FIS - SARASOTA COUNTY, FL
FEMA
DISCHARGE CALCULATIONS

SUBMITTED TO
FEDERAL EMERGENCY MANAGEMENT AGENCY

PRESENTED BY
GEE & JENSON
ENGINEERS
ARCHITECTS
PLANNERS, INC.
<table>
<thead>
<tr>
<th>Summary Table</th>
<th>PHILLIPPI CREEK</th>
<th>MATHENY CREEK</th>
<th>CURRY CREEK</th>
<th>HATCHETT CREEK</th>
<th>ALLIGATOR CREEK</th>
<th>WOODMERE CREEK</th>
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<tbody>
<tr>
<td>TABLE 1 - SUMMARY OF DISCHARGES</td>
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<td>500-YEAR</td>
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<tr>
<td>U.S. 41</td>
<td>-</td>
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<td>1600</td>
<td>1920</td>
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<td>1770</td>
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<td>1220</td>
<td>1490</td>
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<td>690</td>
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</table>

1 The peak discharges were considered receiving flood flows from the Myakka River through the Blackburn Canal. Contributing drainage areas may vary under various conditions of the Myakka River.
<table>
<thead>
<tr>
<th>FLOOD SOURCE AND LOCATION</th>
<th>DRAINAGE AREA (SQ. MILES)</th>
<th>10-YEAR</th>
<th>50-YEAR</th>
<th>100-YEAR</th>
<th>500-YEAR</th>
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<td><strong>HATCHETT CREEK</strong></td>
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<td>900</td>
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<td>1300</td>
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<td>600</td>
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<td>480</td>
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<td>240</td>
<td>280</td>
<td>300</td>
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<td><strong>ALLIGATOR CREEK</strong></td>
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<td>AT MOUTH</td>
<td>9.61</td>
<td>1260</td>
<td>1800</td>
<td>2120</td>
<td>2650</td>
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<td>U.S. 41</td>
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<td>2000</td>
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<td>1330</td>
<td>1550</td>
<td>1900</td>
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<tr>
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<td>750</td>
<td>920</td>
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<td>10-YEAR</td>
<td>50-YEAR</td>
<td>100-YEAR</td>
<td>500-YEAR</td>
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<td>WOODMERE CREEK</td>
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<tr>
<td>AT MOUTH</td>
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<td>440</td>
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The Flood Frequency Analysis for Curry Creek was complicated by the influence of a diversion canal called the Blackburn Canal between the Myakka River and Curry Creek. It was dug for the purpose of releasing flood flows from the Myakka River to Curry Creek. Curry Creek flows westerly to Roberts Bay under normal and high flow condition. However, at low flow conditions in the Myakka River basin, Blackburn Canal reverses and flows easterly to the Myakka River. (Ref. USGS "Magnitude and Frequency of Flooding on the Myakka River, Southwest Florida WRI 78-65)

The flood frequency analysis for Curry Creek was conducted conservatively assuming that peak flow periods occur simultaneously in the Myakka River and the Blackburn Canal.

The computational steps used for estimating the peak discharges for Curry Creek are outlined as follows:

1. Compute the peak discharges using the Unit Hydrograph Method without considering the diverted flows from the Myakka River.

2. Compute backwater profiles for Curry Creek and Blackburn Canal based on the peak discharges computed in Step 1.

3. Compare the peak stages on Blackburn Canal with the peak stages on the Myakka River.

4. Add additional discharges to the peak discharges in Step 1 until the Blackburn Canal profiles reach the flood stages on the Myakka River.
The following table shows flood elevations at Blackburn Canal and the Myakka River and the corresponding peak discharges for Curry Creek.

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<th>100-Yr.</th>
<th>500-Yr.</th>
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<td>10.4</td>
<td>11.5</td>
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<td>2. Blackburn Canal without Considering Flood Flows from the Myakka River</td>
<td>7.3</td>
<td>8.6</td>
<td>9.3</td>
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<tr>
<td>(Curry Creek at US 41) 920 cfs 1330 cfs 1550 cfs 1900 cfs)</td>
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<td>3. Blackburn Canal with Adding Constant Discharges from the Myakka River 180, 270, 370, and 520 cfs for 10-yr, 50-yr, 100-yr, and 500-yr frequency, respectively</td>
<td>8.7</td>
<td>10.3</td>
<td>11.5</td>
<td>12.5</td>
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<tr>
<td>(Curry Creek at US 41) 1100 cfs 1600 cfs 1920 cfs 2420 cfs)</td>
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SS/1qm 87488
The Myakka River's 10-, 50-, 100- and 500-year profiles at confluence point with the Blackburn Canal are:

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<th>10-yr</th>
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<th>500-yr</th>
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<tr>
<td></td>
<td>8.8'</td>
<td>10.4'</td>
<td>11.5'</td>
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("Magnitude and Frequency of Flooding on the Myakka River, Southwest Florida", USGS WRI 78-65)

Comparisons of Flood Elevation at Confluence Point

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<td>10.4'</td>
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<td>2. Curry Cr w/ Blackburn Canal Extension</td>
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<td>9.3'</td>
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<td>3. Curry Cr w/ Blackburn Canal Extension adding discharges from Myakka River, 180, 390, 670, 1250 cfs for 10-yr, 50-yr, 100-yr, and 500-yr frequency respectively</td>
<td>8.7'</td>
<td>10.3'</td>
<td>11.5'</td>
<td>12.5'</td>
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Figure 5. --Blackburn Canal - Showing approximate cross-section locations
Figure 1. --Myakka River study reach showing approximate cross-section locations.

BASE FROM U.S. GEOLOGICAL SURVEY TOPOGRAPHIC MAPS:
MYAKKA CITY, 1972
OLD MYAKKA, 1973
LOWER MYAKKA LAKE, 1973
MYAKKA RIVER, 1973

EXPLANATION
5 ▲ Continuous-record streamflow station
7 ▲ Ungaged measurement site
4 ▲ Discontinued streamflow station
٤ - Channel cross section

SEE FIGURE 5 FOR BLACKBURN CANAL DETAILS

0 5000 10,000 FEET
0 1 2 MILES
Figure 14. -- Blackburn Canal - Profiles for 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year floods, under diked conditions
Figure 12. --Myakka River -- Profiles for 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year floods, under diked conditions
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<th>Flood heights (feet above mean sea level)</th>
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<th>PEAK DISCHARGE (CFS) 100-YEAR</th>
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<td>3000</td>
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TABLE 1 - SUMMARY OF DISCHARGES (CONT.)

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<tr>
<th>SARASOTA COUNTY</th>
<th>DRAINAGE AREA (SQ. MILES)</th>
<th>10-YEAR</th>
<th>50-YEAR</th>
<th>100-YEAR</th>
<th>500-YEAR</th>
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<tr>
<td>MATHENY CREEK</td>
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<td>650</td>
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<td>U.S. 41</td>
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<td>1900</td>
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<td>ALBEE FARM RD.</td>
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<td>5.62</td>
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<tr>
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<td>1.01</td>
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<td>280</td>
<td>320</td>
<td>360</td>
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1 The drainage areas and the peak discharges were considered without diversioning flows from the Myakka River through the Blackburn Canal. These contributing drainage areas and the discharges may vary under various conditions of the Myakka river.
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<thead>
<tr>
<th>Flood Source and Location</th>
<th>Drainage Area (Sq. Miles)</th>
<th>10-Year</th>
<th>50-Year</th>
<th>100-Year</th>
<th>500-Year</th>
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<tr>
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<td>1500</td>
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<td>1300</td>
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<td>850</td>
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<tr>
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<td>1800</td>
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<td>2650</td>
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<td>10-YEAR</td>
<td>50-YEAR</td>
<td>100-YEAR</td>
<td>500-YEAR</td>
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### RESULTS OF UNIT HYDROGRAPH

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<th>Q 10</th>
<th>Q 25</th>
<th>Q 50</th>
<th>Q 100</th>
<th>Q 500</th>
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### Results of Unit Hydrograph

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<th>Q_{25}</th>
<th>Q_{50}</th>
<th>Q_{100}</th>
<th>Q_{500}</th>
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<td>159</td>
<td>183</td>
<td>(220)</td>
<td>(250)</td>
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<tr>
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<td>(0.72)</td>
<td>(124)</td>
<td>(159)</td>
<td>(183)</td>
<td>(220)</td>
<td>(250)</td>
</tr>
<tr>
<td>M-B Gulf Stream</td>
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<td>(260)</td>
<td>294</td>
<td>340</td>
<td>(410)</td>
<td>(460)</td>
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<tr>
<td></td>
<td>(1.91)</td>
<td>(334)</td>
<td>(419)</td>
<td>(477)</td>
<td>(566)</td>
<td>(640)</td>
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<td>(670)</td>
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<td>(790)</td>
<td>(877)</td>
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## Results of Unit Hydrograph

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<th>Q_i</th>
<th>Q_s</th>
<th>Q_e</th>
<th>Q_c</th>
<th>Q_max</th>
<th>Q in. peak</th>
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<td>(255)</td>
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<td>103</td>
<td>134</td>
<td>155</td>
<td>185</td>
<td>560</td>
<td>(455)</td>
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<td>CAPRIEZANO</td>
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<td>217</td>
<td>265</td>
<td>298</td>
<td>309</td>
<td>1130</td>
<td>(790)</td>
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<td>(C-D) PINECOOS RD</td>
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<td>112</td>
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<td>155</td>
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<td>(950)</td>
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<td>199</td>
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<td>(1400)</td>
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<td>379</td>
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# RESULTS OF MITT HIERSOFPH

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<th>Qe</th>
<th>Qd</th>
<th>Qh</th>
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<td>H-1 A</td>
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<td>75</td>
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<td></td>
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<td>(155)</td>
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<td>246</td>
<td>426</td>
<td>550</td>
</tr>
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<td></td>
<td>(0.77)</td>
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<td>H-2 A</td>
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<td>(620)</td>
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<td>H-3 C</td>
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<td>629</td>
<td>808</td>
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<td>(0.44)</td>
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*Note: D.A. stands for Distance Above.*

*Note: Qc, Qe, Qd, Qh represent different quantities or values.*
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<th>Project</th>
<th>Area (sq ft)</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
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<td>3,833</td>
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### RESULTS OF UNIT HYDROGRAPH

<table>
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<tr>
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<th>D.A. (sq mi)</th>
<th>Q10 (cfs)</th>
<th>Q25 (cfs)</th>
<th>Q50 (cfs)</th>
<th>Q100 (cfs)</th>
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<tbody>
<tr>
<td>W-A Everglades Rd</td>
<td>0.43 (0.43)</td>
<td>112 (112)</td>
<td>142 (142)</td>
<td>192 (192)</td>
<td>200 (220)</td>
<td></td>
</tr>
<tr>
<td>W-B Pompano Rd</td>
<td>0.24 (0.67)</td>
<td>147 (237)</td>
<td>183 (298)</td>
<td>208 (339)</td>
<td>244 (401)</td>
<td>250 (450)</td>
</tr>
<tr>
<td>W-C N. Boise St</td>
<td>0.15 (0.82)</td>
<td>75 (311)</td>
<td>93 (390)</td>
<td>106 (443)</td>
<td>125 (523)</td>
<td>310 (590)</td>
</tr>
<tr>
<td>W-D At. Mouth</td>
<td>1.12 (1.95)</td>
<td>237 (506)</td>
<td>297 (634)</td>
<td>337 (723)</td>
<td>397 (855)</td>
<td>600 (970)</td>
</tr>
</tbody>
</table>
Legend: Data point - O, Computed point - *
Curve fit - type = exponential
## Comparison of Discharges for 25-Year Frequency

<table>
<thead>
<tr>
<th>Creek</th>
<th>DA (sq.m)</th>
<th>Depression</th>
<th>U.H</th>
<th>CDN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philippi Creek</td>
<td>56.0</td>
<td>2920</td>
<td>5400</td>
<td>5190</td>
</tr>
<tr>
<td>Hackberry Creek</td>
<td>2.6</td>
<td>445</td>
<td>790</td>
<td>607</td>
</tr>
<tr>
<td>Curly Creek</td>
<td>6.9</td>
<td>399</td>
<td>1098</td>
<td>1201</td>
</tr>
<tr>
<td>Hatchett Creek</td>
<td>5.4</td>
<td>192</td>
<td>1313</td>
<td>323</td>
</tr>
<tr>
<td>Alligator Creek</td>
<td>9.6</td>
<td>478</td>
<td>1796</td>
<td>1659</td>
</tr>
<tr>
<td>Wetherbee Creek</td>
<td>1.95</td>
<td>191</td>
<td>636</td>
<td>495</td>
</tr>
</tbody>
</table>
## RESULTS OF UNIT HYDROGRAPH

In the table below, Q is the discharge in cubic feet per second (cfs), and D is the duration in minutes.

<table>
<thead>
<tr>
<th>Point of Interest</th>
<th>D (in.)</th>
<th>A (sq mi)</th>
<th>Q10</th>
<th>Q25</th>
<th>Q50</th>
<th>Q100</th>
<th>Q500</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-A</td>
<td>2,11</td>
<td>(228)</td>
<td>3.68</td>
<td>(307)</td>
<td>3.69</td>
<td>(451)</td>
<td>(530)</td>
</tr>
<tr>
<td>P-B</td>
<td>0.95</td>
<td>(321)</td>
<td>1.37</td>
<td>(534)</td>
<td>1.64</td>
<td>(635)</td>
<td>(740)</td>
</tr>
<tr>
<td>P-C</td>
<td>0.68</td>
<td>(360)</td>
<td>5.2</td>
<td>(485)</td>
<td>6.61</td>
<td>(573)</td>
<td>(709)</td>
</tr>
<tr>
<td>P-D</td>
<td>1.03</td>
<td>(479)</td>
<td>15.5</td>
<td>(531)</td>
<td>18.1</td>
<td>(754)</td>
<td>(928)</td>
</tr>
<tr>
<td>P-E</td>
<td>2.53</td>
<td>(1473)</td>
<td>1.307</td>
<td>(1943)</td>
<td>1.520</td>
<td>(2269)</td>
<td>(2771)</td>
</tr>
<tr>
<td>P-F</td>
<td>2.00</td>
<td>(2179)</td>
<td>2.42</td>
<td>(2539)</td>
<td>2.77</td>
<td>(3094)</td>
<td>(3600)</td>
</tr>
<tr>
<td>P-G</td>
<td>1.63</td>
<td>(1847)</td>
<td>6.05</td>
<td>(2408)</td>
<td>6.80</td>
<td>(2790)</td>
<td>(3394)</td>
</tr>
<tr>
<td>P-H</td>
<td>1.47</td>
<td>(1059)</td>
<td>2.98</td>
<td>(2539)</td>
<td>3.58</td>
<td>(3094)</td>
<td>(3600)</td>
</tr>
<tr>
<td>P-I</td>
<td>1.80</td>
<td>(2163)</td>
<td>2.60</td>
<td>(2815)</td>
<td>3.02</td>
<td>(3252)</td>
<td>(3957)</td>
</tr>
<tr>
<td>P-J</td>
<td>1.01</td>
<td>(3104)</td>
<td>1.812</td>
<td>(4003)</td>
<td>1.792</td>
<td>(5569)</td>
<td>(6400)</td>
</tr>
<tr>
<td>P-K</td>
<td>3.36</td>
<td>(3619)</td>
<td>6.78</td>
<td>(4619)</td>
<td>7.64</td>
<td>(5313)</td>
<td>(6375)</td>
</tr>
<tr>
<td>P-L</td>
<td>0.99</td>
<td>(3653)</td>
<td>6.41</td>
<td>(4672)</td>
<td>7.20</td>
<td>(5372)</td>
<td>(6443)</td>
</tr>
<tr>
<td>P-M</td>
<td>1.39</td>
<td>(4097)</td>
<td>7.23</td>
<td>(5260)</td>
<td>8.16</td>
<td>(6023)</td>
<td>(7191)</td>
</tr>
<tr>
<td>P-N</td>
<td>1.40</td>
<td>(4265)</td>
<td>5.48</td>
<td>(5400)</td>
<td>6.19</td>
<td>(6177)</td>
<td>(7370)</td>
</tr>
</tbody>
</table>

The table shows the flow characteristics at various points along a hydrograph, with discharge values in cubic feet per second and duration in minutes.
Rainfall Volume in Sarasota County

The total volume of rainfall for a 100-year frequency 24-hour duration storm for Sarasota County can be determined from the isopleth maps in Technical Paper No. 40 (U.S. Weather Bureau, 1961), with 12 inches.

