0.652)	0.018	0.002
66	5.50	0.23	0.020	(0.649)	0.018	0.002
67	5.58	0.27	0.023	(0.646)	0.021	0.002
68	5.67	0.27	0.023	(0.643)	0.021	0.002
69	5.75	0.27	0.023	(0.640)	0.021	0.002
70	5.83	0.27	0.023	(0.638)	0.021	0.002
71	5.92	0.27	0.023	(0.635)	0.021	0.002
72	6.00	0.27	0.023	(0.632)	0.021	0.002
73	6.08	0.30	0.026	(0.629)	0.023	0.003
74	6.17	0.30	0.026	(0.626)	0.023	0.003
75	6.25	0.30	0.026	(0.624)	0.023	0.003
76	6.33	0.30	0.026	(0.621)	0.023	0.003
77	6.42	0.30	0.026	(0.618)	0.023	0.003
78	6.50	0.30	0.026	(0.615)	0.023	0.003
79	6.58	0.33	0.029	(0.612)	0.026	0.003
80	6.67	0.33	0.029	(0.610)	0.026	0.003
81	6.75	0.33	0.029	(0.607)	0.026	0.003
82	6.83	0.33	0.029	(0.604)	0.026	0.003
83	6.92	0.33	0.029	(0.601)	0.026	0.003
84	7.00	0.33	0.029	(0.599)	0.026	0.003
85	7.08	0.33	0.029	(0.596)	0.026	0.003
86	7.17	0.33	0.029	(0.593)	0.026	0.003
87	7.25	0.33	0.029	(0.591)	0.026	0.003
88	7.33	0.37	0.032	(0.588)	0.029	0.003
89	7.42	0.37	0.032	(0.585)	0.029	0.003
90	7.50	0.37	0.032	(0.582)	0.029	0.003
91	7.58	0.40	0.035	(0.580)	0.031	0.003
92	7.67	0.40	0.035	(0.577)	0.031	0.003
93	7.75	0.40	0.035	(0.574)	0.031	0.003
94	7.83	0.43	0.038	(0.572)	0.034	0.004
95	7.92	0.43	0.038	(0.569)	0.034	0.004

96	8.00	0.43	0.038	(0.567)	0.034	0.004
97	8.08	0.50	0.043	(0.564)	0.039	0.004
98	8.17	0.50	0.043	(0.561)	0.039	0.004
99	8.25	0.50	0.043	(0.559)	0.039	0.004
100	8.33	0.50	0.043	(0.556)	0.039	0.004
101	8.42	0.50	0.043	(0.553)	0.039	0.004
102	8.50	0.50	0.043	(0.551)	0.039	0.004
103	8.58	0.53	0.046	(0.548)	0.042	0.005
104	8.67	0.53	0.046	(0.546)	0.042	0.005
105	8.75	0.53	0.046	(0.543)	0.042	0.005
106	8.83	0.57	0.049	(0.541)	0.044	0.005
107	8.92	0.57	0.049	(0.538)	0.044	0.005
108	9.00	0.57	0.049	(0.535)	0.044	0.005
109	9.08	0.63	0.055	(0.533)	0.049	0.005
110	9.17	0.63	0.055	(0.530)	0.049	0.005
111	9.25	0.63	0.055	(0.528)	0.049	0.005
112	9.33	0.67	0.058	(0.525)	0.052	0.006
113	9.42	0.67	0.058	(0.523)	0.052	0.006
114	9.50	0.67	0.058	(0.520)	0.052	0.006
115	9.58	0.70	0.061	(0.518)	0.055	0.006
116	9.67	0.70	0.061	(0.515)	0.055	0.006
117	9.75	0.70	0.061	(0.513)	0.055	0.006
118	9.83	0.73	0.064	(0.510)	0.057	0.006
119	9.92	0.73	0.064	(0.508)	0.057	0.006
120	10.00	0.73	0.064	(0.506)	0.057	0.006
121	10.08	0.50	0.043	(0.503)	0.039	0.004
122	10.17	0.50	0.043	(0.501)	0.039	0.004
123	10.25	0.50	0.043	(0.498)	0.039	0.004
124	10.33	0.50	0.043	(0.496)	0.039	0.004
125	10.42	0.50	0.043	(0.493)	0.039	0.004
126	10.50	0.50	0.043	(0.491)	0.039	0.004
127	10.58	0.67	0.058	(0.489)	0.052	0.006
128	10.67	0.67	0.058	(0.486)	0.052	0.006
129	10.75	0.67	0.058	(0.484)	0.052	0.006
130	10.83	0.67	0.058	(0.481)	0.052	0.006
131	10.92	0.67	0.058	(0.479)	0.052	0.006
132	11.00	0.67	0.058	(0.477)	0.052	0.006
133	11.08	0.63	0.055	(0.474)	0.049	0.005
134	11.17	0.63	0.055	(0.472)	0.049	0.005
135	11.25	0.63	0.055	(0.470)	0.049	0.005
136	11.33	0.63	0.055	(0.467)	0.049	0.005
137	11.42	0.63	0.055	(0.465)	0.049	0.005
138	11.50	0.63	0.055	(0.463)	0.049	0.005
139	11.58	0.57	0.049	(0.460)	0.044	0.005
140	11.67	0.57	0.049	(0.458)	0.044	0.005
141	11.75	0.57	0.049	(0.456)	0.044	0.005
142	11.83	0.60	0.052	(0.454)	0.047	0.005
143	11.92	0.60	0.052	(0.451)	0.047	0.005
144	12.00	0.60	0.052	(0.449)	0.047	0.005
145	12.08	0.83	0.072	(0.447)	0.065	0.007
146	12.17	0.83	0.072	(0.445)	0.065	0.007
147	12.25	0.83	0.072	(0.442)	0.065	0.007
148	12.33	0.87	0.075	(0.440)	0.068	0.008
149	12.42	0.87	0.075	(0.438)	0.068	0.008
150	12.50	0.87	0.075	(0.436)	0.068	0.008
151	12.58	0.93	0.081	(0.434)	0.073	0.008
152	12.67	0.93	0.081	(0.431)	0.073	0.008
153	12.75	0.93	0.081	(0.429)	0.073	0.008
154	12.83	0.97	0.084	(0.427)	0.076	0.008
155	12.92	0.97	0.084	(0.425)	0.076	0.008
156	13.00	0.97	0.084	(0.423)	0.076	0.008
157	13.08	1.13	0.098	(0.421)	0.089	0.010
158	13.17	1.13	0.098	(0.418)	0.089	0.010

159	13.25	1.13	0.098	(0.416)	0.089	0.010
160	13.33	1.13	0.098	(0.414)	0.089	0.010
161	13.42	1.13	0.098	(0.412)	0.089	0.010
162	13.50	1.13	0.098	(0.410)	0.089	0.010
163	13.58	0.77	0.067	(0.408)	0.060	0.007
164	13.67	0.77	0.067	(0.406)	0.060	0.007
165	13.75	0.77	0.067	(0.404)	0.060	0.007
166	13.83	0.77	0.067	(0.402)	0.060	0.007
167	13.92	0.77	0.067	(0.400)	0.060	0.007
168	14.00	0.77	0.067	(0.398)	0.060	0.007
169	14.08	0.90	0.078	(0.396)	0.070	0.008
170	14.17	0.90	0.078	(0.394)	0.070	0.008
171	14.25	0.90	0.078	(0.392)	0.070	0.008
172	14.33	0.87	0.075	(0.390)	0.068	0.008
173	14.42	0.87	0.075	(0.388)	0.068	0.008
174	14.50	0.87	0.075	(0.386)	0.068	0.008
175	14.58	0.87	0.075	(0.384)	0.068	0.008
176	14.67	0.87	0.075	(0.382)	0.068	0.008
177	14.75	0.87	0.075	(0.380)	0.068	0.008
178	14.83	0.83	0.072	(0.378)	0.065	0.007
179	14.92	0.83	0.072	(0.376)	0.065	0.007
180	15.00	0.83	0.072	(0.374)	0.065	0.007
181	15.08	0.80	0.069	(0.372)	0.063	0.007
182	15.17	0.80	0.069	(0.370)	0.063	0.007
183	15.25	0.80	0.069	(0.368)	0.063	0.007
184	15.33	0.77	0.067	(0.366)	0.060	0.007
185	15.42	0.77	0.067	(0.364)	0.060	0.007
186	15.50	0.77	0.067	(0.363)	0.060	0.007
187	15.58	0.63	0.055	(0.361)	0.049	0.005
188	15.67	0.63	0.055	(0.359)	0.049	0.005
189	15.75	0.63	0.055	(0.357)	0.049	0.005
190	15.83	0.63	0.055	(0.355)	0.049	0.005
191	15.92	0.63	0.055	(0.353)	0.049	0.005
192	16.00	0.63	0.055	(0.352)	0.049	0.005
193	16.08	0.13	0.012	(0.350)	0.010	0.001
194	16.17	0.13	0.012	(0.348)	0.010	0.001
195	16.25	0.13	0.012	(0.346)	0.010	0.001
196	16.33	0.13	0.012	(0.344)	0.010	0.001
197	16.42	0.13	0.012	(0.343)	0.010	0.001
198	16.50	0.13	0.012	(0.341)	0.010	0.001
199	16.58	0.10	0.009	(0.339)	0.008	0.001
200	16.67	0.10	0.009	(0.337)	0.008	0.001
201	16.75	0.10	0.009	(0.336)	0.008	0.001
202	16.83	0.10	0.009	(0.334)	0.008	0.001
203	16.92	0.10	0.009	(0.332)	0.008	0.001
204	17.00	0.10	0.009	(0.331)	0.008	0.001
205	17.08	0.17	0.014	(0.329)	0.013	0.001
206	17.17	0.17	0.014	(0.327)	0.013	0.001
207	17.25	0.17	0.014	(0.326)	0.013	0.001
208	17.33	0.17	0.014	(0.324)	0.013	0.001
209	17.42	0.17	0.014	(0.322)	0.013	0.001
210	17.50	0.17	0.014	(0.321)	0.013	0.001
211	17.58	0.17	0.014	(0.319)	0.013	0.001
212	17.67	0.17	0.014	(0.318)	0.013	0.001
213	17.75	0.17	0.014	(0.316)	0.013	0.001
214	17.83	0.13	0.012	(0.314)	0.010	0.001
215	17.92	0.13	0.012	(0.313)	0.010	0.001
216	18.00	0.13	0.012	(0.311)	0.010	0.001
217	18.08	0.13	0.012	(0.310)	0.010	0.001
218	18.17	0.13	0.012	(0.308)	0.010	0.001
219	18.25	0.13	0.012	(0.307)	0.010	0.001
220	18.33	0.13	0.012	(0.305)	0.010	0.001
221	18.42	0.13	0.012	(0.304)	0.010	0.001

222	18.50	0.13	0.012	(0.302)	0.010	0.001
223	18.58	0.10	0.009	(0.301)	0.008	0.001
224	18.67	0.10	0.009	(0.299)	0.008	0.001
225	18.75	0.10	0.009	(0.298)	0.008	0.001
226	18.83	0.07	0.006	(0.297)	0.005	0.001
227	18.92	0.07	0.006	(0.295)	0.005	0.001
228	19.00	0.07	0.006	(0.294)	0.005	0.001
229	19.08	0.10	0.009	(0.292)	0.008	0.001
230	19.17	0.10	0.009	(0.291)	0.008	0.001
231	19.25	0.10	0.009	(0.290)	0.008	0.001
232	19.33	0.13	0.012	(0.288)	0.010	0.001
233	19.42	0.13	0.012	(0.287)	0.010	0.001
234	19.50	0.13	0.012	(0.286)	0.010	0.001
235	19.58	0.10	0.009	(0.284)	0.008	0.001
236	19.67	0.10	0.009	(0.283)	0.008	0.001
237	19.75	0.10	0.009	(0.282)	0.008	0.001
238	19.83	0.07	0.006	(0.280)	0.005	0.001
239	19.92	0.07	0.006	(0.279)	0.005	0.001
240	20.00	0.07	0.006	(0.278)	0.005	0.001
241	20.08	0.10	0.009	(0.277)	0.008	0.001
242	20.17	0.10	0.009	(0.276)	0.008	0.001
243	20.25	0.10	0.009	(0.274)	0.008	0.001
244	20.33	0.10	0.009	(0.273)	0.008	0.001
245	20.42	0.10	0.009	(0.272)	0.008	0.001
246	20.50	0.10	0.009	(0.271)	0.008	0.001
247	20.58	0.10	0.009	(0.270)	0.008	0.001
248	20.67	0.10	0.009	(0.269)	0.008	0.001
249	20.75	0.10	0.009	(0.267)	0.008	0.001
250	20.83	0.07	0.006	(0.266)	0.005	0.001
251	20.92	0.07	0.006	(0.265)	0.005	0.001
252	21.00	0.07	0.006	(0.264)	0.005	0.001
253	21.08	0.10	0.009	(0.263)	0.008	0.001
254	21.17	0.10	0.009	(0.262)	0.008	0.001
255	21.25	0.10	0.009	(0.261)	0.008	0.001
256	21.33	0.07	0.006	(0.260)	0.005	0.001
257	21.42	0.07	0.006	(0.259)	0.005	0.001
258	21.50	0.07	0.006	(0.258)	0.005	0.001
259	21.58	0.10	0.009	(0.257)	0.008	0.001
260	21.67	0.10	0.009	(0.256)	0.008	0.001
261	21.75	0.10	0.009	(0.255)	0.008	0.001
262	21.83	0.07	0.006	(0.254)	0.005	0.001
263	21.92	0.07	0.006	(0.254)	0.005	0.001
264	22.00	0.07	0.006	(0.253)	0.005	0.001
265	22.08	0.10	0.009	(0.252)	0.008	0.001
266	22.17	0.10	0.009	(0.251)	0.008	0.001
267	22.25	0.10	0.009	(0.250)	0.008	0.001
268	22.33	0.07	0.006	(0.250)	0.005	0.001
269	22.42	0.07	0.006	(0.249)	0.005	0.001
270	22.50	0.07	0.006	(0.248)	0.005	0.001
271	22.58	0.07	0.006	(0.247)	0.005	0.001
272	22.67	0.07	0.006	(0.247)	0.005	0.001
273	22.75	0.07	0.006	(0.246)	0.005	0.001
274	22.83	0.07	0.006	(0.245)	0.005	0.001
275	22.92	0.07	0.006	(0.245)	0.005	0.001
276	23.00	0.07	0.006	(0.244)	0.005	0.001
277	23.08	0.07	0.006	(0.244)	0.005	0.001
278	23.17	0.07	0.006	(0.243)	0.005	0.001
279	23.25	0.07	0.006	(0.242)	0.005	0.001
280	23.33	0.07	0.006	(0.242)	0.005	0.001
281	23.42	0.07	0.006	(0.241)	0.005	0.001
282	23.50	0.07	0.006	(0.241)	0.005	0.001
283	23.58	0.07	0.006	(0.241)	0.005	0.001
284	23.67	0.07	0.006	(0.240)	0.005	0.001

285	23.75	0.07	0.006	(0.240)	0.005	0.001
286	23.83	0.07	0.006	(0.240)	0.005	0.001
287	23.92	0.07	0.006	(0.240)	0.005	0.001
288	24.00	0.07	0.006	(0.239)	0.005	0.001

(Loss Rate Not Used)

Sum = 100.0 Sum = 0.9

Flood volume = Effective rainfall 0.07(In)
times area 9.5(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 0.65(In)
Total soil loss = 0.517(Ac.Ft)
Total rainfall = 0.72(In)
Flood volume = 2500.5 Cubic Feet
Total soil loss = 22504.9 Cubic Feet

Storm Event 1 Effective Rainfall = 2.010(In)

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	(0.849)	0.014	0.002
2	0.17	0.07	0.016	(0.845)	0.014	0.002
3	0.25	0.07	0.016	(0.842)	0.014	0.002
4	0.33	0.10	0.024	(0.839)	0.022	0.002
5	0.42	0.10	0.024	(0.836)	0.022	0.002
6	0.50	0.10	0.024	(0.832)	0.022	0.002
7	0.58	0.10	0.024	(0.829)	0.022	0.002
8	0.67	0.10	0.024	(0.826)	0.022	0.002
9	0.75	0.10	0.024	(0.823)	0.022	0.002
10	0.83	0.13	0.032	(0.819)	0.029	0.003
11	0.92	0.13	0.032	(0.816)	0.029	0.003
12	1.00	0.13	0.032	(0.813)	0.029	0.003
13	1.08	0.10	0.024	(0.810)	0.022	0.002
14	1.17	0.10	0.024	(0.806)	0.022	0.002
15	1.25	0.10	0.024	(0.803)	0.022	0.002
16	1.33	0.10	0.024	(0.800)	0.022	0.002
17	1.42	0.10	0.024	(0.797)	0.022	0.002
18	1.50	0.10	0.024	(0.794)	0.022	0.002
19	1.58	0.10	0.024	(0.791)	0.022	0.002
20	1.67	0.10	0.024	(0.787)	0.022	0.002
21	1.75	0.10	0.024	(0.784)	0.022	0.002
22	1.83	0.13	0.032	(0.781)	0.029	0.003
23	1.92	0.13	0.032	(0.778)	0.029	0.003
24	2.00	0.13	0.032	(0.775)	0.029	0.003
25	2.08	0.13	0.032	(0.772)	0.029	0.003
26	2.17	0.13	0.032	(0.769)	0.029	0.003
27	2.25	0.13	0.032	(0.765)	0.029	0.003
28	2.33	0.13	0.032	(0.762)	0.029	0.003
29	2.42	0.13	0.032	(0.759)	0.029	0.003
30	2.50	0.13	0.032	(0.756)	0.029	0.003
31	2.58	0.17	0.040	(0.753)	0.036	0.004
32	2.67	0.17	0.040	(0.750)	0.036	0.004
33	2.75	0.17	0.040	(0.747)	0.036	0.004
34	2.83	0.17	0.040	(0.744)	0.036	0.004
35	2.92	0.17	0.040	(0.741)	0.036	0.004
36	3.00	0.17	0.040	(0.738)	0.036	0.004
37	3.08	0.17	0.040	(0.735)	0.036	0.004
38	3.17	0.17	0.040	(0.731)	0.036	0.004
39	3.25	0.17	0.040	(0.728)	0.036	0.004
40	3.33	0.17	0.040	(0.725)	0.036	0.004
41	3.42	0.17	0.040	(0.722)	0.036	0.004

42	3.50	0.17	0.040	(0.719)	0.036	0.004
43	3.58	0.17	0.040	(0.716)	0.036	0.004
44	3.67	0.17	0.040	(0.713)	0.036	0.004
45	3.75	0.17	0.040	(0.710)	0.036	0.004
46	3.83	0.20	0.048	(0.707)	0.043	0.005
47	3.92	0.20	0.048	(0.704)	0.043	0.005
48	4.00	0.20	0.048	(0.701)	0.043	0.005
49	4.08	0.20	0.048	(0.698)	0.043	0.005
50	4.17	0.20	0.048	(0.695)	0.043	0.005
51	4.25	0.20	0.048	(0.692)	0.043	0.005
52	4.33	0.23	0.056	(0.690)	0.051	0.006
53	4.42	0.23	0.056	(0.687)	0.051	0.006
54	4.50	0.23	0.056	(0.684)	0.051	0.006
55	4.58	0.23	0.056	(0.681)	0.051	0.006
56	4.67	0.23	0.056	(0.678)	0.051	0.006
57	4.75	0.23	0.056	(0.675)	0.051	0.006
58	4.83	0.27	0.064	(0.672)	0.058	0.006
59	4.92	0.27	0.064	(0.669)	0.058	0.006
60	5.00	0.27	0.064	(0.666)	0.058	0.006
61	5.08	0.20	0.048	(0.663)	0.043	0.005
62	5.17	0.20	0.048	(0.660)	0.043	0.005
63	5.25	0.20	0.048	(0.657)	0.043	0.005
64	5.33	0.23	0.056	(0.655)	0.051	0.006
65	5.42	0.23	0.056	(0.652)	0.051	0.006
66	5.50	0.23	0.056	(0.649)	0.051	0.006
67	5.58	0.27	0.064	(0.646)	0.058	0.006
68	5.67	0.27	0.064	(0.643)	0.058	0.006
69	5.75	0.27	0.064	(0.640)	0.058	0.006
70	5.83	0.27	0.064	(0.638)	0.058	0.006
71	5.92	0.27	0.064	(0.635)	0.058	0.006
72	6.00	0.27	0.064	(0.632)	0.058	0.006
73	6.08	0.30	0.072	(0.629)	0.065	0.007
74	6.17	0.30	0.072	(0.626)	0.065	0.007
75	6.25	0.30	0.072	(0.624)	0.065	0.007
76	6.33	0.30	0.072	(0.621)	0.065	0.007
77	6.42	0.30	0.072	(0.618)	0.065	0.007
78	6.50	0.30	0.072	(0.615)	0.065	0.007
79	6.58	0.33	0.080	(0.612)	0.072	0.008
80	6.67	0.33	0.080	(0.610)	0.072	0.008
81	6.75	0.33	0.080	(0.607)	0.072	0.008
82	6.83	0.33	0.080	(0.604)	0.072	0.008
83	6.92	0.33	0.080	(0.601)	0.072	0.008
84	7.00	0.33	0.080	(0.599)	0.072	0.008
85	7.08	0.33	0.080	(0.596)	0.072	0.008
86	7.17	0.33	0.080	(0.593)	0.072	0.008
87	7.25	0.33	0.080	(0.591)	0.072	0.008
88	7.33	0.37	0.088	(0.588)	0.080	0.009
89	7.42	0.37	0.088	(0.585)	0.080	0.009
90	7.50	0.37	0.088	(0.582)	0.080	0.009
91	7.58	0.40	0.096	(0.580)	0.087	0.010
92	7.67	0.40	0.096	(0.577)	0.087	0.010
93	7.75	0.40	0.096	(0.574)	0.087	0.010
94	7.83	0.43	0.105	(0.572)	0.094	0.010
95	7.92	0.43	0.105	(0.569)	0.094	0.010
96	8.00	0.43	0.105	(0.567)	0.094	0.010
97	8.08	0.50	0.121	(0.564)	0.109	0.012
98	8.17	0.50	0.121	(0.561)	0.109	0.012
99	8.25	0.50	0.121	(0.559)	0.109	0.012
100	8.33	0.50	0.121	(0.556)	0.109	0.012
101	8.42	0.50	0.121	(0.553)	0.109	0.012
102	8.50	0.50	0.121	(0.551)	0.109	0.012
103	8.58	0.53	0.129	(0.548)	0.116	0.013
104	8.67	0.53	0.129	(0.546)	0.116	0.013

105	8.75	0.53	0.129	(0.543)	0.116	0.013
106	8.83	0.57	0.137	(0.541)	0.123	0.014
107	8.92	0.57	0.137	(0.538)	0.123	0.014
108	9.00	0.57	0.137	(0.535)	0.123	0.014
109	9.08	0.63	0.153	(0.533)	0.137	0.015
110	9.17	0.63	0.153	(0.530)	0.137	0.015
111	9.25	0.63	0.153	(0.528)	0.137	0.015
112	9.33	0.67	0.161	(0.525)	0.145	0.016
113	9.42	0.67	0.161	(0.523)	0.145	0.016
114	9.50	0.67	0.161	(0.520)	0.145	0.016
115	9.58	0.70	0.169	(0.518)	0.152	0.017
116	9.67	0.70	0.169	(0.515)	0.152	0.017
117	9.75	0.70	0.169	(0.513)	0.152	0.017
118	9.83	0.73	0.177	(0.510)	0.159	0.018
119	9.92	0.73	0.177	(0.508)	0.159	0.018
120	10.00	0.73	0.177	(0.506)	0.159	0.018
121	10.08	0.50	0.121	(0.503)	0.109	0.012
122	10.17	0.50	0.121	(0.501)	0.109	0.012
123	10.25	0.50	0.121	(0.498)	0.109	0.012
124	10.33	0.50	0.121	(0.496)	0.109	0.012
125	10.42	0.50	0.121	(0.493)	0.109	0.012
126	10.50	0.50	0.121	(0.491)	0.109	0.012
127	10.58	0.67	0.161	(0.489)	0.145	0.016
128	10.67	0.67	0.161	(0.486)	0.145	0.016
129	10.75	0.67	0.161	(0.484)	0.145	0.016
130	10.83	0.67	0.161	(0.481)	0.145	0.016
131	10.92	0.67	0.161	(0.479)	0.145	0.016
132	11.00	0.67	0.161	(0.477)	0.145	0.016
133	11.08	0.63	0.153	(0.474)	0.137	0.015
134	11.17	0.63	0.153	(0.472)	0.137	0.015
135	11.25	0.63	0.153	(0.470)	0.137	0.015
136	11.33	0.63	0.153	(0.467)	0.137	0.015
137	11.42	0.63	0.153	(0.465)	0.137	0.015
138	11.50	0.63	0.153	(0.463)	0.137	0.015
139	11.58	0.57	0.137	(0.460)	0.123	0.014
140	11.67	0.57	0.137	(0.458)	0.123	0.014
141	11.75	0.57	0.137	(0.456)	0.123	0.014
142	11.83	0.60	0.145	(0.454)	0.130	0.014
143	11.92	0.60	0.145	(0.451)	0.130	0.014
144	12.00	0.60	0.145	(0.449)	0.130	0.014
145	12.08	0.83	0.201	(0.447)	0.181	0.020
146	12.17	0.83	0.201	(0.445)	0.181	0.020
147	12.25	0.83	0.201	(0.442)	0.181	0.020
148	12.33	0.87	0.209	(0.440)	0.188	0.021
149	12.42	0.87	0.209	(0.438)	0.188	0.021
150	12.50	0.87	0.209	(0.436)	0.188	0.021
151	12.58	0.93	0.225	(0.434)	0.203	0.023
152	12.67	0.93	0.225	(0.431)	0.203	0.023
153	12.75	0.93	0.225	(0.429)	0.203	0.023
154	12.83	0.97	0.233	(0.427)	0.210	0.023
155	12.92	0.97	0.233	(0.425)	0.210	0.023
156	13.00	0.97	0.233	(0.423)	0.210	0.023
157	13.08	1.13	0.273	(0.421)	0.246	0.027
158	13.17	1.13	0.273	(0.418)	0.246	0.027
159	13.25	1.13	0.273	(0.416)	0.246	0.027
160	13.33	1.13	0.273	(0.414)	0.246	0.027
161	13.42	1.13	0.273	(0.412)	0.246	0.027
162	13.50	1.13	0.273	(0.410)	0.246	0.027
163	13.58	0.77	0.185	(0.408)	0.166	0.018
164	13.67	0.77	0.185	(0.406)	0.166	0.018
165	13.75	0.77	0.185	(0.404)	0.166	0.018
166	13.83	0.77	0.185	(0.402)	0.166	0.018
167	13.92	0.77	0.185	(0.400)	0.166	0.018

168	14.00	0.77	0.185	(0.398)	0.166	0.018
169	14.08	0.90	0.217	(0.396)	0.195	0.022
170	14.17	0.90	0.217	(0.394)	0.195	0.022
171	14.25	0.90	0.217	(0.392)	0.195	0.022
172	14.33	0.87	0.209	(0.390)	0.188	0.021
173	14.42	0.87	0.209	(0.388)	0.188	0.021
174	14.50	0.87	0.209	(0.386)	0.188	0.021
175	14.58	0.87	0.209	(0.384)	0.188	0.021
176	14.67	0.87	0.209	(0.382)	0.188	0.021
177	14.75	0.87	0.209	(0.380)	0.188	0.021
178	14.83	0.83	0.201	(0.378)	0.181	0.020
179	14.92	0.83	0.201	(0.376)	0.181	0.020
180	15.00	0.83	0.201	(0.374)	0.181	0.020
181	15.08	0.80	0.193	(0.372)	0.174	0.019
182	15.17	0.80	0.193	(0.370)	0.174	0.019
183	15.25	0.80	0.193	(0.368)	0.174	0.019
184	15.33	0.77	0.185	(0.366)	0.166	0.018
185	15.42	0.77	0.185	(0.364)	0.166	0.018
186	15.50	0.77	0.185	(0.363)	0.166	0.018
187	15.58	0.63	0.153	(0.361)	0.137	0.015
188	15.67	0.63	0.153	(0.359)	0.137	0.015
189	15.75	0.63	0.153	(0.357)	0.137	0.015
190	15.83	0.63	0.153	(0.355)	0.137	0.015
191	15.92	0.63	0.153	(0.353)	0.137	0.015
192	16.00	0.63	0.153	(0.352)	0.137	0.015
193	16.08	0.13	0.032	(0.350)	0.029	0.003
194	16.17	0.13	0.032	(0.348)	0.029	0.003
195	16.25	0.13	0.032	(0.346)	0.029	0.003
196	16.33	0.13	0.032	(0.344)	0.029	0.003
197	16.42	0.13	0.032	(0.343)	0.029	0.003
198	16.50	0.13	0.032	(0.341)	0.029	0.003
199	16.58	0.10	0.024	(0.339)	0.022	0.002
200	16.67	0.10	0.024	(0.337)	0.022	0.002
201	16.75	0.10	0.024	(0.336)	0.022	0.002
202	16.83	0.10	0.024	(0.334)	0.022	0.002
203	16.92	0.10	0.024	(0.332)	0.022	0.002
204	17.00	0.10	0.024	(0.331)	0.022	0.002
205	17.08	0.17	0.040	(0.329)	0.036	0.004
206	17.17	0.17	0.040	(0.327)	0.036	0.004
207	17.25	0.17	0.040	(0.326)	0.036	0.004
208	17.33	0.17	0.040	(0.324)	0.036	0.004
209	17.42	0.17	0.040	(0.322)	0.036	0.004
210	17.50	0.17	0.040	(0.321)	0.036	0.004
211	17.58	0.17	0.040	(0.319)	0.036	0.004
212	17.67	0.17	0.040	(0.318)	0.036	0.004
213	17.75	0.17	0.040	(0.316)	0.036	0.004
214	17.83	0.13	0.032	(0.314)	0.029	0.003
215	17.92	0.13	0.032	(0.313)	0.029	0.003
216	18.00	0.13	0.032	(0.311)	0.029	0.003
217	18.08	0.13	0.032	(0.310)	0.029	0.003
218	18.17	0.13	0.032	(0.308)	0.029	0.003
219	18.25	0.13	0.032	(0.307)	0.029	0.003
220	18.33	0.13	0.032	(0.305)	0.029	0.003
221	18.42	0.13	0.032	(0.304)	0.029	0.003
222	18.50	0.13	0.032	(0.302)	0.029	0.003
223	18.58	0.10	0.024	(0.301)	0.022	0.002
224	18.67	0.10	0.024	(0.299)	0.022	0.002
225	18.75	0.10	0.024	(0.298)	0.022	0.002
226	18.83	0.07	0.016	(0.297)	0.014	0.002
227	18.92	0.07	0.016	(0.295)	0.014	0.002
228	19.00	0.07	0.016	(0.294)	0.014	0.002
229	19.08	0.10	0.024	(0.292)	0.022	0.002
230	19.17	0.10	0.024	(0.291)	0.022	0.002