Technical Paper No. 40 was published in 1961 and hence does not reflect the recent records. However, for Tampa area, new analyses of rainfall volume to establish annual duration-frequency relationships have been prepared by CDM (1999) and RS&H (1982). CDM has concluded to use 9.5 inches for 25-year, 24-hour duration rainfall for Sarasota County Stormwater Management Study in 1986.

The rainfall analysis for Southwest Florida area was prepared for Southwest Florida Water Management District by University of Central Florida in 1987. SWFWMD has adopted the results of new analyses of approximately 8.5 inches and 10.5 inches for 25-year, 24-hour and 100-year, 24-hour duration rainfall, respectively.

1987 Drainage Manual of FDOT shows the isopleth map which indicates 12 inches for 100-year, 24-hour duration rainfall.
Although new analysis developed for SWFWMD results 10.5 inches of total rainfall volume for 100-year, 24-hour duration storm, it seems little low comparing T.P. 40 and FDOT Drainage Manual's value of 13.0 inches.

It is also new study.

Therefore, for this FIS for Sarasota County, which is more closer to the coastal area, 13.0 inches for 100-year, 24-hour duration storm was used.
FIGURE 1 STATION GEOGRAPHIC DISTRIBUTION

SWFWMD (1989)
The following peak rate factor estimation is based on the following factors. We set the lower range based on the reference "Estimation of Runoff Peak Rates and Volumes from Flatwoods Watersheds". They concluded that for the South-Florida flatwoods peak rate factors of less than 100 were in order. Since our conditions are improved over these we used a peak rate factor of 150 for the lower range. We calibrated the upper range peak factor for the fully developed areas using USGS gage station data for Phillippi Creek.

<table>
<thead>
<tr>
<th>Size-Bearing</th>
<th>% Developed</th>
<th>WEIGHTED PEAK RATE FACTOR (based on range from 150 to 350)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-A</td>
<td>10</td>
<td>170</td>
</tr>
<tr>
<td>P-B</td>
<td>30</td>
<td>210</td>
</tr>
<tr>
<td>P-C</td>
<td>0</td>
<td>150</td>
</tr>
<tr>
<td>P-D</td>
<td>20</td>
<td>190</td>
</tr>
<tr>
<td>P-E</td>
<td>0</td>
<td>150</td>
</tr>
<tr>
<td>P-F</td>
<td>40</td>
<td>230</td>
</tr>
<tr>
<td>P-G</td>
<td>75</td>
<td>300</td>
</tr>
<tr>
<td>P-H</td>
<td>10</td>
<td>170</td>
</tr>
<tr>
<td>P-I</td>
<td>8</td>
<td>166</td>
</tr>
<tr>
<td>P-J</td>
<td>34</td>
<td>218</td>
</tr>
<tr>
<td>P-K</td>
<td>80</td>
<td>310</td>
</tr>
<tr>
<td>P-L</td>
<td>80</td>
<td>310</td>
</tr>
<tr>
<td>F-M</td>
<td>60</td>
<td>270</td>
</tr>
<tr>
<td>P-N</td>
<td>75</td>
<td>300</td>
</tr>
</tbody>
</table>

\[ K = 350(\% \text{ Developed}) + 150(1 - \% \text{ Developed}) \]
GEE & JENSON
ENGINEERS, ARCHITECTS, PLANNERS, INC.
WEST PALM BEACH, FLA.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Sheet No.</th>
<th>Job No.</th>
<th>By</th>
<th>Date</th>
</tr>
</thead>
</table>

\[
\begin{align*}
P_1 & = \frac{4700 \times 0.25 + 1600(2+3600)}{2} = 7.2 \text{ hr} \\
P_2 & = \frac{7.2 + 5652}{2} = 8.12 \text{ hr} \\
P_3 & = \frac{8.12 + 3600}{2} = 5.83 \text{ hr} \\
P_4 & = \frac{8.63 + 2471}{3} = 6.92 \text{ hr} \\
P_5 & = \frac{8200/(0.2 \times 3600) + 35.91/(2 \times 3600)}{2} = 10.0 \text{ hr} \\
P_6 & = \frac{16.0 + 30.75}{3} = 16.28 \text{ hr} \\
P_7 & = \frac{16.25 + 4609}{3} = 16.71 \text{ hr} \\
P_8 & = \frac{16.71 + 1455}{3} = 16.90 \text{ hr} \\
P_9 & = \frac{16.70 + 3239}{3} = 17.20 \text{ hr} \\
P_{10} & = \frac{17.20 + 2190}{3} = 17.50 \text{ hr} \\
P_{11} & = \frac{17.50 + 5525}{3} = 18.04 \text{ hr} \\
P_{12} & = \frac{18.04 + 4536}{3} = 18.49 \text{ hr} \\
P_{13} & = \frac{18.49 + 5861}{3} = 19.00 \text{ hr} \\
P_{14} & = \frac{19.00 + 5325}{3} = 19.50 \text{ hr} \\
P_{15} & = \frac{19.50 + 2769}{3} = 19.75 \text{ hr}
\end{align*}
\]

\[
\begin{align*}
P_{16} & = \frac{4200/(0.2 \times 3600) + 1050/1(1 \times 3600)}{2} = 8.77 \text{ hr} \\
P_{17} & = \frac{3000/(0.2 \times 3600) + 3500/(0.5 \times 3600) + 3000/(1 \times 3600)}{3} = 6.94 \text{ hr} \\
P_{18} & = \frac{8500/(0.2 \times 3600) + 850/(1 \times 3600)}{2} = 12.53 \text{ hr} \\
P_{19} & = \frac{5800/(0.2 \times 3600) + 5000/(0.5 \times 3600) + 7000/(1 \times 3600)}{3} = 11.36 \text{ hr} \\
P_{20} & = \frac{8000/(0.2 \times 3600) + 35.09/(1.5 \times 3600)}{2} = 17.61 \text{ hr} \\
P_{21} & = \frac{7000/(0.2 \times 3600) + 6000/(1.5 \times 3600) + 2300/(1.5 \times 3600)}{3} = 13.97 \text{ hr} \\
P_{22} & = \frac{4900/(0.5 \times 3600) + 4500/(0.5 \times 3600) + 2200/(2 \times 3600)}{2} = 5.58 \text{ hr} \\
P_{23} & = \frac{2800/(0.2 \times 3600) + 5900/(0.5 \times 3600) + 3900/(2 \times 3600)}{3} = 7.71 \text{ hr} \\
P_{24} & = \frac{2000/(0.2 \times 3600) + 13.500/(1 \times 3600) + 1700/(2 \times 3600)}{3} = 6.71 \text{ hr} \\
P_{25} & = \frac{4000/(0.2 \times 3600) + 25.200/(1 \times 3600) + 2800/(1 \times 3600)}{3} = 12.94 \text{ hr} \\
P_{26} & = \frac{1200/(0.2 \times 3600) + 1400/(0.75 \times 3600) + 1200/(2 \times 3600)}{3} = 14.00 \text{ hr} \\
P_{27} & = \frac{4500/(0.75 \times 3600) + 3500/(2 \times 3600)}{2} = 7.94 \text{ hr} \\
P_{28} & = \frac{6500/(0.3 \times 3600) + 11300/(1 \times 3600) + 4100/(2 \times 3600)}{2} = 12.35 \text{ hr} \\
P_{29} & = \frac{2100/(0.2 \times 3600) + 3500/(0.5 \times 3600) + 3000/(2 \times 3600)}{3} = 5.44 \text{ hr} \\
P_{30} & = \frac{900/(0.7 \times 3600) + 1600/(2 \times 3600)}{2} = 1.61 \text{ hr} \\
\end{align*}
\]
<table>
<thead>
<tr>
<th>P-H (Incremental)</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>79</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>middle</td>
<td>260</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>6</td>
<td>255</td>
<td>3</td>
<td>53</td>
</tr>
<tr>
<td>Undetermined</td>
<td>441</td>
<td>49</td>
<td>23</td>
<td></td>
</tr>
</tbody>
</table>

% Impervious = \[\frac{[79(79) + 255(6) + 217(30) + 518(5)]]}{1170} = 15\%

Lake Area = 4.4 Ac  Total Area = 1152 Ac

Impervious = 172.2 Ac  Pervious = 975.8 Ac

\[\text{CN}_w = [79(86) + 260(73) + 6(31) + 6(5)] + 255(68) + 3(79) + 53(8) + 441(60) + 49(15) + 23(8)] + 400] / 1174 = 66\]

\[S = \frac{1000}{66} - 10 = 515 \text{ in.} = 495 \text{ Ac - ft}\]

(Cumulative) \[T_c = 6.76 \quad \text{UHP} + 3.00\]

Total Area = 3,181 Ac  Lake Area = 292 Ac

Impervious = 2,706 Ac  Pervious = 50,183 Ac

\[S = 10,249 \quad \text{Ac - ft}\]

\[T_c \quad \text{UHP} = \]
<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>2434</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>1391</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>48</td>
<td>1938</td>
<td>53</td>
<td>175</td>
</tr>
</tbody>
</table>

\[
\% \text{ Impervious} = \left[ \frac{2559(70) + 1520(50) + 2219(5)}{6291} \right] / 15
\]

Lake Area = 149 Ac  
Total Area = 6407 Ac

Impervious = 939 Ac  
PerVIOUS: 5319 Ac)

\[
CN_w = \left[ 10(80) + 2434(50) + 10(10) + 100(10) + 31(61) + 1391(75) + 43(92) + 12(87) + 48(40) + 1938(60) + 53(75) + 175(90) + 149(100) \right] / 125 = 75.3
\]

\[
S = \frac{1000 - 10}{12} = 3.23 \text{ in.} = 1751.0 \text{ Ac} - ft
\]

(Cumulative)

Total Area = 39,588 Ac  
Lake Area = 4,411 Ac

Impervious = 3445 Ac  
PerVIOUS: 25,502 Ac

\[
S = \frac{12,000 \text{ Ac} - ft}{12} = 1000
\]

(UHн = 6.0)

(P-K (Incremental))

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1575</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>High</td>
<td></td>
<td></td>
<td></td>
<td>471</td>
</tr>
<tr>
<td>Medium</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>69</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[
\% \text{ Impervious} = \left[ \frac{1575(70) + 471(55) + 69(35)}{2124} \right] / 2124 = 49
\]

Lake Area = 26 Ac  
Total Area = 2657 Ac

Impervious = 859 Ac  
PerVIOUS: 7799 Ac)

\[
CN_w = \left[ 1575(30) + 4(90) - 4(12) + 471(75) + 69(65) + 26(100) \right] / 2152 = 83.2
\]

\[
S = \frac{1000 - 10}{14.3} = 362.0 \text{ Ac} - ft
\]

(Cumulative)

Total Area = 31,945 Ac  
Lake Area = 467 Ac

Impervious = 4497 Ac  
PerVIOUS: 26,881 Ac

\[
S = \frac{12,362 \text{ Ac} - ft}{12} = 1030
\]

(UHн = 6.0)
Subject: [Redacted]

Sheet No. ___ of ___

Job No. ___

By ___ Date: ___

---

E - N (Incremental)  

High  

Low  

---

3. Improvement: \[ \frac{(12.02 (H) + 4.21 (171) + 124 (E))}{2593} = 30 \]

Area = 2.0 Ac  

Total Area = 6.33 Ac

Improvement = 126 Ac  

Previous = 504 Ac

\( H = \frac{2.02(13) + 140(22) + 47(98) + 215(92) + 6(614 + 42(7)) + 15(32) + 15(32) + 77(100)}{2593} = 32.1 \)

\( C = \frac{1000}{521} - 10 = 2.04 \text{ in} + 42.3 \text{ Ac} + \text{F} \)

\( T_c = 12.85 \text{ UH} = 6.00 \)

---

E - N (Incremental)  

High  

Low  

---

4. Improvement: \[ \frac{[12.02 (132) + 4.21 (171) + 124 (E)]}{2593} = 30 \]

Area = 7.7 Ac  

Total Area = 55.5 Ac

Improvement = 49.5 Ac  

Previous = 1981 Ac

\( C = \frac{1000}{521} - 10 = 2.04 \text{ in} + 42.3 \text{ Ac} + \text{F} \)

\( T_c = 12.85 \text{ UH} = 6.00 \)

---

5. Improvement: \[ \frac{[12.02 (132) + 4.21 (171) + 124 (E)]}{2593} = 30 \]

Area = 7.7 Ac  

Total Area = 55.5 Ac

Improvement = 49.5 Ac  

Previous = 1981 Ac

\( C = \frac{1000}{521} - 10 = 2.04 \text{ in} + 42.3 \text{ Ac} + \text{F} \)

\( T_c = 12.85 \text{ UH} = 6.00 \)
\[
\text{P-O (Incremental)}
\]

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>25</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Low</td>
<td>48</td>
<td>73</td>
<td>45</td>
<td>27</td>
</tr>
</tbody>
</table>

% Impervious = \(\frac{[31(70) + 143(30)]}{174} = 37.1\%\)

Lake Area = 8 Ac  \(\text{Total Area} = 182\text{Ac}\)

Imperious = 65.9 Ac  \(\text{Pervious} = 111.7\text{Ac}\)

CN\(_w\) = \(\frac{125(84) + 6(92) + 48(61) + 23(69) + 45(79) + 27(84) + 800}{182}\)

\(CN\_w = 73.3\)

\(S = \frac{1088}{12.5} - 10 = 3.65\text{in} = 55.3\text{Ac-ft}\)

\(T_c = 161\text{ft}\)

\(UHD = 80\text{ft}\)

Total Area = 34,803 Ac  \(\text{Lake Area} = 560\text{Ac}\)

Imperious = 12,444.6 Ac  \(\text{Pervious} = 21,798.4\text{Ac}\)

\(S = 11,236.1\text{Ac-ft}\)
### FIS - PHILLIPPI CREEK AT SARASOTA, # 02299800 (1960 - 1981)