231	19.25	0.10	0.024	(0.290)	0.022	0.002
232	19.33	0.13	0.032	(0.288)	0.029	0.003
233	19.42	0.13	0.032	(0.287)	0.029	0.003
234	19.50	0.13	0.032	(0.286)	0.029	0.003
235	19.58	0.10	0.024	(0.284)	0.022	0.002
236	19.67	0.10	0.024	(0.283)	0.022	0.002
237	19.75	0.10	0.024	(0.282)	0.022	0.002
238	19.83	0.07	0.016	(0.280)	0.014	0.002
239	19.92	0.07	0.016	(0.279)	0.014	0.002
240	20.00	0.07	0.016	(0.278)	0.014	0.002
241	20.08	0.10	0.024	(0.277)	0.022	0.002
242	20.17	0.10	0.024	(0.276)	0.022	0.002
243	20.25	0.10	0.024	(0.274)	0.022	0.002
244	20.33	0.10	0.024	(0.273)	0.022	0.002
245	20.42	0.10	0.024	(0.272)	0.022	0.002
246	20.50	0.10	0.024	(0.271)	0.022	0.002
247	20.58	0.10	0.024	(0.270)	0.022	0.002
248	20.67	0.10	0.024	(0.269)	0.022	0.002
249	20.75	0.10	0.024	(0.267)	0.022	0.002
250	20.83	0.07	0.016	(0.266)	0.014	0.002
251	20.92	0.07	0.016	(0.265)	0.014	0.002
252	21.00	0.07	0.016	(0.264)	0.014	0.002
253	21.08	0.10	0.024	(0.263)	0.022	0.002
254	21.17	0.10	0.024	(0.262)	0.022	0.002
255	21.25	0.10	0.024	(0.261)	0.022	0.002
256	21.33	0.07	0.016	(0.260)	0.014	0.002
257	21.42	0.07	0.016	(0.259)	0.014	0.002
258	21.50	0.07	0.016	(0.258)	0.014	0.002
259	21.58	0.10	0.024	(0.257)	0.022	0.002
260	21.67	0.10	0.024	(0.256)	0.022	0.002
261	21.75	0.10	0.024	(0.255)	0.022	0.002
262	21.83	0.07	0.016	(0.254)	0.014	0.002
263	21.92	0.07	0.016	(0.254)	0.014	0.002
264	22.00	0.07	0.016	(0.253)	0.014	0.002
265	22.08	0.10	0.024	(0.252)	0.022	0.002
266	22.17	0.10	0.024	(0.251)	0.022	0.002
267	22.25	0.10	0.024	(0.250)	0.022	0.002
268	22.33	0.07	0.016	(0.250)	0.014	0.002
269	22.42	0.07	0.016	(0.249)	0.014	0.002
270	22.50	0.07	0.016	(0.248)	0.014	0.002
271	22.58	0.07	0.016	(0.247)	0.014	0.002
272	22.67	0.07	0.016	(0.247)	0.014	0.002
273	22.75	0.07	0.016	(0.246)	0.014	0.002
274	22.83	0.07	0.016	(0.245)	0.014	0.002
275	22.92	0.07	0.016	(0.245)	0.014	0.002
276	23.00	0.07	0.016	(0.244)	0.014	0.002
277	23.08	0.07	0.016	(0.244)	0.014	0.002
278	23.17	0.07	0.016	(0.243)	0.014	0.002
279	23.25	0.07	0.016	(0.242)	0.014	0.002
280	23.33	0.07	0.016	(0.242)	0.014	0.002
281	23.42	0.07	0.016	(0.241)	0.014	0.002
282	23.50	0.07	0.016	(0.241)	0.014	0.002
283	23.58	0.07	0.016	(0.241)	0.014	0.002
284	23.67	0.07	0.016	(0.240)	0.014	0.002
285	23.75	0.07	0.016	(0.240)	0.014	0.002
286	23.83	0.07	0.016	(0.240)	0.014	0.002
287	23.92	0.07	0.016	(0.240)	0.014	0.002
288	24.00	0.07	0.016	(0.239)	0.014	0.002

(Loss Rate Not Used)

Sum = 100.0 Sum = 2.4

Flood volume = Effective rainfall 0.20(In)
times area 9.5(Ac.)/[(In)/(Ft.)] = 0.2(Ac.Ft)
Total soil loss = 1.81(In)

Total soil loss = 1.435(Ac.Ft)
Total rainfall = 2.01(In)
Flood volume = 6945.9 Cubic Feet
Total soil loss = 62513.5 Cubic Feet

Peak flow rate of this hydrograph = 0.251(CFS)

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TOTAL OF: 5 24 - H O U R S T O R M E V E N T S
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q				
0+10	0.0000	0.00	Q				
0+15	0.0000	0.00	Q				
0+20	0.0000	0.00	Q				
0+25	0.0000	0.00	Q				
0+30	0.0000	0.00	Q				
0+35	0.0000	0.00	Q				
0+40	0.0001	0.00	Q				
0+45	0.0001	0.00	Q				
0+50	0.0001	0.00	Q				
0+55	0.0001	0.00	Q				
1+ 0	0.0001	0.00	Q				
1+ 5	0.0001	0.00	Q				
1+10	0.0002	0.00	Q				
1+15	0.0002	0.00	Q				
1+20	0.0002	0.00	Q				
1+25	0.0002	0.00	Q				
1+30	0.0002	0.00	Q				
1+35	0.0002	0.00	Q				
1+40	0.0003	0.00	Q				
1+45	0.0003	0.00	Q				
1+50	0.0003	0.00	Q				
1+55	0.0003	0.00	Q				
2+ 0	0.0003	0.00	Q				
2+ 5	0.0003	0.00	Q				
2+10	0.0004	0.00	Q				
2+15	0.0004	0.00	Q				
2+20	0.0004	0.00	Q				
2+25	0.0004	0.00	Q				
2+30	0.0004	0.00	Q				
2+35	0.0005	0.00	Q				
2+40	0.0005	0.00	Q				
2+45	0.0005	0.00	Q				
2+50	0.0005	0.00	Q				
2+55	0.0006	0.00	Q				
3+ 0	0.0006	0.00	Q				
3+ 5	0.0006	0.00	Q				
3+10	0.0006	0.00	Q				
3+15	0.0007	0.00	Q				
3+20	0.0007	0.00	Q				
3+25	0.0007	0.00	Q				
3+30	0.0007	0.00	Q				
3+35	0.0008	0.00	Q				
3+40	0.0008	0.00	Q				
3+45	0.0008	0.00	Q				
3+50	0.0008	0.00	Q				
3+55	0.0009	0.00	Q				

4+ 0	0.0009	0.00	Q				
4+ 5	0.0009	0.00	Q				
4+10	0.0010	0.00	Q				
4+15	0.0010	0.00	Q				
4+20	0.0010	0.00	Q				
4+25	0.0011	0.00	Q				
4+30	0.0011	0.00	Q				
4+35	0.0011	0.01	Q				
4+40	0.0012	0.01	Q				
4+45	0.0012	0.01	Q				
4+50	0.0012	0.01	Q				
4+55	0.0013	0.01	Q				
5+ 0	0.0013	0.01	Q				
5+ 5	0.0013	0.01	Q				
5+10	0.0014	0.01	Q				
5+15	0.0014	0.01	Q				
5+20	0.0015	0.01	Q				
5+25	0.0015	0.01	Q				
5+30	0.0015	0.01	Q				
5+35	0.0016	0.01	Q				
5+40	0.0016	0.01	Q				
5+45	0.0016	0.01	Q				
5+50	0.0017	0.01	Q				
5+55	0.0017	0.01	Q				
6+ 0	0.0018	0.01	Q				
6+ 5	0.0018	0.01	Q				
6+10	0.0018	0.01	Q				
6+15	0.0019	0.01	Q				
6+20	0.0019	0.01	Q				
6+25	0.0020	0.01	Q				
6+30	0.0020	0.01	Q				
6+35	0.0021	0.01	Q				
6+40	0.0021	0.01	Q				
6+45	0.0022	0.01	Q				
6+50	0.0022	0.01	Q				
6+55	0.0023	0.01	Q				
7+ 0	0.0023	0.01	Q				
7+ 5	0.0024	0.01	Q				
7+10	0.0024	0.01	Q				
7+15	0.0025	0.01	Q				
7+20	0.0025	0.01	Q				
7+25	0.0026	0.01	Q				
7+30	0.0026	0.01	Q				
7+35	0.0027	0.01	Q				
7+40	0.0028	0.01	Q				
7+45	0.0028	0.01	Q				
7+50	0.0029	0.01	Q				
7+55	0.0029	0.01	Q				
8+ 0	0.0030	0.01	Q				
8+ 5	0.0031	0.01	Q				
8+10	0.0031	0.01	Q				
8+15	0.0032	0.01	Q				
8+20	0.0033	0.01	Q				
8+25	0.0034	0.01	Q				
8+30	0.0034	0.01	Q				
8+35	0.0035	0.01	Q				
8+40	0.0036	0.01	Q				
8+45	0.0037	0.01	Q				
8+50	0.0038	0.01	Q				
8+55	0.0038	0.01	Q				
9+ 0	0.0039	0.01	Q				
9+ 5	0.0040	0.01	Q				
9+10	0.0041	0.01	Q				

9+15	0.0042	0.01	Q				
9+20	0.0043	0.01	Q				
9+25	0.0044	0.01	Q				
9+30	0.0045	0.01	Q				
9+35	0.0046	0.01	Q				
9+40	0.0047	0.02	Q				
9+45	0.0048	0.02	Q				
9+50	0.0049	0.02	Q				
9+55	0.0050	0.02	Q				
10+ 0	0.0051	0.02	Q				
10+ 5	0.0052	0.02	Q				
10+10	0.0054	0.02	Q				
10+15	0.0054	0.01	Q				
10+20	0.0055	0.01	Q				
10+25	0.0056	0.01	Q				
10+30	0.0057	0.01	Q				
10+35	0.0058	0.01	Q				
10+40	0.0059	0.01	Q				
10+45	0.0060	0.01	Q				
10+50	0.0061	0.01	Q				
10+55	0.0062	0.01	Q				
11+ 0	0.0063	0.01	Q				
11+ 5	0.0064	0.01	Q				
11+10	0.0065	0.01	Q				
11+15	0.0066	0.01	Q				
11+20	0.0067	0.01	Q				
11+25	0.0068	0.01	Q				
11+30	0.0069	0.01	Q				
11+35	0.0070	0.01	Q				
11+40	0.0071	0.01	Q				
11+45	0.0072	0.01	QV				
11+50	0.0073	0.01	QV				
11+55	0.0074	0.01	QV				
12+ 0	0.0075	0.01	QV				
12+ 5	0.0076	0.01	QV				
12+10	0.0077	0.01	QV				
12+15	0.0078	0.02	QV				
12+20	0.0079	0.02	QV				
12+25	0.0080	0.02	QV				
12+30	0.0082	0.02	QV				
12+35	0.0083	0.02	QV				
12+40	0.0084	0.02	QV				
12+45	0.0086	0.02	QV				
12+50	0.0087	0.02	QV				
12+55	0.0088	0.02	QV				
13+ 0	0.0090	0.02	QV				
13+ 5	0.0091	0.02	QV				
13+10	0.0093	0.02	QV				
13+15	0.0095	0.02	QV				
13+20	0.0096	0.02	QV				
13+25	0.0098	0.02	QV				
13+30	0.0100	0.03	QV				
13+35	0.0101	0.03	QV				
13+40	0.0103	0.02	QV				
13+45	0.0105	0.02	QV				
13+50	0.0106	0.02	QV				
13+55	0.0107	0.02	QV				
14+ 0	0.0109	0.02	QV				
14+ 5	0.0110	0.02	QV				
14+10	0.0111	0.02	QV				
14+15	0.0113	0.02	QV				
14+20	0.0114	0.02	QV				
14+25	0.0116	0.02	QV				

14+30	0.0117	0.02	QV				
14+35	0.0118	0.02	QV				
14+40	0.0120	0.02	QV				
14+45	0.0121	0.02	QV				
14+50	0.0122	0.02	QV				
14+55	0.0124	0.02	QV				
15+ 0	0.0125	0.02	QV				
15+ 5	0.0127	0.02	QV				
15+10	0.0128	0.02	QV				
15+15	0.0129	0.02	QV				
15+20	0.0130	0.02	QV				
15+25	0.0132	0.02	QV				
15+30	0.0133	0.02	QV				
15+35	0.0134	0.02	QV				
15+40	0.0136	0.02	QV				
15+45	0.0137	0.02	QV				
15+50	0.0138	0.02	QV				
15+55	0.0139	0.02	QV				
16+ 0	0.0140	0.02	QV				
16+ 5	0.0141	0.01	QV				
16+10	0.0142	0.01	QV				
16+15	0.0142	0.01	QV				
16+20	0.0143	0.01	QV				
16+25	0.0143	0.01	Q V				
16+30	0.0144	0.01	Q V				
16+35	0.0144	0.01	Q V				
16+40	0.0145	0.00	Q V				
16+45	0.0145	0.00	Q V				
16+50	0.0145	0.00	Q V				
16+55	0.0145	0.00	Q V				
17+ 0	0.0146	0.00	Q V				
17+ 5	0.0146	0.00	Q V				
17+10	0.0146	0.00	Q V				
17+15	0.0146	0.00	Q V				
17+20	0.0146	0.00	Q V				
17+25	0.0147	0.00	Q V				
17+30	0.0147	0.00	Q V				
17+35	0.0147	0.00	Q V				
17+40	0.0147	0.00	Q V				
17+45	0.0148	0.00	Q V				
17+50	0.0148	0.00	Q V				
17+55	0.0148	0.00	Q V				
18+ 0	0.0148	0.00	Q V				
18+ 5	0.0149	0.00	Q V				
18+10	0.0149	0.00	Q V				
18+15	0.0149	0.00	Q V				
18+20	0.0149	0.00	Q V				
18+25	0.0150	0.00	Q V				
18+30	0.0150	0.00	Q V				
18+35	0.0150	0.00	Q V				
18+40	0.0150	0.00	Q V				
18+45	0.0150	0.00	Q V				
18+50	0.0151	0.00	Q V				
18+55	0.0151	0.00	Q V				
19+ 0	0.0151	0.00	Q V				
19+ 5	0.0151	0.00	Q V				
19+10	0.0151	0.00	Q V				
19+15	0.0151	0.00	Q V				
19+20	0.0152	0.00	Q V				
19+25	0.0152	0.00	Q V				
19+30	0.0152	0.00	Q V				
19+35	0.0152	0.00	Q V				
19+40	0.0152	0.00	Q V				

19+45	0.0152	0.00	Q V				
19+50	0.0153	0.00	Q V				
19+55	0.0153	0.00	Q V				
20+ 0	0.0153	0.00	Q V				
20+ 5	0.0153	0.00	Q V				
20+10	0.0153	0.00	Q V				
20+15	0.0153	0.00	Q V				
20+20	0.0153	0.00	Q V				
20+25	0.0154	0.00	Q V				
20+30	0.0154	0.00	Q V				
20+35	0.0154	0.00	Q V				
20+40	0.0154	0.00	Q V				
20+45	0.0154	0.00	Q V				
20+50	0.0154	0.00	Q V				
20+55	0.0155	0.00	Q V				
21+ 0	0.0155	0.00	Q V				
21+ 5	0.0155	0.00	Q V				
21+10	0.0155	0.00	Q V				
21+15	0.0155	0.00	Q V				
21+20	0.0155	0.00	Q V				
21+25	0.0155	0.00	Q V				
21+30	0.0155	0.00	Q V				
21+35	0.0156	0.00	Q V				
21+40	0.0156	0.00	Q V				
21+45	0.0156	0.00	Q V				
21+50	0.0156	0.00	Q V				
21+55	0.0156	0.00	Q V				
22+ 0	0.0156	0.00	Q V				
22+ 5	0.0156	0.00	Q V				
22+10	0.0157	0.00	Q V				
22+15	0.0157	0.00	Q V				
22+20	0.0157	0.00	Q V				
22+25	0.0157	0.00	Q V				
22+30	0.0157	0.00	Q V				
22+35	0.0157	0.00	Q V				
22+40	0.0157	0.00	Q V				
22+45	0.0157	0.00	Q V				
22+50	0.0158	0.00	Q V				
22+55	0.0158	0.00	Q V				
23+ 0	0.0158	0.00	Q V				
23+ 5	0.0158	0.00	Q V				
23+10	0.0158	0.00	Q V				
23+15	0.0158	0.00	Q V				
23+20	0.0158	0.00	Q V				
23+25	0.0158	0.00	Q V				
23+30	0.0158	0.00	Q V				
23+35	0.0158	0.00	Q V				
23+40	0.0159	0.00	Q V				
23+45	0.0159	0.00	Q V				
23+50	0.0159	0.00	Q V				
23+55	0.0159	0.00	Q V				
24+ 0	0.0159	0.00	Q V				
24+ 5	0.0159	0.00	Q V				
24+10	0.0159	0.00	Q V				
24+15	0.0159	0.00	Q V				
24+20	0.0159	0.00	Q V				
24+25	0.0159	0.00	Q V				
24+30	0.0160	0.00	Q V				
24+35	0.0160	0.00	Q V				
24+40	0.0160	0.00	Q V				
24+45	0.0160	0.00	Q V				
24+50	0.0160	0.00	Q V				
24+55	0.0161	0.00	Q V				

25+ 0	0.0161	0.00	Q	V			
25+ 5	0.0161	0.00	Q	V			
25+10	0.0161	0.00	Q	V			
25+15	0.0162	0.00	Q	V			
25+20	0.0162	0.00	Q	V			
25+25	0.0162	0.00	Q	V			
25+30	0.0162	0.00	Q	V			
25+35	0.0163	0.00	Q	V			
25+40	0.0163	0.00	Q	V			
25+45	0.0163	0.00	Q	V			
25+50	0.0163	0.00	Q	V			
25+55	0.0164	0.00	Q	V			
26+ 0	0.0164	0.00	Q	V			
26+ 5	0.0164	0.00	Q	V			
26+10	0.0164	0.00	Q	V			
26+15	0.0165	0.00	Q	V			
26+20	0.0165	0.00	Q	V			
26+25	0.0165	0.00	Q	V			
26+30	0.0166	0.00	Q	V			
26+35	0.0166	0.00	Q	V			
26+40	0.0166	0.00	Q	V			
26+45	0.0167	0.01	Q	V			
26+50	0.0167	0.01	Q	V			
26+55	0.0167	0.01	Q	V			
27+ 0	0.0168	0.01	Q	V			
27+ 5	0.0168	0.01	Q	V			
27+10	0.0169	0.01	Q	V			
27+15	0.0169	0.01	Q	V			
27+20	0.0169	0.01	Q	V			
27+25	0.0170	0.01	Q	V			
27+30	0.0170	0.01	Q	V			
27+35	0.0171	0.01	Q	V			
27+40	0.0171	0.01	Q	V			
27+45	0.0171	0.01	Q	V			
27+50	0.0172	0.01	Q	V			
27+55	0.0172	0.01	Q	V			
28+ 0	0.0173	0.01	Q	V			
28+ 5	0.0173	0.01	Q	V			
28+10	0.0173	0.01	Q	V			
28+15	0.0174	0.01	Q	V			
28+20	0.0174	0.01	Q	V			
28+25	0.0175	0.01	Q	V			
28+30	0.0175	0.01	Q	V			
28+35	0.0176	0.01	Q	V			
28+40	0.0176	0.01	Q	V			
28+45	0.0177	0.01	Q	V			
28+50	0.0178	0.01	Q	V			
28+55	0.0178	0.01	Q	V			
29+ 0	0.0179	0.01	Q	V			
29+ 5	0.0179	0.01	Q	V			
29+10	0.0180	0.01	Q	V			
29+15	0.0180	0.01	Q	V			
29+20	0.0181	0.01	Q	V			
29+25	0.0181	0.01	Q	V			
29+30	0.0182	0.01	Q	V			
29+35	0.0183	0.01	Q	V			
29+40	0.0183	0.01	Q	V			
29+45	0.0184	0.01	Q	V			
29+50	0.0184	0.01	Q	V			
29+55	0.0185	0.01	Q	V			
30+ 0	0.0186	0.01	Q	V			
30+ 5	0.0186	0.01	Q	V			
30+10	0.0187	0.01	Q	V			

30+15	0.0187	0.01	Q	V			
30+20	0.0188	0.01	Q	V			
30+25	0.0189	0.01	Q	V			
30+30	0.0190	0.01	Q	V			
30+35	0.0190	0.01	Q	V			
30+40	0.0191	0.01	Q	V			
30+45	0.0192	0.01	Q	V			
30+50	0.0192	0.01	Q	V			
30+55	0.0193	0.01	Q	V			
31+ 0	0.0194	0.01	Q	V			
31+ 5	0.0195	0.01	Q	V			
31+10	0.0196	0.01	Q	V			
31+15	0.0196	0.01	Q	V			
31+20	0.0197	0.01	Q	V			
31+25	0.0198	0.01	Q	V			
31+30	0.0199	0.01	Q	V			
31+35	0.0200	0.01	Q	V			
31+40	0.0200	0.01	Q	V			
31+45	0.0201	0.01	Q	V			
31+50	0.0202	0.01	Q	V			
31+55	0.0203	0.01	Q	V			
32+ 0	0.0204	0.01	Q	V			
32+ 5	0.0205	0.01	Q	V			
32+10	0.0206	0.01	Q	V			
32+15	0.0207	0.02	Q	V			
32+20	0.0208	0.02	Q	V			
32+25	0.0210	0.02	Q	V			
32+30	0.0211	0.02	Q	V			
32+35	0.0212	0.02	Q	V			
32+40	0.0213	0.02	Q	V			
32+45	0.0214	0.02	Q	V			
32+50	0.0215	0.02	Q	V			
32+55	0.0217	0.02	Q	V			
33+ 0	0.0218	0.02	Q	V			
33+ 5	0.0219	0.02	Q	V			
33+10	0.0221	0.02	Q	V			
33+15	0.0222	0.02	Q	V			
33+20	0.0223	0.02	Q	V			
33+25	0.0225	0.02	Q	V			
33+30	0.0226	0.02	Q	V			
33+35	0.0228	0.02	Q	V			
33+40	0.0230	0.02	Q	V			
33+45	0.0231	0.02	Q	V			
33+50	0.0233	0.02	Q	V			
33+55	0.0234	0.02	Q	V			
34+ 0	0.0236	0.02	Q	V			
34+ 5	0.0238	0.02	Q	V			
34+10	0.0239	0.02	Q	V			
34+15	0.0241	0.02	Q	V			
34+20	0.0242	0.02	Q	V			
34+25	0.0243	0.02	Q	V			
34+30	0.0245	0.02	Q	V			
34+35	0.0246	0.02	Q	V			
34+40	0.0247	0.02	Q	V			
34+45	0.0249	0.02	Q	V			
34+50	0.0250	0.02	Q	V			
34+55	0.0252	0.02	Q	V			
35+ 0	0.0253	0.02	Q	V			
35+ 5	0.0255	0.02	Q	V			
35+10	0.0256	0.02	Q	V			
35+15	0.0258	0.02	Q	V			
35+20	0.0260	0.02	Q	V			
35+25	0.0261	0.02	Q	V			

35+30	0.0263	0.02	Q	V				
35+35	0.0264	0.02	Q	V				
35+40	0.0266	0.02	Q	V				
35+45	0.0267	0.02	Q	V				
35+50	0.0268	0.02	Q	V				
35+55	0.0270	0.02	Q	V				
36+ 0	0.0271	0.02	Q	V				
36+ 5	0.0273	0.02	Q	V				
36+10	0.0274	0.02	Q	V				
36+15	0.0276	0.02	Q	V				
36+20	0.0278	0.03	Q	V				
36+25	0.0280	0.03	Q	V				
36+30	0.0281	0.03	Q	V				
36+35	0.0283	0.03	Q	V				
36+40	0.0285	0.03	Q	V				
36+45	0.0288	0.03	Q	V				
36+50	0.0290	0.03	Q	V				
36+55	0.0292	0.03	Q	V				
37+ 0	0.0294	0.03	Q	V				
37+ 5	0.0296	0.03	Q	V				
37+10	0.0299	0.03	Q	V				
37+15	0.0301	0.04	Q	V				
37+20	0.0303	0.04	Q	V				
37+25	0.0306	0.04	Q	V				
37+30	0.0309	0.04	Q	V				
37+35	0.0311	0.04	Q	V				
37+40	0.0314	0.04	Q	V				
37+45	0.0316	0.03	Q	V				
37+50	0.0318	0.03	Q	V				
37+55	0.0320	0.03	Q	V				
38+ 0	0.0322	0.03	Q	V				
38+ 5	0.0324	0.03	Q	V				
38+10	0.0326	0.03	Q	V				
38+15	0.0328	0.03	Q	V				
38+20	0.0330	0.03	Q	V				
38+25	0.0332	0.03	Q	V				
38+30	0.0334	0.03	Q	V				
38+35	0.0337	0.03	Q	V				
38+40	0.0339	0.03	Q	V				
38+45	0.0341	0.03	Q	V				
38+50	0.0343	0.03	Q	V				
38+55	0.0345	0.03	Q	V				
39+ 0	0.0347	0.03	Q	V				
39+ 5	0.0349	0.03	Q	V				
39+10	0.0351	0.03	Q	V				
39+15	0.0353	0.03	Q	V				
39+20	0.0355	0.03	Q	V				
39+25	0.0357	0.03	Q	V				
39+30	0.0359	0.03	Q	V				
39+35	0.0360	0.03	Q	V				
39+40	0.0362	0.03	Q	V				
39+45	0.0364	0.02	Q	V				
39+50	0.0366	0.02	Q	V				
39+55	0.0367	0.02	Q	V				
40+ 0	0.0369	0.02	Q	V				
40+ 5	0.0370	0.02	Q	V				
40+10	0.0372	0.02	Q	V				
40+15	0.0373	0.01	Q	V				
40+20	0.0374	0.01	Q	V				
40+25	0.0374	0.01	Q	V				
40+30	0.0375	0.01	Q	V				
40+35	0.0375	0.01	Q	V				
40+40	0.0376	0.01	Q	V				