<table>
<thead>
<tr>
<th>ORDER</th>
<th>FLOOD MAGNITUDE</th>
<th>EMPIRICAL RECURRENCE INTERVAL</th>
<th>EMPIRICAL EXCEEDANCE PROBABILITY (PERCENT)</th>
<th>LOG10 FLOOD MAGNITUDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6740.00</td>
<td>23.00</td>
<td>4.35</td>
<td>3.828660</td>
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<td>4400.00</td>
<td>11.50</td>
<td>8.70</td>
<td>3.643493</td>
</tr>
<tr>
<td>3</td>
<td>4240.00</td>
<td>7.67</td>
<td>13.04</td>
<td>3.627366</td>
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<tr>
<td>4</td>
<td>2820.00</td>
<td>5.75</td>
<td>17.39</td>
<td>3.450249</td>
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<td>5</td>
<td>1190.00</td>
<td>4.60</td>
<td>21.74</td>
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<td>6</td>
<td>1120.00</td>
<td>3.83</td>
<td>26.09</td>
<td>3.049218</td>
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<tr>
<td>7</td>
<td>1080.00</td>
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Mean of Floods = 1454.68  
Std Dev of Floods = 1632.87  

Mean of LOG10(FLOOD) = 2.99747  
Std Dev of LOG10(FLOOD) = .34976  
Coef of Skewness of LOG10(FLOOD) = 1.08514

Unit Hydrograph at Gaging Station

\[ K = 2.15 \]

\[ U.H. = 400.3 \text{ cfs} \]

\[ L.P. = 4572 \text{ cfs} \]
WEIGHTED SKEW

\[ G_w = \frac{\text{MSE}_G(G) + \text{MSE}_S(G)}{\text{MSE}_G + \text{MSE}_S} \]

\[ \text{MSE}_G = 10 \left[ A - B \left( \log_{10} \left( \frac{N}{10} \right) \right) \right] \]

\[ A = -0.52 + 0.3 \times 1.08514 = -0.1945 \]

\[ B = 0.94 - 0.36 \times 1.08514 = 0.6579 \]

\[ \text{MSE}_S = 10 \left[ -0.1945 - 0.6579 \left( \log_{10} \left( \frac{N}{10} \right) \right) \right] = 0.3804 \]

\[ G_w = \frac{0.303 (1.08514) + 0.3804 \times 0.303}{0.303 + 0.3804} = 0.48 \]

OUTLIERS

1. HIGH OUTLIERS

\[ X_H = \bar{X} + K_N \times S \]

\[ \bar{X} = 2.99747 \]

\[ K_N = 2.459 \]

\[ S = 0.34978 \]

\[ X_H = 2.99747 + (2.459)(0.34978) = 3.8471 \]

\[ \text{Antilog } 3.8471 = 7033 \text{ cm} \]

There is no high outliers.
### EXCEEDANCE RECURRENCE PROBABILITY INTERVAL (PERCENT)

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Page No. 2
PHILLIPPI CR. - DISCHARGE

Point of Interest - P-A

Drainage Area At - 3.11 sq. mi

Regression Constant (C_R)  = 3.11

Geographic Zone Coeff. (C_G)  = 5.48

Channel Slope  = 5.48 ft/mi

Lake Area  = 1.61

Soil Index (Initiation)  = 2.05

Regression Equation:

Q_x = C_R * C_G * DA * SL * LK * SO

Q_{10} = (54.1)(1.27)(3.11) * 5.48 * 1.61 * 1.05 = 263

Q_{50} = (140)(1.28)(3.11) * 5.48 * 1.61 * 1.05 = 554

Q_{100} = (198)(1.28)(3.11) * 5.48 * 1.61 * 1.05 = 725

Q_{500} = (403)(1.29)(3.11) * 5.48 * 1.61 * 1.05 = 1287

* Discharge was determined using the regression equation from Regional Flood-Frequency relations for West-Central Florida. USGS WAI Open-File Report 79-1293.
PHILLIP CR - DISCHARGE

POINT OF INTEREST - P-B

DRAINAGE AREA AT - = 4.06 SQ. MI

REGRESSION CONSTANT (C_R)

GEOGRAPHIC ZONE COEFF. (C_G)

CHANNEL SLOPE = 5.1 FT/MI

LAKE AREA = 1.55 %

SOIL INDEX (EQUATION) = 2.05 IN

REGRESSION EQUATION:

\[ Q = C_R \cdot C_G \cdot DA^{B_1} \cdot SL^{B_2} \cdot LK^{B_3} \cdot SO^{B_4} \]

\[ Q_{10} = (54.1) \cdot (1.27) \cdot (4.06)^{0.84} \cdot (5.1)^{0.53} \cdot (1.55)^{-1.11} \cdot (2.05)^{-0.64} = 318 \]

\[ Q_{50} = (140) \cdot (1.28) \cdot (4.06)^{0.79} \cdot (5.1)^{0.46} \cdot (1.55)^{-1.10} \cdot (2.05)^{-0.70} = 664 \]

\[ Q_{100} = (198) \cdot (1.28) \cdot (4.06)^{0.77} \cdot (5.1)^{0.44} \cdot (1.55)^{-1.10} \cdot (2.05)^{-0.73} = 865 \]

\[ Q_{500} = (403) \cdot (1.29) \cdot (4.06)^{0.75} \cdot (5.1)^{0.39} \cdot (1.55)^{-1.10} \cdot (2.05)^{-0.78} = 1535 \]

* DISCHARGE WAS DETERMINED USING THE REGRESSION EQUATION
FROM REGIONAL FLOOD-FREQUENCY RELATIONS FOR WEST-CENTRAL
FLORIDA. USGS WAT OPEN-FILE REPORT 79-1393.
PHILLIPPI CR — DISCHARGE

Point of Interest — P-C
Drainage Area at —
Regression Constant (Cr)
Geographic Zone Coeff. (Cq)
Channel Slope = 3.18 ft/mi
Lake Area = 1.41 %
Soil Index (Infiltration) =

Regression Equation:

\[ Q_x = C_r \cdot C_q \cdot DA^{b_1} \cdot SL^{b_2} \cdot LK^{b_3} \cdot SO^{b_4} \]

\[ Q_{10} = (54.1)(1.27)(4.24)^{0.84}(3.18)^{0.53}(1.41)^{-0.11}(2.05)^{-0.64} = 235 \]

\[ Q_{50} = (140)(1.28)(4.74)^{0.79}(3.18)^{0.46}(1.41)^{-0.10}(2.05)^{-0.70} = 610 \]

\[ Q_{100} = (198)(1.28)(4.74)^{0.77}(3.18)^{0.44}(1.41)^{-0.10}(2.05)^{-0.73} = 799 \]

\[ Q_{500} = (403)(1.29)(4.74)^{0.75}(3.18)^{0.39}(1.41)^{-0.10}(2.05)^{-0.78} = 1447 \]

* Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS WRI Open-File Report 79-1393.
PHILLIP CR - DISCHARGE

Point of Interest - P-D

Drainage Area At - = 6.37 SQ. MI

Regression Constant (Cr)

Geographic Zone Coeff. (Cg)

Channel Slope = 4.66 FT/MI

Lake Area = 1.15 %

Soil Index (Infiltration) = 2.05 IN

Regression Equation:

\[ Q_x = C_r \cdot C_g \cdot DA \cdot SL \cdot LK \cdot SO \]

\[ Q_{10} = (54.1) (1.27) (6.37) (4.66)^{0.52} (1.15)^{-1.1} (2.05)^{-0.64} = 452 \]

\[ Q_{50} = (140) (1.28) (6.37) (4.66)^{0.46} (1.15)^{-1.10} (2.05)^{-0.70} = 925 \]

\[ Q_{100} = (198) (1.28) (6.37) (4.66)^{0.44} (1.15)^{-1.10} (2.05)^{-0.73} = 1197 \]

\[ Q_{500} = (403) (1.29) (6.37) (4.66)^{0.39} (1.15)^{-1.10} (2.05)^{-0.78} = 2115 \]

* Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS WRI Open-File Report 79-1393.
PHILLIPPI CR - DISCHARGE

Point of Interest - P-E

Drainage Area At - = 28.90 SQ. MI

Regression Constant (C_r)

Geographic Zone Coeff. (C_g)

Channel Slope = 5.56 FT/MI

Lake Area = 1.2 %

Soil Index (Initiation) = 2.05 IN

Regression Equation:

\[ Q_x = C_r \cdot C_g \cdot DA \cdot SL \cdot LK \cdot SO \]

\[ Q_{10} = (54.1 \cdot 1.27 \cdot 28.9)^{.84} \cdot (5.56)^{.53} \cdot (1.2)^{-.11} \cdot (2.05)^{-64} = 1782 \]

\[ Q_{50} = (140 \cdot 1.28 \cdot 28.9)^{.79} \cdot (5.56)^{.46} \cdot (1.2)^{-.10} \cdot (2.05)^{-70} = 3342 \]

\[ Q_{100} = (198 \cdot 1.28 \cdot 28.9)^{.77} \cdot (5.56)^{.44} \cdot (1.2)^{-.10} \cdot (2.05)^{-73} = 4179 \]

\[ Q_{500} = (403 \cdot 1.29 \cdot 28.9)^{.75} \cdot (5.56)^{.39} \cdot (1.2)^{-.10} \cdot (2.05)^{-78} = 7097 \]

* Discharge was determined using the regression equation from regional flood-frequency relations for west-central Florida. USGS WAI Open-File Report 79-1293.
PHILLIPPI CR - DISCHARGE

POINT OF INTEREST - P - F

DRAINAGE AREA AT -

REGRESSION CONSTANT (Co)

GEOGRAPHIC ZONE COEFFICIENT (Ce)

CHANNEL SLOPE = 5.11 FT/MI

LAKE AREA = 1.33 %

SOIL INDEX (Initiation) = 2.05

REGRESSION EQUATION:

\[ Q_x = C_r \cdot C_g \cdot DA^{b1} \cdot SL^{b2} \cdot LK^{b3} \cdot SO^{b4} \]

\[ Q_{10} = (54.1)(1.27)(30.9)^{.84})(5.11)^{.53}(1.23)^{-.11}(2.05)^{-.64} = 1797 \]

\[ Q_{50} = (140)(1.28)(30.9)^{.79})(5.11)^{.46}(1.23)^{-.10}(2.05)^{-.70} = 3381 \]

\[ Q_{100} = (198)(1.28)(30.9)^{.77})(5.11)^{.44}(1.23)^{-.10}(2.05)^{-.73} = 4229 \]

\[ Q_{300} = (403)(1.29)(30.9)^{.75})(5.11)^{.39}(1.23)^{-.10}(2.05)^{-.78} = 7203 \]

*DISCHARGE WAS DETERMINED USING THE REGRESSION EQUATION FROM REGIONAL FLOOD-FREQUENCY RELATIONS FOR WEST-CENTRAL FLORIDA. U.S.G.S WRI OPEN-FILE REPORT 79-1293.*
PHILLIPPI CR. — DISCHARGE

Point of Interest —

Drainage Area At = 32.53 SQ. MI
Regression Constant (C_r)
Geographic Zone Coeff. (C_g)
Channel Slope = 4.86 FT/MI
Lake Area = 1.29 %
Soil Index (Infiltration) = 2.05 IN

Regression Equation:

\[ Q = \frac{C_r \cdot C_g \cdot DA^{B_1} \cdot SL^{B_2} \cdot LK^{B_3} \cdot SO^{B_4}}{1000} \]

\[ Q_{10} = (54.1)(1.27)(32.53)(4.86)(1.29)(2.05) = 1813 \]

\[ Q_{50} = (140)(1.28)(32.53)(4.86)(1.29)(2.05) = 3425 \]

\[ Q_{100} = (198)(1.28)(32.53)(4.86)(1.29)(2.05) = 4284 \]

\[ Q_{500} = (403)(1.29)(32.53)(4.86)(1.29)(2.05) = 7304 \]

* Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS WRI Open-File Report 79-1393.
PHILLIPPI CR. - DISCHARGE

Point of Interest - P-H

Drainage Area At - = 34.42 sq. mi

Regression Constant (CR)

Geographic Zone Coef. (C4)

Channel Slope = 4.81 ft/mi

Lake Area = 1.31 %

Soil Index (saturation) = 2.05 in

Regression Equation:

\[ Q_x = C_R \cdot C_4 \cdot DA \cdot SL \cdot LK \cdot SD \]

\[ Q_{10} = (54.1 \cdot 1.27 \cdot (34.42) \cdot (4.81) \cdot (1.31) \cdot (2.05) = 1893 \]

\[ Q_{50} = (140 \cdot 1.28 \cdot (34.42) \cdot (4.81) \cdot (1.31) \cdot (2.05) = 3553 \]

\[ Q_{100} = (198 \cdot 1.28 \cdot (34.42) \cdot (4.81) \cdot (1.31) \cdot (2.05) = 4447 \]

\[ Q_{500} = (403 \cdot 1.29 \cdot (34.42) \cdot (4.81) \cdot (1.31) \cdot (2.05) = 7533 \]

* Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS WRI Open-File Report 79-1393.
PHILLIPPI CR. - DISCHARGE

Point of Interest = P-1
Drainage Area At = 36.22 SQ. Mi
Regression Constant (C_R)
Geographic Zone Coef. (C_G)
Channel Slope = 4.59 FT/MI
Lake Area = 1.26 %
Soil Index (Infiltration) = 2.05 IN

Regression Equation:

\[ Q_x = C_R \cdot C_G \cdot DA^{b_1} \cdot SL^{b_2} \cdot LK^{b_3} \cdot SO^{b_4} \]

\[ Q_{10} = (54.1)(1.27)(36.22)^{0.84}(4.59)^{0.53}(1.26)^{-0.11}(2.05)^{-0.64} = 1925 \]

\[ Q_{50} = (140)(1.28)(36.22)^{0.79}(4.59)^{0.46}(1.26)^{-0.10}(2.05)^{-0.70} = 3640 \]

\[ Q_{100} = (198)(1.28)(36.22)^{0.77}(4.59)^{0.44}(1.26)^{-0.10}(2.05)^{-0.73} = 4545 \]

\[ Q_{500} = (408)(1.29)(36.22)^{0.75}(4.59)^{0.39}(1.26)^{-0.10}(2.05)^{-0.78} = 7763 \]

*Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS WRI Open-File Report 79-1293.*
PHILLIPPI CR - DISCHARGE

Point of Interest - P-J

Drainage Area At = 46.23 SQ. MI

Regression Constant (C_r)

Geographic Zone Coeff. (C_g)

Channel Slope = 3.81 FT/MI

Lake Area = 1.47 %

Soil Index (Limitation) = 2.05 IN

Regression Equation:

\[ Q_x = C_r \cdot C_g \cdot DA^{b_1} \cdot SL^{b_2} \cdot LK^{b_3} \cdot SO^{b_4} \]

\[ Q_{10} = (54.1) \cdot (1.27) \cdot (46.23)^{0.84} \cdot (3.81)^{0.53} \cdot (1.47)^{-0.11} \cdot (2.05)^{-0.64} = 2160 \]

\[ Q_{50} = (140) \cdot (1.28) \cdot (46.23)^{0.79} \cdot (3.81)^{0.46} \cdot (1.47)^{-0.10} \cdot (2.05)^{-0.70} = 5430 \]

\[ Q_{100} = (198) \cdot (1.28) \cdot (46.23)^{0.77} \cdot (3.81)^{0.44} \cdot (1.47)^{-0.10} \cdot (2.05)^{-0.73} = 4970 \]

\[ Q_{500} = (408) \cdot (1.29) \cdot (46.23)^{0.75} \cdot (3.81)^{0.39} \cdot (1.47)^{-0.10} \cdot (2.05)^{-0.78} = 8530 \]

* Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS WRI Open-File Report 79-1393.
PHILLIPPI CR. - DISCHARGE

Point of Interest - P-K

Drainage Area At = 49.60 SQ. MI

Regression Constant (C_r) = 5.84
Geographic Zone Coeff. (C_g) = 0.53
Channel Slope = 3.19 FT/MI
Lake Area = 1.46 %
Soil Index (Infiltration) = 2.05 IN

Regression Equation:

\[ Q_x = C_r \cdot C_g \cdot DA^{b_1} \cdot SL \cdot LK \cdot SO^{b_4} \]

\[ Q_{10} = (54.1)(1.27)(49.60)^{0.84}(3.19)^{0.53}(1.46)^{-1.11}(2.05)^{-0.64} = 2.045 \]

\[ Q_{50} = (140)(1.28)(49.60)^{0.79}(3.19)^{0.46}(1.46)^{-1.10}(2.05)^{-0.70} = 3.889 \]

\[ Q_{100} = (198)(1.28)(49.60)^{0.77}(3.19)^{0.44}(1.46)^{-1.10}(2.05)^{-0.73} = 4.865 \]

\[ Q_{500} = (403)(1.29)(49.60)^{0.75}(3.19)^{0.39}(1.46)^{-1.10}(2.05)^{-0.78} = 8402 \]

* DISCHARGE WAS DETERMINED USING THE REGRESSION EQUATION FROM REGIONAL FLOOD-FREQUENCY RELATIONS FOR WEST-CENTRAL FLORIDA. USGS WRI OPEN-FILE REPORT 79-1393.
PHILLIPPI CR — DISCHARGE

Point of Interest — P-L

Drainage Area At — = 50.59 SQ. MI
Regression Constant (CR)
Geographic Zone Coef. (Cf)
Channel Slope = 3.0 FT/MI
Lake Area = 1.43 %
Soil Index (Infiltration) = 2.05 IN

Regression Equation:

\[ Q_x = C_x \cdot C_f \cdot DA^{b_1} \cdot SL^{b_2} \cdot LK^{b_3} \cdot SO^{b_4} \]

\[ Q_{10} = (54.1)(1.27)(50.59)^{.84}(3.0)^{.53}(1.43)^{-1.11}(2.05)^{-0.64} = 2017 \]

\[ Q_{50} = (140)(1.28)(50.59)^{.79}(3.0)^{.46}(1.43)^{-1.10}(2.05)^{-0.70} = 394 \]

\[ Q_{100} = (198)(1.28)(50.59)^{.77}(3.0)^{.44}(1.43)^{-1.10}(2.05)^{-0.73} = 48 \]

\[ Q_{500} = (408)(1.29)(50.59)^{.75}(3.0)^{.39}(1.43)^{-1.10}(2.05)^{-0.78} = 834 \]

* Discharge was determined using the regression equation from regional flood-frequency relations for west-central Florida. USGS WRI OPEN-FILE REPORT 79-1293.
PHILLIPPI CR - DISCHARGE

Point of Interest - P-M

Drainage Area At = 54.58 SQ. MI

Regression Constant (C_R) = 50.1
Geographic Zone Coeff. (C_G) = 1.37
Channel Slope = 2.79 FT/MI
Lake Area = 1.55 %
Soil Index (Initiation) = 2.05 IN

Regression Equation:

\[ Q_x = C_R \cdot C_G \cdot DA^{b_1} \cdot SL \cdot LK^{b_3} \cdot SO^{b_4} \]

\[ Q_{10} = (54.58) (1.37) \cdot (54.58) \cdot (2.79) \cdot (1.55)^{-1.11} \cdot (2.05)^{-0.53} = 2050 \]

\[ Q_{50} = (140) (1.28) \cdot (54.58) \cdot (2.79) \cdot (1.55)^{-0.10} \cdot (2.05)^{-0.79} = 3905 \]

\[ Q_{100} = (198) (1.28) \cdot (54.58)^{-0.10} \cdot (2.79) \cdot (1.55)^{-0.46} \cdot (2.05)^{-0.77} = 4957 \]

\[ Q_{500} = (408) (1.29) \cdot (54.58)^{-0.75} \cdot (2.79)^{-0.39} \cdot (1.55)^{-0.39} \cdot (2.05)^{-0.78} = 8515 \]

* DISCHARGE WAS DETERMINED USING THE REGRESSION EQUATION FROM REGIONAL FLOOD-FREQUENCY RELATION FOR WEST-CENTRAL FLORIDA. USGS WRI OPEN-FILE REPORT 79-1393.
PHILLIPPI CR - DISCHARGE

Point of Interest - P - 0

Drainage Area At - = 56.27 sq. mi

Regression Constant (C_r)

Geographic Zone Coeff. (C_g)

Channel Slope = 2.41 ft/mi

Lake Area = 1.53%

Soil Index (Infiltration) = 2.05 in

Regression Equation:

\[ Q_x = C_r \cdot C_g \cdot DA^{b_1} \cdot SL^{b_2} \cdot LK^{b_3} \cdot SD^{b_4} \]

\[ Q_{10} = (54.1)(3.27)(56.27)^{2.41}(1.53)^{-11}(2.05)^{-64} = 197 \]

\[ Q_{50} = (140)(1.28)(56.27)^{2.41}(1.53)^{10}(2.05)^{-70} = 375 \]

\[ Q_{100} = (198)(1.28)(56.27)^{2.41}(1.53)^{44}(2.05)^{-10} = 472 \]

\[ Q_{500} = (408)(1.29)(56.27)^{2.41}(1.53)^{39}(2.05)^{-10} = 824 \]

* Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS WRI OPEN-FILE REPORT 79-1393.
## Phillipi Creek - Discharge

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<td>P-E</td>
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<td>1607</td>
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<td>P-G</td>
<td>1629</td>
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<td>P-H</td>
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<td>P-J</td>
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<td>2325</td>
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<td>P-K</td>
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<td>3353</td>
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<td>P-M</td>
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<td>P-N</td>
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<td>P-O</td>
<td>1987</td>
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</tbody>
</table>

*Discharge was determined using the regression equation for region 'A' taken from U.S.G.S. Water Resources Investigations 82-4012.
SUEJECT: E111111

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(67x764)

GEE & JERSON
ENGINEERS-ARCHITECTS-PLANNERS, INC.
WEST PALM BEACH, FLA.

P-A
High Density

Low Density

% Impervious = \[\frac{12(60) + 49(20) + 11(30)}{152} = 2.0\]

Area = 37 Acre

Total Area = 1990 Acre

Impervious = 392 Acre

Previous = 994 Acre

\(CN_a = \left(\frac{12(60) + 49(20) + 11(30)}{152}\right) \div 1990 = 60\)

\(S = \frac{100(60) - 10}{6.67} \text{ in } = 1106 \text{ Acre-ft}\)

\(T_c = 9.00 \text{ UHD } = 4.0\)

P-B (Infill)

\[\begin{array}{cccc}
A & B & C & D \\
353 & 11 & 6 & \\
45 & & & \\
14 & 5 & 7 & 9
\end{array}\]

% Impervious = \[\frac{12(60) + 49(20) + 11(30)}{152} = 2.0\]

Area = 8 Acre

Total Area = 608 Acre

Impervious = 12 Acre

Previous = 538 Acre

\(CN_a = 60\)

\(S = \frac{100(60) - 10}{6.67} \text{ in } = 338 \text{ Acre-ft}\)

\(T_c = 7.00 \text{ UHD } = 3.00\)

P-C (Infill)

\[\begin{array}{cccc}
A & B & C & D \\
351 & 21 & & \\
& & & \\
& & & \\
& & & \\
\end{array}\]

% Impervious = \[\frac{21(60) + 402(5)}{432} = 5.0\]

Area = 2 Acre

Total Area = 28.5 Acre

Impervious = 35 Acre

Previous = 397.4 Acre
\[
\begin{align*}
S_{\text{improvement}} & = \frac{(8 	imes 2.5) + 87 \times (2.5) + 37 \times (5)}{970} = 8 \\
\text{Lake Area} & = 42 \text{ Ac.} \\
\text{Total Area} & = 3633 \text{ Ac.} \\
\text{Improvement Area} & = 87 \text{ Ac.} \\
\text{Remaining Area} & = 3904 \text{ Ac.}
\end{align*}
\]

\[
S = \frac{1002}{65.2} = 15.34 \text{ in} = 395 \text{ Ac.}
\]

\[
\begin{align*}
\text{Job} & = 12.00 \\
\text{UHO} & = 5.00 \\
\text{Total Area} & = 979 \text{ Ac.} \\
\text{Lake Area} & = 3 \text{ Ac.} \\
\text{Improvement Area} & = 78.1 \text{ Ac.} \\
\text{Remaining Area} & = 795.1 \text{ Ac.}
\end{align*}
\]

\[
\begin{align*}
S & = \frac{1002}{65.2} = 15.34 \text{ in} = 395 \text{ Ac.}
\end{align*}
\]

\[
\begin{align*}
\text{P-E (Incremental)} & = \begin{bmatrix} A & B & C & D \\ 308 & 0 & 0 & 0 \\
217 & 2 & 10 & 0 \\
58 & 68 & 24 & 0 \\
65.2 & 10 & 5.34 & 435 \end{bmatrix} \\
\text{Total Area} & = 4012 \text{ Ac.} \\
\text{Lake Area} & = 45 \text{ Ac.} \\
\text{Improvement Area} & = 165 \text{ Ac.} \\
\text{Remaining Area} & = 3802 \text{ Ac.}
\end{align*}
\]

\[
\begin{align*}
S & = \frac{1002}{65} = 15.38 \text{ in} = 6499 \text{ Ac.}
\end{align*}
\]
**GEE & JENSEN**  
ENGINEERS-ARCHITECTS-POLLNERS, INC.  
WEST PALM BEACH, FLA.

**Subject**  
SHEET 3  
DRAWN BY  
DATE

**P-E (Cumulative)**

Total Area: 18.496 Ac  
Lake Area = 2.164 Ac  
Impervious = 1310 Ac  
Previous = 16.964 Ac  
S = 8650 Ac

**P-E (Incremental)**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>200</td>
<td>33</td>
<td>33</td>
</tr>
</tbody>
</table>

Lake Area = 20 A  
Total Area = 1280 Ac

**Impervious**

Lake Area = 19.996 Ac  
Total Area = 242 Ac

**Impervious = 1688 Ac  
Previous = 17,846 Ac**

S = 9102 Ac

**Tc = 14.00  
UH = 6.00**

**K-i (Incremental)**

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<th>C</th>
<th>D</th>
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</thead>
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</tr>
<tr>
<td>179</td>
<td>78</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lake Area = 26 Ac  
Total Area = 1043 Ac

**Impervious = 608.3 Ac  
Previous = 408.9 Ac**

**Cn = [762(82)+6(92)+179(69)+78(84)+26(103)]/1021 = 83.1**

S = 10820  
10 = 2.03

**UH = 2.00**

**Tc = 6.00  
UH = 2.00**

**Total Area = 20,819 Ac  
Lake Area = 268 Ac

Impervious = 9279 Ac  
Previous = 18,255**

S = 9279 Ac  
Tc =
<table>
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<th>POINT OF INTEREST</th>
<th>DRAINAGE AREA (SQM)</th>
<th>LAKE AREA (SQM)</th>
<th>PERCENT OF LA</th>
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<td>ACCUM.</td>
<td>INCREM.</td>
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<td>3.11</td>
<td>0.052</td>
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<td>0.63</td>
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<td>0.005</td>
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<td>P-O</td>
<td>0.29</td>
<td>57.27</td>
<td>0.007</td>
</tr>
</tbody>
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*Drainage area and lake area were determined and taken from U.S.G.S. quad maps and aerial photos made by Sarasota County and South West Florida Water Management District.*
PHILLIPPI CREEK - Discharge

Point of Interest - D-I

Drainage Area at
Lake Area = 1.2% 
Channel Slope = 4.59 ft/mi

Regression Equation: \( Q_T = C \cdot DA^a \cdot SL^b \cdot (L_0 + 3)^c \)

10 - YEAR

\[ Q_{10} = 274 (36.22 \text{ sqmi}) \cdot (4.59 \text{ ft/mi}) \cdot (1.26 + 3) = 1742 \text{ cfs} \]

50 - YEAR

\[ Q_{50} = 496 (36.22 \text{ sqmi}) \cdot (4.59 \text{ ft/mi}) \cdot (1.26 + 3) = 3036 \text{ cfs} \]

100 - YEAR

\[ Q_{100} = 609 (36.22 \text{ sqmi}) \cdot (4.59 \text{ ft/mi}) \cdot (1.26 + 3) = 3675 \text{ cfs} \]

500 - YEAR

\[ Q_{500} = 985 (36.22 \text{ sqmi}) \cdot (4.59 \text{ ft/mi}) \cdot (1.26 + 3) = 5397 \text{ cfs} \]
PHILLIPPI CREEK - DISCHARGE

Point of Interest - P-J

Drainage Area at

Lake Area = 1.47%

Channel Slope = 3.81

Regression Equation: $Q_T = C \cdot DA \cdot SL \cdot (LK + 3.0)^B$

10 - YEAR

$Q_{10} = 2.74 \cdot (46.23 \text{ sq mi}) \cdot (3.81 \frac{\text{ft}}{\text{mi}}) \cdot (1.47 + 3) = 1905 \text{ CF}$

50 - YEAR

$Q_{50} = 4.96 \cdot (46.23 \text{ sq mi}) \cdot (3.81 \frac{\text{ft}}{\text{mi}}) \cdot (1.47 + 3) = 3325 \text{ CF}$

100 - YEAR

$Q_{100} = 6.09 \cdot (46.23 \text{ sq mi}) \cdot (3.81 \frac{\text{ft}}{\text{mi}}) \cdot (1.47 + 3) = 4027 \text{ CF}$

500 - YEAR

$Q_{500} = 9.85 \cdot (46.23 \text{ sq mi}) \cdot (3.81 \frac{\text{ft}}{\text{mi}}) \cdot (1.47 + 3) = 5925 \text{ CF}$
PHILLIPPI CREEK — Discharge

Point of Interest — P-K

Drainage Area at = 49.60 SQMI
Lake Area = 1.46 %
Channel Slope = 3.19 FT/MI

Regression Equation: \( Q_T = C \cdot DA^{b_1} \cdot SL^{b_2} \cdot (LK + 3.0)^{b_3} \)

10 - YEAR

\[ Q_{10} = 2.74 (49.60 \text{ SQMI}) \cdot (3.19 \text{ FT/MI}) \cdot (1.46 + 3) = 1923 \text{ CF} \]

50 - YEAR

\[ Q_{50} = 4.96 (49.60 \text{ SQMI}) \cdot (3.19 \text{ FT/MI}) \cdot (1.46 + 3) = 3353 \text{ CF} \]

100 - YEAR

\[ Q_{100} = 6.09 (49.60 \text{ SQMI}) \cdot (3.19 \text{ FT/MI}) \cdot (1.46 + 3) = 4065 \text{ CF} \]

500 - YEAR

\[ Q_{500} = 9.85 (49.60 \text{ SQMI}) \cdot (3.19 \text{ FT/MI}) \cdot (1.46 + 3) = 6007 \text{ CF} \]
Phillippi Creek — Discharge

Point of Interest - P-L

DRAINAGE AREA AT = 50.59 SQMI
LAKE AREA = 1.43 %
CHANNEL SLOPE = 3.00 FT/MI

REGRESSION EQUATION: \( Q_T = C \cdot DA^{B_1} \cdot SL^{B_2} \cdot (LK + 3.0)^{B_3} \)

10 - YEAR

\[ Q_{10} = 274 (50.59 \text{ SQMI}) \cdot (3.00 \text{ FT/MI}) \cdot (1.43 + 3) = 1930 \text{ CF} \]

50 - YEAR

\[ Q_{50} = 4.96 (50.59 \text{ SQMI}) \cdot (3.00 \text{ FT/MI}) \cdot (1.43 + 3) = 8367 \text{ CF} \]

100 - YEAR

\[ Q_{100} = 609 (50.59 \text{ SQMI}) \cdot (3.00 \text{ FT/MI}) \cdot (1.43 + 3) = 4083 \text{ CF} \]

500 - YEAR

\[ Q_{500} = 985 (50.59 \text{ SQMI}) \cdot (3.00 \text{ FT/MI}) \cdot (1.43 + 3) = 6042 \text{ CF} \]
PHILIPPI CREEK — DISCHARGE

Point of Interest = P.M.

DRAINAGE AREA AT
LAKE AREA = 1.55 %
CHANNEL SLOPE = 2.79 FT/MI

Regression Equation: $Q_T = C \cdot DA \cdot SL \cdot (LK + 3.0)^b$

10 - YEAR

$Q_{10} = 274 (54.58 \text{ sqmi}) \cdot (2.79 \text{ ft/mi}) \cdot (1.55 + 3) = 344 \text{ CF}$

50 - YEAR

$Q_{50} = 496 (54.58 \text{ sqmi}) \cdot (2.79 \text{ ft/mi}) \cdot (1.55 + 3) = 3423 \text{ CF}$

100 - YEAR

$Q_{100} = 609 (54.58 \text{ sqmi}) \cdot (2.79 \text{ ft/mi}) \cdot (1.55 + 3) = 4153 \text{ CF}$

500 - YEAR

$Q_{500} = 985 (54.58 \text{ sqmi}) \cdot (2.79 \text{ ft/mi}) \cdot (1.55 + 3) = 2153 \text{ CF}$
PHILLIPPI CREEK - DISCHARGE

Point of Interest - P-N

DRAINAGE AREA AT = 55.98 SQMI
LAKE AREA = 1.52%
CHANNEL SLOPE = 2.57 FT/MI

REGRESSION EQUATION: QT = C.DA8.SL8.(LK + 3.0)B3

10 - YEAR

\[ Q_{10} = 274 \times (55.98 \text{ SQMI}) \times (2.57 \text{ FT/MI}) \times (1.52 + 3) = 14.14 \text{ CI} \]

50 - YEAR

\[ Q_{50} = 496 \times (55.98 \text{ SQMI}) \times (2.57 \text{ FT/MI}) \times (1.52 + 3) = 3433 \text{ CF} \]

100 - YEAR

\[ Q_{100} = 609 \times (55.98 \text{ SQMI}) \times (2.57 \text{ FT/MI}) \times (1.52 + 3) = 4146 \text{ CF} \]

500 - YEAR

\[ Q_{500} = 985 \times (55.98 \text{ SQMI}) \times (2.57 \text{ FT/MI}) \times (1.52 + 3) = 6186 \text{ CF} \]
PHILLIPPI CREEK - CHANNEL SLOPE

Point of Interest - P-A

CHANNEL LENGTH = 14,787 ft x 1 m/5280' x 75% = 2.10 MI
10% of CHANNEL LENGTH = 14,787 ft x 10% = 1479 FT
15% of CHANNEL LENGTH = 14,787 ft x 15% = 2218 FT
CHANNEL SLOPES

$$SL = \frac{(24.5 - 23)}{2.10 \text{ MI}} = \frac{1.5 \text{ ft}}{2.10 \text{ MI}} = 5.43 \text{ FT/MI}$$

Point of Interest - P-B

CHANNEL LENGTH = 20,670 ft x 1 m/5280' x 75% = 2.94 MI
10% of CHANNEL LENGTH = 20,670 ft x 10% = 2067 FT
15% of CHANNEL LENGTH = 20,670 ft x 15% = 3101 FT
CHANNEL SLOPE

$$SL = \frac{(34-19)}{2.94 \text{ MI}} = \frac{15 \text{ ft}}{2.94 \text{ MI}} = 5.10 \text{ FT/MI}$$

Point of Interest - P-C

CHANNEL LENGTH = 24,335 ft x 1 m/5280' x 75% = 3.46 MI
10% of CHANNEL LENGTH = 24,335 ft x 10% = 2434 FT
15% of CHANNEL LENGTH = 24,335 ft x 15% = 3650 FT
CHANNEL SLOPES

$$SL = \frac{(34-23)}{3.46 \text{ MI}} = \frac{11 \text{ ft}}{3.46 \text{ MI}} = 3.18 \text{ FT/MI}$$
PHILLIPPI CREEK - CHANNEL SLOPE

Point of Interest - P-D

Channel Length = 27,202 ft² x 1 mi/5,280' x 75% = 3.56 mi
10% of Channel Length = 27,202 ft² x 10% = 2720 ft
15% of Channel Length = 27,202 ft² x 15% = 4080 ft
Channel Slope

\[
SL = \frac{(32.5 - 14.5)}{3.56} = \frac{18}{3.56} = 4.66 \text{ ft/mi}
\]

Point of Interest - P-E

Channel Length = 43,091 ft² x 1 mi/5,280' x 75% = 6.12 mi
10% of Channel Length = 43,091 ft² x 10% = 4309 ft
15% of Channel Length = 43,091 ft² x 15% = 6464 ft
Channel Slope

\[
SL = \frac{(41.5 - 7.5)}{6.12} = \frac{34}{6.12} = 5.56 \text{ ft/mi}
\]

Point of Interest - P-F

Channel Length = 46,106 ft² x 1 mi/5,280' x 75% = 6.55 mi
10% of Channel Length = 46,106 ft² x 10% = 4611 ft
15% of Channel Length = 46,106 ft² x 15% = 6916 ft
Channel Slope

\[
SL = \frac{(41 - 7.5)}{6.55} = \frac{33.5}{6.55} = 5.11 \text{ ft/mi}
\]
PHILLIP CREEK - CHANNEL SLOPE

Point of Interest - P-G

Channel Length = 59,715 ft x 1 mi/5280' x 75% = 7.20 MI
10% of Channel Length = 59,715 ft x 10% = 5972 FT
15% of Channel Length = 59,715 ft x 15% = 7637 FT

Channel Slope

\[ SL = \frac{(40.5 - 1)\text{ft}}{7.20\text{ MI}} = \frac{39.5\text{ft}}{7.20\text{ MI}} = 4.86 \text{ FT/MI} \]

Point of Interest - P-H

Channel Length = 52,698 ft x 1 mi/5280' x 75% = 7.49 MI
10% of Channel Length = 52,698 ft x 10% = 5270 FT
15% of Channel Length = 52,698 ft x 15% = 7905 FT

Channel Slope

\[ SL = \frac{(39.5 - 3.5)\text{ft}}{7.49\text{ MI}} = \frac{36.0\text{ft}}{7.49\text{ MI}} = 4.81 \text{ FT/MI} \]

Point of Interest - P-I

Channel Length = 56,037 ft x 1 mi/5280' x 75% = 7.96 MI
10% of Channel Length = 56,037 ft x 10% = 5604 FT
15% of Channel Length = 56,037 ft x 15% = 8406 FT

Channel Slope

\[ SL = \frac{(40.5 - 3.5)\text{ft}}{7.96\text{ MI}} = \frac{36.5\text{ft}}{7.96\text{ MI}} = 4.59 \text{ FT/MI} \]
PHILLIPPI CREEK - CHANNEL SLOPE

Point of Interest - P-J

Channel Length = 59,227 ft \times \frac{1 \text{ mi}}{5280 \text{ ft}} \times 75\% = 8.41 \text{ mi}

10\% \text{ of Channel Length} = 59,227 \text{ ft} \times 10\% = 5923 \text{ ft}

15\% \text{ of Channel Length} = 59,227 \text{ ft} \times 15\% = 8884 \text{ ft}

Channel Slope

\[
SL = \frac{(35-3) \text{ ft}}{8.41 \text{ mi}} = \frac{32 \text{ ft}}{8.41 \text{ mi}} = 3.81 \text{ ft/mi}
\]

Point of Interest - P-K

Channel Length = 65,152 ft \times \frac{1 \text{ mi}}{5280 \text{ ft}} \times 75\% = 9.25 \text{ mi}

10\% \text{ of Channel Length} = 65,152 \text{ ft} \times 10\% = 6515 \text{ ft}

15\% \text{ of Channel Length} = 65,152 \text{ ft} \times 15\% = 9773 \text{ ft}

Channel Slope

\[
SL = \frac{(32.5-3) \text{ ft}}{9.25 \text{ mi}} = \frac{29.5 \text{ ft}}{9.25 \text{ mi}} = 3.19 \text{ ft/mi}
\]

Point of Interest - P-L

Channel Length = 69,688 ft \times \frac{1 \text{ mi}}{5280 \text{ ft}} \times 75\% = 9.90 \text{ mi}

10\% \text{ of Channel Length} = 69,688 \text{ ft} \times 10\% = 6969 \text{ ft}

15\% \text{ of Channel Length} = 69,688 \text{ ft} \times 15\% = 10,453 \text{ ft}

Channel Slope

\[
SL = \frac{(32.5-2.8) \text{ ft}}{9.90 \text{ mi}} = \frac{29.7 \text{ ft}}{9.90 \text{ mi}} = 3.00 \text{ ft/mi}
\]
PHILLIPPI CREEK - CHANNEL SLOPE

Point of Interest - P-M

Channel Length = 75,549 ft x 1 mi/5280' x 75% = 10.73 mi
10% of Channel Length = 75,549 ft x 10% = 7555 ft
15% of Channel Length = 75,549 ft x 15% = 11,332 ft

Channel Slope

\[
SL = \frac{(32.5 - 2.6)}{10.73} = \frac{29.9}{10.73} = 2.79 \text{ ft/mi}
\]

Point of Interest - P-N

Channel Length = 80,879 ft x 1 mi/5280' x 75% = 11.50 mi
10% of Channel Length = 80,879 ft x 10% = 8088 ft
15% of Channel Length = 80,879 ft x 15% = 12,147 ft

Channel Slope

\[
SL = \frac{(32.5 - 2.6)}{11.50} = \frac{29.9}{11.50} = 2.67 \text{ ft/mi}
\]

Point of Interest - P-O

Channel Length = 83,648 ft x 1 mi/5280' x 75% = 11.88 mi
10% of Channel Length = 83,648 ft x 10% = 8365 ft
15% of Channel Length = 83,648 ft x 15% = 12,547 ft

Channel Slope

\[
SL = \frac{(32.5 - 6.4)}{11.88} = \frac{26.1}{11.88} = 2.41 \text{ ft/mi}
\]
S500_PLOT

LEGEND: DATA POINT - O, COMPUTED POINT - *

CURVE FIT - TYPE = LINEAR

Q

GR(SQ.MI)
# Results of Unit Hydrograph

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<td>(346)</td>
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<tr>
<td>M-C</td>
<td>1.20</td>
<td>298</td>
<td>373</td>
<td>424</td>
<td>500</td>
<td>1210</td>
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<td>(2.24)</td>
<td>(298)</td>
<td>(373)</td>
<td>(424)</td>
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<td>(1210)</td>
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### Nat-Eny Creek

<table>
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<tr>
<th>Sub-Basin</th>
<th>% Developed</th>
<th>Peak Rate (based on factor from 150-250)</th>
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<tbody>
<tr>
<td>M-A</td>
<td>30</td>
<td>210</td>
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<tr>
<td>M-B</td>
<td>75</td>
<td>300</td>
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<tr>
<td>M-C</td>
<td>80</td>
<td>310</td>
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</tbody>
</table>
Time of Concentration

\[ M-A: \frac{1}{2} \times \frac{1}{15} = \frac{1}{30} \times \frac{1}{0.5} = \frac{1}{60} = 0.5 \text{ min} \]

\[ M-2: \frac{1}{100} \times 0.5 \times 1.5 \times 3 \times 100 = 7.5 \text{ min} \]

\[ M-3: \frac{1}{20} \times 0.5 \times 7 \times 100 = 7.5 \text{ min} \]
Matheny Cr - Unit Hydrograph

<table>
<thead>
<tr>
<th>Point of Interest</th>
<th>Channel Length (mi)</th>
<th>Velocity (ft/s)</th>
<th>Log Time (hrs)</th>
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<tr>
<td>MA</td>
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<td></td>
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<tr>
<td>MA → MB</td>
<td>3000</td>
<td>1.5</td>
<td>0.5</td>
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<tr>
<td>MB → MC</td>
<td>3500</td>
<td>2.0</td>
<td>0.5</td>
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SUMB (s) IN

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<tr>
<td>MAJO. SV</td>
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<tr>
<td>0.5</td>
</tr>
<tr>
<td>1.0</td>
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<tr>
<td>MB100. SV</td>
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<tr>
<td>1.0</td>
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SUMC (s) IN

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<td>2</td>
</tr>
<tr>
<td>SUMB (s) SV</td>
</tr>
<tr>
<td>0.5</td>
</tr>
<tr>
<td>1.0</td>
</tr>
<tr>
<td>MC (10) SV</td>
</tr>
<tr>
<td>0.0</td>
</tr>
<tr>
<td>1.0</td>
</tr>
</tbody>
</table>
From CDM, 1/4 inch Scale Attached

M-A
Implements = 45 Ac.  Previous = 408 Ac.  Lake = 3 Ac.
CN (Pre-treatment) = 14 Ac.  CN (Max. CN) = 72
Q = \frac{100}{72} - 1 = 3.88 in.  T = 149 Ac ft
T = \left(300 \times 1.2 \times 30.5 + 1.5 \times 1.5 \times 30\right) = 6 HR

M-B
Implements = 100  Previous = 229 Ac.  Lake = 14 Ac.
CN (Pre-treatment) = 78
Q = 282 in.  = 106.3 Ac ft
(Cumulative)
Implements = 145 Ac  Previous = 737 Ac.
Lake = 22 Ac
S = 143.7 in.