40+45	0.0376	0.01	Q	V				
40+50	0.0377	0.01	Q	V				
40+55	0.0377	0.01	Q	V				
41+ 0	0.0377	0.00	Q	V				
41+ 5	0.0378	0.00	Q	V				
41+10	0.0378	0.00	Q	V				
41+15	0.0378	0.01	Q	V				
41+20	0.0379	0.01	Q	V				
41+25	0.0379	0.01	Q	V				
41+30	0.0380	0.01	Q	V				
41+35	0.0380	0.01	Q	V				
41+40	0.0380	0.01	Q	V				
41+45	0.0381	0.01	Q	V				
41+50	0.0381	0.01	Q	V				
41+55	0.0381	0.01	Q	V				
42+ 0	0.0382	0.01	Q	V				
42+ 5	0.0382	0.00	Q	V				
42+10	0.0382	0.00	Q	V				
42+15	0.0383	0.00	Q	V				
42+20	0.0383	0.00	Q	V				
42+25	0.0383	0.00	Q	V				
42+30	0.0384	0.00	Q	V				
42+35	0.0384	0.00	Q	V				
42+40	0.0384	0.00	Q	V				
42+45	0.0385	0.00	Q	V				
42+50	0.0385	0.00	Q	V				
42+55	0.0385	0.00	Q	V				
43+ 0	0.0385	0.00	Q	V				
43+ 5	0.0386	0.00	Q	V				
43+10	0.0386	0.00	Q	V				
43+15	0.0386	0.00	Q	V				
43+20	0.0386	0.00	Q	V				
43+25	0.0387	0.00	Q	V				
43+30	0.0387	0.00	Q	V				
43+35	0.0387	0.00	Q	V				
43+40	0.0387	0.00	Q	V				
43+45	0.0388	0.00	Q	V				
43+50	0.0388	0.00	Q	V				
43+55	0.0388	0.00	Q	V				
44+ 0	0.0388	0.00	Q	V				
44+ 5	0.0389	0.00	Q	V				
44+10	0.0389	0.00	Q	V				
44+15	0.0389	0.00	Q	V				
44+20	0.0389	0.00	Q	V				
44+25	0.0389	0.00	Q	V				
44+30	0.0390	0.00	Q	V				
44+35	0.0390	0.00	Q	V				
44+40	0.0390	0.00	Q	V				
44+45	0.0390	0.00	Q	V				
44+50	0.0391	0.00	Q	V				
44+55	0.0391	0.00	Q	V				
45+ 0	0.0391	0.00	Q	V				
45+ 5	0.0391	0.00	Q	V				
45+10	0.0391	0.00	Q	V				
45+15	0.0392	0.00	Q	V				
45+20	0.0392	0.00	Q	V				
45+25	0.0392	0.00	Q	V				
45+30	0.0392	0.00	Q	V				
45+35	0.0392	0.00	Q	V				
45+40	0.0393	0.00	Q	V				
45+45	0.0393	0.00	Q	V				
45+50	0.0393	0.00	Q	V				
45+55	0.0393	0.00	Q	V				

46+ 0	0.0393	0.00	Q	V				
46+ 5	0.0394	0.00	Q	V				
46+10	0.0394	0.00	Q	V				
46+15	0.0394	0.00	Q	V				
46+20	0.0394	0.00	Q	V				
46+25	0.0394	0.00	Q	V				
46+30	0.0395	0.00	Q	V				
46+35	0.0395	0.00	Q	V				
46+40	0.0395	0.00	Q	V				
46+45	0.0395	0.00	Q	V				
46+50	0.0395	0.00	Q	V				
46+55	0.0395	0.00	Q	V				
47+ 0	0.0396	0.00	Q	V				
47+ 5	0.0396	0.00	Q	V				
47+10	0.0396	0.00	Q	V				
47+15	0.0396	0.00	Q	V				
47+20	0.0396	0.00	Q	V				
47+25	0.0396	0.00	Q	V				
47+30	0.0397	0.00	Q	V				
47+35	0.0397	0.00	Q	V				
47+40	0.0397	0.00	Q	V				
47+45	0.0397	0.00	Q	V				
47+50	0.0397	0.00	Q	V				
47+55	0.0397	0.00	Q	V				
48+ 0	0.0398	0.00	Q	V				
48+ 5	0.0398	0.00	Q	V				
48+10	0.0398	0.00	Q	V				
48+15	0.0398	0.00	Q	V				
48+20	0.0398	0.00	Q	V				
48+25	0.0398	0.00	Q	V				
48+30	0.0398	0.00	Q	V				
48+35	0.0398	0.00	Q	V				
48+40	0.0399	0.00	Q	V				
48+45	0.0399	0.00	Q	V				
48+50	0.0399	0.00	Q	V				
48+55	0.0400	0.00	Q	V				
49+ 0	0.0400	0.00	Q	V				
49+ 5	0.0400	0.00	Q	V				
49+10	0.0401	0.00	Q	V				
49+15	0.0401	0.00	Q	V				
49+20	0.0401	0.00	Q	V				
49+25	0.0401	0.00	Q	V				
49+30	0.0402	0.00	Q	V				
49+35	0.0402	0.00	Q	V				
49+40	0.0402	0.00	Q	V				
49+45	0.0403	0.00	Q	V				
49+50	0.0403	0.00	Q	V				
49+55	0.0403	0.00	Q	V				
50+ 0	0.0404	0.01	Q	V				
50+ 5	0.0404	0.01	Q	V				
50+10	0.0404	0.01	Q	V				
50+15	0.0405	0.01	Q	V				
50+20	0.0405	0.01	Q	V				
50+25	0.0406	0.01	Q	V				
50+30	0.0406	0.01	Q	V				
50+35	0.0406	0.01	Q	V				
50+40	0.0407	0.01	Q	V				
50+45	0.0407	0.01	Q	V				
50+50	0.0408	0.01	Q	V				
50+55	0.0408	0.01	Q	V				
51+ 0	0.0409	0.01	Q	V				
51+ 5	0.0409	0.01	Q	V				
51+10	0.0410	0.01	Q	V				

51+15	0.0410	0.01	Q	V				
51+20	0.0411	0.01	Q	V				
51+25	0.0411	0.01	Q	V				
51+30	0.0412	0.01	Q	V				
51+35	0.0412	0.01	Q	V				
51+40	0.0413	0.01	Q	V				
51+45	0.0413	0.01	Q	V				
51+50	0.0414	0.01	Q	V				
51+55	0.0414	0.01	Q	V				
52+ 0	0.0415	0.01	Q	V				
52+ 5	0.0415	0.01	Q	V				
52+10	0.0416	0.01	Q	V				
52+15	0.0416	0.01	Q	V				
52+20	0.0417	0.01	Q	V				
52+25	0.0418	0.01	Q	V				
52+30	0.0418	0.01	Q	V				
52+35	0.0419	0.01	Q	V				
52+40	0.0420	0.01	Q	V				
52+45	0.0420	0.01	Q	V				
52+50	0.0421	0.01	Q	V				
52+55	0.0422	0.01	Q	V				
53+ 0	0.0422	0.01	Q	V				
53+ 5	0.0423	0.01	Q	V				
53+10	0.0424	0.01	Q	V				
53+15	0.0425	0.01	Q	V				
53+20	0.0425	0.01	Q	V				
53+25	0.0426	0.01	Q	V				
53+30	0.0427	0.01	Q	V				
53+35	0.0427	0.01	Q	V				
53+40	0.0428	0.01	Q	V				
53+45	0.0429	0.01	Q	V				
53+50	0.0430	0.01	Q	V				
53+55	0.0430	0.01	Q	V				
54+ 0	0.0431	0.01	Q	V				
54+ 5	0.0432	0.01	Q	V				
54+10	0.0433	0.01	Q	V				
54+15	0.0434	0.01	Q	V				
54+20	0.0434	0.01	Q	V				
54+25	0.0435	0.01	Q	V				
54+30	0.0436	0.01	Q	V				
54+35	0.0437	0.01	Q	V				
54+40	0.0438	0.01	Q	V				
54+45	0.0439	0.01	Q	V				
54+50	0.0440	0.01	Q	V				
54+55	0.0441	0.01	Q	V				
55+ 0	0.0442	0.01	Q	V				
55+ 5	0.0443	0.01	Q	V				
55+10	0.0444	0.01	Q	V				
55+15	0.0445	0.01	Q	V				
55+20	0.0446	0.01	Q	V				
55+25	0.0447	0.01	Q	V				
55+30	0.0448	0.02	Q	V				
55+35	0.0449	0.02	Q	V				
55+40	0.0450	0.02	Q	V				
55+45	0.0451	0.02	Q	V				
55+50	0.0452	0.02	Q	V				
55+55	0.0454	0.02	Q	V				
56+ 0	0.0455	0.02	Q	V				
56+ 5	0.0456	0.02	Q	V				
56+10	0.0457	0.02	Q	V				
56+15	0.0459	0.02	Q	V				
56+20	0.0460	0.02	Q	V				
56+25	0.0462	0.02	Q	V				

56+30	0.0463	0.02	Q	V				
56+35	0.0464	0.02	Q	V				
56+40	0.0466	0.02	Q	V				
56+45	0.0467	0.02	Q	V				
56+50	0.0469	0.02	Q	V				
56+55	0.0471	0.02	Q	V				
57+ 0	0.0472	0.02	Q	V				
57+ 5	0.0474	0.02	Q	V				
57+10	0.0476	0.02	Q	V				
57+15	0.0477	0.03	Q	V				
57+20	0.0479	0.03	Q	V				
57+25	0.0481	0.03	Q	V				
57+30	0.0483	0.03	Q	V				
57+35	0.0485	0.03	Q	V				
57+40	0.0487	0.03	Q	V				
57+45	0.0489	0.03	Q	V				
57+50	0.0491	0.03	Q	V				
57+55	0.0493	0.03	Q	V				
58+ 0	0.0495	0.03	Q	V				
58+ 5	0.0497	0.03	Q	V				
58+10	0.0499	0.03	Q	V				
58+15	0.0501	0.03	Q	V				
58+20	0.0503	0.03	Q	V				
58+25	0.0504	0.02	Q	V				
58+30	0.0506	0.02	Q	V				
58+35	0.0508	0.02	Q	V				
58+40	0.0509	0.02	Q	V				
58+45	0.0511	0.03	Q	V				
58+50	0.0513	0.03	Q	V				
58+55	0.0515	0.03	Q	V				
59+ 0	0.0517	0.03	Q	V				
59+ 5	0.0519	0.03	Q	V				
59+10	0.0521	0.03	Q	V				
59+15	0.0523	0.03	Q	V				
59+20	0.0525	0.03	Q	V				
59+25	0.0527	0.03	Q	V				
59+30	0.0529	0.03	Q	V				
59+35	0.0531	0.03	Q	V				
59+40	0.0532	0.03	Q	V				
59+45	0.0534	0.03	Q	V				
59+50	0.0536	0.03	Q	V				
59+55	0.0538	0.03	Q	V				
60+ 0	0.0540	0.03	Q	V				
60+ 5	0.0542	0.03	Q	V				
60+10	0.0543	0.03	Q	V				
60+15	0.0546	0.03	Q	V				
60+20	0.0548	0.03	Q	V				
60+25	0.0550	0.03	Q	V				
60+30	0.0553	0.04	Q	V				
60+35	0.0555	0.04	Q	V				
60+40	0.0558	0.04	Q	V				
60+45	0.0560	0.04	Q	V				
60+50	0.0563	0.04	Q	V				
60+55	0.0566	0.04	Q	V				
61+ 0	0.0569	0.04	Q	V				
61+ 5	0.0571	0.04	Q	V				
61+10	0.0574	0.04	Q	V				
61+15	0.0577	0.04	Q	V				
61+20	0.0581	0.05	Q	V				
61+25	0.0584	0.05	Q	V				
61+30	0.0587	0.05	Q	V				
61+35	0.0590	0.05	Q	V				
61+40	0.0593	0.05	Q	V				

61+45	0.0596	0.04	Q	V			
61+50	0.0599	0.04	Q	V			
61+55	0.0602	0.04	Q	V			
62+ 0	0.0604	0.04	Q	V			
62+ 5	0.0607	0.04	Q	V			
62+10	0.0609	0.04	Q	V			
62+15	0.0612	0.04	Q	V			
62+20	0.0614	0.04	Q	V			
62+25	0.0617	0.04	Q	V			
62+30	0.0620	0.04	Q	V			
62+35	0.0622	0.04	Q	V			
62+40	0.0625	0.04	Q	V			
62+45	0.0628	0.04	Q	V			
62+50	0.0630	0.04	Q	V			
62+55	0.0633	0.04	Q	V			
63+ 0	0.0635	0.04	Q	V			
63+ 5	0.0638	0.04	Q	V			
63+10	0.0641	0.04	Q	V			
63+15	0.0643	0.04	Q	V			
63+20	0.0646	0.04	Q	V			
63+25	0.0648	0.04	Q	V			
63+30	0.0650	0.03	Q	V			
63+35	0.0653	0.03	Q	V			
63+40	0.0655	0.03	Q	V			
63+45	0.0657	0.03	Q	V			
63+50	0.0659	0.03	Q	V			
63+55	0.0661	0.03	Q	V			
64+ 0	0.0663	0.03	Q	V			
64+ 5	0.0665	0.03	Q	V			
64+10	0.0667	0.02	Q	V			
64+15	0.0668	0.02	Q	V			
64+20	0.0669	0.01	Q	V			
64+25	0.0670	0.01	Q	V			
64+30	0.0671	0.01	Q	V			
64+35	0.0672	0.01	Q	V			
64+40	0.0672	0.01	Q	V			
64+45	0.0673	0.01	Q	V			
64+50	0.0673	0.01	Q	V			
64+55	0.0674	0.01	Q	V			
65+ 0	0.0674	0.01	Q	V			
65+ 5	0.0675	0.01	Q	V			
65+10	0.0675	0.01	Q	V			
65+15	0.0675	0.01	Q	V			
65+20	0.0676	0.01	Q	V			
65+25	0.0676	0.01	Q	V			
65+30	0.0677	0.01	Q	V			
65+35	0.0677	0.01	Q	V			
65+40	0.0678	0.01	Q	V			
65+45	0.0678	0.01	Q	V			
65+50	0.0679	0.01	Q	V			
65+55	0.0679	0.01	Q	V			
66+ 0	0.0680	0.01	Q	V			
66+ 5	0.0680	0.01	Q	V			
66+10	0.0681	0.01	Q	V			
66+15	0.0681	0.01	Q	V			
66+20	0.0681	0.01	Q	V			
66+25	0.0682	0.01	Q	V			
66+30	0.0682	0.01	Q	V			
66+35	0.0683	0.01	Q	V			
66+40	0.0683	0.01	Q	V			
66+45	0.0683	0.01	Q	V			
66+50	0.0684	0.00	Q	V			
66+55	0.0684	0.00	Q	V			

67+ 0	0.0684	0.00	Q	V|	|	|	|
67+ 5	0.0685	0.00	Q	V|	|	|	|
67+10	0.0685	0.00	Q	V|	|	|	|
67+15	0.0685	0.00	Q	V|	|	|	|
67+20	0.0685	0.00	Q	V|	|	|	|
67+25	0.0686	0.00	Q	V|	|	|	|
67+30	0.0686	0.01	Q	V|	|	|	|
67+35	0.0686	0.01	Q	V|	|	|	|
67+40	0.0687	0.01	Q	V|	|	|	|
67+45	0.0687	0.00	Q	V|	|	|	|
67+50	0.0687	0.00	Q	V|	|	|	|
67+55	0.0688	0.00	Q	V|	|	|	|
68+ 0	0.0688	0.00	Q	V|	|	|	|
68+ 5	0.0688	0.00	Q	V|	|	|	|
68+10	0.0689	0.00	Q	V|	|	|	|
68+15	0.0689	0.00	Q	V|	|	|	|
68+20	0.0689	0.00	Q	V|	|	|	|
68+25	0.0689	0.00	Q	V|	|	|	|
68+30	0.0690	0.00	Q	V|	|	|	|
68+35	0.0690	0.00	Q	V|	|	|	|
68+40	0.0690	0.00	Q	V|	|	|	|
68+45	0.0691	0.00	Q	V|	|	|	|
68+50	0.0691	0.00	Q	V|	|	|	|
68+55	0.0691	0.00	Q	V|	|	|	|
69+ 0	0.0691	0.00	Q	V|	|	|	|
69+ 5	0.0692	0.00	Q	V|	|	|	|
69+10	0.0692	0.00	Q	V|	|	|	|
69+15	0.0692	0.00	Q	V|	|	|	|
69+20	0.0692	0.00	Q	V|	|	|	|
69+25	0.0693	0.00	Q	V|	|	|	|
69+30	0.0693	0.00	Q	V|	|	|	|
69+35	0.0693	0.00	Q	V|	|	|	|
69+40	0.0693	0.00	Q	V|	|	|	|
69+45	0.0694	0.00	Q	V|	|	|	|
69+50	0.0694	0.00	Q	V|	|	|	|
69+55	0.0694	0.00	Q	V|	|	|	|
70+ 0	0.0694	0.00	Q	V|	|	|	|
70+ 5	0.0695	0.00	Q	V|	|	|	|
70+10	0.0695	0.00	Q	V|	|	|	|
70+15	0.0695	0.00	Q	V|	|	|	|
70+20	0.0695	0.00	Q	V|	|	|	|
70+25	0.0696	0.00	Q	V|	|	|	|
70+30	0.0696	0.00	Q	V|	|	|	|
70+35	0.0696	0.00	Q	V|	|	|	|
70+40	0.0696	0.00	Q	V|	|	|	|
70+45	0.0697	0.00	Q	V|	|	|	|
70+50	0.0697	0.00	Q	V|	|	|	|
70+55	0.0697	0.00	Q	V|	|	|	|
71+ 0	0.0697	0.00	Q	V|	|	|	|
71+ 5	0.0697	0.00	Q	V|	|	|	|
71+10	0.0698	0.00	Q	V|	|	|	|
71+15	0.0698	0.00	Q	V|	|	|	|
71+20	0.0698	0.00	Q	V|	|	|	|
71+25	0.0698	0.00	Q	V|	|	|	|
71+30	0.0699	0.00	Q	V|	|	|	|
71+35	0.0699	0.00	Q	V|	|	|	|
71+40	0.0699	0.00	Q	V|	|	|	|
71+45	0.0699	0.00	Q	V|	|	|	|
71+50	0.0699	0.00	Q	V|	|	|	|
71+55	0.0700	0.00	Q	V|	|	|	|
72+ 0	0.0700	0.00	Q	V|	|	|	|
72+ 5	0.0700	0.00	Q	V|	|	|	|
72+10	0.0700	0.00	Q	V|	|	|	|

72+15	0.0700	0.00	Q	V|	|	|	|
72+20	0.0700	0.00	Q	V|	|	|	|
72+25	0.0701	0.00	Q	V|	|	|	|
72+30	0.0701	0.01	Q	V|	|	|	|
72+35	0.0701	0.01	Q	V|	|	|	|
72+40	0.0702	0.01	Q	V|	|	|	|
72+45	0.0702	0.01	Q	V|	|	|	|
72+50	0.0703	0.01	Q	V|	|	|	|
72+55	0.0703	0.01	Q	V|	|	|	|
73+ 0	0.0704	0.01	Q	V|	|	|	|
73+ 5	0.0705	0.01	Q	V|	|	|	|
73+10	0.0705	0.01	Q	V|	|	|	|
73+15	0.0706	0.01	Q	V|	|	|	|
73+20	0.0707	0.01	Q	V|	|	|	|
73+25	0.0707	0.01	Q	V|	|	|	|
73+30	0.0708	0.01	Q	V|	|	|	|
73+35	0.0708	0.01	Q	V|	|	|	|
73+40	0.0709	0.01	Q	V|	|	|	|
73+45	0.0709	0.01	Q	V|	|	|	|
73+50	0.0710	0.01	Q	V|	|	|	|
73+55	0.0711	0.01	Q	V|	|	|	|
74+ 0	0.0711	0.01	Q	V|	|	|	|
74+ 5	0.0712	0.01	Q	V|	|	|	|
74+10	0.0713	0.01	Q	V|	|	|	|
74+15	0.0713	0.01	Q	V|	|	|	|
74+20	0.0714	0.01	Q	V|	|	|	|
74+25	0.0715	0.01	Q	V|	|	|	|
74+30	0.0716	0.01	Q	V|	|	|	|
74+35	0.0716	0.01	Q	V|	|	|	|
74+40	0.0717	0.01	Q	V	|	|	|
74+45	0.0718	0.01	Q	V	|	|	|
74+50	0.0719	0.01	Q	V	|	|	|
74+55	0.0720	0.01	Q	V	|	|	|
75+ 0	0.0721	0.01	Q	V	|	|	|
75+ 5	0.0722	0.01	Q	V	|	|	|
75+10	0.0723	0.01	Q	V	|	|	|
75+15	0.0724	0.01	Q	V	|	|	|
75+20	0.0724	0.01	Q	V	|	|	|
75+25	0.0725	0.01	Q	V	|	|	|
75+30	0.0726	0.01	Q	V	|	|	|
75+35	0.0727	0.01	Q	V	|	|	|
75+40	0.0728	0.01	Q	V	|	|	|
75+45	0.0729	0.01	Q	V	|	|	|
75+50	0.0730	0.01	Q	V	|	|	|
75+55	0.0731	0.01	Q	V	|	|	|
76+ 0	0.0732	0.02	Q	V	|	|	|
76+ 5	0.0733	0.02	Q	V	|	|	|
76+10	0.0734	0.02	Q	V	|	|	|
76+15	0.0736	0.02	Q	V	|	|	|
76+20	0.0737	0.02	Q	V	|	|	|
76+25	0.0738	0.02	Q	V	|	|	|
76+30	0.0739	0.02	Q	V	|	|	|
76+35	0.0740	0.02	Q	V	|	|	|
76+40	0.0742	0.02	Q	V	|	|	|
76+45	0.0743	0.02	Q	V	|	|	|
76+50	0.0744	0.02	Q	V	|	|	|
76+55	0.0745	0.02	Q	V	|	|	|
77+ 0	0.0747	0.02	Q	V	|	|	|
77+ 5	0.0748	0.02	Q	V	|	|	|
77+10	0.0750	0.02	Q	V	|	|	|
77+15	0.0751	0.02	Q	V	|	|	|
77+20	0.0752	0.02	Q	V	|	|	|
77+25	0.0753	0.02	Q	V	|	|	|

77+30	0.0755	0.02	Q	V	|	|	|
77+35	0.0756	0.02	Q	V	|	|	|
77+40	0.0757	0.02	Q	V	|	|	|
77+45	0.0759	0.02	Q	V	|	|	|
77+50	0.0760	0.02	Q	V	|	|	|
77+55	0.0762	0.02	Q	V	|	|	|
78+ 0	0.0763	0.02	Q	V	|	|	|
78+ 5	0.0765	0.02	Q	V	|	|	|
78+10	0.0766	0.02	Q	V	|	|	|
78+15	0.0768	0.02	Q	V	|	|	|
78+20	0.0770	0.02	Q	V	|	|	|
78+25	0.0771	0.02	Q	V	|	|	|
78+30	0.0773	0.02	Q	V	|	|	|
78+35	0.0775	0.02	Q	V	|	|	|
78+40	0.0776	0.03	Q	V	|	|	|
78+45	0.0778	0.03	Q	V	|	|	|
78+50	0.0780	0.03	Q	V	|	|	|
78+55	0.0782	0.03	Q	V	|	|	|
79+ 0	0.0784	0.03	Q	V	|	|	|
79+ 5	0.0785	0.03	Q	V	|	|	|
79+10	0.0787	0.03	Q	V	|	|	|
79+15	0.0789	0.03	Q	|V	|	|	|
79+20	0.0791	0.03	Q	|V	|	|	|
79+25	0.0793	0.03	Q	|V	|	|	|
79+30	0.0795	0.03	Q	|V	|	|	|
79+35	0.0797	0.03	Q	|V	|	|	|
79+40	0.0799	0.03	Q	|V	|	|	|
79+45	0.0801	0.03	Q	|V	|	|	|
79+50	0.0803	0.03	Q	|V	|	|	|
79+55	0.0806	0.03	Q	|V	|	|	|
80+ 0	0.0808	0.03	Q	|V	|	|	|
80+ 5	0.0810	0.03	Q	|V	|	|	|
80+10	0.0813	0.04	Q	|V	|	|	|
80+15	0.0815	0.04	Q	|V	|	|	|
80+20	0.0818	0.04	Q	|V	|	|	|
80+25	0.0821	0.04	Q	|V	|	|	|
80+30	0.0824	0.04	Q	|V	|	|	|
80+35	0.0826	0.04	Q	|V	|	|	|
80+40	0.0829	0.04	Q	|V	|	|	|
80+45	0.0832	0.04	Q	|V	|	|	|
80+50	0.0835	0.04	Q	|V	|	|	|
80+55	0.0838	0.04	Q	|V	|	|	|
81+ 0	0.0841	0.04	Q	|V	|	|	|
81+ 5	0.0844	0.05	Q	|V	|	|	|
81+10	0.0848	0.05	Q	|V	|	|	|
81+15	0.0851	0.05	Q	|V	|	|	|
81+20	0.0854	0.05	Q	|V	|	|	|
81+25	0.0858	0.05	Q	|V	|	|	|
81+30	0.0861	0.05	Q	| V	|	|	|
81+35	0.0865	0.05	Q	| V	|	|	|
81+40	0.0869	0.05	Q	| V	|	|	|
81+45	0.0873	0.06	Q	| V	|	|	|
81+50	0.0877	0.06	Q	| V	|	|	|
81+55	0.0880	0.06	Q	| V	|	|	|
82+ 0	0.0885	0.06	Q	| V	|	|	|
82+ 5	0.0889	0.06	Q	| V	|	|	|
82+10	0.0892	0.06	Q	| V	|	|	|
82+15	0.0896	0.05	Q	| V	|	|	|
82+20	0.0899	0.05	Q	| V	|	|	|
82+25	0.0902	0.05	Q	| V	|	|	|
82+30	0.0905	0.05	Q	| V	|	|	|
82+35	0.0909	0.05	Q	| V	|	|	|
82+40	0.0912	0.05	Q	| V	|	|	|

82+45	0.0915	0.05	Q	V			
82+50	0.0919	0.05	Q	V			
82+55	0.0922	0.05	Q	V			
83+ 0	0.0926	0.05	Q	V			
83+ 5	0.0930	0.05	Q	V			
83+10	0.0934	0.05	Q	V			
83+15	0.0937	0.05	Q	V			
83+20	0.0941	0.05	Q	V			
83+25	0.0945	0.05	Q	V			
83+30	0.0948	0.05	Q	V			
83+35	0.0952	0.05	Q	V			
83+40	0.0955	0.05	Q	V			
83+45	0.0959	0.05	Q	V			
83+50	0.0962	0.05	Q	V			
83+55	0.0966	0.05	Q	V			
84+ 0	0.0969	0.05	Q	V			
84+ 5	0.0972	0.05	Q	V			
84+10	0.0976	0.05	Q	V			
84+15	0.0980	0.06	Q	V			
84+20	0.0985	0.06	Q	V			
84+25	0.0989	0.06	Q	V			
84+30	0.0994	0.07	Q	V			
84+35	0.0998	0.07	Q	V			
84+40	0.1003	0.07	Q	V			
84+45	0.1008	0.07	Q	V			
84+50	0.1013	0.07	Q	V			
84+55	0.1018	0.08	Q	V			
85+ 0	0.1024	0.08	Q	V			
85+ 5	0.1029	0.08	Q	V			
85+10	0.1035	0.08	Q	V			
85+15	0.1040	0.08	Q	V			
85+20	0.1046	0.09	Q	V			
85+25	0.1053	0.09	Q	V			
85+30	0.1059	0.09	Q	V			
85+35	0.1065	0.09	Q	V			
85+40	0.1071	0.09	Q	V			
85+45	0.1076	0.08	Q	V			
85+50	0.1081	0.07	Q	V			
85+55	0.1086	0.07	Q	V			
86+ 0	0.1091	0.07	Q	V			
86+ 5	0.1096	0.07	Q	V			
86+10	0.1101	0.07	Q	V			
86+15	0.1106	0.07	Q	V			
86+20	0.1111	0.07	Q	V			
86+25	0.1116	0.07	Q	V			
86+30	0.1121	0.07	Q	V			
86+35	0.1126	0.07	Q	V			
86+40	0.1131	0.07	Q	V			
86+45	0.1136	0.07	Q	V			
86+50	0.1141	0.07	Q	V			
86+55	0.1146	0.07	Q	V			
87+ 0	0.1150	0.07	Q	V			
87+ 5	0.1155	0.07	Q	V			
87+10	0.1160	0.07	Q	V			
87+15	0.1165	0.07	Q	V			
87+20	0.1170	0.07	Q	V			
87+25	0.1174	0.07	Q	V			
87+30	0.1179	0.07	Q	V			
87+35	0.1183	0.07	Q	V			
87+40	0.1188	0.06	Q	V			
87+45	0.1192	0.06	Q	V			
87+50	0.1196	0.06	Q	V			
87+55	0.1200	0.06	Q	V			

88+ 0	0.1203	0.06	Q	|	V	|	|
88+ 5	0.1207	0.05	Q	|	V	|	|
88+10	0.1210	0.05	Q	|	V	|	|
88+15	0.1213	0.04	Q	|	V	|	|
88+20	0.1215	0.03	Q	|	V	|	|
88+25	0.1216	0.02	Q	|	V	|	|
88+30	0.1218	0.02	Q	|	V	|	|
88+35	0.1219	0.02	Q	|	V	|	|
88+40	0.1220	0.02	Q	|	V	|	|
88+45	0.1221	0.01	Q	|	V	|	|
88+50	0.1222	0.01	Q	|	V	|	|
88+55	0.1223	0.01	Q	|	V	|	|
89+ 0	0.1224	0.01	Q	|	V	|	|
89+ 5	0.1224	0.01	Q	|	V	|	|
89+10	0.1225	0.01	Q	|	V	|	|
89+15	0.1226	0.01	Q	|	V	|	|
89+20	0.1227	0.01	Q	|	V	|	|
89+25	0.1228	0.01	Q	|	V	|	|
89+30	0.1229	0.01	Q	|	V	|	|
89+35	0.1230	0.01	Q	|	V	|	|
89+40	0.1231	0.01	Q	|	V	|	|
89+45	0.1232	0.01	Q	|	V	|	|
89+50	0.1233	0.01	Q	|	V	|	|
89+55	0.1233	0.01	Q	|	V	|	|
90+ 0	0.1234	0.01	Q	|	V	|	|
90+ 5	0.1235	0.01	Q	|	V	|	|
90+10	0.1236	0.01	Q	|	V	|	|
90+15	0.1237	0.01	Q	|	V	|	|
90+20	0.1238	0.01	Q	|	V	|	|
90+25	0.1238	0.01	Q	|	V	|	|
90+30	0.1239	0.01	Q	|	V	|	|
90+35	0.1240	0.01	Q	|	V	|	|
90+40	0.1241	0.01	Q	|	V	|	|
90+45	0.1241	0.01	Q	|	V	|	|
90+50	0.1242	0.01	Q	|	V	|	|
90+55	0.1243	0.01	Q	|	V	|	|
91+ 0	0.1243	0.01	Q	|	V	|	|
91+ 5	0.1244	0.01	Q	|	V	|	|
91+10	0.1244	0.01	Q	|	V	|	|
91+15	0.1245	0.01	Q	|	V	|	|
91+20	0.1245	0.01	Q	|	V	|	|
91+25	0.1246	0.01	Q	|	V	|	|
91+30	0.1246	0.01	Q	|	V	|	|
91+35	0.1247	0.01	Q	|	V	|	|
91+40	0.1248	0.01	Q	|	V	|	|
91+45	0.1248	0.01	Q	|	V	|	|
91+50	0.1249	0.01	Q	|	V	|	|
91+55	0.1250	0.01	Q	|	V	|	|
92+ 0	0.1250	0.01	Q	|	V	|	|
92+ 5	0.1251	0.01	Q	|	V	|	|
92+10	0.1251	0.01	Q	|	V	|	|
92+15	0.1252	0.01	Q	|	V	|	|
92+20	0.1252	0.01	Q	|	V	|	|
92+25	0.1253	0.01	Q	|	V	|	|
92+30	0.1253	0.01	Q	|	V	|	|
92+35	0.1254	0.01	Q	|	V	|	|
92+40	0.1254	0.01	Q	|	V	|	|
92+45	0.1255	0.01	Q	|	V	|	|
92+50	0.1255	0.01	Q	|	V	|	|
92+55	0.1256	0.01	Q	|	V	|	|
93+ 0	0.1256	0.01	Q	|	V	|	|
93+ 5	0.1257	0.01	Q	|	V	|	|
93+10	0.1257	0.01	Q	|	V	|	|

93+15	0.1258	0.01	Q	|	V	|	|
93+20	0.1258	0.01	Q	|	V	|	|
93+25	0.1259	0.01	Q	|	V	|	|
93+30	0.1259	0.01	Q	|	V	|	|
93+35	0.1260	0.01	Q	|	V	|	|
93+40	0.1260	0.01	Q	|	V	|	|
93+45	0.1261	0.01	Q	|	V	|	|
93+50	0.1261	0.01	Q	|	V	|	|
93+55	0.1262	0.01	Q	|	V	|	|
94+ 0	0.1262	0.01	Q	|	V	|	|
94+ 5	0.1263	0.01	Q	|	V	|	|
94+10	0.1263	0.01	Q	|	V	|	|
94+15	0.1264	0.01	Q	|	V	|	|
94+20	0.1264	0.01	Q	|	V	|	|
94+25	0.1265	0.01	Q	|	V	|	|
94+30	0.1265	0.01	Q	|	V	|	|
94+35	0.1266	0.01	Q	|	V	|	|
94+40	0.1266	0.01	Q	|	V	|	|
94+45	0.1266	0.01	Q	|	V	|	|
94+50	0.1267	0.01	Q	|	V	|	|
94+55	0.1267	0.01	Q	|	V	|	|
95+ 0	0.1268	0.01	Q	|	V	|	|
95+ 5	0.1268	0.01	Q	|	V	|	|
95+10	0.1268	0.01	Q	|	V	|	|
95+15	0.1269	0.01	Q	|	V	|	|
95+20	0.1269	0.01	Q	|	V	|	|
95+25	0.1270	0.01	Q	|	V	|	|
95+30	0.1270	0.01	Q	|	V	|	|
95+35	0.1270	0.01	Q	|	V	|	|
95+40	0.1271	0.01	Q	|	V	|	|
95+45	0.1271	0.01	Q	|	V	|	|
95+50	0.1271	0.01	Q	|	V	|	|
95+55	0.1272	0.01	Q	|	V	|	|
96+ 0	0.1272	0.01	Q	|	V	|	|
96+ 5	0.1272	0.00	Q	|	V	|	|
96+10	0.1273	0.00	Q	|	V	|	|
96+15	0.1273	0.01	Q	|	V	|	|
96+20	0.1274	0.01	Q	|	V	|	|
96+25	0.1275	0.01	Q	|	V	|	|
96+30	0.1276	0.02	Q	|	V	|	|
96+35	0.1277	0.02	Q	|	V	|	|
96+40	0.1278	0.02	Q	|	V	|	|
96+45	0.1280	0.02	Q	|	V	|	|
96+50	0.1281	0.02	Q	|	V	|	|
96+55	0.1283	0.02	Q	|	V	|	|
97+ 0	0.1284	0.02	Q	|	V	|	|
97+ 5	0.1286	0.03	Q	|	V	|	|
97+10	0.1288	0.03	Q	|	V	|	|
97+15	0.1290	0.02	Q	|	V	|	|
97+20	0.1291	0.02	Q	|	V	|	|
97+25	0.1293	0.02	Q	|	V	|	|
97+30	0.1294	0.02	Q	|	V	|	|
97+35	0.1296	0.02	Q	|	V	|	|
97+40	0.1298	0.02	Q	|	V	|	|
97+45	0.1299	0.02	Q	|	V	|	|
97+50	0.1301	0.02	Q	|	V	|	|
97+55	0.1303	0.02	Q	|	V	|	|
98+ 0	0.1304	0.03	Q	|	V	|	|
98+ 5	0.1306	0.03	Q	|	V	|	|
98+10	0.1308	0.03	Q	|	V	|	|
98+15	0.1310	0.03	Q	|	V	|	|
98+20	0.1312	0.03	Q	|	V	|	|
98+25	0.1315	0.03	Q	|	V	|	|

98+30	0.1317	0.03	Q	|	V |	|	|
98+35	0.1319	0.03	Q	|	V |	|	|
98+40	0.1321	0.03	Q	|	V |	|	|
98+45	0.1323	0.03	Q	|	V |	|	|
98+50	0.1326	0.04	Q	|	V |	|	|
98+55	0.1328	0.04	Q	|	V |	|	|
99+ 0	0.1331	0.04	Q	|	V |	|	|
99+ 5	0.1333	0.04	Q	|	V |	|	|
99+10	0.1336	0.04	Q	|	V |	|	|
99+15	0.1338	0.04	Q	|	V |	|	|
99+20	0.1341	0.04	Q	|	V |	|	|
99+25	0.1344	0.04	Q	|	V |	|	|
99+30	0.1346	0.04	Q	|	V |	|	|
99+35	0.1349	0.04	Q	|	V |	|	|
99+40	0.1352	0.04	Q	|	V |	|	|
99+45	0.1354	0.04	Q	|	V |	|	|
99+50	0.1357	0.04	Q	|	V |	|	|
99+55	0.1360	0.04	Q	|	V |	|	|
100+ 0	0.1362	0.04	Q	|	V|	|	|
100+ 5	0.1365	0.04	Q	|	V|	|	|
100+10	0.1369	0.04	Q	|	V|	|	|
100+15	0.1372	0.04	Q	|	V|	|	|
100+20	0.1375	0.05	Q	|	V|	|	|
100+25	0.1378	0.05	Q	|	V|	|	|
100+30	0.1381	0.05	Q	|	V|	|	|
100+35	0.1385	0.05	Q	|	V|	|	|
100+40	0.1388	0.05	Q	|	V|	|	|
100+45	0.1392	0.05	Q	|	V|	|	|
100+50	0.1396	0.05	Q	|	V|	|	|
100+55	0.1399	0.05	Q	|	V|	|	|
101+ 0	0.1403	0.06	Q	|	V|	|	|
101+ 5	0.1407	0.06	Q	|	V|	|	|
101+10	0.1411	0.06	Q	|	V|	|	|
101+15	0.1415	0.05	Q	|	V|	|	|
101+20	0.1418	0.05	Q	|	V|	|	|
101+25	0.1422	0.05	Q	|	V|	|	|
101+30	0.1425	0.05	Q	|	V|	|	|
101+35	0.1429	0.05	Q	|	V|	|	|
101+40	0.1433	0.05	Q	|	V|	|	|
101+45	0.1436	0.06	Q	|	V	|	|
101+50	0.1441	0.06	Q	|	V	|	|
101+55	0.1445	0.06	Q	|	V	|	|
102+ 0	0.1449	0.06	Q	|	V	|	|
102+ 5	0.1453	0.06	Q	|	V	|	|
102+10	0.1457	0.06	Q	|	V	|	|
102+15	0.1462	0.06	Q	|	V	|	|
102+20	0.1466	0.07	Q	|	V	|	|
102+25	0.1471	0.07	Q	|	V	|	|
102+30	0.1475	0.07	Q	|	V	|	|
102+35	0.1480	0.07	Q	|	V	|	|
102+40	0.1485	0.07	Q	|	V	|	|
102+45	0.1490	0.07	Q	|	V	|	|
102+50	0.1495	0.07	Q	|	V	|	|
102+55	0.1500	0.07	Q	|	V	|	|
103+ 0	0.1505	0.07	Q	|	|V	|	|
103+ 5	0.1510	0.08	Q	|	|V	|	|
103+10	0.1516	0.08	Q	|	|V	|	|
103+15	0.1521	0.08	Q	|	|V	|	|
103+20	0.1526	0.08	Q	|	|V	|	|
103+25	0.1531	0.08	Q	|	|V	|	|
103+30	0.1537	0.08	Q	|	|V	|	|
103+35	0.1543	0.08	Q	|	|V	|	|
103+40	0.1548	0.08	Q	|	|V	|	|

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103+45       0.1554      0.09  Q          |          |V         |          |
103+50       0.1560      0.09  Q          |          |V         |          |
103+55       0.1567      0.09  Q          |          |V         |          |
104+ 0       0.1573      0.09  Q          |          |V         |          |
104+ 5       0.1580      0.10  Q          |          | V        |          |
104+10       0.1587      0.10  Q          |          | V        |          |
104+15       0.1594      0.10  Q          |          | V        |          |
104+20       0.1601      0.11  Q          |          | V        |          |
104+25       0.1609      0.11  Q          |          | V        |          |
104+30       0.1616      0.11  Q          |          | V        |          |
104+35       0.1624      0.11  Q          |          | V        |          |
104+40       0.1632      0.11  Q          |          | V        |          |
104+45       0.1640      0.12  Q          |          | V        |          |
104+50       0.1648      0.12  Q          |          | V        |          |
104+55       0.1657      0.12  Q          |          |  V       |          |
105+ 0       0.1665      0.12  Q          |          |  V       |          |
105+ 5       0.1674      0.13  Q          |          |  V       |          |
105+10       0.1683      0.13  Q          |          |  V       |          |
105+15       0.1692      0.14  Q          |          |  V       |          |
105+20       0.1702      0.14  Q          |          |  V       |          |
105+25       0.1711      0.14  Q          |          |  V       |          |
105+30       0.1721      0.15  Q          |          |   V      |          |
105+35       0.1732      0.15  Q          |          |   V      |          |
105+40       0.1742      0.15  Q          |          |   V      |          |
105+45       0.1753      0.15  Q          |          |   V      |          |
105+50       0.1763      0.16  Q          |          |   V      |          |
105+55       0.1774      0.16  Q          |          |   V      |          |
106+ 0       0.1786      0.16  Q          |          |   V      |          |
106+ 5       0.1797      0.16  Q          |          |    V     |          |
106+10       0.1807      0.15  Q          |          |    V     |          |
106+15       0.1817      0.14  Q          |          |    V     |          |
106+20       0.1826      0.13  Q          |          |    V     |          |
106+25       0.1835      0.13  Q          |          |    V     |          |
106+30       0.1844      0.13  Q          |          |    V     |          |
106+35       0.1852      0.13  Q          |          |    V     |          |
106+40       0.1861      0.13  Q          |          |    V     |          |
106+45       0.1871      0.14  Q          |          |     V    |          |
106+50       0.1881      0.14  Q          |          |     V    |          |
106+55       0.1891      0.15  Q          |          |     V    |          |
107+ 0       0.1901      0.15  Q          |          |     V    |          |
107+ 5       0.1911      0.15  Q          |          |     V    |          |
107+10       0.1922      0.15  Q          |          |     V    |          |
107+15       0.1932      0.15  Q          |          |     V    |          |
107+20       0.1942      0.15  Q          |          |      V   |          |
107+25       0.1952      0.15  Q          |          |      V   |          |
107+30       0.1962      0.15  Q          |          |      V   |          |
107+35       0.1972      0.15  Q          |          |      V   |          |
107+40       0.1982      0.14  Q          |          |      V   |          |
107+45       0.1992      0.14  Q          |          |      V   |          |
107+50       0.2001      0.14  Q          |          |      V   |          |
107+55       0.2011      0.14  Q          |          |       V  |          |
108+ 0       0.2020      0.14  Q          |          |       V  |          |
108+ 5       0.2030      0.14  Q          |          |       V  |          |
108+10       0.2040      0.15  Q          |          |       V  |          |
108+15       0.2051      0.16  Q          |          |       V  |          |
108+20       0.2063      0.17  Q          |          |       V  |          |
108+25       0.2076      0.18  Q          |          |       V  |          |
108+30       0.2089      0.19  Q          |          |        V |          |
108+35       0.2102      0.19  Q          |          |        V |          |
108+40       0.2115      0.19  Q          |          |        V |          |
108+45       0.2129      0.20  Q          |          |        V |          |
108+50       0.2143      0.20  Q          |          |        V |          |
108+55       0.2157      0.21  Q          |          |         V          |
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109+ 0	0.2172	0.21	Q	|	|	V	|
109+ 5	0.2187	0.22	Q	|	|	V	|
109+10	0.2202	0.22	Q	|	|	V	|
109+15	0.2218	0.24	Q	|	|	V	|
109+20	0.2235	0.24	Q	|	|	|V	|
109+25	0.2252	0.25	Q	|	|	|V	|
109+30	0.2270	0.25	|Q	|	|	|V	|
109+35	0.2287	0.25	|Q	|	|	|V	|
109+40	0.2303	0.24	Q	|	|	| V	|
109+45	0.2318	0.22	Q	|	|	| V	|
109+50	0.2332	0.20	Q	|	|	| V	|
109+55	0.2346	0.20	Q	|	|	| V	|
110+ 0	0.2359	0.19	Q	|	|	| V	|
110+ 5	0.2372	0.19	Q	|	|	| V	|
110+10	0.2386	0.19	Q	|	|	| V	|
110+15	0.2399	0.20	Q	|	|	| V	|
110+20	0.2413	0.20	Q	|	|	| V	|
110+25	0.2428	0.20	Q	|	|	| V	|
110+30	0.2441	0.20	Q	|	|	| V	|
110+35	0.2455	0.20	Q	|	|	| V	|
110+40	0.2469	0.20	Q	|	|	| V	|
110+45	0.2483	0.20	Q	|	|	| V	|
110+50	0.2497	0.20	Q	|	|	| V	|
110+55	0.2511	0.20	Q	|	|	| V	|
111+ 0	0.2524	0.20	Q	|	|	| V	|
111+ 5	0.2538	0.20	Q	|	|	| V	|
111+10	0.2551	0.19	Q	|	|	| V	|
111+15	0.2564	0.19	Q	|	|	| V	|
111+20	0.2577	0.19	Q	|	|	| V	|
111+25	0.2590	0.19	Q	|	|	| V	|
111+30	0.2603	0.18	Q	|	|	| V	|
111+35	0.2615	0.18	Q	|	|	| V	|
111+40	0.2627	0.17	Q	|	|	| V	|
111+45	0.2639	0.17	Q	|	|	| V	|
111+50	0.2650	0.16	Q	|	|	| V	|
111+55	0.2661	0.16	Q	|	|	| V	|
112+ 0	0.2671	0.15	Q	|	|	| V	|
112+ 5	0.2681	0.15	Q	|	|	| V	|
112+10	0.2690	0.13	Q	|	|	| V	|
112+15	0.2697	0.10	Q	|	|	| V	|
112+20	0.2702	0.08	Q	|	|	| V	|
112+25	0.2707	0.06	Q	|	|	| V	|
112+30	0.2711	0.06	Q	|	|	| V	|
112+35	0.2714	0.05	Q	|	|	| V	|
112+40	0.2718	0.05	Q	|	|	| V	|
112+45	0.2720	0.04	Q	|	|	| V	|
112+50	0.2723	0.04	Q	|	|	| V	|
112+55	0.2725	0.03	Q	|	|	| V	|
113+ 0	0.2728	0.03	Q	|	|	| V	|
113+ 5	0.2730	0.03	Q	|	|	| V	|
113+10	0.2732	0.03	Q	|	|	| V	|
113+15	0.2734	0.03	Q	|	|	| V	|
113+20	0.2737	0.04	Q	|	|	| V	|
113+25	0.2739	0.04	Q	|	|	| V	|
113+30	0.2742	0.04	Q	|	|	| V	|
113+35	0.2745	0.04	Q	|	|	| V	|
113+40	0.2747	0.04	Q	|	|	| V	|
113+45	0.2750	0.04	Q	|	|	| V	|
113+50	0.2752	0.04	Q	|	|	| V	|
113+55	0.2755	0.04	Q	|	|	| V	|
114+ 0	0.2757	0.03	Q	|	|	| V	|
114+ 5	0.2759	0.03	Q	|	|	| V	|
114+10	0.2762	0.03	Q	|	|	| V	|

114+15	0.2764	0.03	Q	|	|	|	V |
114+20	0.2766	0.03	Q	|	|	|	V |
114+25	0.2768	0.03	Q	|	|	|	V |
114+30	0.2770	0.03	Q	|	|	|	V |
114+35	0.2773	0.03	Q	|	|	|	V |
114+40	0.2775	0.03	Q	|	|	|	V |
114+45	0.2777	0.03	Q	|	|	|	V |
114+50	0.2778	0.03	Q	|	|	|	V |
114+55	0.2780	0.02	Q	|	|	|	V |
115+ 0	0.2781	0.02	Q	|	|	|	V |
115+ 5	0.2783	0.02	Q	|	|	|	V |
115+10	0.2784	0.02	Q	|	|	|	V |
115+15	0.2786	0.02	Q	|	|	|	V |
115+20	0.2787	0.02	Q	|	|	|	V |
115+25	0.2789	0.02	Q	|	|	|	V |
115+30	0.2791	0.03	Q	|	|	|	V |
115+35	0.2793	0.03	Q	|	|	|	V |
115+40	0.2795	0.03	Q	|	|	|	V |
115+45	0.2796	0.03	Q	|	|	|	V|
115+50	0.2798	0.02	Q	|	|	|	V|
115+55	0.2800	0.02	Q	|	|	|	V|
116+ 0	0.2801	0.02	Q	|	|	|	V|
116+ 5	0.2802	0.02	Q	|	|	|	V|
116+10	0.2804	0.02	Q	|	|	|	V|
116+15	0.2805	0.02	Q	|	|	|	V|
116+20	0.2807	0.02	Q	|	|	|	V|
116+25	0.2808	0.02	Q	|	|	|	V|
116+30	0.2810	0.02	Q	|	|	|	V|
116+35	0.2811	0.02	Q	|	|	|	V|
116+40	0.2813	0.02	Q	|	|	|	V|
116+45	0.2814	0.02	Q	|	|	|	V|
116+50	0.2816	0.02	Q	|	|	|	V|
116+55	0.2817	0.02	Q	|	|	|	V|
117+ 0	0.2819	0.02	Q	|	|	|	V|
117+ 5	0.2820	0.02	Q	|	|	|	V|
117+10	0.2821	0.02	Q	|	|	|	V|
117+15	0.2823	0.02	Q	|	|	|	V|
117+20	0.2824	0.02	Q	|	|	|	V|
117+25	0.2826	0.02	Q	|	|	|	V|
117+30	0.2827	0.02	Q	|	|	|	V|
117+35	0.2828	0.02	Q	|	|	|	V|
117+40	0.2829	0.02	Q	|	|	|	V|
117+45	0.2831	0.02	Q	|	|	|	V|
117+50	0.2832	0.02	Q	|	|	|	V|
117+55	0.2834	0.02	Q	|	|	|	V|
118+ 0	0.2835	0.02	Q	|	|	|	V|
118+ 5	0.2836	0.02	Q	|	|	|	V|
118+10	0.2837	0.02	Q	|	|	|	V|
118+15	0.2839	0.02	Q	|	|	|	V|
118+20	0.2840	0.02	Q	|	|	|	V|
118+25	0.2842	0.02	Q	|	|	|	V|
118+30	0.2843	0.02	Q	|	|	|	V|
118+35	0.2844	0.02	Q	|	|	|	V|
118+40	0.2845	0.02	Q	|	|	|	V|
118+45	0.2846	0.02	Q	|	|	|	V|
118+50	0.2847	0.02	Q	|	|	|	V|
118+55	0.2849	0.02	Q	|	|	|	V|
119+ 0	0.2850	0.02	Q	|	|	|	V|
119+ 5	0.2851	0.02	Q	|	|	|	V|
119+10	0.2852	0.02	Q	|	|	|	V|
119+15	0.2853	0.02	Q	|	|	|	V|
119+20	0.2854	0.02	Q	|	|	|	V|
119+25	0.2855	0.02	Q	|	|	|	V|

119+30	0.2856	0.02	Q	|	|	|	V|
119+35	0.2857	0.02	Q	|	|	|	V|
119+40	0.2858	0.02	Q	|	|	|	V|
119+45	0.2859	0.02	Q	|	|	|	V|
119+50	0.2860	0.02	Q	|	|	|	V|
119+55	0.2862	0.02	Q	|	|	|	V|
120+ 0	0.2863	0.02	Q	|	|	|	V|
120+ 5	0.2864	0.01	Q	|	|	|	V|
120+10	0.2864	0.01	Q	|	|	|	V|
120+15	0.2865	0.01	Q	|	|	|	V|
120+20	0.2865	0.01	Q	|	|	|	V|
120+25	0.2866	0.00	Q	|	|	|	V|
120+30	0.2866	0.00	Q	|	|	|	V|
120+35	0.2866	0.00	Q	|	|	|	V|
120+40	0.2866	0.00	Q	|	|	|	V|
120+45	0.2866	0.00	Q	|	|	|	V|
120+50	0.2866	0.00	Q	|	|	|	V|
120+55	0.2867	0.00	Q	|	|	|	V|
121+ 0	0.2867	0.00	Q	|	|	|	V|
121+ 5	0.2867	0.00	Q	|	|	|	V|
121+10	0.2867	0.00	Q	|	|	|	V|
121+15	0.2867	0.00	Q	|	|	|	V|
121+20	0.2867	0.00	Q	|	|	|	V|
121+25	0.2867	0.00	Q	|	|	|	V|
121+30	0.2867	0.00	Q	|	|	|	V|
121+35	0.2867	0.00	Q	|	|	|	V|
121+40	0.2867	0.00	Q	|	|	|	V|
121+45	0.2867	0.00	Q	|	|	|	V|

Project Summary	
Title	JD Fields Hemet
Engineer	Shea-Michael Anti, P.E.
Company	Kimley-Horn and Associates, Inc.
Date	10/14/2021

Notes

Table of Contents

Subsection: User Notifications

User Notifications?	No user notifications generated.

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
Unit Hydrograph (Onsite Runoff)	Base	0	6,498.000	885.000	1.71

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
Outfall (POC)	Base	0	0.000	0.000	0.00

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ft³)
Infiltration Basin (IN)	Base	0	6,499.000	885.000	1.71	(N/A)	(N/A)
Infiltration Basin (OUT)	Base	0	0.000	0.000	0.00	1,538.31	3,881.000

Peak Discharge	1.71 ft³/s
Time to Peak	885.000 min
Hydrograph Volume	6,498.000 ft³

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
5.000	0.00	0.00	0.01	0.01	0.01
30.000	0.01	0.01	0.01	0.01	0.01
55.000	0.01	0.01	0.01	0.02	0.02
80.000	0.02	0.02	0.02	0.02	0.02
105.000	0.02	0.02	0.03	0.03	0.03
130.000	0.03	0.03	0.03	0.04	0.04
155.000	0.05	0.06	0.06	0.05	0.04
180.000	0.03	0.00	0.00	0.01	0.01
205.000	0.01	0.02	0.02	0.02	0.02
230.000	0.02	0.02	0.02	0.02	0.02
255.000	0.03	0.03	0.03	0.03	0.03
280.000	0.03	0.03	0.04	0.04	0.04
305.000	0.04	0.04	0.05	0.05	0.06
330.000	0.06	0.07	0.08	0.09	0.07
355.000	0.06	0.05	0.00	0.00	0.01
380.000	0.01	0.02	0.02	0.02	0.02
405.000	0.03	0.03	0.03	0.03	0.03
430.000	0.03	0.03	0.04	0.04	0.04
455.000	0.04	0.04	0.04	0.05	0.05
480.000	0.05	0.05	0.05	0.06	0.06
505.000	0.07	0.08	0.09	0.11	0.11
530.000	0.09	0.07	0.06	0.00	0.01
555.000	0.02	0.03	0.03	0.04	0.04
580.000	0.05	0.05	0.05	0.05	0.05
605.000	0.05	0.06	0.06	0.07	0.07
630.000	0.07	0.08	0.08	0.08	0.09
655.000	0.09	0.10	0.10	0.10	0.11
680.000	0.12	0.13	0.15	0.18	0.20
705.000	0.21	0.18	0.14	0.11	0.00
730.000	0.02	0.06	0.08	0.09	0.10
755.000	0.12	0.13	0.14	0.14	0.15
780.000	0.14	0.15	0.16	0.18	0.19
805.000	0.19	0.20	0.21	0.22	0.23
830.000	0.25	0.26	0.27	0.27	0.28
855.000	0.31	0.34	0.42	0.68	1.18
880.000	1.64	1.71	1.30	0.85	0.59
905.000	0.46	0.35	0.27	0.21	0.17
930.000	0.14	0.12	(N/A)	(N/A)	(N/A)

Subsection: Time vs. Elevation
Label: Infiltration Basin (IN)

Scenario: Base

Time vs. Elevation (ft)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
15.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
30.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
45.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
60.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.71
75.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
90.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
105.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
120.000	1,537.71	1,537.71	1,537.71	1,537.72	1,537.72
135.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
150.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.73
165.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
180.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
195.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
210.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
225.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
240.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
255.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
270.000	1,537.73	1,537.74	1,537.74	1,537.74	1,537.74
285.000	1,537.74	1,537.74	1,537.74	1,537.74	1,537.74
300.000	1,537.74	1,537.74	1,537.74	1,537.74	1,537.74
315.000	1,537.74	1,537.74	1,537.74	1,537.75	1,537.75
330.000	1,537.75	1,537.75	1,537.75	1,537.75	1,537.75
345.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
360.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
375.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
390.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
405.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
420.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
435.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
450.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
465.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
480.000	1,537.76	1,537.76	1,537.77	1,537.77	1,537.77
495.000	1,537.77	1,537.77	1,537.77	1,537.77	1,537.77
510.000	1,537.77	1,537.77	1,537.78	1,537.78	1,537.78
525.000	1,537.78	1,537.78	1,537.79	1,537.79	1,537.79
540.000	1,537.79	1,537.79	1,537.79	1,537.79	1,537.79
555.000	1,537.78	1,537.78	1,537.78	1,537.78	1,537.78
570.000	1,537.78	1,537.78	1,537.78	1,537.78	1,537.78
585.000	1,537.78	1,537.78	1,537.79	1,537.79	1,537.79
600.000	1,537.79	1,537.79	1,537.79	1,537.79	1,537.79
615.000	1,537.79	1,537.79	1,537.79	1,537.79	1,537.79
630.000	1,537.79	1,537.79	1,537.79	1,537.80	1,537.80

Subsection: Time vs. Elevation
Label: Infiltration Basin (IN)