M-C
Implements = 104 Ac  Previous = 584 Ac.  Lake = 24 Ac
CN (Pre-treatment) = 78
S = 282 in.  = 180.5 Ac ft
(Cumulative)
Implements = 329 Ac  Previous = 918 Ac.
Lake = 41 Ac
S = 256 Ac ft
MATHENY CR - DISCHARGE

Point of Interest — M-B

Drainage Area At — = 1.4/ SQ. M1

Regression Constant (Cr)

Geographic Zone Coef. (CG)

Channel Slope = 0.93 FT/MI

Lake Area = 2.48 %

Soil Index (Initiation) = 0.05 IN

Regression Equation:

\[ Q_x = C_r \cdot C_g \cdot DA^{B1} \cdot SL^{B2} \cdot LK^{B3} \cdot SO^{B4} \]

\[ Q_{10} = (54.1) (1.27) (0.41) ^{0.84} (8.93) ^{0.53} (2.48) ^{-0.11} (2.05) ^{-0.64} = 167 \]

\[ Q_{50} = (140) (1.28) (0.41) ^{0.79} (8.93) ^{0.46} (2.48) ^{-0.10} (2.05) ^{-0.70} = 356 \]

\[ Q_{100} = (198) (1.28) (0.41) ^{0.77} (8.93) ^{0.44} (2.48) ^{-0.10} (2.05) ^{-0.73} = 468 \]

\[ Q_{500} = (403) (1.29) (0.41) ^{0.75} (8.93) ^{0.39} (2.48) ^{-0.10} (2.05) ^{-0.78} = 834 \]

Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS WAI OPEN-FILE REPORT 79-1393.
MATHEWY CR - DISCHARGE

Point of Interest - M-C

Drainage Area at = 2.61 sq. mi

Regression Constant (C0) =

Geographic Zone Coeff. (Cg) =

Channel Slope = 7.76 ft/mi

Lake Area = 2.8

Soil Index (Initiation) = 2.05

Regression Equation:

\[ Q_x = C_0 + C_1 \cdot DA + C_2 \cdot SL + C_3 \cdot LK + C_4 \cdot SO \]

\[ Q_{10} = (54.1) (1.57) (2.61) (7.76) (2.8) (2.05) = 257 \]

\[ Q_{50} = (140) (1.58) (2.61) (7.76) (2.8) (2.05) = 536 \]

\[ Q_{100} = (198) (1.58) (2.61) (7.76) (2.8) (2.05) = 698 \]

\[ Q_{500} = (403) (1.59) (2.61) (7.76) (2.8) (2.05) = 1225 \]

*Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS WRI Open-File Report 79-1393.*
**WATSON CREEK — DISCHARGE**

<table>
<thead>
<tr>
<th>POINT OF INTEREST</th>
<th>10-yr DISCHARGE (cfs)</th>
<th>50-yr DISCHARGE (cfs)</th>
<th>100-yr DISCHARGE (cfs)</th>
<th>500-yr DISCHARGE (cfs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-A</td>
<td>115</td>
<td>214</td>
<td>263</td>
<td>406</td>
</tr>
<tr>
<td>M-B</td>
<td>171</td>
<td>316</td>
<td>398</td>
<td>591</td>
</tr>
<tr>
<td>M-C</td>
<td>245</td>
<td>450</td>
<td>551</td>
<td>835</td>
</tr>
</tbody>
</table>

*Discharge was determined using the regression equation for region 'A' taken from U.S.G.S. Water Resources Investigations 82-4012.*
# Matheny Creek - Drainage and Lake Area

<table>
<thead>
<tr>
<th>Point of Interest</th>
<th>Drainage Area (sq mi)</th>
<th>Lake Area (sq mi)</th>
<th>Percent of L.A</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-A</td>
<td>0.72</td>
<td>0.72</td>
<td>0.013</td>
</tr>
<tr>
<td>M-E</td>
<td>0.69</td>
<td>1.41</td>
<td>0.022</td>
</tr>
<tr>
<td>M-C</td>
<td>1.20</td>
<td>2.61</td>
<td>0.025</td>
</tr>
</tbody>
</table>

*Drainage area and lake area were determined and taken from U.S.G.S. quad maps and aerial photos made by Sarasota County and South West Florida Water Management District.*
MATHENY CREEK — DISCHARGE

Point of Interest — M-A

DRAINAGE AREA AT = 0.72 SQMI
LAKE AREA = 1.81%
CHANNEL SLOPE = 8.16 FT/MI

REGRESSION EQUATION: \( Q_T = C \cdot DA^{B_1} \cdot SL^{B_2} \cdot (LK + 3.0)^{B_3} \)

10 - YEAR

\[ Q_{10} = 274 \cdot (0.72 \text{ SQMI}) \cdot (8.16 \text{ FT/MI}) \cdot (1.81 + 3) = 115 \text{ CI} \]

50 - YEAR

\[ Q_{50} = 496 \cdot (0.72 \text{ SQMI}) \cdot (8.16 \text{ FT/MI}) \cdot (1.81 + 3) = 214 \text{ CF} \]

100 - YEAR

\[ Q_{100} = 609 \cdot (0.72 \text{ SQMI}) \cdot (8.16 \text{ FT/MI}) \cdot (1.81 + 3) = 263 \text{ CF} \]

500 - YEAR

\[ Q_{500} = 985 \cdot (0.72 \text{ SQMI}) \cdot (8.16 \text{ FT/MI}) \cdot (1.81 + 3) = 406 \text{ CF} \]
MATHEWY CREEK - DISCHARGE

Point of Interest - M-0

DRAINAGE AREA AT = 1.41 sq.mi

LAKE AREA = 2.48 %

CHANNEL SLOPE = 8.93 ft/mi

REGRESSION EQUATION: \( Q_T = C \cdot DA \cdot SL^b \cdot (LK + 3.0)^b \)

10 - YEAR
\[
Q_{10} = 2.74 \times (1.41 \text{ sq.mi}) \times (8.93 \text{ ft/mi}) \times (2.48 + 3) = 171 \text{ cfs (ft})^3
\]

50 - YEAR
\[
Q_{50} = 4.96 \times (1.41 \text{ sq.mi}) \times (8.93 \text{ ft/mi}) \times (2.48 + 3) = 316 \text{ cfs (ft})^3
\]

100 - YEAR
\[
Q_{100} = 6.09 \times (1.41 \text{ sq.mi}) \times (8.93 \text{ ft/mi}) \times (2.48 + 3) = 388 \text{ cfs (ft})^3
\]

500 - YEAR
\[
Q_{500} = 9.85 \times (1.41 \text{ sq.mi}) \times (8.93 \text{ ft/mi}) \times (2.48 + 3) = 591 \text{ cfs (ft})^3
\]
MATHFVY CHEK - DISCHARGE

Point of Interest - Mi-C

Drainage Area at
Lake Area = 2.80 %
Channel Slope = 7.7 ft/mi

Regression Equation: \( Q = CDA \cdot SL^B \cdot (LK + 3.0)^B \)

0 - YEAR

\( C = 2.74 \cdot (2.61 \text{ sqmi}) \cdot (7.76 \text{ ft/mi}) \cdot (2.80 + 3) = 245 \text{ cf} \)

2 YEAR

\( C = 4.96 \cdot (2.61 \text{ sqmi}) \cdot (7.76 \text{ ft/mi}) \cdot (2.80 + 3) = 450 \text{ cf} \)

3 YEAR

\( Q = 6.09 \cdot (2.61 \text{ sqmi}) \cdot (7.76 \text{ ft/mi}) \cdot (2.80 + 3) = 551 \text{ cf} \)

4 YEAR

\( Q = 9.85 \cdot (2.61 \text{ sqmi}) \cdot (7.76 \text{ ft/mi}) \cdot (2.80 + 3) = 835 \text{ cf} \)
## Results of Unit Hydrograph

<table>
<thead>
<tr>
<th>Event</th>
<th>DA (in.)</th>
<th>Qo (cfs)</th>
<th>Ca (cfs)</th>
<th>Q1 (cfs)</th>
<th>Q2 (cfs)</th>
<th>Q3 (cfs)</th>
<th>Q4 (cfs)</th>
<th>Da (in.)</th>
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<tr>
<td>2/78</td>
<td>1.01</td>
<td>124</td>
<td>161</td>
<td>185</td>
<td>223</td>
<td>(255)</td>
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<tr>
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<td>(1.5)</td>
<td>(124)</td>
<td>(161)</td>
<td>(185)</td>
<td>(223)</td>
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<tr>
<td>8/78</td>
<td>(0.7)</td>
<td>103</td>
<td>134</td>
<td>155</td>
<td>188</td>
<td>(455)</td>
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<td>(221)</td>
<td>(287)</td>
<td>(331)</td>
<td>(399)</td>
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<td>1/80</td>
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<td></td>
<td>(384)</td>
<td>(495)</td>
<td>(571)</td>
<td>(688)</td>
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<td>(470)</td>
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<td>(700)</td>
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<td>2-E</td>
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<td>228</td>
<td>255</td>
<td>297</td>
<td>(1220)</td>
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<tr>
<td></td>
<td>(611)</td>
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<td>(902)</td>
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<td>3-F</td>
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<td>146</td>
<td>167</td>
<td>199</td>
<td>(1400)</td>
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<td>(702)</td>
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<td>C-F</td>
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<td>C-B</td>
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<tr>
<td>C-D</td>
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<td>157</td>
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</table>
FIS - Sarasota Co.

Curry Cr - Unit Hydrograph

<table>
<thead>
<tr>
<th>Point of Interest</th>
<th>Channel Length (FT)</th>
<th>Velocity (FPS)</th>
<th>Lag Time (hrs)</th>
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</thead>
<tbody>
<tr>
<td>CA</td>
<td></td>
<td></td>
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<tr>
<td>CA → CB</td>
<td>3000</td>
<td>1.5</td>
<td>1.0</td>
</tr>
<tr>
<td>CB → CC</td>
<td>3500</td>
<td>1.5</td>
<td>1.0</td>
</tr>
<tr>
<td>CC → CD</td>
<td>3500</td>
<td>2.0</td>
<td>1.0</td>
</tr>
<tr>
<td>CD → CE</td>
<td>3000</td>
<td>2.0</td>
<td>1.0</td>
</tr>
<tr>
<td>CE → CF</td>
<td>3000</td>
<td>2.0</td>
<td>1.0</td>
</tr>
<tr>
<td>CF → CG</td>
<td>5000</td>
<td>2.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>
Time of Concentration

\[
C-1 = \frac{6600/0.2}{2.0-1} = \frac{6600}{1.0} = 6 \text{ hrs}
\]

\[
C-2 = \frac{31.0/0.2}{3.0-1} + \frac{6000/0.2}{3.0-1} = 4.0 \text{ hrs}
\]

\[
C-3 = \frac{25.0/0.2}{2.0-1} = 60.0, \text{ hrs}
\]

\[
C-4 = \frac{6000/0.2}{3.0-1} = 8 \text{ hrs}
\]

\[
C-5 = \frac{300/0.2 + 4000/0.2}{2.0} = 6.0 \text{ hrs}
\]

\[
C-6 = \frac{200/0.2 + 2400/0.2}{3.0-1} = 5.0 \text{ hrs}
\]

\[
C-7 = \frac{2000/0.2}{3.0-1} = 5.0 \text{ hrs}
\]
From AVR  Arrivals
C-A = 0 % impervious
C-B = 0 % impervious
C-C = 0.5% impervious
C-D = 0.5% impervious

Hydrologic Soil Group: C

C-A
In pervious = 0 Ac, Reviouse = 6.25 Ac, Lake = 20.4 Ac
CN (meadow) = 71
S = \( \frac{100}{71} - 10 = 4.03 \) in = 212.6 Ac-ft
Tc = \( \frac{[2000/0.2 + 5300/2 + 2800/3]}{3600} = 3.73 \) hrs

C-B (Incremental)
In pervious = 0 Ac, Reviouse = 5.99 Ac, Lake = 0.6 Ac
CN (meadow) = 71
S = \( \frac{1025}{71} - 10 = 4.08 \) in = 132.4 Ac-ft
Tc = 4.0 hrs
(Cumulative)
In pervious = 0 Ac, Reviouse = 10.44 Ac
Lake = 21 Ac
S = 345.0 Ac-ft
Tc = 3.73 hrs + \( \frac{5300/2}{3600} = 4.24 \) hrs

C-C (Incremental)
In pervious = 7 Ac, Reviouse = 14.74 Ac, Lake = 48 Ac
CN (meadow) = 71
S = \( \frac{4200}{71} - 10 = 4.08 \) in = 503.9 Ac-ft

(Cumulative)
In pervious = 7 Ac, Reviouse = 24.88 Ac
Lake = 64 Ac
S = 848.9 Ac-ft
Tc = \( \frac{[2000/0.2 + 12000/2 + 500/3]}{3600} = 4.50 \) hrs
C - D (Incremental)
Impervious: 3 Ac        Pervious = 523 Ac      Lake = 17 Ac
CN (meadow/80% , residential x Ac /80%) = 72
S = \frac{1000}{72} - 10 = 3.89 m = 170.3 Ac-ft
(Cumulative)
Impervious = 12 Ac      Pervious = 3011 Ac
Lake = 56 in          S = 1019.2 Ac
Tc = 4.80 + \left[ \frac{2.423}{2} \right] \times 1200 = 5.74 hr

C - E (Incremental)
Impervious: 92 Ac      Pervious = 371 Ac      Lake = 8.8 Ac
CN (meadow/95% , residential x Ac /80%) = 78
S = \frac{1000}{78} - 10 = 2.82 in = 10\frac{5}{4} Ac-ft
(Cumulative)
Impervious = 12 Ac      Pervious = 3332 Ac
Lake = 124 in          S = 1185.6 Ac-ft
Tc = 4.74 + \left[ \frac{3.872}{2} \right] \times 1200 = 5.08 hr

C - F (Incremental)
Impervious: 13 Ac      Pervious = 338 Ac      Lake = 1.5 Ac
CN (meadow/85% , residential x Ac /80%) = 75.5
S = \frac{1000}{75.5} - 10 = 3.25 in = 96.3 Ac-ft
(Cumulative)
Impervious = 110 Ac     Pervious = 3720 Ac
Lake = 125.5 in        S = 1221.9 Ac-ft
Tc = 5.03 + \left[ \frac{2.837}{3} \right] \times 1200 = 5.29 hr

C - G (Incremental)
Impervious = 67 Ac      Pervious = 413 Ac      Lake = 5 Ac
CN (meadow/75% , bay/80% , residential x Ac /80%) = 86.4
S = \frac{1000}{86.4} - 10 = 1.27 in = 62.0 Ac-ft
\[ Q_{25} = 64.26 \quad \text{A} \quad 0.567 \quad L \quad 0.42 \quad S \quad 0.20 \quad 0.958 \]

**Curry CR - Discharge**

**Point of Interest - C-A**

**Drainage Area At**

**Regression Constant (CR):**

**Geographic Zone Coefficient (Cg):**

**Channel Slope:** 3.33 ft/m

**Lake Area:** 5.17%

**Soil Index (Infiltration):** 2.05

**Regression Equation:**

\[ Q_x = C_R \cdot C_g \cdot DA^{0.84} \cdot SL^{0.53} \cdot LK^{0.11} \cdot SO^{-0.64} \]

\[ Q_{10} = (54.1)(1.27)(1.01)(3.33)^{0.84}(3.17)^{0.53}(2.05)^{0.11}(2.05)^{-0.64} = 73 \]

\[ Q_{50} = (140)(1.28)(1.01)^{0.79}(3.33)^{0.46}(3.17)^{-0.10}(2.05)^{-0.70} = 169 \]

\[ Q_{100} = (198)(1.28)(1.01)^{0.77}(3.33)^{0.44}(3.17)^{-0.10}(2.05)^{-0.73} = 229 \]

\[ Q_{500} = (403)(1.29)(1.01)^{0.75}(3.33)^{0.39}(3.17)^{-0.10}(2.05)^{-0.78} = 426 \]

*Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS WAH OPEN-FILE REPORT 79-1293.*
CURRY CR — DISCHARGE

Point of Interest — C - B

Drainage Area At — = 1.62 CQ. M.
Regression Constant (C_r)
Geographic Zone Coeff. (C_g)
Channel Slope = 2.02 FT/MI
Lake Area = 2.04 %
Soil Index (Infiltration) = 2.05 IN

Regression Equation:

\[ Q_x = C_r \cdot C_g \cdot DA^{b_1} \cdot SL^{b_2} \cdot LK^{b_3} \cdot SO^{b_4} \]

\[ Q_{10} = (54.1) (1.27) (1.62)^{.84} (2.02)^{.53} (2.04)^{-1.11} (2.05)^{-0.64} = 87 \]
\[ Q_{50} = (140) (1.28) (1.62)^{.79} (2.02)^{.46} (2.04)^{-1.10} (2.05)^{-0.70} = 204 \]
\[ Q_{100} = (198) (1.28) (1.62)^{.77} (2.02)^{.44} (2.04)^{-1.10} (2.05)^{-0.70} = 576 \]
\[ Q_{500} = (403) (1.29) (1.62)^{.75} (2.02)^{.39} (2.04)^{-1.10} (2.05)^{-0.70} = 522 \]

* Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS WAI Open-File Report 79-1293.
CURRY CR - DISCHARGE

POINT OF INTEREST - C - C

DRAINAGE AREA AT = 4.01 SQ. MI

REGRESSION CONSTANT (CR)

GEOPHYSIC ZONE CORR. (Cq)

CHANNEL SLOPE = 0.95 FT/MI

LAKE AREA = 2.0 9%

SOIL INDEX (Inundation) = 2.05 IN

REGRESSION EQUATION:

\[ Q_x = \text{CR} \cdot \text{Cq} \cdot \text{DA}^{b_1} \cdot \text{SL}^{b_2} \cdot \text{LK}^{b_3} \cdot \text{SO}^{b_4} \]

\[ Q_{10} = (54.1)(1.27)(4.01)^{0.84} \cdot (0.95)^{0.53} \cdot (2.7)^{-1.11} \cdot (2.05)^{-0.64} = 122 \]

\[ Q_{50} = (140)(1.28)(4.01)^{0.79} \cdot (0.95)^{0.46} \cdot (2.7)^{-1.10} \cdot (2.05)^{-0.70} = 237 \]

\[ Q_{100} = (198)(1.28)(4.01)^{0.77} \cdot (0.95)^{0.44} \cdot (2.7)^{-1.10} \cdot (2.05)^{-0.73} = 387 \]

\[ Q_{500} = (403)(1.29)(4.01)^{0.75} \cdot (0.95)^{0.39} \cdot (2.7)^{-1.10} \cdot (2.05)^{-0.78} = 747 \]

* DISCHARGE WAS DETERMINED USING THE REGRESSION EQUATION FROM REGIONAL FLOOD-FREQUENCY RELATIONS FOR WEST-CENTRAL FLORIDA. USGS WRI OPEN-FILE REPORT 79-1293.
Curry CR. - Discharge

Point of Interest - C-D

Drainage Area At = 4.85 sq. mi

Regression Constant (C_r) =

Geographic Zone Constant (C_g) =

Channel Slope = 1.62 ft/mi

Lake Area = 2.76 %

Soil Index (Initiation) = 2.05 in

Regression Equation:

\[ Q_x = C_r \cdot C_g \cdot DA^{b_1} \cdot SL^{b_2} \cdot LK^{b_3} \cdot SO^{b_4} \]

\[ Q_{10} = (54.1) \cdot (1.27) \cdot (4.85)^{.84} \cdot (1.62)^{.53} \cdot (2.76)^{-11} \cdot (2.05)^{-64} = 189 \]

\[ Q_{50} = (140) \cdot (1.28) \cdot (4.85)^{.79} \cdot (1.62)^{.46} \cdot (2.76)^{-10} \cdot (2.05)^{-70} = 526 \]

\[ Q_{100} = (198) \cdot (1.28) \cdot (4.85)^{.77} \cdot (1.62)^{.44} \cdot (2.76)^{-10} \cdot (2.05)^{-73} = 565 \]

\[ Q_{500} = (403) \cdot (1.29) \cdot (4.85)^{.75} \cdot (1.62)^{.39} \cdot (2.76)^{-10} \cdot (2.05)^{-78} = 1058 \]

* Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS WAT OPEN-FILE REPORT 79-1393.
CLARKY CR - DISCHARGE

POINT OF INTEREST - C-E

DRAINAGE AREA AT - = 5.62 SQ. MI

REGRESSION CONSTANT (C_R)

GEOGRAPHIC ZONE (DIF. C_G)

CHANNEL SLOPE = 1.72 FT/MI

LAKE AREA = 3.48 IN

SOIL INDEX (INITIATION) = 2.05 IN

REGRESSION EQUATION:

\[ Q_x = C_R \cdot C_G \cdot DA^{b_1} \cdot SL^{b_2} \cdot LK^{b_3} \cdot SO^{b_4} \]

\[ Q_{10} = (54.1)(1.27)(5.62) \cdot (1.72) \cdot (3.48) \cdot (2.05) = 2.15 \]

\[ Q_{50} = (140)(1.28)(5.62) \cdot (1.72) \cdot (3.48) \cdot (2.05) = 481 \]

\[ Q_{100} = (198)(1.28)(5.62) \cdot (1.72) \cdot (3.48) \cdot (2.05) = 636 \]

\[ Q_{500} = (403)(1.29)(5.62) \cdot (1.72) \cdot (3.48) \cdot (2.05) = 1184 \]

* DISCHARGE WAS DETERMINED USING THE REGRESSION EQUATION FROM REGIONAL FLOOD-FREQUENCY RELATIONS FOR WEST-CENTRAL FLORIDA. USGS WRI OPEN-FILE REPORT 79-1293.
CURRY CR - DISCHARGE

Point of Interest - C - F

Drainage Area At - = 6.18 SQ. MI

Regression Constant (CR)

Geographic Zone Coeff. (Cg)

Channel Slope = 1.51 FT/MI

Lake Area = 3.16 %

Soil Index (Infiltration) = 2.05 IN

Regression Equation:

\[ Q_x = C_R \cdot C_g \cdot DA^{B_1} \cdot SL \cdot LK \cdot SD^{B_4} \]

\[ Q_{10} = (54.1) \cdot (1.27) \cdot (6.18)^{0.84} \cdot (1.51)^{0.52} \cdot (3.16)^{-1.11} \cdot (2.05)^{-0.64} = 0.226 \]

\[ Q_{50} = (140) \cdot (1.28) \cdot (6.18)^{0.79} \cdot (1.51)^{0.46} \cdot (3.16)^{-1.10} \cdot (2.05)^{-0.70} = 492 \]

\[ Q_{100} = (198) \cdot (1.28) \cdot (6.18)^{0.77} \cdot (1.51)^{0.44} \cdot (3.16)^{-1.10} \cdot (2.05)^{-0.73} = 652 \]

\[ Q_{500} = (403) \cdot (1.29) \cdot (6.18)^{0.75} \cdot (1.51)^{0.39} \cdot (3.16)^{-1.10} \cdot (2.05)^{-0.78} = 121 \]

* Discharge was determined using the regression equation from regional flood-frequency relations for west-central Florida. USGS WRI Open-File Report 79-1293.
CURRY CR - DISCHARGE

POINT OF INTEREST - C-G

DRAINAGE AREA AT = 6.94 SQ. M

REGRESSION CONSTANT (Cr)

GEOGRAPHIC ZONE COEFFICIENT (Cg)

CHANNEL SLOPE = 1.51 FT/M

LAKE AREA = 2.93 %

SOIL INDEX (Aridity Index) = 2.05 IN

REGRESSION EQUATION:

\[ Q_x = C_r \cdot C_g \cdot D_{A}^{b_1} \cdot S_{L}^{b_2} \cdot L_{K}^{b_3} \cdot S_{O}^{b_4} \]

\[ Q_{10} = (54.1) \cdot (1.27) \cdot (6.94)^{0.84} \cdot (1.51)^{0.53} \cdot (2.93)^{-0.11} \cdot (2.05)^{-0.64} = 244 \]

\[ Q_{50} = (140) \cdot (1.28) \cdot (6.94)^{0.46} \cdot (1.51)^{0.46} \cdot (2.93)^{-0.10} \cdot (2.05)^{-0.70} = 544 \]

\[ Q_{100} = (198) \cdot (1.28) \cdot (6.94)^{0.77} \cdot (1.51)^{0.44} \cdot (2.93)^{-0.10} \cdot (2.05)^{-0.73} = 718 \]

\[ Q_{500} = (408) \cdot (1.29) \cdot (6.94)^{0.75} \cdot (1.51)^{0.39} \cdot (2.93)^{-10} \cdot (2.05)^{-0.98} = 1339 \]

* DISCHARGE WAS DETERMINED USING THE REGRESSION EQUATION FROM REGIONAL FLOOD-FREQUENCY RELATIONS FOR WEST-CENTRAL FLORIDA. USGS WRI OPEN-FILE REPORT 79-1293.
**Curry Creek — Discharge**

<table>
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<tr>
<th>Point of Interest</th>
<th>10-yr</th>
<th>50-yr</th>
<th>100-yr</th>
<th>500-yr</th>
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<tr>
<td>C-1</td>
<td>97</td>
<td>183</td>
<td>227</td>
<td>359</td>
</tr>
<tr>
<td>C-2</td>
<td>129</td>
<td>260</td>
<td>323</td>
<td>513</td>
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<tr>
<td>C-1</td>
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<td>374</td>
<td>465</td>
<td>745</td>
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<tr>
<td>C-2</td>
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<td>451</td>
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<td>537</td>
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<tr>
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<td>633</td>
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<td>1146</td>
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<tr>
<td>C-2</td>
<td>321</td>
<td>593</td>
<td>731</td>
<td>1146</td>
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*Discharge was determined using the regression equation for region 'A' taken from U.S.G.S. Water Resources Investigations 82-4012.*
### Curby Creek - Drainage and Lake Area

<table>
<thead>
<tr>
<th>Point of Interest</th>
<th>Drainage Area (sqmi)</th>
<th>Lake Area (sqmi)</th>
<th>Percent of L.A.</th>
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<td>1.006</td>
<td>0.032</td>
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<td>4.615</td>
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<td>5.266</td>
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<td>0.076</td>
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<td>16.328</td>
<td>0.026</td>
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<td>0.767</td>
<td>5.619</td>
<td>0.067</td>
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<tr>
<td>A-5</td>
<td>0.653</td>
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<td>A-6</td>
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<td>6.934</td>
<td>0.025</td>
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*Drainage area and lake area were determined and taken from U.S.G.S. Quad Maps and Aerial Photos made by Sarasota County and South West Florida Water Management District.*
CURRY CREEK - DISCHARGE

Point of Interest - C-A

Drainage Area at
Lake Area = 3.17
Channel Slope = 3.33

Regression Equation: \[ Q_T = C \cdot A^B \cdot L^C \cdot (L + 3.0)^D \]

10 - Year
\[ Q_{10} = 2.74 \cdot (1.005)^B \cdot (3.23)^C \cdot (3.17 + 3)^D = 97 \text{ CI} \]

50 - Year
\[ Q_{50} = 4.96 \cdot (1.005)^B \cdot (3.23)^C \cdot (3.17 + 3)^D = 147 \text{ CF} \]

100 - Year
\[ Q_{100} = 6.09 \cdot (1.005)^B \cdot (3.33)^C \cdot (3.17 + 3)^D = 227 \text{ CF} \]

500 - Year
\[ Q_{500} = 9.85 \cdot (1.005)^B \cdot (3.33)^C \cdot (3.17 + 3)^D = 359 \text{ CF} \]
CURRY CREEK — DISCHARGE

Point of Interest — C-B

Drainage Area At
Lake Area = 2.04 %
Channel Slope = 2.02 FT/MI

Regression Equation: \( Q_t = C \cdot DA \cdot SL \cdot (LK + 3.0)^{B_3} \)

10 - YEAR

\[ Q_{10} = 2.74 (1.617 \text{ SQMI}) \cdot (2.02 \text{ FT/MI}) \cdot (2.04 + 3) = 150 \text{ CF} \]

50 - YEAR

\[ Q_{50} = 4.96 (1.617 \text{ SQMI}) \cdot (2.02 \text{ FT/MI}) \cdot (2.04 + 3) = 260 \text{ CF} \]

100 - YEAR

\[ Q_{100} = 6.09 (1.617 \text{ SQMI}) \cdot (2.02 \text{ FT/MI}) \cdot (2.04 + 3) = 323 \text{ CF} \]

500 - YEAR

\[ Q_{500} = 9.85 (1.617 \text{ SQMI}) \cdot (2.02 \text{ FT/MI}) \cdot (2.04 + 3) = 513 \text{ CF} \]
CURRIE CREEK — DISCHARGE

Point of Interest — C-C

Drainage Area at = 4.005 sq mi

Lake Area = 270

Channel Slope = 0.95 ft/mi

Regression Equation: \( Q_T = C \cdot DA^{B_1} \cdot SL^{B_2} \cdot (LK + 3.0)^{B_3} \)

10 - YEAR

\[
Q_{10} = 274 (4.005 \text{ sq mi}) \cdot (0.95 \text{ ft/mi}) \cdot (2.70 + 3) = 200 \text{ cf}
\]

50 - YEAR

\[
Q_{50} = 496 (4.005 \text{ sq mi}) \cdot (0.95 \text{ ft/mi}) \cdot (2.70 + 3) = 374 \text{ cf}
\]

100 - YEAR

\[
Q_{100} = 609 (4.005 \text{ sq mi}) \cdot (0.95 \text{ ft/mi}) \cdot (2.70 + 3) = 405 \text{ cf}
\]

500 - YEAR

\[
Q_{500} = 985 (4.005 \text{ sq mi}) \cdot (0.95 \text{ ft/mi}) \cdot (2.70 + 3) = 745 \text{ cf}
\]
CURRY CREEK — DISCHARGE

Point of Interest — C-2

Drainage Area at
Lake Area = 2.76
Channel Slope = 1.62
Regression Equation: \( Q_T = C \cdot D_A \cdot S_L \cdot (L_K + 3.0)^{B_2} \)

10 - YEAR

\[
Q_{10} = 274 \left( 4.852 \text{ sqmi} \right) \cdot \left( 1.62 \text{ ft/mi} \right) \cdot \left( 2.74 + 3 \right) = 2.20 \text{ cfs}
\]

50 - YEAR

\[
Q_{50} = 496 \left( 4.852 \text{ sqmi} \right) \cdot \left( 1.62 \text{ ft/mi} \right) \cdot \left( 2.74 + 3 \right) = 4.81 \text{ cfs}
\]