Scenario: Base

Time vs. Elevation (ft)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
645.000	1,537.80	1,537.80	1,537.80	1,537.80	1,537.80
660.000	1,537.80	1,537.81	1,537.81	1,537.81	1,537.81
675.000	1,537.81	1,537.81	1,537.82	1,537.82	1,537.82
690.000	1,537.82	1,537.82	1,537.83	1,537.83	1,537.84
705.000	1,537.84	1,537.84	1,537.85	1,537.85	1,537.85
720.000	1,537.85	1,537.85	1,537.85	1,537.85	1,537.85
735.000	1,537.85	1,537.85	1,537.85	1,537.85	1,537.85
750.000	1,537.85	1,537.85	1,537.85	1,537.86	1,537.86
765.000	1,537.86	1,537.86	1,537.86	1,537.86	1,537.87
780.000	1,537.87	1,537.87	1,537.87	1,537.87	1,537.88
795.000	1,537.88	1,537.88	1,537.89	1,537.89	1,537.89
810.000	1,537.90	1,537.90	1,537.90	1,537.91	1,537.91
825.000	1,537.91	1,537.92	1,537.92	1,537.93	1,537.93
840.000	1,537.93	1,537.94	1,537.94	1,537.95	1,537.95
855.000	1,537.96	1,537.96	1,537.97	1,537.98	1,537.99
870.000	1,538.00	1,538.02	1,538.05	1,538.09	1,538.13
885.000	1,538.17	1,538.21	1,538.24	1,538.26	1,538.28
900.000	1,538.29	1,538.30	1,538.30	1,538.31	1,538.31
915.000	1,538.31	1,538.31	1,538.31	1,538.31	1,538.31
930.000	1,538.31	1,538.31	1,538.30	1,538.30	1,538.29
945.000	1,538.28	1,538.28	1,538.27	1,538.27	1,538.26
960.000	1,538.25	1,538.25	1,538.24	1,538.24	1,538.23
975.000	1,538.22	1,538.22	1,538.21	1,538.21	1,538.20
990.000	1,538.19	1,538.19	1,538.18	1,538.17	1,538.17
1,005.000	1,538.16	1,538.16	1,538.15	1,538.14	1,538.14
1,020.000	1,538.13	1,538.13	1,538.12	1,538.12	1,538.11
1,035.000	1,538.10	1,538.10	1,538.09	1,538.09	1,538.08
1,050.000	1,538.08	1,538.07	1,538.07	1,538.06	1,538.06
1,065.000	1,538.05	1,538.05	1,538.05	1,538.04	1,538.04
1,080.000	1,538.03	1,538.03	1,538.02	1,538.02	1,538.01
1,095.000	1,538.01	1,538.01	1,538.00	1,538.00	1,537.99
1,110.000	1,537.99	1,537.99	1,537.98	1,537.98	1,537.98
1,125.000	1,537.97	1,537.97	1,537.96	1,537.96	1,537.96
1,140.000	1,537.95	1,537.95	1,537.95	1,537.94	1,537.94
1,155.000	1,537.94	1,537.94	1,537.93	1,537.93	1,537.93
1,170.000	1,537.92	1,537.92	1,537.92	1,537.91	1,537.91
1,185.000	1,537.91	1,537.91	1,537.90	1,537.90	1,537.90
1,200.000	1,537.90	1,537.89	1,537.89	1,537.89	1,537.89
1,215.000	1,537.88	1,537.88	1,537.88	1,537.88	1,537.87
1,230.000	1,537.87	1,537.87	1,537.87	1,537.86	1,537.86
1,245.000	1,537.86	1,537.86	1,537.86	1,537.85	1,537.85
1,260.000	1,537.85	1,537.85	1,537.85	1,537.84	1,537.84
1,275.000	1,537.84	1,537.84	1,537.84	1,537.84	1,537.83

Subsection: Time vs. Elevation
Scenario: Base
Label: Infiltration Basin (IN)

Time vs. Elevation (ft)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
1,290.000	1,537.83	1,537.83	1,537.83	1,537.83	1,537.82
1,305.000	1,537.82	1,537.82	1,537.82	1,537.82	1,537.82
1,320.000	1,537.82	1,537.81	1,537.81	1,537.81	1,537.81
1,335.000	1,537.81	1,537.81	1,537.81	1,537.80	1,537.80
1,350.000	1,537.80	1,537.80	1,537.80	1,537.80	1,537.80
1,365.000	1,537.79	1,537.79	1,537.79	1,537.79	1,537.79
1,380.000	1,537.79	1,537.79	1,537.79	1,537.79	1,537.78
1,395.000	1,537.78	1,537.78	1,537.78	1,537.78	1,537.78
1,410.000	1,537.78	1,537.78	1,537.78	1,537.77	1,537.77
1,425.000	1,537.77	1,537.77	1,537.77	1,537.77	1,537.77
1,440.000	1,537.77	(N/A)	(N/A)	(N/A)	(N/A)

Time vs. Volume (ft³)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
0.000	0.000	0.000	0.000	0.000	0.000
15.000	2.000	3.000	5.000	6.000	8.000
30.000	10.000	11.000	13.000	14.000	16.000
45.000	17.000	19.000	20.000	22.000	23.000
60.000	24.000	26.000	27.000	29.000	32.000
75.000	35.000	38.000	41.000	44.000	46.000
90.000	49.000	52.000	55.000	57.000	60.000
105.000	63.000	65.000	68.000	71.000	75.000
120.000	79.000	83.000	87.000	91.000	95.000
135.000	99.000	102.000	106.000	111.000	116.000
150.000	121.000	127.000	133.000	141.000	149.000
165.000	157.000	165.000	171.000	176.000	181.000
180.000	184.000	185.000	183.000	181.000	179.000
195.000	178.000	177.000	177.000	176.000	176.000
210.000	176.000	177.000	178.000	179.000	180.000
225.000	181.000	182.000	183.000	184.000	185.000
240.000	186.000	187.000	188.000	189.000	190.000
255.000	192.000	195.000	197.000	200.000	202.000
270.000	204.000	207.000	209.000	211.000	214.000
285.000	216.000	219.000	222.000	226.000	230.000
300.000	234.000	237.000	241.000	244.000	248.000
315.000	253.000	258.000	263.000	269.000	275.000
330.000	282.000	289.000	297.000	305.000	315.000
345.000	326.000	335.000	343.000	350.000	355.000
360.000	359.000	360.000	357.000	353.000	348.000
375.000	345.000	342.000	340.000	338.000	336.000
390.000	335.000	334.000	333.000	332.000	332.000
405.000	332.000	333.000	333.000	334.000	335.000
420.000	335.000	336.000	337.000	337.000	338.000
435.000	338.000	339.000	341.000	344.000	346.000
450.000	348.000	350.000	352.000	355.000	357.000
465.000	359.000	361.000	365.000	368.000	372.000
480.000	375.000	379.000	382.000	386.000	389.000
495.000	394.000	399.000	404.000	409.000	416.000
510.000	423.000	432.000	441.000	452.000	465.000
525.000	477.000	488.000	497.000	504.000	510.000
540.000	513.000	514.000	509.000	503.000	499.000
555.000	495.000	492.000	491.000	489.000	488.000
570.000	488.000	488.000	489.000	490.000	492.000
585.000	494.000	496.000	498.000	499.000	501.000
600.000	503.000	505.000	507.000	510.000	513.000
615.000	516.000	520.000	525.000	530.000	534.000
630.000	539.000	544.000	550.000	557.000	563.000

Time vs. Volume (ft³)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
645.000	569.000	575.000	583.000	590.000	598.000
660.000	606.000	615.000	624.000	633.000	641.000
675.000	651.000	662.000	673.000	685.000	698.000
690.000	714.000	731.000	751.000	773.000	797.000
705.000	821.000	844.000	864.000	879.000	891.000
720.000	899.000	900.000	893.000	883.000	875.000
735.000	872.000	872.000	873.000	876.000	880.000
750.000	885.000	891.000	899.000	908.000	918.000
765.000	929.000	941.000	952.000	964.000	976.000
780.000	987.000	998.000	1,010.000	1,023.000	1,037.000
795.000	1,053.000	1,070.000	1,088.000	1,105.000	1,123.000
810.000	1,141.000	1,161.000	1,181.000	1,201.000	1,223.000
825.000	1,245.000	1,268.000	1,293.000	1,319.000	1,346.000
840.000	1,373.000	1,401.000	1,428.000	1,455.000	1,484.000
855.000	1,515.000	1,549.000	1,586.000	1,630.000	1,686.000
870.000	1,767.000	1,902.000	2,092.000	2,336.000	2,614.000
885.000	2,905.000	3,167.000	3,367.000	3,519.000	3,630.000
900.000	3,709.000	3,767.000	3,812.000	3,844.000	3,865.000
915.000	3,877.000	3,881.000	3,879.000	3,872.000	3,861.000
930.000	3,847.000	3,830.000	3,801.000	3,760.000	3,719.000
945.000	3,678.000	3,637.000	3,596.000	3,555.000	3,513.000
960.000	3,472.000	3,431.000	3,390.000	3,349.000	3,308.000
975.000	3,267.000	3,226.000	3,185.000	3,144.000	3,103.000
990.000	3,058.000	3,015.000	2,972.000	2,929.000	2,887.000
1,005.000	2,846.000	2,805.000	2,764.000	2,724.000	2,685.000
1,020.000	2,646.000	2,608.000	2,570.000	2,533.000	2,496.000
1,035.000	2,460.000	2,424.000	2,388.000	2,353.000	2,319.000
1,050.000	2,285.000	2,251.000	2,218.000	2,185.000	2,153.000
1,065.000	2,121.000	2,090.000	2,059.000	2,028.000	1,998.000
1,080.000	1,968.000	1,939.000	1,910.000	1,881.000	1,853.000
1,095.000	1,825.000	1,798.000	1,770.000	1,745.000	1,722.000
1,110.000	1,700.000	1,677.000	1,655.000	1,633.000	1,612.000
1,125.000	1,591.000	1,570.000	1,549.000	1,529.000	1,509.000
1,140.000	1,489.000	1,470.000	1,450.000	1,431.000	1,413.000
1,155.000	1,394.000	1,376.000	1,358.000	1,340.000	1,322.000
1,170.000	1,305.000	1,288.000	1,271.000	1,254.000	1,238.000
1,185.000	1,222.000	1,205.000	1,190.000	1,174.000	1,159.000
1,200.000	1,143.000	1,128.000	1,114.000	1,099.000	1,085.000
1,215.000	1,070.000	1,056.000	1,042.000	1,029.000	1,015.000
1,230.000	1,002.000	989.000	976.000	963.000	950.000
1,245.000	938.000	926.000	913.000	901.000	890.000
1,260.000	878.000	866.000	855.000	844.000	833.000
1,275.000	822.000	811.000	800.000	790.000	780.000

Time vs. Volume (ft³)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
1,290.000	769.000	759.000	749.000	739.000	730.000
1,305.000	720.000	711.000	701.000	692.000	683.000
1,320.000	674.000	665.000	657.000	648.000	639.000
1,335.000	631.000	623.000	615.000	607.000	599.000
1,350.000	591.000	583.000	575.000	568.000	560.000
1,365.000	553.000	546.000	539.000	531.000	524.000
1,380.000	518.000	511.000	504.000	497.000	491.000
1,395.000	485.000	478.000	472.000	466.000	460.000
1,410.000	454.000	448.000	442.000	436.000	430.000
1,425.000	425.000	419.000	413.000	408.000	403.000
1,440.000	397.000	(N/A)	(N/A)	(N/A)	(N/A)

Elevation-Volume

Pond Elevation (ft)	Pond Volume (ft^3)
1,537.70	0.000
1,538.00	1,754.750
1,539.00	8,515.070
1,540.00	16,770.050
1,541.00	26,728.200
1,542.00	41,675.180
1,543.00	80,599.530

Requested Pond Water Surface Elevations	
Minimum (Headwater)	1,537.74 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	1,543.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Rectangular Weir	Weir - 1	Forward	TW	1,542.88	1,543.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Weir - 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	1,542.88 ft
Weir Length	2.00 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Base
Label: Infiltration Basin

Infiltration	
Infiltration Method (Computed)	Constant
Infiltration Rate (Constant)	0.23 ft³/s

Initial Conditions	
Elevation (Water Surface, Initial)	1,537.70 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	3.000 min

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
1,537.70	0.00	0.000	0	0.00	0.00	0.00
1,538.20	0.00	3,106.814	0	0.23	0.23	34.75
1,538.70	0.00	6,486.974	0	0.23	0.23	72.31
1,539.20	0.00	10,166.066	0	0.23	0.23	113.18
1,539.70	0.00	14,293.556	0	0.23	0.23	159.05
1,540.20	0.00	18,761.680	0	0.23	0.23	208.69
1,540.70	0.00	23,740.755	0	0.23	0.23	264.01
1,541.20	0.00	29,717.596	0	0.23	0.23	330.42
1,541.70	0.00	37,191.086	0	0.23	0.23	413.46
1,542.20	0.00	49,460.050	0	0.23	0.23	549.78
1,542.70	0.00	68,922.225	0	0.23	0.23	766.03
1,542.88	0.00	75,928.608	0	0.23	0.23	843.88
1,543.00	0.25	80,599.530	0	0.23	0.48	896.03

Subsection: Level Pool Pond Routing Summary
Label: Infiltration Basin (IN)

Scenario: Base

Infiltration	
Infiltration Method (Computed)	Constant
Infiltration Rate (Constant)	0.23 ft³/s

Initial Conditions	
Elevation (Water Surface, Initial)	1,537.70 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	3.000 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	1.71 ft³/s	Time to Peak (Flow, In)	885.000 min
Infiltration (Peak)	0.23 ft³/s	Time to Peak (Infiltration)	888.000 min
Flow (Peak Outlet)	0.00 ft³/s	Time to Peak (Flow, Outlet)	0.000 min

Elevation (Water Surface, Peak)	1,538.31 ft
Volume (Peak)	3,880.846 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	6,499.000 ft³
Volume (Total Infiltration)	6,082.000 ft³
Volume (Total Outlet Outflow)	0.000 ft³
Volume (Retained)	392.000 ft³
Volume (Unrouted)	-24.000 ft³
Error (Mass Balance)	0.4 %

Summary for Hydrograph Addition at 'Infiltration Basin'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Unit Hydrograph (Onsite Runoff)

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	Unit Hydrograph (Onsite Runoff)	6,498.000	885.000	1.71
Flow (In)	Infiltration Basin	6,499.080	885.000	1.71

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Project Summary	
Title	JF Fields Hemet
Engineer	Shea-Michael Anti, P.E.
Company	Kimley-Horn and Associates, Inc.
Date	10/14/2021

Notes

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Subsection: User Notifications

User Notifications

Message Id	40
Scenario	Base
Element Type	Pond
Element Id	16
Label	Infiltration Basin
Time	(N/A)
Message	Mass balance for routing volumes vary by more than 0.5 %. (1.9 % of Inflow Volume))
Source	Warning

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
Unit Hydrograph (Onsite Runoff)	Base	0	4,617.000	1,685.000	0.20

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
Outfall (POC)	Base	0	0.000	0.000	0.00

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ft³)
Infiltration Basin (IN)	Base	0	3,016.000	1,416.000	0.19	(N/A)	(N/A)
Infiltration Basin (OUT)	Base	0	0.000	0.000	0.00	1,537.86	917.000

Peak Discharge	0.20 ft³/s
Time to Peak	1,685.000 min
Hydrograph Volume	4,617.000 ft³

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
5.000	0.00	0.00	0.00	0.00	0.01
30.000	0.01	0.01	0.01	0.01	0.01
55.000	0.01	0.01	0.01	0.01	0.01
80.000	0.01	0.01	0.01	0.01	0.01
105.000	0.01	0.01	0.01	0.01	0.01
130.000	0.01	0.01	0.01	0.01	0.01
155.000	0.01	0.01	0.01	0.01	0.01
180.000	0.01	0.01	0.01	0.01	0.01
205.000	0.01	0.01	0.02	0.02	0.02
230.000	0.02	0.02	0.02	0.02	0.02
255.000	0.02	0.02	0.02	0.02	0.03
280.000	0.03	0.03	0.03	0.03	0.03
305.000	0.03	0.03	0.04	0.04	0.05
330.000	0.05	0.05	0.05	0.04	0.03
355.000	0.02	0.02	0.00	0.00	0.00
380.000	0.01	0.01	0.01	0.01	0.01
405.000	0.01	0.01	0.01	0.01	0.01
430.000	0.01	0.01	0.01	0.02	0.02
455.000	0.02	0.02	0.02	0.02	0.02
480.000	0.02	0.02	0.02	0.02	0.02
505.000	0.02	0.02	0.02	0.02	0.02
530.000	0.02	0.02	0.02	0.02	0.02
555.000	0.02	0.02	0.02	0.02	0.02
580.000	0.02	0.03	0.03	0.03	0.03
605.000	0.03	0.03	0.03	0.03	0.03
630.000	0.04	0.04	0.04	0.04	0.04
655.000	0.04	0.05	0.05	0.05	0.06
680.000	0.06	0.07	0.07	0.08	0.08
705.000	0.06	0.04	0.03	0.03	0.00
730.000	0.00	0.01	0.01	0.01	0.01
755.000	0.01	0.01	0.01	0.02	0.02
780.000	0.02	0.02	0.02	0.02	0.02
805.000	0.02	0.02	0.02	0.02	0.02
830.000	0.02	0.02	0.02	0.02	0.02
855.000	0.02	0.02	0.02	0.02	0.02
880.000	0.02	0.02	0.02	0.02	0.02
905.000	0.02	0.02	0.03	0.03	0.03
930.000	0.03	0.03	0.03	0.03	0.03
955.000	0.03	0.04	0.04	0.04	0.04

Subsection: Read Hydrograph
Scenario: Base
Label: Unit Hydrograph (Onsite Runoff)

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
980.000	0.04	0.04	0.05	0.05	0.05
1,005.000	0.05	0.05	0.06	0.06	0.06
1,030.000	0.06	0.07	0.08	0.09	0.09
1,055.000	0.10	0.10	0.07	0.05	0.04
1,080.000	0.03	0.00	0.00	0.01	0.02
1,105.000	0.02	0.02	0.02	0.03	0.03
1,130.000	0.03	0.03	0.03	0.03	0.03
1,155.000	0.04	0.04	0.04	0.04	0.04
1,180.000	0.04	0.04	0.04	0.04	0.04
1,205.000	0.04	0.04	0.04	0.04	0.04
1,230.000	0.04	0.04	0.04	0.04	0.04
1,255.000	0.04	0.05	0.05	0.05	0.05
1,280.000	0.05	0.05	0.05	0.05	0.06
1,305.000	0.06	0.06	0.07	0.07	0.07
1,330.000	0.07	0.08	0.08	0.08	0.09
1,355.000	0.09	0.09	0.10	0.10	0.11
1,380.000	0.11	0.11	0.12	0.13	0.15
1,405.000	0.16	0.18	0.19	0.18	0.14
1,430.000	0.10	0.08	0.06	0.00	0.01
1,455.000	0.03	0.05	0.06	0.06	0.07
1,480.000	0.07	0.08	0.08	0.08	0.09
1,505.000	0.09	0.09	0.10	0.10	0.10
1,530.000	0.10	0.10	0.10	0.10	0.10
1,555.000	0.10	0.11	0.11	0.11	0.11
1,580.000	0.11	0.12	0.12	0.12	0.12
1,605.000	0.12	0.12	0.12	0.13	0.13
1,630.000	0.13	0.13	0.14	0.14	0.14
1,655.000	0.15	0.16	0.17	0.17	0.18
1,680.000	0.19	0.20	0.00	(N/A)	(N/A)

Subsection: Time vs. Elevation
Label: Infiltration Basin (IN)

Scenario: Base

Time vs. Elevation (ft)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
15.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
30.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
45.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
60.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
75.000	1,537.70	1,537.70	1,537.70	1,537.71	1,537.71
90.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
105.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
120.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
135.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
150.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
165.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
180.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
195.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
210.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
225.000	1,537.71	1,537.71	1,537.71	1,537.72	1,537.72
240.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
255.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
270.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
285.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
300.000	1,537.72	1,537.73	1,537.73	1,537.73	1,537.73
315.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
330.000	1,537.73	1,537.73	1,537.73	1,537.74	1,537.74
345.000	1,537.74	1,537.74	1,537.74	1,537.74	1,537.74
360.000	1,537.74	1,537.74	1,537.74	1,537.74	1,537.74
375.000	1,537.74	1,537.74	1,537.74	1,537.74	1,537.74
390.000	1,537.74	1,537.74	1,537.73	1,537.73	1,537.73
405.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
420.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
435.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
450.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
465.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
480.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
495.000	1,537.73	1,537.73	1,537.74	1,537.74	1,537.74
510.000	1,537.74	1,537.74	1,537.74	1,537.74	1,537.74
525.000	1,537.74	1,537.74	1,537.74	1,537.74	1,537.74
540.000	1,537.74	1,537.74	1,537.74	1,537.74	1,537.74
555.000	1,537.74	1,537.74	1,537.74	1,537.74	1,537.74
570.000	1,537.74	1,537.74	1,537.74	1,537.74	1,537.74
585.000	1,537.74	1,537.74	1,537.74	1,537.74	1,537.74
600.000	1,537.74	1,537.74	1,537.74	1,537.74	1,537.74
615.000	1,537.74	1,537.74	1,537.74	1,537.74	1,537.74
630.000	1,537.74	1,537.74	1,537.74	1,537.74	1,537.75

Subsection: Time vs. Elevation
Label: Infiltration Basin (IN)

Scenario: Base

Time vs. Elevation (ft)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
645.000	1,537.75	1,537.75	1,537.75	1,537.75	1,537.75
660.000	1,537.75	1,537.75	1,537.75	1,537.75	1,537.75
675.000	1,537.75	1,537.75	1,537.76	1,537.76	1,537.76
690.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
705.000	1,537.77	1,537.77	1,537.77	1,537.77	1,537.77
720.000	1,537.77	1,537.77	1,537.77	1,537.77	1,537.76
735.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
750.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
765.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
780.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
795.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
810.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
825.000	1,537.75	1,537.75	1,537.75	1,537.75	1,537.75
840.000	1,537.75	1,537.75	1,537.75	1,537.75	1,537.75
855.000	1,537.75	1,537.75	1,537.75	1,537.75	1,537.75
870.000	1,537.75	1,537.75	1,537.75	1,537.75	1,537.75
885.000	1,537.75	1,537.75	1,537.75	1,537.75	1,537.75
900.000	1,537.75	1,537.75	1,537.75	1,537.75	1,537.75
915.000	1,537.75	1,537.75	1,537.75	1,537.75	1,537.75
930.000	1,537.75	1,537.75	1,537.75	1,537.75	1,537.75
945.000	1,537.75	1,537.75	1,537.75	1,537.75	1,537.75
960.000	1,537.75	1,537.75	1,537.76	1,537.76	1,537.76
975.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
990.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
1,005.000	1,537.76	1,537.76	1,537.76	1,537.76	1,537.76
1,020.000	1,537.77	1,537.77	1,537.77	1,537.77	1,537.77
1,035.000	1,537.77	1,537.77	1,537.77	1,537.77	1,537.78
1,050.000	1,537.78	1,537.78	1,537.78	1,537.78	1,537.78
1,065.000	1,537.79	1,537.79	1,537.79	1,537.79	1,537.79
1,080.000	1,537.79	1,537.79	1,537.79	1,537.78	1,537.78
1,095.000	1,537.78	1,537.78	1,537.78	1,537.78	1,537.78
1,110.000	1,537.78	1,537.78	1,537.78	1,537.78	1,537.78
1,125.000	1,537.78	1,537.78	1,537.78	1,537.78	1,537.78
1,140.000	1,537.78	1,537.78	1,537.78	1,537.78	1,537.78
1,155.000	1,537.78	1,537.78	1,537.78	1,537.78	1,537.78
1,170.000	1,537.78	1,537.78	1,537.78	1,537.78	1,537.78
1,185.000	1,537.78	1,537.78	1,537.78	1,537.78	1,537.78
1,200.000	1,537.78	1,537.78	1,537.78	1,537.78	1,537.78
1,215.000	1,537.78	1,537.78	1,537.78	1,537.78	1,537.78
1,230.000	1,537.78	1,537.78	1,537.78	1,537.78	1,537.78
1,245.000	1,537.78	1,537.78	1,537.78	1,537.78	1,537.78
1,260.000	1,537.78	1,537.78	1,537.78	1,537.78	1,537.78
1,275.000	1,537.78	1,537.78	1,537.78	1,537.78	1,537.78

Time vs. Elevation (ft)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
1,290.000	1,537.78	1,537.78	1,537.79	1,537.79	1,537.79
1,305.000	1,537.79	1,537.79	1,537.79	1,537.79	1,537.79
1,320.000	1,537.79	1,537.79	1,537.79	1,537.79	1,537.79
1,335.000	1,537.79	1,537.80	1,537.80	1,537.80	1,537.80
1,350.000	1,537.80	1,537.80	1,537.80	1,537.80	1,537.81
1,365.000	1,537.81	1,537.81	1,537.81	1,537.81	1,537.81
1,380.000	1,537.81	1,537.82	1,537.82	1,537.82	1,537.82
1,395.000	1,537.82	1,537.83	1,537.83	1,537.83	1,537.83
1,410.000	1,537.84	1,537.84	1,537.84	1,537.85	1,537.85
1,425.000	1,537.85	1,537.85	1,537.86	1,537.86	1,537.86
1,440.000	1,537.86	(N/A)	(N/A)	(N/A)	(N/A)

Time vs. Volume (ft³)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
0.000	0.000	0.000	0.000	0.000	0.000
15.000	0.000	0.000	0.000	1.000	3.000
30.000	4.000	6.000	7.000	9.000	11.000
45.000	12.000	14.000	15.000	17.000	18.000
60.000	20.000	21.000	22.000	24.000	25.000
75.000	26.000	28.000	29.000	30.000	32.000
90.000	33.000	34.000	35.000	37.000	38.000
105.000	39.000	40.000	41.000	43.000	44.000
120.000	45.000	46.000	47.000	48.000	49.000
135.000	50.000	51.000	52.000	53.000	54.000
150.000	55.000	56.000	57.000	58.000	59.000
165.000	60.000	61.000	62.000	62.000	63.000
180.000	64.000	65.000	66.000	67.000	67.000
195.000	68.000	69.000	70.000	71.000	71.000
210.000	72.000	73.000	75.000	78.000	80.000
225.000	82.000	85.000	87.000	89.000	91.000
240.000	94.000	96.000	98.000	100.000	102.000
255.000	104.000	106.000	108.000	110.000	112.000
270.000	114.000	116.000	119.000	123.000	126.000
285.000	130.000	133.000	136.000	140.000	143.000
300.000	146.000	149.000	152.000	155.000	159.000
315.000	163.000	167.000	172.000	177.000	183.000
330.000	189.000	195.000	201.000	207.000	212.000
345.000	217.000	220.000	222.000	224.000	224.000
360.000	225.000	224.000	222.000	219.000	216.000
375.000	213.000	211.000	209.000	208.000	207.000
390.000	206.000	205.000	204.000	203.000	202.000
405.000	201.000	200.000	199.000	199.000	198.000
420.000	197.000	196.000	195.000	194.000	193.000
435.000	192.000	191.000	191.000	191.000	192.000
450.000	192.000	193.000	194.000	195.000	196.000
465.000	196.000	197.000	198.000	199.000	200.000
480.000	200.000	201.000	202.000	202.000	203.000
495.000	204.000	205.000	205.000	206.000	207.000
510.000	207.000	208.000	209.000	209.000	210.000
525.000	210.000	211.000	212.000	212.000	213.000
540.000	213.000	214.000	214.000	215.000	216.000
555.000	216.000	217.000	217.000	218.000	218.000
570.000	219.000	219.000	220.000	220.000	221.000
585.000	223.000	225.000	227.000	229.000	231.000
600.000	233.000	235.000	237.000	239.000	241.000
615.000	243.000	245.000	246.000	248.000	250.000
630.000	253.000	257.000	260.000	263.000	267.000

Time vs. Volume (ft³)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
645.000	270.000	273.000	276.000	279.000	283.000
660.000	287.000	292.000	296.000	301.000	306.000
675.000	311.000	317.000	323.000	330.000	337.000
690.000	345.000	352.000	361.000	370.000	378.000
705.000	384.000	388.000	390.000	391.000	391.000
720.000	391.000	389.000	385.000	380.000	375.000
735.000	372.000	368.000	365.000	362.000	359.000
750.000	356.000	353.000	350.000	347.000	344.000
765.000	341.000	339.000	338.000	337.000	336.000
780.000	335.000	334.000	333.000	332.000	331.000
795.000	330.000	329.000	328.000	327.000	326.000
810.000	325.000	324.000	323.000	322.000	321.000
825.000	321.000	320.000	319.000	318.000	317.000
840.000	316.000	316.000	315.000	314.000	313.000
855.000	313.000	312.000	311.000	310.000	310.000
870.000	309.000	308.000	308.000	307.000	306.000
885.000	306.000	305.000	304.000	304.000	303.000
900.000	303.000	302.000	301.000	301.000	301.000
915.000	301.000	302.000	303.000	304.000	305.000
930.000	306.000	307.000	309.000	310.000	310.000
945.000	311.000	312.000	313.000	314.000	316.000
960.000	318.000	320.000	323.000	325.000	328.000
975.000	330.000	333.000	335.000	337.000	340.000
990.000	343.000	347.000	351.000	355.000	359.000
1,005.000	362.000	366.000	370.000	374.000	379.000
1,020.000	384.000	389.000	394.000	399.000	405.000
1,035.000	411.000	417.000	425.000	434.000	443.000
1,050.000	453.000	462.000	473.000	483.000	493.000
1,065.000	500.000	504.000	506.000	507.000	507.000
1,080.000	506.000	503.000	497.000	491.000	485.000
1,095.000	479.000	475.000	472.000	469.000	467.000
1,110.000	464.000	461.000	459.000	457.000	456.000
1,125.000	455.000	454.000	453.000	452.000	451.000
1,140.000	450.000	449.000	449.000	448.000	447.000
1,155.000	448.000	448.000	449.000	450.000	451.000
1,170.000	452.000	453.000	453.000	454.000	455.000
1,185.000	456.000	456.000	457.000	458.000	459.000
1,200.000	459.000	460.000	461.000	461.000	462.000
1,215.000	463.000	463.000	464.000	465.000	465.000
1,230.000	466.000	467.000	467.000	468.000	468.000
1,245.000	469.000	470.000	470.000	471.000	472.000
1,260.000	473.000	476.000	478.000	480.000	482.000
1,275.000	484.000	486.000	488.000	490.000	492.000

Time vs. Volume (ft³)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
1,290.000	494.000	496.000	498.000	501.000	504.000
1,305.000	508.000	511.000	515.000	519.000	524.000
1,320.000	529.000	533.000	538.000	543.000	548.000
1,335.000	554.000	560.000	566.000	572.000	578.000
1,350.000	585.000	593.000	600.000	608.000	615.000
1,365.000	623.000	632.000	641.000	650.000	660.000
1,380.000	670.000	679.000	689.000	699.000	711.000
1,395.000	723.000	736.000	751.000	767.000	785.000
1,410.000	804.000	824.000	845.000	865.000	882.000
1,425.000	896.000	906.000	912.000	915.000	917.000
1,440.000	916.000	(N/A)	(N/A)	(N/A)	(N/A)

Elevation-Volume

Pond Elevation (ft)	Pond Volume (ft^3)
1,537.70	0.000
1,538.00	1,754.750
1,539.00	8,515.070
1,540.00	16,770.050
1,541.00	26,728.200
1,542.00	41,675.180
1,543.00	80,599.530

Requested Pond Water Surface Elevations	
Minimum (Headwater)	1,537.74 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	1,543.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Rectangular Weir	Weir - 1	Forward	TW	1,542.88	1,543.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Weir - 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	1,542.88 ft
Weir Length	2.00 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Base
Label: Infiltration Basin

Infiltration	
Infiltration Method (Computed)	Constant
Infiltration Rate (Constant)	0.23 ft³/s

Initial Conditions	
Elevation (Water Surface, Initial)	1,537.70 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	3.000 min

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
1,537.70	0.00	0.000	0	0.00	0.00	0.00
1,538.20	0.00	3,106.814	0	0.23	0.23	34.75
1,538.70	0.00	6,486.974	0	0.23	0.23	72.31
1,539.20	0.00	10,166.066	0	0.23	0.23	113.18
1,539.70	0.00	14,293.556	0	0.23	0.23	159.05
1,540.20	0.00	18,761.680	0	0.23	0.23	208.69
1,540.70	0.00	23,740.755	0	0.23	0.23	264.01
1,541.20	0.00	29,717.596	0	0.23	0.23	330.42
1,541.70	0.00	37,191.086	0	0.23	0.23	413.46
1,542.20	0.00	49,460.050	0	0.23	0.23	549.78
1,542.70	0.00	68,922.225	0	0.23	0.23	766.03
1,542.88	0.00	75,928.608	0	0.23	0.23	843.88
1,543.00	0.25	80,599.530	0	0.23	0.48	896.03

Subsection: Level Pool Pond Routing Summary
Label: Infiltration Basin (IN)

Scenario: Base

Infiltration	
Infiltration Method (Computed)	Constant
Infiltration Rate (Constant)	0.23 ft³/s

Initial Conditions	
Elevation (Water Surface, Initial)	1,537.70 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	3.000 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	0.19 ft³/s	Time to Peak (Flow, In)	1,416.000 min
Infiltration (Peak)	0.07 ft³/s	Time to Peak (Infiltration)	1,437.000 min
Flow (Peak Outlet)	0.00 ft³/s	Time to Peak (Flow, Outlet)	0.000 min

Elevation (Water Surface, Peak)	1,537.86 ft
Volume (Peak)	916.522 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	3,016.000 ft³
Volume (Total Infiltration)	2,057.000 ft³
Volume (Total Outlet Outflow)	0.000 ft³
Volume (Retained)	904.000 ft³
Volume (Unrouted)	-56.000 ft³
Error (Mass Balance)	1.9 %

Summary for Hydrograph Addition at 'Infiltration Basin'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Unit Hydrograph (Onsite Runoff)

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	Unit Hydrograph (Onsite Runoff)	4,617.000	1,685.000	0.20
Flow (In)	Infiltration Basin	3,016.440	1,416.000	0.19

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Project Summary	
Title	JD Fields Hemet
Engineer	Shea-Michael Anti, P.E.
Company	Kimley-Horn and Associates, Inc.
Date	10/14/2021

Notes

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Subsection: User Notifications

User Notifications?	No user notifications generated.

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
Unit Hydrograph (Onsite Runoff)	Base	0	12,348.000	6,565.000	0.25

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)
Outfall (POC)	Base	0	0.000	0.000	0.00

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ft³)	Time to Peak (min)	Peak Flow (ft³/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ft³)
Infiltration Basin (IN)	Base	0	600.000	810.000	0.03	(N/A)	(N/A)
Infiltration Basin (OUT)	Base	0	0.000	0.000	0.00	1,537.74	210.000

Peak Discharge	0.25 ft³/s
Time to Peak	6,570.000 min
Hydrograph Volume	12,348.000 ft³

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
5.000	0.00	0.00	0.00	0.00	0.00
30.000	0.00	0.00	0.00	0.00	0.00
55.000	0.00	0.00	0.00	0.00	0.00
80.000	0.00	0.00	0.00	0.00	0.00
105.000	0.00	0.00	0.00	0.00	0.00
130.000	0.00	0.00	0.00	0.00	0.00
155.000	0.00	0.00	0.00	0.00	0.00
180.000	0.00	0.00	0.00	0.00	0.00
205.000	0.00	0.00	0.00	0.00	0.00
230.000	0.00	0.00	0.00	0.00	0.00
255.000	0.00	0.00	0.00	0.00	0.01
280.000	0.01	0.01	0.01	0.01	0.01
305.000	0.01	0.01	0.01	0.01	0.01
330.000	0.01	0.01	0.01	0.01	0.01
355.000	0.01	0.01	0.01	0.01	0.01
380.000	0.01	0.01	0.01	0.01	0.01
405.000	0.01	0.01	0.01	0.01	0.01
430.000	0.01	0.01	0.01	0.01	0.01
455.000	0.01	0.01	0.01	0.01	0.01
480.000	0.01	0.01	0.01	0.01	0.01
505.000	0.01	0.01	0.01	0.01	0.01
530.000	0.01	0.01	0.01	0.01	0.01
555.000	0.01	0.01	0.01	0.01	0.01
580.000	0.02	0.02	0.02	0.02	0.02
605.000	0.02	0.02	0.01	0.01	0.01
630.000	0.01	0.01	0.01	0.01	0.01
655.000	0.01	0.01	0.01	0.01	0.01
680.000	0.01	0.01	0.01	0.01	0.01
705.000	0.01	0.01	0.01	0.01	0.01
730.000	0.01	0.02	0.02	0.02	0.02
755.000	0.02	0.02	0.02	0.02	0.02
780.000	0.02	0.02	0.02	0.02	0.02
805.000	0.02	0.03	0.03	0.02	0.02
830.000	0.02	0.02	0.02	0.02	0.02
855.000	0.02	0.02	0.02	0.02	0.02
880.000	0.02	0.02	0.02	0.02	0.02
905.000	0.02	0.02	0.02	0.02	0.02
930.000	0.02	0.02	0.02	0.02	0.02
955.000	0.02	0.02	0.01	0.01	0.01

Subsection: Read Hydrograph
Scenario: Base
Label: Unit Hydrograph (Onsite Runoff)

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
980.000	0.01	0.01	0.01	0.01	0.00
1,005.000	0.00	0.00	0.00	0.00	0.00
1,030.000	0.00	0.00	0.00	0.00	0.00
1,055.000	0.00	0.00	0.00	0.00	0.00
1,080.000	0.00	0.00	0.00	0.00	0.00
1,105.000	0.00	0.00	0.00	0.00	0.00
1,130.000	0.00	0.00	0.00	0.00	0.00
1,155.000	0.00	0.00	0.00	0.00	0.00
1,180.000	0.00	0.00	0.00	0.00	0.00
1,205.000	0.00	0.00	0.00	0.00	0.00
1,230.000	0.00	0.00	0.00	0.00	0.00
1,255.000	0.00	0.00	0.00	0.00	0.00
1,280.000	0.00	0.00	0.00	0.00	0.00
1,305.000	0.00	0.00	0.00	0.00	0.00
1,330.000	0.00	0.00	0.00	0.00	0.00
1,355.000	0.00	0.00	0.00	0.00	0.00
1,380.000	0.00	0.00	0.00	0.00	0.00
1,405.000	0.00	0.00	0.00	0.00	0.00
1,430.000	0.00	0.00	0.00	0.00	0.00
1,455.000	0.00	0.00	0.00	0.00	0.00
1,480.000	0.00	0.00	0.00	0.00	0.00
1,505.000	0.00	0.00	0.00	0.00	0.00
1,530.000	0.00	0.00	0.00	0.00	0.00
1,555.000	0.00	0.00	0.00	0.00	0.00
1,580.000	0.00	0.00	0.00	0.00	0.00
1,605.000	0.01	0.01	0.01	0.01	0.01
1,630.000	0.01	0.01	0.01	0.01	0.01
1,655.000	0.01	0.01	0.01	0.01	0.01
1,680.000	0.01	0.01	0.01	0.01	0.01
1,705.000	0.01	0.01	0.01	0.01	0.01
1,730.000	0.01	0.01	0.01	0.01	0.01
1,755.000	0.01	0.01	0.01	0.01	0.01
1,780.000	0.01	0.01	0.01	0.01	0.01
1,805.000	0.01	0.01	0.01	0.01	0.01
1,830.000	0.01	0.01	0.01	0.01	0.01
1,855.000	0.01	0.01	0.01	0.01	0.01
1,880.000	0.01	0.01	0.01	0.01	0.01
1,905.000	0.01	0.01	0.01	0.01	0.01
1,930.000	0.01	0.02	0.02	0.02	0.02
1,955.000	0.02	0.02	0.02	0.02	0.02
1,980.000	0.02	0.02	0.02	0.02	0.02
2,005.000	0.02	0.02	0.02	0.02	0.02
2,030.000	0.02	0.02	0.02	0.02	0.02
2,055.000	0.02	0.02	0.02	0.02	0.02

Subsection: Read Hydrograph
Scenario: Base
Label: Unit Hydrograph (Onsite Runoff)

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
2,080.000	0.02	0.02	0.02	0.02	0.02
2,105.000	0.02	0.02	0.02	0.02	0.02
2,130.000	0.02	0.02	0.02	0.02	0.02
2,155.000	0.02	0.02	0.02	0.02	0.02
2,180.000	0.03	0.03	0.03	0.03	0.03
2,205.000	0.03	0.03	0.03	0.03	0.03
2,230.000	0.03	0.04	0.04	0.04	0.04
2,255.000	0.04	0.04	0.03	0.03	0.03
2,280.000	0.03	0.03	0.03	0.03	0.03
2,305.000	0.03	0.03	0.03	0.03	0.03
2,330.000	0.03	0.03	0.03	0.03	0.03
2,355.000	0.03	0.03	0.03	0.03	0.03
2,380.000	0.03	0.02	0.02	0.02	0.02
2,405.000	0.02	0.02	0.01	0.01	0.01
2,430.000	0.01	0.01	0.01	0.01	0.01
2,455.000	0.01	0.00	0.00	0.00	0.01
2,480.000	0.01	0.01	0.01	0.01	0.01
2,505.000	0.01	0.01	0.01	0.01	0.00
2,530.000	0.00	0.00	0.00	0.00	0.00
2,555.000	0.00	0.00	0.00	0.00	0.00
2,580.000	0.00	0.00	0.00	0.00	0.00
2,605.000	0.00	0.00	0.00	0.00	0.00
2,630.000	0.00	0.00	0.00	0.00	0.00
2,655.000	0.00	0.00	0.00	0.00	0.00
2,680.000	0.00	0.00	0.00	0.00	0.00
2,705.000	0.00	0.00	0.00	0.00	0.00
2,730.000	0.00	0.00	0.00	0.00	0.00
2,755.000	0.00	0.00	0.00	0.00	0.00
2,780.000	0.00	0.00	0.00	0.00	0.00
2,805.000	0.00	0.00	0.00	0.00	0.00
2,830.000	0.00	0.00	0.00	0.00	0.00
2,855.000	0.00	0.00	0.00	0.00	0.00
2,880.000	0.00	0.00	0.00	0.00	0.00
2,905.000	0.00	0.00	0.00	0.00	0.00
2,930.000	0.00	0.00	0.00	0.00	0.00
2,955.000	0.00	0.00	0.00	0.00	0.00
2,980.000	0.00	0.00	0.00	0.00	0.01
3,005.000	0.01	0.01	0.01	0.01	0.01
3,030.000	0.01	0.01	0.01	0.01	0.01
3,055.000	0.01	0.01	0.01	0.01	0.01
3,080.000	0.01	0.01	0.01	0.01	0.01
3,105.000	0.01	0.01	0.01	0.01	0.01
3,130.000	0.01	0.01	0.01	0.01	0.01
3,155.000	0.01	0.01	0.01	0.01	0.01

Subsection: Read Hydrograph
Scenario: Base
Label: Unit Hydrograph (Onsite Runoff)

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
3,180.000	0.01	0.01	0.01	0.01	0.01
3,205.000	0.01	0.01	0.01	0.01	0.01
3,230.000	0.01	0.01	0.01	0.01	0.01
3,255.000	0.01	0.01	0.01	0.01	0.01
3,280.000	0.01	0.01	0.01	0.01	0.01
3,305.000	0.01	0.01	0.01	0.01	0.01
3,330.000	0.02	0.02	0.02	0.02	0.02
3,355.000	0.02	0.02	0.02	0.02	0.02
3,380.000	0.02	0.02	0.02	0.02	0.02
3,405.000	0.02	0.02	0.02	0.02	0.02
3,430.000	0.02	0.03	0.03	0.03	0.03
3,455.000	0.03	0.03	0.03	0.03	0.03
3,480.000	0.03	0.03	0.03	0.03	0.03
3,505.000	0.02	0.02	0.02	0.02	0.03
3,530.000	0.03	0.03	0.03	0.03	0.03
3,555.000	0.03	0.03	0.03	0.03	0.03
3,580.000	0.03	0.03	0.03	0.03	0.03
3,605.000	0.03	0.03	0.03	0.03	0.03
3,630.000	0.04	0.04	0.04	0.04	0.04
3,655.000	0.04	0.04	0.04	0.04	0.04
3,680.000	0.05	0.05	0.05	0.05	0.05
3,705.000	0.04	0.04	0.04	0.04	0.04
3,730.000	0.04	0.04	0.04	0.04	0.04
3,755.000	0.04	0.04	0.04	0.04	0.04
3,780.000	0.04	0.04	0.04	0.04	0.04
3,805.000	0.04	0.03	0.03	0.03	0.03
3,830.000	0.03	0.03	0.03	0.03	0.02
3,855.000	0.02	0.01	0.01	0.01	0.01
3,880.000	0.01	0.01	0.01	0.01	0.01
3,905.000	0.01	0.01	0.01	0.01	0.01
3,930.000	0.01	0.01	0.01	0.01	0.01
3,955.000	0.01	0.01	0.01	0.01	0.01
3,980.000	0.01	0.01	0.01	0.01	0.01
4,005.000	0.01	0.00	0.00	0.00	0.00
4,030.000	0.00	0.00	0.00	0.00	0.01
4,055.000	0.01	0.01	0.00	0.00	0.00
4,080.000	0.00	0.00	0.00	0.00	0.00
4,105.000	0.00	0.00	0.00	0.00	0.00
4,130.000	0.00	0.00	0.00	0.00	0.00
4,155.000	0.00	0.00	0.00	0.00	0.00
4,180.000	0.00	0.00	0.00	0.00	0.00
4,205.000	0.00	0.00	0.00	0.00	0.00
4,230.000	0.00	0.00	0.00	0.00	0.00
4,255.000	0.00	0.00	0.00	0.00	0.00

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
4,280.000	0.00	0.00	0.00	0.00	0.00
4,305.000	0.00	0.00	0.00	0.00	0.00
4,330.000	0.00	0.00	0.00	0.00	0.01
4,355.000	0.01	0.01	0.01	0.01	0.01
4,380.000	0.01	0.01	0.01	0.01	0.01
4,405.000	0.01	0.01	0.01	0.01	0.01
4,430.000	0.01	0.01	0.01	0.01	0.01
4,455.000	0.01	0.01	0.01	0.01	0.01
4,480.000	0.01	0.01	0.01	0.01	0.01
4,505.000	0.01	0.01	0.01	0.01	0.01
4,530.000	0.01	0.01	0.01	0.01	0.01
4,555.000	0.01	0.02	0.02	0.02	0.02
4,580.000	0.02	0.02	0.02	0.02	0.02
4,605.000	0.02	0.02	0.02	0.02	0.02
4,630.000	0.02	0.02	0.02	0.02	0.02
4,655.000	0.02	0.02	0.02	0.02	0.02
4,680.000	0.02	0.02	0.02	0.02	0.02
4,705.000	0.02	0.02	0.02	0.03	0.03
4,730.000	0.03	0.03	0.03	0.03	0.03
4,755.000	0.03	0.03	0.03	0.03	0.03
4,780.000	0.03	0.03	0.03	0.03	0.03
4,805.000	0.03	0.04	0.04	0.04	0.04
4,830.000	0.04	0.04	0.04	0.04	0.04
4,855.000	0.04	0.04	0.05	0.05	0.05
4,880.000	0.05	0.05	0.05	0.05	0.05
4,905.000	0.06	0.06	0.06	0.06	0.06
4,930.000	0.06	0.05	0.05	0.05	0.05
4,955.000	0.05	0.05	0.05	0.05	0.05
4,980.000	0.05	0.05	0.05	0.05	0.05
5,005.000	0.05	0.05	0.05	0.05	0.05
5,030.000	0.05	0.05	0.05	0.05	0.05
5,055.000	0.06	0.06	0.06	0.07	0.07
5,080.000	0.07	0.07	0.07	0.08	0.08
5,105.000	0.08	0.08	0.08	0.09	0.09
5,130.000	0.09	0.09	0.09	0.08	0.07
5,155.000	0.07	0.07	0.07	0.07	0.07
5,180.000	0.07	0.07	0.07	0.07	0.07
5,205.000	0.07	0.07	0.07	0.07	0.07
5,230.000	0.07	0.07	0.07	0.07	0.07
5,255.000	0.07	0.06	0.06	0.06	0.06
5,280.000	0.06	0.05	0.05	0.04	0.03
5,305.000	0.02	0.02	0.02	0.02	0.01
5,330.000	0.01	0.01	0.01	0.01	0.01
5,355.000	0.01	0.01	0.01	0.01	0.01

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
5,380.000	0.01	0.01	0.01	0.01	0.01
5,405.000	0.01	0.01	0.01	0.01	0.01
5,430.000	0.01	0.01	0.01	0.01	0.01
5,455.000	0.01	0.01	0.01	0.01	0.01
5,480.000	0.01	0.01	0.01	0.01	0.01
5,505.000	0.01	0.01	0.01	0.01	0.01
5,530.000	0.01	0.01	0.01	0.01	0.01
5,555.000	0.01	0.01	0.01	0.01	0.01
5,580.000	0.01	0.01	0.01	0.01	0.01
5,605.000	0.01	0.01	0.01	0.01	0.01
5,630.000	0.01	0.01	0.01	0.01	0.01
5,655.000	0.01	0.01	0.01	0.01	0.01
5,680.000	0.01	0.01	0.01	0.01	0.01
5,705.000	0.01	0.01	0.01	0.01	0.01
5,730.000	0.01	0.01	0.01	0.01	0.01
5,755.000	0.01	0.01	0.00	0.00	0.01
5,780.000	0.01	0.01	0.02	0.02	0.02
5,805.000	0.02	0.02	0.02	0.02	0.03
5,830.000	0.03	0.02	0.02	0.02	0.02
5,855.000	0.02	0.02	0.02	0.02	0.02
5,880.000	0.03	0.03	0.03	0.03	0.03
5,905.000	0.03	0.03	0.03	0.03	0.03
5,930.000	0.04	0.04	0.04	0.04	0.04
5,955.000	0.04	0.04	0.04	0.04	0.04
5,980.000	0.04	0.04	0.04	0.04	0.04
6,005.000	0.04	0.04	0.04	0.05	0.05
6,030.000	0.05	0.05	0.05	0.05	0.05
6,055.000	0.05	0.06	0.06	0.06	0.05
6,080.000	0.05	0.05	0.05	0.05	0.05
6,105.000	0.06	0.06	0.06	0.06	0.06
6,130.000	0.06	0.06	0.07	0.07	0.07
6,155.000	0.07	0.07	0.07	0.07	0.07
6,180.000	0.07	0.08	0.08	0.08	0.08
6,205.000	0.08	0.08	0.08	0.08	0.09
6,230.000	0.09	0.09	0.09	0.10	0.10
6,255.000	0.10	0.11	0.11	0.11	0.11
6,280.000	0.11	0.12	0.12	0.12	0.12
6,305.000	0.13	0.13	0.14	0.14	0.14
6,330.000	0.15	0.15	0.15	0.15	0.16
6,355.000	0.16	0.16	0.16	0.15	0.14
6,380.000	0.13	0.13	0.13	0.13	0.13
6,405.000	0.14	0.14	0.15	0.15	0.15
6,430.000	0.15	0.15	0.15	0.15	0.15
6,455.000	0.15	0.14	0.14	0.14	0.14

Subsection: Read Hydrograph
Scenario: Base
Label: Unit Hydrograph (Onsite Runoff)

HYDROGRAPH ORDINATES (ft³/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

Time (min)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)	Flow (ft³/s)
6,480.000	0.14	0.14	0.15	0.16	0.17
6,505.000	0.18	0.19	0.19	0.19	0.20
6,530.000	0.20	0.21	0.21	0.22	0.22
6,555.000	0.24	0.24	0.25	0.25	0.25
6,580.000	0.24	0.22	0.20	0.20	0.19
6,605.000	0.19	0.19	0.20	0.20	0.20
6,630.000	0.20	0.20	0.20	0.20	0.20
6,655.000	0.20	0.20	0.20	0.19	0.19
6,680.000	0.19	0.19	0.18	0.18	0.17
6,705.000	0.17	0.16	0.16	0.15	0.15
6,730.000	0.13	0.10	0.08	0.06	0.06
6,755.000	0.05	0.05	0.04	0.04	0.03
6,780.000	0.03	0.03	0.03	0.03	0.04
6,805.000	0.04	0.04	0.04	0.04	0.04
6,830.000	0.04	0.04	0.03	0.03	0.03
6,855.000	0.03	0.03	0.03	0.03	0.03
6,880.000	0.03	0.03	0.03	0.02	0.02
6,905.000	0.02	0.02	0.02	0.02	0.02
6,930.000	0.03	0.03	0.03	0.03	0.02
6,955.000	0.02	0.02	0.02	0.02	0.02
6,980.000	0.02	0.02	0.02	0.02	0.02
7,005.000	0.02	0.02	0.02	0.02	0.02
7,030.000	0.02	0.02	0.02	0.02	0.02
7,055.000	0.02	0.02	0.02	0.02	0.02
7,080.000	0.02	0.02	0.02	0.02	0.02
7,105.000	0.02	0.02	0.02	0.02	0.02
7,130.000	0.02	0.02	0.02	0.02	0.02
7,155.000	0.02	0.02	0.02	0.02	0.02
7,180.000	0.02	0.02	0.02	0.02	0.02
7,205.000	0.01	0.01	0.01	0.01	0.00
7,230.000	0.00	0.00	0.00	0.00	0.00
7,255.000	0.00	0.00	0.00	0.00	0.00
7,280.000	0.00	0.00	0.00	0.00	0.00
7,305.000	0.00	0.00	(N/A)	(N/A)	(N/A)

Subsection: Time vs. Elevation
Label: Infiltration Basin (IN)

Scenario: Base

Time vs. Elevation (ft)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
0.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
15.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
30.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
45.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
60.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
75.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
90.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
105.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
120.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
135.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
150.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
165.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
180.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
195.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
210.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
225.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
240.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
255.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
270.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
285.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
300.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
315.000	1,537.70	1,537.70	1,537.70	1,537.70	1,537.70
330.000	1,537.70	1,537.71	1,537.71	1,537.71	1,537.71
345.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
360.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
375.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
390.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
405.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
420.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
435.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
450.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
465.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
480.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
495.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
510.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
525.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.72
540.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
555.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
570.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
585.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
600.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
615.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
630.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72

Subsection: Time vs. Elevation
Label: Infiltration Basin (IN)

Scenario: Base

Time vs. Elevation (ft)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
645.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
660.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
675.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
690.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
705.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
720.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
735.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
750.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
765.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
780.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
795.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
810.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
825.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
840.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
855.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
870.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
885.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
900.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
915.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
930.000	1,537.73	1,537.73	1,537.74	1,537.74	1,537.74
945.000	1,537.74	1,537.74	1,537.74	1,537.74	1,537.74
960.000	1,537.74	1,537.74	1,537.74	1,537.74	1,537.74
975.000	1,537.74	1,537.74	1,537.73	1,537.73	1,537.73
990.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
1,005.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
1,020.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
1,035.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
1,050.000	1,537.73	1,537.73	1,537.73	1,537.73	1,537.73
1,065.000	1,537.73	1,537.72	1,537.72	1,537.72	1,537.72
1,080.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
1,095.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
1,110.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
1,125.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
1,140.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
1,155.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
1,170.000	1,537.72	1,537.72	1,537.72	1,537.72	1,537.72
1,185.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
1,200.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
1,215.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
1,230.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
1,245.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
1,260.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
1,275.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71

Time vs. Elevation (ft)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)	Elevation (ft)
1,290.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
1,305.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
1,320.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
1,335.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
1,350.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
1,365.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
1,380.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
1,395.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
1,410.000	1,537.71	1,537.71	1,537.71	1,537.71	1,537.71
1,425.000	1,537.71	1,537.71	1,537.71	1,537.70	1,537.70
1,440.000	1,537.70	(N/A)	(N/A)	(N/A)	(N/A)

Subsection: Time vs. Volume
Label: Infiltration Basin

Scenario: Base

Time vs. Volume (ft³)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
0.000	0.000	0.000	0.000	0.000	0.000
15.000	0.000	0.000	0.000	0.000	0.000
30.000	0.000	0.000	0.000	0.000	0.000
45.000	0.000	0.000	0.000	0.000	0.000
60.000	0.000	0.000	0.000	0.000	0.000
75.000	0.000	0.000	0.000	0.000	0.000
90.000	0.000	0.000	0.000	0.000	0.000
105.000	0.000	0.000	0.000	0.000	0.000
120.000	0.000	0.000	0.000	0.000	0.000
135.000	0.000	0.000	0.000	0.000	0.000
150.000	0.000	0.000	0.000	0.000	0.000
165.000	0.000	0.000	0.000	0.000	0.000
180.000	0.000	0.000	0.000	0.000	0.000
195.000	0.000	0.000	0.000	0.000	0.000
210.000	0.000	0.000	0.000	0.000	0.000
225.000	0.000	0.000	0.000	0.000	0.000
240.000	0.000	0.000	0.000	0.000	0.000
255.000	0.000	0.000	0.000	0.000	0.000
270.000	0.000	0.000	2.000	4.000	5.000
285.000	7.000	8.000	10.000	11.000	13.000
300.000	15.000	16.000	17.000	19.000	20.000
315.000	22.000	23.000	25.000	26.000	27.000
330.000	29.000	30.000	31.000	32.000	34.000
345.000	35.000	36.000	37.000	39.000	40.000
360.000	41.000	42.000	43.000	44.000	45.000
375.000	47.000	48.000	49.000	50.000	51.000
390.000	52.000	53.000	54.000	55.000	56.000
405.000	57.000	58.000	59.000	59.000	60.000
420.000	61.000	62.000	63.000	64.000	65.000
435.000	65.000	66.000	67.000	68.000	69.000
450.000	70.000	70.000	71.000	72.000	73.000
465.000	73.000	74.000	75.000	75.000	76.000
480.000	77.000	77.000	78.000	79.000	79.000
495.000	80.000	81.000	81.000	82.000	83.000
510.000	83.000	84.000	84.000	85.000	85.000
525.000	86.000	87.000	87.000	88.000	88.000
540.000	89.000	89.000	90.000	90.000	91.000
555.000	91.000	92.000	92.000	93.000	93.000
570.000	94.000	94.000	95.000	96.000	98.000
585.000	100.000	102.000	104.000	106.000	108.000
600.000	110.000	112.000	114.000	116.000	117.000
615.000	118.000	118.000	118.000	118.000	118.000
630.000	119.000	119.000	119.000	119.000	119.000

Time vs. Volume (ft³)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
645.000	119.000	119.000	119.000	120.000	120.000
660.000	120.000	120.000	120.000	120.000	120.000
675.000	120.000	120.000	120.000	121.000	121.000
690.000	121.000	121.000	121.000	121.000	121.000
705.000	121.000	121.000	121.000	122.000	122.000
720.000	122.000	122.000	122.000	122.000	122.000
735.000	124.000	125.000	127.000	129.000	130.000
750.000	132.000	134.000	135.000	137.000	139.000
765.000	140.000	142.000	143.000	145.000	146.000
780.000	148.000	149.000	150.000	152.000	153.000
795.000	155.000	156.000	157.000	158.000	160.000
810.000	163.000	165.000	168.000	170.000	171.000
825.000	173.000	174.000	175.000	176.000	177.000
840.000	178.000	179.000	180.000	181.000	182.000
855.000	183.000	184.000	185.000	186.000	187.000
870.000	188.000	189.000	189.000	190.000	191.000
885.000	192.000	193.000	194.000	195.000	195.000
900.000	196.000	197.000	198.000	199.000	199.000
915.000	200.000	201.000	202.000	202.000	203.000
930.000	204.000	204.000	205.000	206.000	206.000
945.000	207.000	208.000	208.000	209.000	210.000
960.000	210.000	210.000	210.000	209.000	207.000
975.000	206.000	205.000	204.000	203.000	202.000
990.000	201.000	200.000	199.000	198.000	195.000
1,005.000	193.000	190.000	188.000	185.000	183.000
1,020.000	180.000	178.000	176.000	173.000	171.000
1,035.000	169.000	167.000	164.000	162.000	160.000
1,050.000	158.000	156.000	154.000	152.000	150.000
1,065.000	148.000	146.000	144.000	142.000	140.000
1,080.000	138.000	137.000	135.000	133.000	131.000
1,095.000	130.000	128.000	126.000	125.000	123.000
1,110.000	121.000	120.000	118.000	117.000	115.000
1,125.000	114.000	112.000	111.000	109.000	108.000
1,140.000	106.000	105.000	104.000	102.000	101.000
1,155.000	99.000	98.000	97.000	96.000	94.000
1,170.000	93.000	92.000	91.000	90.000	88.000
1,185.000	87.000	86.000	85.000	84.000	83.000
1,200.000	82.000	81.000	79.000	78.000	77.000
1,215.000	76.000	75.000	74.000	73.000	72.000
1,230.000	72.000	71.000	70.000	69.000	68.000
1,245.000	67.000	66.000	65.000	64.000	63.000
1,260.000	63.000	62.000	61.000	60.000	59.000
1,275.000	59.000	58.000	57.000	56.000	56.000

Time vs. Volume (ft³)

Output Time increment = 3.000 min
Time on left represents time for first value in each row.

Time (min)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)	Volume (ft³)
1,290.000	55.000	54.000	53.000	53.000	52.000
1,305.000	51.000	51.000	50.000	49.000	49.000
1,320.000	48.000	47.000	47.000	46.000	46.000
1,335.000	45.000	44.000	44.000	43.000	43.000
1,350.000	42.000	42.000	41.000	41.000	40.000
1,365.000	39.000	39.000	38.000	38.000	37.000
1,380.000	37.000	36.000	36.000	36.000	35.000
1,395.000	35.000	34.000	34.000	33.000	33.000
1,410.000	32.000	32.000	32.000	31.000	31.000
1,425.000	30.000	30.000	30.000	29.000	29.000
1,440.000	28.000	(N/A)	(N/A)	(N/A)	(N/A)

Elevation-Volume

Pond Elevation (ft)	Pond Volume (ft^3)
1,537.70	0.000
1,538.00	1,754.750
1,539.00	8,515.070
1,540.00	16,770.050
1,541.00	26,728.200
1,542.00	41,675.180
1,543.00	80,599.530

Requested Pond Water Surface Elevations	
Minimum (Headwater)	1,537.74 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	1,543.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Rectangular Weir	Weir - 1	Forward	TW	1,542.88	1,543.00
Tailwater Settings	Tailwater			(N/A)	(N/A)

Structure ID: Weir - 1 Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	1,542.88 ft
Weir Length	2.00 ft
Weir Coefficient	3.00 (ft^0.5)/s

Structure ID: TW Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall

Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft³/s
Flow Tolerance (Maximum)	10.000 ft³/s

Subsection: Elevation-Volume-Flow Table (Pond) Scenario: Base
Label: Infiltration Basin

Infiltration	
Infiltration Method (Computed)	Constant
Infiltration Rate (Constant)	0.23 ft³/s

Initial Conditions	
Elevation (Water Surface, Initial)	1,537.70 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	3.000 min

Elevation (ft)	Outflow (ft³/s)	Storage (ft³)	Area (ft²)	Infiltration (ft³/s)	Flow (Total) (ft³/s)	2S/t + O (ft³/s)
1,537.70	0.00	0.000	0	0.00	0.00	0.00
1,538.20	0.00	3,106.814	0	0.23	0.23	34.75
1,538.70	0.00	6,486.974	0	0.23	0.23	72.31
1,539.20	0.00	10,166.066	0	0.23	0.23	113.18
1,539.70	0.00	14,293.556	0	0.23	0.23	159.05
1,540.20	0.00	18,761.680	0	0.23	0.23	208.69
1,540.70	0.00	23,740.755	0	0.23	0.23	264.01
1,541.20	0.00	29,717.596	0	0.23	0.23	330.42
1,541.70	0.00	37,191.086	0	0.23	0.23	413.46
1,542.20	0.00	49,460.050	0	0.23	0.23	549.78
1,542.70	0.00	68,922.225	0	0.23	0.23	766.03
1,542.88	0.00	75,928.608	0	0.23	0.23	843.88
1,543.00	0.25	80,599.530	0	0.23	0.48	896.03

Subsection: Level Pool Pond Routing Summary
Label: Infiltration Basin (IN)

Scenario: Base

Infiltration	
Infiltration Method (Computed)	Constant
Infiltration Rate (Constant)	0.23 ft³/s

Initial Conditions	
Elevation (Water Surface, Initial)	1,537.70 ft
Volume (Initial)	0.000 ft³
Flow (Initial Outlet)	0.00 ft³/s
Flow (Initial Infiltration)	0.00 ft³/s
Flow (Initial, Total)	0.00 ft³/s
Time Increment	3.000 min

Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	0.03 ft³/s	Time to Peak (Flow, In)	810.000 min
Infiltration (Peak)	0.02 ft³/s	Time to Peak (Infiltration)	963.000 min
Flow (Peak Outlet)	0.00 ft³/s	Time to Peak (Flow, Outlet)	0.000 min

Elevation (Water Surface, Peak)	1,537.74 ft
Volume (Peak)	210.310 ft³

Mass Balance (ft³)	
Volume (Initial)	0.000 ft³
Volume (Total Inflow)	600.000 ft³
Volume (Total Infiltration)	570.000 ft³
Volume (Total Outlet Outflow)	0.000 ft³
Volume (Retained)	28.000 ft³
Volume (Unrouted)	-2.000 ft³
Error (Mass Balance)	0.3 %

Summary for Hydrograph Addition at 'Infiltration Basin'

Upstream Link	Upstream Node
<Catchment to Outflow Node>	Unit Hydrograph (Onsite Runoff)

Node Inflows

Inflow Type	Element	Volume (ft^3)	Time to Peak (min)	Flow (Peak) (ft^3/s)
Flow (From)	Unit Hydrograph (Onsite Runoff)	12,348.000	6,565.000	0.25
Flow (In)	Infiltration Basin	600.120	810.000	0.03

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Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

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

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

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

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

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

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

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

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

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

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

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ L. **Fuel Dispensing Areas**	☒ **Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.** ☒ **Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.**		☒ **The property owner shall dry sweep the fueling area routinely.** ☒ **See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

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

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ M. **Loading Docks**	☒ **Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer.** ☒ **Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation.** ☒ **Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.**		☒ **Move loaded and unloaded items indoors as soon as possible.** ☒ **See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☑ N. **Fire Sprinkler Test Water**		☑ **Provide a means to drain fire sprinkler test water to the sanitary sewer.**	☑ **See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**
O. **Miscellaneous Drain or Wash Water or Other Sources** ☑ **Boiler drain lines** ☑ **Condensate drain lines** ☒ **Rooftop equipment** ☒ **Drainage sumps** ☑ **Roofing, gutters, and trim.** ☒ **Other sources**		☑ **Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system.** ☑ **Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system.** ☒ **Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment.** ☒ **Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.** ☑ **Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.** **Include controls for other sources as specified by local reviewer.**	

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☑ P. **Plazas, sidewalks, and parking lots.**			☑ **Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.**

Appendix 9: O&M

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

Appendix 10: Educational Materials

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

Infiltration Basin TC-11

Maintenance Concerns, Objectives, and Goals

- Vector Control
- Clogged soil or outlet structures
- Vegetation/Landscape Maintenance
- Groundwater contamination
- Accumulation of metals
- Aesthetics

General Description

An infiltration basin is a shallow impoundment that is designed to infiltrate stormwater. Infiltration basins use the natural filtering ability of the soil to remove pollutants in stormwater runoff. Infiltration facilities store runoff until it gradually infiltrates into the soil and eventually into the water table. This practice has high pollutant removal efficiency and can also help recharge groundwater, thus helping to maintain low flows in stream systems. Infiltration basins can be challenging to apply on many sites, however, because of soils requirements. In addition, some studies have shown relatively high failure rates compared with other management practices.

Targeted Constituents

✓	Sediment	■
✓	Nutrients	■
✓	Trash	■
✓	Metals	■
✓	Bacteria	■
✓	Oil and Grease	■
✓	Organics	■
✓	Oxygen Demanding	■

Legend ***(Removal Effectiveness)***

● Low ■ High

▲ Medium

Inspection/Maintenance Considerations

Infiltration basins perform better in well-drained permeable soils. Infiltration basins in areas of low permeability can clog within a couple years, and require more frequent inspections and maintenance. The use and regular maintenance of pretreatment BMPs will significantly minimize maintenance requirements for the basin. Spill response procedures and controls should be implemented to prevent spills from reaching the infiltration system.

Scarification or other disturbance should only be performed when there are actual signs of clogging or significant loss of infiltrative capacity, rather than on a routine basis. Always remove deposited sediments before scarification, and use a hand-guided rotary tiller, if possible, or a disc harrow pulled by a light tractor. This BMP may require groundwater monitoring. Basins cannot be put into operation until the upstream tributary area stabilized.

CASQA California Stormwater Quality Association is

TC-11 Infiltration Basin

Clogged infiltration basins with surface standing water can become a breeding area for mosquitoes and midges. Maintenance efforts associated with infiltration basins should include frequent inspections to ensure that water infiltrates into the subsurface completely (recommended infiltration rate of 72 hours or less) and that vegetation is carefully managed to prevent creating mosquito and other vector habitats.

Inspection Activities	Suggested Frequency
■ Observe drain time for a storm after completion or modification of the facility to confirm that the desired drain time has been obtained. ■ Newly established vegetation should be inspected several times to determine if any landscape maintenance (reseeding, irrigation, etc.) is necessary.	Post construction
■ Inspect for the following issues: differential accumulation of sediment, signs of wetness or damage to structures, erosion of the basin floor, dead or dying grass on the bottom, condition of riprap, drain time, signs of petroleum hydrocarbon contamination, standing water, trash and debris, sediment accumulation, slope stability, pretreatment device condition	Semi-annual and after extreme events
Maintenance Activities	**Suggested Frequency**
■ Factors responsible for clogging should be repaired immediately. ■ Weed once monthly during the first two growing seasons.	Post construction
■ Stabilize eroded banks. ■ Repair undercut and eroded areas at inflow and outflow structures. ■ Maintain access to the basin for regular maintenance activities. ■ Mow as appropriate for vegetative cover species. ■ Monitor health of vegetation and replace as necessary. ■ Control mosquitoes as necessary. ■ Remove litter and debris from infiltration basin area as required.	Standard maintenance (as needed)
■ Mow and remove grass clippings, litter, and debris. ■ Trim vegetation at the beginning and end of the wet season to prevent establishment of woody vegetation and for aesthetic and vector reasons. ■ Replant eroded or barren spots to prevent erosion and accumulation of sediment.	Semi-annual
■ Scrape bottom and remove sediment when accumulated sediment reduces original infiltration rate by 25-50%. Restore original cross-section and infiltration rate. Properly dispose of sediment. ■ Seed or sod to restore ground cover. ■ Disc or otherwise aerate bottom. ■ Dethatch basin bottom.	3-5 year maintenance

Additional Information

In most cases, sediment from an infiltration basin does not contain toxins at levels posing a hazardous concern. Studies to date indicate that pond sediments are generally below toxicity limits and can be safely landfilled or disposed onsite. Onsite sediment disposal is always preferable (if local authorities permit) as long as the sediments are deposited away from the shoreline to prevent their reentry into the pond and away from recreation areas, where they could possibly be ingested by young children. Sediments should be tested for toxicants in compliance with current disposal requirements if land uses in the catchment include commercial or industrial zones, or if visual or olfactory indications of pollution are noticed. Sediments containing high levels of pollutants should be disposed of properly.

Light equipment, which will not compact the underlying soil, should be used to remove the top layer of sediment. The remaining soil should be tilled and revegetated as soon as possible.

Sediment removal within the basin should be performed when the sediment is dry enough so that it is cracked and readily separates from the basin floor. This also prevents smearing of the basin floor.

References

King County, Stormwater Pollution Control Manual – Best Management Practices for Businesses. July, 1995 Available at: ftp://dnr metrokc.gov/wlr/dss/spcm/SPCM.HTM

Metropolitan Council, Urban Small Sites Best Management Practices Manual. Available at: http://www.metrocouncil.org/environment/Watershed/BMP/manual.htm

U.S. Environmental Protection Agency, Post-Construction Stormwater Management in New Development & Redevelopment BMP Factsheets. Available at: http://www.cfpub.epa.gov/npdes/stormwater/menuofbmps/bmp_files.cfm

Ventura Countywide Stormwater Quality Management Program, Technical Guidance Manual for Stormwater Quality Control Measures. July, 2002.

After the Storm

A Citizen's Guide to Understanding Stormwater

EPA 833-B-03-002

January 2003

For more information contact:

or visit
www.epa.gov/npdes/stormwater
www.epa.gov/nps

What is stormwater runoff?

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

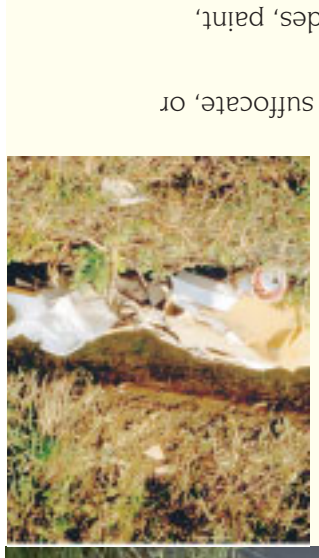
Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

Why is stormwater runoff a problem?

The effects of pollution

Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.
- Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.



Stormwater Pollution Solutions

Residential

Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

Lawn care

Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.

- Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- Cover piles of dirt or mulch being used in landscaping projects.

Septic systems

Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.

- Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- Don't dispose of household hazardous waste in sinks or toilets.

Auto care

Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

- Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

Pet waste

Pet waste can be a major source of bacteria and excess nutrients in local waters.

- When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.

Education is essential to changing people's behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.

Residential landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.

Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.

Rain Gardens and Grassy Swales—Specially designed areas planted with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.

Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.

Commercial

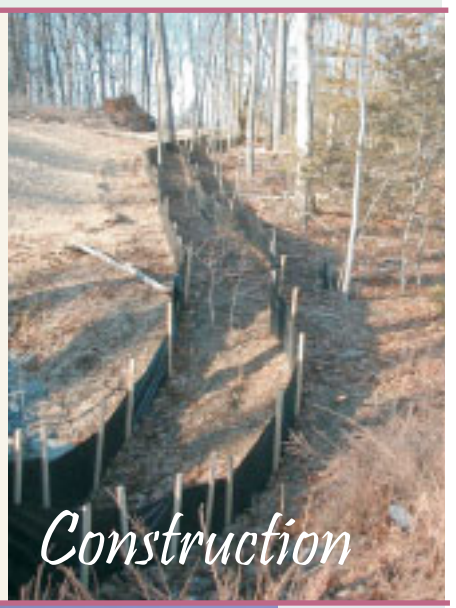
Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- Cover grease storage and dumpsters and keep them clean to avoid leaks.
- Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Construction

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

- Divert stormwater away from disturbed or exposed areas of the construction site.
- Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.



Agriculture

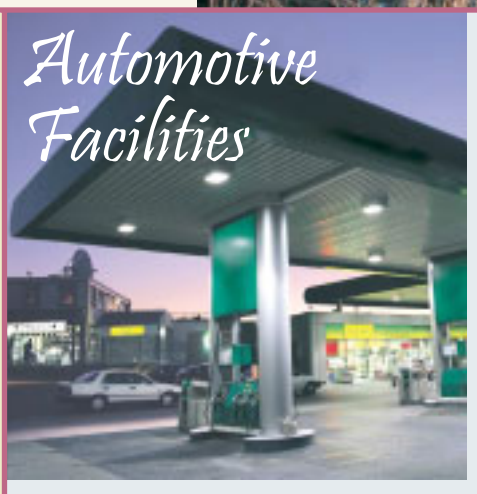
Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.

- Keep livestock away from streambanks and provide them a water source away from waterbodies.
- Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- Vegetate riparian areas along waterways.
- Rotate animal grazing to prevent soil erosion in fields.
- Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.

Forestry

Improperly managed logging operations can result in erosion and sedimentation.

- Conduct preharvest planning to prevent erosion and lower costs.
- Use logging methods and equipment that minimize soil disturbance.
- Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- Construct stream crossings so that they minimize erosion and physical changes to streams.
- Expedite revegetation of cleared areas.



Automotive Facilities

Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- Clean up spills immediately and properly dispose of cleanup materials.
- Provide cover over fueling stations and design or retrofit facilities for spill containment.
- Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- Install and maintain oil/water separators.

Landscaping and garden maintenance activities can be major contributors to water pollution. Soils, yard wastes, over-watering and garden chemicals become part of the urban runoff mix that winds its way through streets, gutters and storm drains before entering lakes, rivers, streams, etc. Urban runoff pollution contaminates water and harms aquatic life!

In Riverside County, report illegal discharges into the storm drain, call
1-800-506-2555
"Only Rain Down the Storm Drain"

Important Links:

Riverside County Household Hazardous Waste Collection Information
1-800-304-2226 or www.rivcowm.org

Riverside County Backyard Composting Program
1-800-366-SAVE

Integrated Pest Management (IPM) Solutions
www.ipm.ucdavis.edu

California Master Gardener Programs
www.mastergardeners.org
www.camastergardeners.ucdavis.edu

California Native Plant Society
www.cnps.org

The Riverside County "Only Rain Down the Storm Drain" Pollution Prevention Program gratefully acknowledges Orange County's Storm Water Program for their contribution to this brochure.

...Only Rain Down ...the Storm Drain

What you should know for... Landscape and Gardening

Best Management tips for:

- Professionals
- Novices
- Landscapers
- Gardeners
- Cultivators

Tips for Landscape & Gardening

This brochure will help you to get the most of your lawn and gardening efforts and keep our waterways clean. Clean waterways provide recreation, establish thriving fish habitats, secure safe sanctuaries for wildlife, and add beauty to our communities. NEVER allow gardening products or waste water to enter the street, gutter or storm drain.

General Landscaping Tips

- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.

- Plant native vegetation to reduce the amount of water, fertilizers and pesticides applied to the landscape.
- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.

Garden & Lawn Maintenance

- Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro-spray systems. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program.

- Consider recycling your green waste and adding "nature's own fertilizer" to your lawn or garden.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.
- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains or sewers. Dispose of empty containers in the trash.
- When available, use non-toxic alternatives to traditional pesticides, and use pesticides specifically designed to control the pest you are targeting.
- Try natural long-term common sense solutions first. Integrated Pest Management (IPM) can provide landscaping guidance and solutions, such as:
  - **Physical Controls** - Try hand picking, barriers, traps or caulking holes to control weeds and pests.
  - **Biological Controls** - Use predatory insects to control harmful pests.
  - **Chemical Controls** - Check out www.ipm.ucdavis.edu before using chemicals. Remember, all chemicals should be used cautiously and in moderation.
- If fertilizer is spilled, sweep up the spill before irrigating. If the spill is liquid, apply an absorbent material such as cat litter, and then sweep it up and dispose of it in the trash.
- Take unwanted pesticides to a Household Waste Collection Center to be recycled.
- *Dumping toxics into the street, gutter or storm drain is illegal!*

www.bewaterwise.com Great water conservation tips and drought tolerant garden designs.

www.ourwaterourworld.com Learn how to safely manage home and garden pests.

Additional information can also be found on the back of this brochure.

Helpful telephone numbers and links:

Riverside County Stormwater Protection Partners

Flood Control District	(951) 955-1200
County of Riverside	(951) 955-1000
City of Banning	(951) 922-3105
City of Beaumont	(951) 769-8520
City of Calimesa	(909) 795-9801
City of Canyon Lake	(951) 244-2955
Cathedral City	(760) 770-0327
City of Coachella	(760) 398-4978
City of Corona	(951) 736-2447
City of Desert Hot Springs	(760) 329-6411
City of Eastvale	(951) 361-0900
City of Hemet	(951) 765-2300
City of Indian Wells	(760) 346-2489
City of Indio	(760) 391-4000
City of Lake Elsinore	(951) 674-3124
City of La Quinta	(760) 777-7000
City of Menifee	(951) 672-6777
City of Moreno Valley	(951) 413-3000
City of Murrieta	(951) 304-2489
City of Norco	(951) 270-5607
City of Palm Desert	(760) 346-0611
City of Palm Springs	(760) 323-8299
City of Perris	(951) 943-6100
City of Rancho Mirage	(760) 324-4511
City of Riverside	(951) 361-0900
City of San Jacinto	(951) 654-7337
City of Temecula	(951) 694-6444
City of Wildomar	(951) 677-7751

REPORT ILLEGAL STORM DRAIN DISPOSAL
1-800-506-2555 or e-mail us at
fcnpdes@rcflood.org

- Riverside County Flood Control and Water Conservation District
  www.rcflood.org

Online resources include:

- California Storm Water Quality Association
  www.casqa.org
- State Water Resources Control Board
  www.waterboards.ca.gov
- Power Washers of North America
  www.thepwna.org

Stormwater Pollution

What you should know for...

Outdoor Cleaning Activities and Professional Mobile Service Providers

Storm drain pollution prevention information for:

- Car Washing / Mobile Detailers
- Window and Carpet Cleaners
- Power Washers
- Waterproofers / Street Sweepers
- Equipment cleaners or degreasers and all mobile service providers

Do you know where street flows actually go?

Storm drains are NOT connected to sanitary sewer systems and treatment plants!

The primary purpose of storm drains is to carry *rain* water away from developed areas to prevent flooding. Pollutants discharged to storm drains are transported directly into rivers, lakes and streams. Soaps, degreasers, automotive fluids, litter and a host of materials are washed off buildings, sidewalks, plazas and parking areas. Vehicles and equipment must be properly managed to prevent the pollution of local waterways.

Unintentional spills by mobile service operators can flow into storm drains and pollute our waterways. **Avoid mishaps.** *Always* have a **Spill Response Kit** on hand to clean up unintentional spills. Only emergency **Mechanical** repairs should be done in City streets, using drip pans for spills. **Plumbing** should be done on private property. Always store chemicals in a leak-proof container and keep covered when not in use. **Window/Power Washing** waste water shouldn't be released into the streets, but should be disposed of in a sanitary sewer, landscaped area or in the soil. Soiled **Carpet Cleaning** wash water should be filtered before being discharged into the sanitary sewer. Dispose of all filter debris properly. **Car Washing/Detailing** operators should wash cars on private property and use a regulated hose nozzle for water flow control and runoff prevention. Capture and dispose of waste water and chemicals properly. Remember, storm drains are for receiving rain water runoff only.

REPORT ILLEGAL STORM DRAIN DISPOSAL
1-800-506-2555

Help Protect Our Waterways!

Use these guidelines for Outdoor Cleaning Activities and Wash Water Disposal

Did you know that disposing of pollutants into the street, gutter, storm drain or body of water is *PROHIBITED* by law and can result in stiff penalties?

Best Management Practices

Waste wash water from Mechanics, Plumbers, Window/Power Washers, Carpet Cleaners, Car Washing and Mobile Detailing activities may contain significant quantities of motor oil, grease, chemicals, dirt, detergents, brake pad dust, litter and other materials.

Best Management Practices, or BMPs as they are known, are guides to prevent pollutants from entering the storm drains. ***Each of us*** can do our part to keep stormwater clean by using the suggested BMPs below:

Simple solutions for both light and heavy duty jobs:

Do...consider dry cleaning methods first such as a mop, broom, rag or wire brush. Always keep a spill response kit on site.

Do...prepare the work area before power cleaning by using sand bags, rubber mats, vacuum booms, containment pads or temporary berms to keep wash water away from the gutters and storm drains.

Do...use vacuums or other machines to remove and collect loose debris or litter before applying water.

Do...obtain the property owner's permission to dispose of ***small amounts*** of power washing waste water on to landscaped, gravel or unpaved surfaces.

Do...check your local sanitary sewer agency's policies on wash water disposal regulations before disposing of wash water into the sewer. (See list on reverse side)

Do...be aware that if discharging to landscape areas, soapy wash water may damage landscaping. Residual wash water may remain on paved surfaces to evaporate. Sweep up solid residuals and dispose of properly. Vacuum booms are another option for capturing and collecting wash water.

Do...check to see if local ordinances prevent certain activities.

Do not let...wash or waste water from sidewalk, plaza or building cleaning go into a street or storm drain.

Report illegal storm drain disposal
Call Toll Free
1-800-506-2555

Using Cleaning Agents

Try using biodegradable/phosphate-free products. They are easier on the environment, but don't confuse them with being toxic free. Soapy water entering the storm drain system can impact the delicate aquatic environment.

When cleaning surfaces with a ***high-pressure washer*** or ***steam cleaner***, additional precautions should be taken to prevent the discharge of pollutants into the storm drain system. These two methods of surface cleaning can loosen additional material that can contaminate local waterways.

Think Water Conservation

Minimize water use by using high pressure, low volume nozzles. Be sure to check all hoses for leaks. Water is a precious resource, don't let it flow freely and be sure to shut it off in between uses.

Screening Wash Water

Conduct thorough dry cleanup before washing exterior surfaces, such as buildings and decks ***with loose paint***, sidewalks or plaza areas. Keep debris from entering the storm drain after cleaning by first passing the wash water through a "20 mesh" or finer screen to catch the solid materials, then dispose of the mesh in a refuse container. Do not let the remaining wash water enter a street, gutter or storm drain.

Drain Inlet Protection & Collection of Wash Water

- Prior to any washing, block all storm drains with an impervious barrier such as sandbags or berms, or seal the storm drain with plugs or other appropriate materials.
- Create a containment area with berms and traps or take advantage of a low spot to keep wash water contained.
- Wash vehicles and equipment on grassy or gravel areas so that the wash water can seep into the ground.
- Pump or vacuum up all wash water in the contained area.

Concrete/Coring/Saw Cutting and Drilling Projects

Protect any down-gradient inlets by using dry activity techniques whenever possible. If water is used, minimize the amount of water used during the coring/drilling or saw cutting process. Place a barrier of sandbags and/or absorbent berms to protect the storm drain inlet or watercourse. Use a shovel or wet vacuum to remove the residue from the pavement. Do not wash residue or particulate matter into a storm drain inlet or watercourse.

Parking/Storage Area Maintenance SC-43

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓
Oxygen Demanding	✓

Description

Parking lots and storage areas can contribute a number of substances, such as trash, suspended solids, hydrocarbons, oil and grease, and heavy metals that can enter receiving waters through stormwater runoff or non-stormwater discharges. The following protocols are intended to prevent or reduce the discharge of pollutants from parking/storage areas and include using good housekeeping practices, following appropriate cleaning BMPs, and training employees.

Approach

Pollution Prevention

- Encourage alternative designs and maintenance strategies for impervious parking lots. (See New Development and Redevelopment BMP Handbook).
- Keep accurate maintenance logs to evaluate BMP implementation.

Suggested Protocols

General

- Keep the parking and storage areas clean and orderly. Remove debris in a timely fashion.
- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and/or infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low concentrations.

- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide an adequate number of litter receptacles.
- Clean out and cover litter receptacles frequently to prevent spillage.
- Provide trash receptacles in parking lots to discourage litter.
- Routinely sweep, shovel and dispose of litter in the trash.

Surface cleaning

- Use dry cleaning methods (e.g. sweeping or vacuuming) to prevent the discharge of pollutants into the stormwater conveyance system.
- Establish frequency of public parking lot sweeping based on usage and field observations of waste accumulation.
- Sweep all parking lots at least once before the onset of the wet season.
- If water is used follow the procedures below:
  - Block the storm drain or contain runoff.
  - Wash water should be collected and pumped to the sanitary sewer or discharged to a pervious surface, do not allow wash water to enter storm drains.
  - Dispose of parking lot sweeping debris and dirt at a landfill.
- When cleaning heavy oily deposits:
  - Use absorbent materials on oily spots prior to sweeping or washing.
  - Dispose of used absorbents appropriately.

Surface Repair

- Pre-heat, transfer or load hot bituminous material away from storm drain inlets.
- Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff.
- Cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc., where applicable. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal.

- Use only as much water as necessary for dust control, to avoid runoff.
- Catch drips from paving equipment that is not in use with pans or absorbent material placed under the machines. Dispose of collected material and absorbents properly.

Inspection

- Have designated personnel conduct inspections of the parking facilities and stormwater conveyance systems associated with them on a regular basis.
- Inspect cleaning equipment/sweepers for leaks on a regular basis.

Training

- Provide regular training to field employees and/or contractors regarding cleaning of paved areas and proper operation of equipment.
- Train employees and contractors in proper techniques for spill containment and cleanup.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, nad implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Limitations related to sweeping activities at large parking facilities may include high equipment costs, the need for sweeper operator training, and the inability of current sweeper technology to remove oil and grease.

Requirements

Costs

Cleaning/sweeping costs can be quite large, construction and maintenance of stormwater structural controls can be quite expensive as well.

Maintenance

- Sweep parking lot to minimize cleaning with water.
- Clean out oil/water/sand separators regularly, especially after heavy storms.
- Clean parking facilities on a regular basis to prevent accumulated wastes and pollutants from being discharged into conveyance systems during rainy conditions.

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Supplemental Information

Further Detail of the BMP

Surface Repair

Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff. Where applicable, cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal. Use only as much water as necessary for dust control, to avoid runoff.

References and Resources

http://www.stormwatercenter.net/

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

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Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA) http://www.basma.org

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP)
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

Drainage System Maintenance SC-44

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Description

As a consequence of its function, the stormwater conveyance system collects and transports urban runoff and stormwater that may contain certain pollutants. The protocols in this fact sheet are intended to reduce pollutants reaching receiving waters through proper conveyance system operation and maintenance.

Targeted Constituents

Sediment	✓
Nutrients	
Trash	✓
Metals	
Bacteria	✓
Oil and Grease	
Organics	

Approach

Pollution Prevention

Maintain catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis to remove pollutants, reduce high pollutant concentrations during the first flush of storms, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.

Suggested Protocols

Catch Basins/Inlet Structures

- Staff should regularly inspect facilities to ensure compliance with the following:
  - Immediate repair of any deterioration threatening structural integrity.
  - Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.
  - Stenciling of catch basins and inlets (see SC34 Waste Handling and Disposal).

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- Clean catch basins, storm drain inlets, and other conveyance structures before the wet season to remove sediments and debris accumulated during the summer.
- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Clean and repair as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes if necessary with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed. Do not dewater near a storm drain or stream.

Storm Drain Conveyance System

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Collect and pump flushed effluent to the sanitary sewer for treatment whenever possible.

Pump Stations

- Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- Do not allow discharge to reach the storm drain system when cleaning a storm drain pump station or other facility.
- Conduct routine maintenance at each pump station.
- Inspect, clean, and repair as necessary all outlet structures prior to the wet season.

Open Channel

- Modify storm channel characteristics to improve channel hydraulics, increase pollutant removals, and enhance channel/creek aesthetic and habitat value.
- Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural (emphasis added) state of any river, stream, or lake in California, must enter into a Steam or Lake Alteration Agreement with the Department of Fish and Game. The developer-applicant should also contact local governments (city, county, special districts), other state agencies (SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Federal Corps of Engineers and USFWS.

Illicit Connections and Discharges

- Look for evidence of illegal discharges or illicit connections during routine maintenance of conveyance system and drainage structures:
  - Is there evidence of spills such as paints, discoloring, etc?

- Are there any odors associated with the drainage system?
- Record locations of apparent illegal discharges/illicit connections?
- Track flows back to potential dischargers and conduct aboveground inspections. This can be done through visual inspection of upgradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
- Eliminate the discharge once the origin of flow is established.

- Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Illegal Dumping

- Inspect and clean up hot spots and other storm drainage areas regularly where illegal dumping and disposal occurs.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Illegal dumping hot spots
  - Types and quantities (in some cases) of wastes
  - Patterns in time of occurrence (time of day/night, month, or year)
  - Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
  - Responsible parties
- Post "No Dumping" signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Training

- Train crews in proper maintenance activities, including record keeping and disposal.
- Allow only properly trained individuals to handle hazardous materials/wastes.
- Have staff involved in detection and removal of illicit connections trained in the following:
  - OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).

- OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and Federal OSHA 29 CFR 1910.146).
- Procedural training (field screening, sampling, smoke/dye testing, TV inspection).

Spill Response and Prevention

- Investigate all reports of spills, leaks, and/or illegal dumping promptly.
- Clean up all spills and leaks using "dry" methods (with absorbent materials and/or rags) or dig up, remove, and properly dispose of contaminated soil.
- Refer to fact sheet SC-11 Spill Prevention, Control, and Cleanup.

Other Considerations (Limitations and Regulations)

- Clean-up activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.
- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, liquid/sediment disposal, and prohibition against disposal of flushed effluent to sanitary sewer in some areas.
- Regulations may include adoption of substantial penalties for illegal dumping and disposal.
- Local municipal codes may include sections prohibiting discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the storm drain system.

Requirements

Costs

- An aggressive catch basin cleaning program could require a significant capital and O&M budget.
- The elimination of illegal dumping is dependent on the availability, convenience, and cost of alternative means of disposal. The primary cost is for staff time. Cost depends on how aggressively a program is implemented. Other cost considerations for an illegal dumping program include:
  - Purchase and installation of signs.
  - Rental of vehicle(s) to haul illegally-disposed items and material to landfills.
  - Rental of heavy equipment to remove larger items (e.g., car bodies) from channels.
  - Purchase of landfill space to dispose of illegally-dumped items and material.

- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary.

Maintenance

- Two-person teams may be required to clean catch basins with vactor trucks.
- Teams of at least two people plus administrative personnel are required to identify illicit discharges, depending on the complexity of the storm sewer system.
- Arrangements must be made for proper disposal of collected wastes.
- Technical staff are required to detect and investigate illegal dumping violations.

Supplemental Information

Further Detail of the BMP

Storm Drain Flushing

Flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in storm drainage systems. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as an open channel, another point where flushing will be initiated, or the sanitary sewer and the treatment facilities, thus preventing resuspension and overflow of a portion of the solids during storm events. Flushing prevents "plug flow" discharges of concentrated pollutant loadings and sediments. Deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, thereby releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce impacts of stormwater pollution, a second inflatable device placed well downstream may be used to recollect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to recollect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75% for organics and 55-65% for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used or that fire hydrant line flushing coincide with storm sewer flushing.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

Ferguson, B.K. 1991. Urban Stream Reclamation, p. 324-322, Journal of Soil and Water Conservation.

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net

United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Storm Drain System Cleaning. On line:
http://www.epa.gov/npdes/menuofbmps/poll_16.htm

Plaza and Sidewalk Cleaning SC-71

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Description

Pollutants on sidewalks and other pedestrian traffic areas and plazas are typically due to littering and vehicle use. This fact sheet describes good housekeeping practices that can be incorporated into the municipality's existing cleaning and maintenance program.

Approach

Pollution Prevention

- Use dry cleaning methods whenever practical for surface cleaning activities.
- Use the least toxic materials available (e.g. water based paints, gels or sprays for graffiti removal).

Suggested Protocols

Surface Cleaning

- Regularly broom (dry) sweep sidewalk, plaza and parking lot areas to minimize cleaning with water.
- Dry cleanup first (sweep, collect, and dispose of debris and trash) when cleaning sidewalks or plazas, then wash with or without soap.
- Block the storm drain or contain runoff when cleaning with water. Discharge wash water to landscaping or collect water and pump to a tank or discharge to sanitary sewer if allowed. (Permission may be required from local sanitation district.)

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- Block the storm drain or contain runoff when washing parking areas, driveways or drive-throughs. Use absorbents to pick up oil; then dry sweep. Clean with or without soap. Collect water and pump to a tank or discharge to sanitary sewer if allowed. Street Repair and Maintenance.

Graffiti Removal

- Avoid graffiti abatement activities during rain events.
- Implement the procedures under Painting and Paint Removal in SC-70 Roads, Streets, and Highway Operation and Maintenance fact sheet when graffiti is removed by painting over.
- Direct runoff from sand blasting and high pressure washing (with no cleaning agents) into a dirt or landscaped area after treating with an appropriate filtering device.
- Plug nearby storm drain inlets and vacuum/pump wash water to the sanitary sewer if authorized to do so if a graffiti abatement method generates wash water containing a cleaning compound (such as high pressure washing with a cleaning compound). Ensure that a non-hazardous cleaning compound is used or dispose as hazardous waste, as appropriate.

Surface Removal and Repair

- Schedule surface removal activities for dry weather if possible.
- Avoid creating excess dust when breaking asphalt or concrete.
- Take measures to protect nearby storm drain inlets prior to breaking up asphalt or concrete (e.g. place hay bales or sand bags around inlets). Clean afterwards by sweeping up as much material as possible.
- Designate an area for clean up and proper disposal of excess materials.
- Remove and recycle as much of the broken pavement as possible to avoid contact with rainfall and stormwater runoff.
- When making saw cuts in pavement, use as little water as possible. Cover each storm drain inlet completely with filter fabric during the sawing operation and contain the slurry by placing straw bales, sandbags, or gravel dams around the inlets. After the liquid drains or evaporates, shovel or vacuum the slurry residue from the pavement or gutter and remove from site.
- Always dry sweep first to clean up tracked dirt. Use a street sweeper or vacuum truck. Do not dump vacuumed liquid in storm drains. Once dry sweeping is complete, the area may be hosed down if needed. Wash water should be directed to landscaping or collected and pumped to the sanitary sewer if allowed.

Concrete Installation and Repair

- Schedule asphalt and concrete activities for dry weather.

- Take measures to protect any nearby storm drain inlets and adjacent watercourses, prior to breaking up asphalt or concrete (e.g. place san bags around inlets or work areas).
- Limit the amount of fresh concrete or cement mortar mixed, mix only what is needed for the job.
- Store concrete materials under cover, away from drainage areas. Secure bags of cement after they are open. Be sure to keep wind-blown cement powder away from streets, gutters, storm drains, rainfall, and runoff.
- Return leftover materials to the transit mixer. Dispose of small amounts of hardened excess concrete, grout, and mortar in the trash.
- Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile, or dispose in the trash.
- Protect applications of fresh concrete from rainfall and runoff until the material has dried.
- Do not allow excess concrete to be dumped onsite, except in designated areas.
- Wash concrete trucks off site or in designated areas on site designed to preclude discharge of wash water to drainage system.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide litter receptacles in busy, high pedestrian traffic areas of the community, at recreational facilities, and at community events.
- Cover litter receptacles and clean out frequently to prevent leaking/spillage or overflow.
- Clean parking lots on a regular basis with a street sweeper.

Training

- Provide regular training to field employees and/or contractors regarding surface cleaning and proper operation of equipment.
- Train employee and contractors in proper techniques for spill containment and cleanup.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Limitations related to sweeping activities at large parking facilities may include current sweeper technology to remove oil and grease.
- Surface cleaning activities that require discharges to the local sewering agency will require coordination with the agency.
- Arrangements for disposal of the swept material collected must be made, as well as accurate tracking of the areas swept and the frequency of sweeping.

Requirements

Costs

- The largest expenditures for sweeping and cleaning of sidewalks, plazas, and parking lots are in staffing and equipment. Sweeping of these areas should be incorporated into street sweeping programs to reduce costs.

Maintenance

Not applicable

Supplemental Information

Further Detail of the BMP

Community education, such as informing residents about their options for recycling and waste disposal, as well as the consequences of littering, can instill a sense of citizen responsibility and potentially reduce the amount of maintenance required by the municipality.

Additional BMPs that should be considered for parking lot areas include:

- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low concentrations.
- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.
- Structural BMPs such as storm drain inlet filters can be very effective in reducing the amount of pollutants discharged from parking facilities during periods of rain.

References and Resources

Bay Area Stormwater Management Agencies Association (BASMAA). 1996. Pollution From Surface Cleaning Folder http://www.basmaa.org

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July. 1998.

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Santa Clara Valley Urban Runoff Pollution Prevention Program. Maintenance Best Management Practices for the Construction Industry. Brochures: Landscaping, Gardening, and Pool; Roadwork and Paving; and Fresh Concrete and Mortar Application. June 2001.

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Plan. 2001. Municipal Activities Model Program Guidance. November.

Landscape Maintenance SC-73

Objectives

- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	
Bacteria	
Oil and Grease	
Organics	
Oxygen Demanding	☑

Description

Landscape maintenance activities include vegetation removal; herbicide and insecticide application; fertilizer application; watering; and other gardening and lawn care practices. Vegetation control typically involves a combination of chemical (herbicide) application and mechanical methods. All of these maintenance practices have the potential to contribute pollutants to the storm drain system. The major objectives of this BMP are to minimize the discharge of pesticides, herbicides and fertilizers to the storm drain system and receiving waters; prevent the disposal of landscape waste into the storm drain system by collecting and properly disposing of clippings and cuttings, and educating employees and the public.

Approach

Pollution Prevention

- Implement an integrated pest management (IPM) program. IPM is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools.
- Choose low water using flowers, trees, shrubs, and groundcover.
- Consider alternative landscaping techniques such as naturescaping and xeriscaping.
- Conduct appropriate maintenance (i.e. properly timed fertilizing, weeding, pest control, and pruning) to help preserve the landscapes water efficiency.

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- Consider grass cycling (grass cycling is the natural recycling of grass by leaving the clippings on the lawn when mowing. Grass clippings decompose quickly and release valuable nutrients back into the lawn).

Suggested Protocols

Mowing, Trimming, and Weeding

- Whenever possible use mechanical methods of vegetation removal (e.g mowing with tractor-type or push mowers, hand cutting with gas or electric powered weed trimmers) rather than applying herbicides. Use hand weeding where practical.
- Avoid loosening the soil when conducting mechanical or manual weed control, this could lead to erosion. Use mulch or other erosion control measures when soils are exposed.
- Performing mowing at optimal times. Mowing should not be performed if significant rain events are predicted.
- Mulching mowers may be recommended for certain flat areas. Other techniques may be employed to minimize mowing such as selective vegetative planting using low maintenance grasses and shrubs.
- Collect lawn and garden clippings, pruning waste, tree trimmings, and weeds. Chip if necessary, and compost or dispose of at a landfill (see waste management section of this fact sheet).
- Place temporarily stockpiled material away from watercourses, and berm or cover stockpiles to prevent material releases to storm drains.

Planting

- Determine existing native vegetation features (location, species, size, function, importance) and consider the feasibility of protecting them. Consider elements such as their effect on drainage and erosion, hardiness, maintenance requirements, and possible conflicts between preserving vegetation and the resulting maintenance needs.
- Retain and/or plant selected native vegetation whose features are determined to be beneficial, where feasible. Native vegetation usually requires less maintenance (e.g., irrigation, fertilizer) than planting new vegetation.
- Consider using low water use groundcovers when planting or replanting.

Waste Management

- Compost leaves, sticks, or other collected vegetation or dispose of at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Place temporarily stockpiled material away from watercourses and storm drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- Reduce the use of high nitrogen fertilizers that produce excess growth requiring more frequent mowing or trimming.

- Avoid landscape wastes in and around storm drain inlets by either using bagging equipment or by manually picking up the material.

Irrigation

- Where practical, use automatic timers to minimize runoff.
- Use popup sprinkler heads in areas with a lot of activity or where there is a chance the pipes may be broken. Consider the use of mechanisms that reduce water flow to sprinkler heads if broken.
- Ensure that there is no runoff from the landscaped area(s) if re-claimed water is used for irrigation.
- If bailing of muddy water is required (e.g. when repairing a water line leak), do not put it in the storm drain; pour over landscaped areas.
- Irrigate slowly or pulse irrigate to prevent runoff and then only irrigate as much as is needed.
- Apply water at rates that do not exceed the infiltration rate of the soil.

Fertilizer and Pesticide Management

- Utilize a comprehensive management system that incorporates integrated pest management (IPM) techniques. There are many methods and types of IPM, including the following:
  - Mulching can be used to prevent weeds where turf is absent, fencing installed to keep rodents out, and netting used to keep birds and insects away from leaves and fruit.
  - Visible insects can be removed by hand (with gloves or tweezers) and placed in soapy water or vegetable oil. Alternatively, insects can be sprayed off the plant with water or in some cases vacuumed off of larger plants.
  - Store-bought traps, such as species-specific, pheromone-based traps or colored sticky cards, can be used.
  - Slugs can be trapped in small cups filled with beer that are set in the ground so the slugs can get in easily.
  - In cases where microscopic parasites, such as bacteria and fungi, are causing damage to plants, the affected plant material can be removed and disposed of (pruning equipment should be disinfected with bleach to prevent spreading the disease organism).
  - Small mammals and birds can be excluded using fences, netting, tree trunk guards.
  - Beneficial organisms, such as bats, birds, green lacewings, ladybugs, praying mantis, ground beetles, parasitic nematodes, trichogramma wasps, seed head weevils, and spiders that prey on detrimental pest species can be promoted.
- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.

- Use pesticides only if there is an actual pest problem (not on a regular preventative schedule).
- Do not use pesticides if rain is expected. Apply pesticides only when wind speeds are low (less than 5 mph).
- Do not mix or prepare pesticides for application near storm drains.
- Prepare the minimum amount of pesticide needed for the job and use the lowest rate that will effectively control the pest.
- Employ techniques to minimize off-target application (e.g. spray drift) of pesticides, including consideration of alternative application techniques.
- Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.
- Calibrate fertilizer and pesticide application equipment to avoid excessive application.
- Periodically test soils for determining proper fertilizer use.
- Sweep pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Purchase only the amount of pesticide that you can reasonably use in a given time period (month or year depending on the product).
- Triple rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Dispose of empty pesticide containers according to the instructions on the container label.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.
- Inspect pesticide/fertilizer equipment and transportation vehicles daily.

Training

- Educate and train employees on use of pesticides and in pesticide application techniques to prevent pollution. Pesticide application must be under the supervision of a California qualified pesticide applicator.
- Train/encourage municipal maintenance crews to use IPM techniques for managing public green areas.
- Annually train employees within departments responsible for pesticide application on the appropriate portions of the agency's IPM Policy, SOPs, and BMPs, and the latest IPM techniques.

- Employees who are not authorized and trained to apply pesticides should be periodically (at least annually) informed that they cannot use over-the-counter pesticides in or around the workplace.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a know in location
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- The Federal Pesticide, Fungicide, and Rodenticide Act and California Title 3, Division 6, Pesticides and Pest Control Operations place strict controls over pesticide application and handling and specify training, annual refresher, and testing requirements. The regulations generally cover: a list of approved pesticides and selected uses, updated regularly; general application information; equipment use and maintenance procedures; and record keeping. The California Department of Pesticide Regulations and the County Agricultural Commission coordinate and maintain the licensing and certification programs. All public agency employees who apply pesticides and herbicides in "agricultural use" areas such as parks, golf courses, rights-of-way and recreation areas should be properly certified in accordance with state regulations. Contracts for landscape maintenance should include similar requirements.
- All employees who handle pesticides should be familiar with the most recent material safety data sheet (MSDS) files.
- Municipalities do not have the authority to regulate the use of pesticides by school districts, however the California Healthy Schools Act of 2000 (AB 2260) has imposed requirements on California school districts regarding pesticide use in schools. Posting of notification prior to the application of pesticides is now required, and IPM is stated as the preferred approach to pest management in schools.

Requirements

Costs

Additional training of municipal employees will be required to address IPM techniques and BMPs. IPM methods will likely increase labor cost for pest control which may be offset by lower chemical costs.

Maintenance

Not applicable

Supplemental Information

Further Detail of the BMP

Waste Management

Composting is one of the better disposal alternatives if locally available. Most municipalities either have or are planning yard waste composting facilities as a means of reducing the amount of waste going to the landfill. Lawn clippings from municipal maintenance programs as well as private sources would probably be compatible with most composting facilities

Contractors and Other Pesticide Users

Municipal agencies should develop and implement a process to ensure that any contractor employed to conduct pest control and pesticide application on municipal property engages in pest control methods consistent with the IPM Policy adopted by the agency. Specifically, municipalities should require contractors to follow the agency's IPM policy, SOPs, and BMPs; provide evidence to the agency of having received training on current IPM techniques when feasible; provide documentation of pesticide use on agency property to the agency in a timely manner.

References and Resources

King County Stormwater Pollution Control Manual. Best Management Practices for Businesses. 1995. King County Surface Water Management. July. On-line: http://dnr.metrokc.gov/wlr/dss/spcm.htm

Los Angeles County Stormwater Quality Model Programs. Public Agency Activities http://ladpw.org/wmd/npdes/model_links.cfm

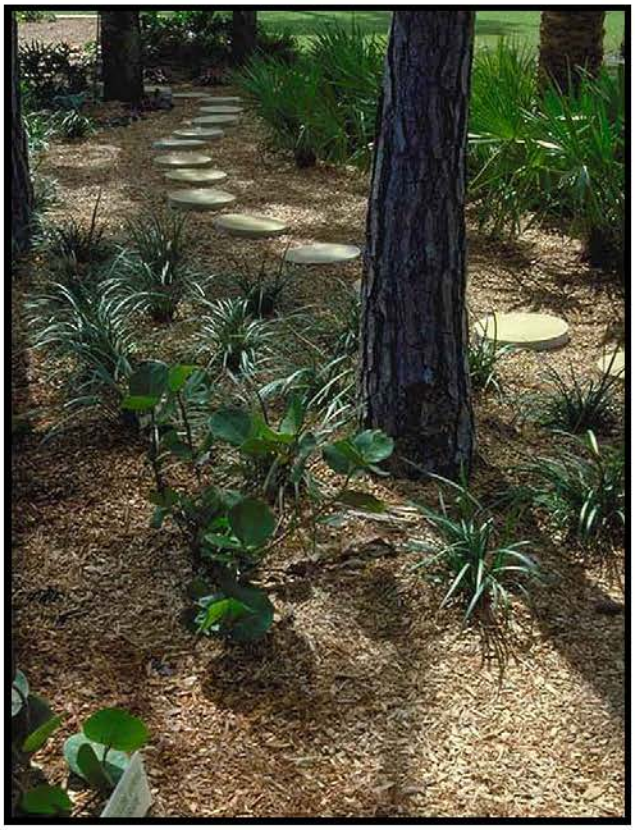
Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July. 1998.

Orange County Stormwater Program http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Santa Clara Valley Urban Runoff Pollution Prevention Program. 1997 Urban Runoff Management Plan. September 1997, updated October 2000.

United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Landscaping and Lawn Care. Office of Water. Office of Wastewater Management. On-line: http://www.epa.gov/npdes/menuofbmps/poll_8.htm

Site Design & Landscape Planning SD-10



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- ☑ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

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Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.
- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Promote natural vegetation by using parking lot islands and other landscaped areas.
- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.
- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Roof Runoff Controls SD-11

Rain Garden

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Various roof runoff controls are available to address stormwater that drains off rooftops. The objective is to reduce the total volume and rate of runoff from individual lots, and retain the pollutants on site that may be picked up from roofing materials and atmospheric deposition. Roof runoff controls consist of directing the roof runoff away from paved areas and mitigating flow to the storm drain system through one of several general approaches: cisterns or rain barrels; dry wells or infiltration trenches; pop-up emitters, and foundation planting. The first three approaches require the roof runoff to be contained in a gutter and downspout system. Foundation planting provides a vegetated strip under the drip line of the roof.

Approach

Design of individual lots for single-family homes as well as lots for higher density residential and commercial structures should consider site design provisions for containing and infiltrating roof runoff or directing roof runoff to vegetative swales or buffer areas. Retained water can be reused for watering gardens, lawns, and trees. Benefits to the environment include reduced demand for potable water used for irrigation, improved stormwater quality, increased groundwater recharge, decreased runoff volume and peak flows, and decreased flooding potential.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Designing New Installations

Cisterns or Rain Barrels

One method of addressing roof runoff is to direct roof downspouts to cisterns or rain barrels. A cistern is an above ground storage vessel with either a manually operated valve or a permanently open outlet. Roof runoff is temporarily stored and then released for irrigation or infiltration between storms. The number of rain

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barrels needed is a function of the rooftop area. Some low impact developers recommend that every house have at least 2 rain barrels, with a minimum storage capacity of 1000 liters. Roof barrels serve several purposes including mitigating the first flush from the roof which has a high volume, amount of contaminants, and thermal load. Several types of rain barrels are commercially available. Consideration must be given to selecting rain barrels that are vector proof and childproof. In addition, some barrels are designed with a bypass valve that filters out grit and other contaminants and routes overflow to a soak-away pit or rain garden.

If the cistern has an operable valve, the valve can be closed to store stormwater for irrigation or infiltration between storms. This system requires continual monitoring by the resident or grounds crews, but provides greater flexibility in water storage and metering. If a cistern is provided with an operable valve and water is stored inside for long periods, the cistern must be covered to prevent mosquitoes from breeding.

A cistern system with a permanently open outlet can also provide for metering stormwater runoff. If the cistern outlet is significantly smaller than the size of the downspout inlet (say ¼ to ½ inch diameter), runoff will build up inside the cistern during storms, and will empty out slowly after peak intensities subside. This is a feasible way to mitigate the peak flow increases caused by rooftop impervious land coverage, especially for the frequent, small storms.

Dry wells and Infiltration Trenches

Roof downspouts can be directed to dry wells or infiltration trenches. A dry well is constructed by excavating a hole in the ground and filling it with an open graded aggregate, and allowing the water to fill the dry well and infiltrate after the storm event. An underground connection from the downspout conveys water into the dry well, allowing it to be stored in the voids. To minimize sedimentation from lateral soil movement, the sides and top of the stone storage matrix can be wrapped in a permeable filter fabric, though the bottom may remain open. A perforated observation pipe can be inserted vertically into the dry well to allow for inspection and maintenance.

In practice, dry wells receiving runoff from single roof downspouts have been successful over long periods because they contain very little sediment. They must be sized according to the amount of rooftop runoff received, but are typically 4 to 5 feet square, and 2 to 3 feet deep, with a minimum of 1-foot soil cover over the top (maximum depth of 10 feet).

To protect the foundation, dry wells must be set away from the building at least 10 feet. They must be installed in solids that accommodate infiltration. In poorly drained soils, dry wells have very limited feasibility.

Infiltration trenches function in a similar manner and would be particularly effective for larger roof areas. An infiltration trench is a long, narrow, rock-filled trench with no outlet that receives stormwater runoff. These are described under Treatment Controls.

Pop-up Drainage Emitter

Roof downspouts can be directed to an underground pipe that daylights some distance from the building foundation, releasing the roof runoff through a pop-up emitter. Similar to a pop-up irrigation head, the emitter only opens when there is flow from the roof. The emitter remains flush to the ground during dry periods, for ease of lawn or landscape maintenance.

Foundation Planting

Landscape planting can be provided around the base to allow increased opportunities for stormwater infiltration and protect the soil from erosion caused by concentrated sheet flow coming off the roof. Foundation plantings can reduce the physical impact of water on the soil and provide a subsurface matrix of roots that encourage infiltration. These plantings must be sturdy enough to tolerate the heavy runoff sheet flows, and periodic soil saturation.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Supplemental Information

Examples

- City of Ottawa's Water Links Surface –Water Quality Protection Program
- City of Toronto Downspout Disconnection Program
- City of Boston, MA, Rain Barrel Demonstration Program

Other Resources

Hager, Marty Catherine, Stormwater, "Low-Impact Development", January/February 2003. www.stormh2o.com

Low Impact Urban Design Tools, Low Impact Development Design Center, Beltsville, MD. www.lid-stormwater.net

Start at the Source, Bay Area Stormwater Management Agencies Association, 1999 Edition

Efficient Irrigation SD-12

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

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- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING

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– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.
- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Trash Storage Areas SD-32

Description

Trash storage areas are areas where a trash receptacle (s) are located for use as a repository for solid wastes. Stormwater runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or creeks. Waste handling operations that may be sources of stormwater pollution include dumpsters, litter control, and waste piles.

Approach

This fact sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff associated with trash storage and handling. Preventative measures including enclosures, containment structures, and impervious pavements to mitigate spills, should be used to reduce the likelihood of contamination.

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Design requirements for waste handling areas are governed by Building and Fire Codes, and by current local agency ordinances and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code and ordinance requirements. Hazardous waste should be handled in accordance with legal requirements established in Title 22, California Code of Regulation.

Wastes from commercial and industrial sites are typically hauled by either public or commercial carriers that may have design or access requirements for waste storage areas. The design criteria in this fact sheet are recommendations and are not intended to be in conflict with requirements established by the waste hauler. The waste hauler should be contacted prior to the design of your site trash collection areas. Conflicts or issues should be discussed with the local agency.

Designing New Installations

Trash storage areas should be designed to consider the following structural or treatment control BMPs:

- Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater.
- Make sure trash container areas are screened or walled to prevent off-site transport of trash.

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- Use lined bins or dumpsters to reduce leaking of liquid waste.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Pave trash storage areas with an impervious surface to mitigate spills.
- Do not locate storm drains in immediate vicinity of the trash storage area.
- Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Maintenance Considerations

The integrity of structural elements that are subject to damage (i.e., screens, covers, and signs) must be maintained by the owner/operator. Maintenance agreements between the local agency and the owner/operator may be required. Some agencies will require maintenance deed restrictions to be recorded of the property title. If required by the local agency, maintenance agreements or deed restrictions must be executed by the owner/operator before improvement plans are approved.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

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