100 - YEAR

\[
Q_{100} = 609 \left( 4.852 \text{ sqmi} \right) \cdot \left( 1.62 \text{ ft/mi} \right) \cdot \left( 2.74 + 3 \right) = 5.32 \text{ cfs}
\]

500 - YEAR

\[
Q_{500} = 985 \left( 4.852 \text{ sqmi} \right) \cdot \left( 1.62 \text{ ft/mi} \right) \cdot \left( 2.74 + 3 \right) = 9.34 \text{ cfs}
\]
CUFFY CREEK — DISCHARGE

Point of Interest - C. E

Drainage Area at = 5.417 sq.mi
Lake Area = 3.43 %
Channel Slope = 1.72 ft/mi

Regression Equation: \( Q_t = C \cdot DA^a \cdot SL^b \cdot (LK + 3.0)^c \)

10 - YEAR

\[ Q_{10} = 274 \times (5.417 \text{ sq.mi}) \times (1.72 \text{ ft/mi}) \times (3.43 + 3) = 269 \text{ c.f.} \]

50 - YEAR

\[ Q_{50} = 496 \times (5.417 \text{ sq.mi}) \times (1.72 \text{ ft/mi}) \times (3.43 + 3) = 499 \text{ c.f.} \]

100 - YEAR

\[ Q_{100} = 609 \times (5.417 \text{ sq.mi}) \times (1.72 \text{ ft/mi}) \times (3.43 + 3) = 516 \text{ c.f.} \]

500 - YEAR

\[ Q_{500} = 985 \times (5.417 \text{ sq.mi}) \times (1.72 \text{ ft/mi}) \times (3.43 + 3) = 966 \text{ c.f.} \]
CURRY CREEK - DISCHARGE

POINT OF INTEREST - C-F

DRAINAGE AREA AT
LAKE AREA = 3.16 %
CHANNEL SLOPE = 1.51 FT/MI

REGRESSION EQUATION: \[ Q_T = C \cdot DA \cdot SL \cdot (LK + 3.0)^B \]

10 - YEAR

\[ Q_{10} = 2.74 \cdot (6.178 \text{ sqmi}) \cdot (1.51 \text{ FT/MI}) \cdot (3.16 + 3) = 288 \text{ CF} \]

50 - YEAR

\[ Q_{50} = 4.96 \cdot (6.178 \text{ sqmi}) \cdot (1.51 \text{ FT/MI}) \cdot (3.16 + 3) = 525 \text{ CF} \]

100 - YEAR

\[ Q_{100} = 6.09 \cdot (6.178 \text{ sqmi}) \cdot (1.51 \text{ FT/MI}) \cdot (3.16 + 3) = 658 \text{ CF} \]

500 - YEAR

\[ Q_{500} = 9.85 \cdot (6.178 \text{ sqmi}) \cdot (1.51 \text{ FT/MI}) \cdot (3.16 + 3) = 1034 \text{ CF} \]
Curtis Creek — Discharge

Point of Interest — 0.3

Drainage Area at

Lake Area = 2.93 %

Channel Slope = 0.51 ft/mi

Regression Equation: \( Q_T = C \cdot DA \cdot SL \cdot (LK + 3.0)^{B_3} \)

10 - YEAR

\[
Q_{10} = 274 (6.93 \text{ sqmi}) \cdot (0.51 \text{ ft/mi}) \cdot (2.93 + 3) = 321 \text{ cfs}
\]

50 - YEAR

\[
Q_{50} = 496 (6.93 \text{ sqmi}) \cdot (0.51 \text{ ft/mi}) \cdot (2.93 + 3) = 593 \text{ cfs}
\]

100 - YEAR

\[
Q_{100} = 609 (6.93 \text{ sqmi}) \cdot (0.51 \text{ ft/mi}) \cdot (2.93 + 3) = 751 \text{ cfs}
\]

500 - YEAR

\[
Q_{500} = 985 (6.93 \text{ sqmi}) \cdot (0.51 \text{ ft/mi}) \cdot (2.93 + 3) = 1146 \text{ cfs}
\]
Curry Creek - Channel Slope

Point of Interest - C-A

Channel Length = 5414 ft \times \frac{1}{5280} \times 75\% = 1.25 \text{ MI}

10\% of Channel Length = 5414 ft \times 10\% = 541 ft

15\% of Channel Length = 5414 ft \times 15\% = 812 ft

Channel Slope

\[ SL = \frac{(13 - 9) \text{ ft}}{1.20 \text{ MI}} = \frac{4}{1.20} = 3.33 \text{ FT/MI} \]

Point of Interest - C-B

Channel Length = 13,951 ft \times \frac{1}{5280} \times 75\% = 1.98 \text{ MI}

10\% of Channel Length = 13,951 ft \times 10\% = 1395 ft

15\% of Channel Length = 13,951 ft \times 15\% = 2093 ft

Channel Slope

\[ SL = \frac{(13 - 9) \text{ ft}}{1.98 \text{ MI}} = \frac{4}{1.98} = 2.02 \text{ FT/MI} \]

Point of Interest - C-C

Channel Length = 14,762 ft \times \frac{1}{5280} \times 75\% = 2.10 \text{ MI}

10\% of Channel Length = 14,762 ft \times 10\% = 1476 ft

15\% of Channel Length = 14,762 ft \times 15\% = 2214 ft

Channel Slope

\[ SL = \frac{(9 - 7) \text{ ft}}{2.10 \text{ MI}} = \frac{2}{2.10} = 0.95 \text{ FT/MI} \]
Curry Creek - Channel Slope

Point of Interest - C-D

Channel Length = \((17 \times \frac{20}{2}} \times 1 \text{ mi/5280} \times 75\% = 2.91\) MI

10% of Channel Length = \((17 \times \frac{20}{2}} \times 10\% = 1740\) FT

15% of Channel Length = \((17 \times \frac{20}{2}} \times 15\% = 2609\) FT

Channel Slope

\[ SL = \frac{(9 - 5)}{2.47 \text{ MI}} = \frac{4}{2.47} = 1.63 \text{ FT/MI} \]

Point of Interest - C-E

Channel Length = \((20 \times \frac{20}{2}} \times 1 \text{ mi/5280} \times 75\% = 2.91\) MI

10% of Channel Length = \((20 \times \frac{20}{2}} \times 10\% = 2047\) FT

15% of Channel Length = \((20 \times \frac{20}{2}} \times 15\% = 3070\) FT

Channel Slope

\[ SL = \frac{(9 - 4)}{2.91 \text{ MI}} = \frac{5}{2.91} = 1.72 \text{ FT/MI} \]

Point of Interest - C-F

Channel Length = \((23,305 \times 1 \text{ mi/5280} \times 75\% = 3.31\) MI

10% of Channel Length = \((23,305 \times 10\% = 2331\) FT

15% of Channel Length = \((23,305 \times 15\% = 3496\) FT

Channel Slope

\[ SL = \frac{(9 - 4)}{3.31 \text{ MI}} = \frac{5}{3.31} = 1.51 \text{ FT/MI} \]
EUPHIA CREEK - CHANNEL SLOPE

Point of Interest - C

CHANNEL LENGTH  = 28,000 \times 1 \text{ m} / 5280 = 5.32 \text{ m}
10\% of CHANNEL LENGTH  = 28,000 \times 10\% = 2800 \text{ ft}
15\% of CHANNEL LENGTH  = 28,000 \times 15\% = 4200 \text{ ft}

CHANNEL SLOPE

\[
SL = \frac{(7 - 0)}{3.98} \frac{\text{ft}}{\text{mi}} = \frac{6}{3.98} \frac{\text{ft}}{\text{mi}} = 1.51 \frac{\text{ft}}{\text{mi}}
\]

Point of Interest -

CHANNEL LENGTH  = \frac{x}{1 \text{ m} / 5280} = \frac{3.98}{\text{mi}} \text{ ft}
10\% of CHANNEL LENGTH  = \frac{x}{10\%} = \frac{\text{ft}}{\text{mi}}
15\% of CHANNEL LENGTH  = \frac{x}{15\%} = \frac{\text{ft}}{\text{mi}}

CHANNEL SLOPE

\[
SL = \frac{\text{ft}}{\text{mi}} = \frac{\text{ft}}{\text{mi}} = \frac{\text{ft}}{\text{mi}}
\]

Point of Interest -

CHANNEL LENGTH  = \frac{x}{1 \text{ m} / 5280} = \frac{3.98}{\text{mi}} \text{ ft}
10\% of CHANNEL LENGTH  = \frac{x}{10\%} = \frac{\text{ft}}{\text{mi}}
15\% of CHANNEL LENGTH  = \frac{x}{15\%} = \frac{\text{ft}}{\text{mi}}

CHANNEL SLOPE

\[
SL = \frac{\text{ft}}{\text{mi}} = \frac{\text{ft}}{\text{mi}} = \frac{\text{ft}}{\text{mi}}
\]
### RESULTS OF MIT HYDRO-11.41

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<th>D4</th>
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<td>6</td>
<td>0.10</td>
<td>282 (1054)</td>
<td>348 (1313)</td>
<td>391 (1488)</td>
<td>456 (1752)</td>
</tr>
<tr>
<td>7</td>
<td>0.54</td>
<td>586 (794)</td>
<td>719 (997)</td>
<td>808 (1096)</td>
<td>942 (1341)</td>
</tr>
</tbody>
</table>

Note: The numbers in parentheses represent the actual measurements.
### HATHAWTCH CREEK

<table>
<thead>
<tr>
<th>Sub-Basin</th>
<th>% Developed</th>
<th>Weighted Peak Rate Factor (based on range 150-350)</th>
</tr>
</thead>
<tbody>
<tr>
<td>H-A</td>
<td>0</td>
<td>150</td>
</tr>
<tr>
<td>H-B</td>
<td>2</td>
<td>154</td>
</tr>
<tr>
<td>H-C</td>
<td>0</td>
<td>150</td>
</tr>
<tr>
<td>H-D</td>
<td>0</td>
<td>150</td>
</tr>
<tr>
<td>H-E</td>
<td>70</td>
<td>290</td>
</tr>
<tr>
<td>H-F</td>
<td>75</td>
<td>300</td>
</tr>
</tbody>
</table>
Time of Concentration

HATCHETT

HA \( \frac{5800}{0.2} \times 13600 = 8.0 \text{ HRS} \)

HE \( \frac{3200}{0.2} + \frac{3200}{13} \times 13600 = 5.1 \text{ HRS} \)

HC \( \frac{1300}{12} + \frac{4100}{0.2} \times 13600 = 6.0 \text{ HRS} \)

HD \( \frac{3100}{12} + \frac{3700}{0.2} \times 13600 = 5.5 \text{ HRS} \)

HE \( \frac{4500}{1} + \frac{2100}{0.2} + \frac{6900}{2} \times 13600 = 5.0 \text{ HRS} \)

HF \( \frac{2900}{1} + \frac{2400}{0.2} \times 13600 = 6.0 \text{ HRS} \)
From CDM Aerials

H-A = 0% impervious  H-D = 0% impervious
H-B = 0.9% impervious  H-E = 20% impervious
H-C = 0% impervious  H-F = 30% impervious

Hydrologic Soil Group: C

H-A
Impervious = 0 Ac, Pervious = 485 Ac, Lake = 5 Ac
CN (meadow) = 71
S = \frac{1000}{71} - 0.08 in = 16.7 Ac-ft
T_c = \left[ \frac{3500}{3} + \frac{3500}{2} + \frac{3500}{3} \right] / 3600 = 5.4 HR

H-B (Incremental)
Impervious = 4 Ac, Pervious = 609 Ac, Lake = 6.5 Ac
CN (meadow) = 71
S = \frac{1000}{71} - 0.08 in = 277.2 Ac-ft

(Cumulative)
Impervious = 4 Ac, Pervious = 1089 Ac
Lake = 11.5 Ac
S = 372.4 Ac-ft
T_c = 5.4 HR + \left[ \frac{333}{5} \right] / 3600 = 5.71 HR

H-C (Incremental)
Impervious = 0 Ac, Pervious = 468 Ac, Lake = 7 Ac
CN (meadow) = 71
S = 0.08 in = 159.3 Ac-ft

(Cumulative)
Impervious = 4 Ac, Pervious = 1557 Ac
Lake = 18.5 Ac
S = 531.7 Ac-ft
T_c = 5.71 + \left[ \frac{3723}{3} \right] / 3600 = 6.05 HR
H-D (Incremental)

\[
\text{Impervious} = 0 \text{ Ac} \quad \text{Pervious} = 29.5 \text{ Ac} \quad \text{Lake} = 1.5 \text{ Ac}
\]
\[
\text{CN (meadow)} = 71
\]
\[
S = 4.05 \text{ in.} = 100.6 \text{ Ac-ft}
\]
(Cumulative)

\[
\text{Impervious} = 4 \text{ Ac} \quad \text{Pervious} = 18.53 \text{ Ac}
\]
\[
\text{Lake} = 20 \text{ Ac} \quad S = 632.3 \text{ Ac-ft}
\]
\[
T_e = 6.05 + \left[ \frac{362.2/3}{3600} \right] = 6.39 \text{ HR}
\]

H-E (Incremental)

\[
\text{Impervious} = 20.2 \text{ Ac} \quad \text{Pervious} = 80.3 \text{ Ac} \quad \text{Lake} = 17 \text{ Ac}
\]
\[
\text{CN (Residential)} = 86
\]
\[
S = 1269 - 10 = 163 \text{ in.} = 137.0 \text{ Ac-ft}
\]
(Cumulative)

\[
\text{Impervious} = 20.6 \text{ Ac} \quad \text{Pervious} = 99.1 \text{ Ac}
\]
\[
\text{Lake} = 37 \text{ Ac} \quad S = 729.3 \text{ Ac-ft}
\]
\[
T_e = 6.29 + \left[ \frac{7152/3}{2600} \right] = 7.05 \text{ HR}
\]

H-E (Incremental)

\[
\text{Impervious} = 17.1 \text{ Ac} \quad \text{Pervious} = 400 \text{ Ac} \quad \text{Lake} = 4.5 \text{ Ac}
\]
\[
\text{CN (Commercial/35\%, Residential/60\%, meadow/10\%)} = 85.7
\]
\[
S = \frac{4000}{85.7} - 10 = 167 \text{ in.} = 79.5 \text{ Ac-ft}
\]
(Cumulative)

\[
\text{Impervious} = 57.7 \text{ Ac} \quad \text{Pervious} = 304.1 \text{ Ac}
\]
\[
\text{Lake} = 41.5 \text{ Ac} \quad S = 848.8 \text{ Ac-ft}
\]
\[
T_e = 7.05 + \left[ \frac{2773/3}{3600} \right] = 7.30 \text{ HR}
\]
HATCHETT CR - DISCHARGE

Point of Interest - H-A

Drainage Area At - = 0.77 SQ.MI

Regression Constant (CR)

Geographic Zone Coeff. (Cg)

Channel Slope = 0.44 FT/MI

Lake Area = 1.04 %

Soil Index (Initiation) = 2.05 IN

Regression Equation:

\[ Q_x = \text{CR} \cdot \text{Cg} \cdot DA^{b_1} \cdot SL^{b_2} \cdot LK^{b_3} \cdot SO^{b_4} \]

\[ Q_{10} = (54.1) \cdot (1.27) \cdot (0.77)^{0.84} \cdot (0.44)^{0.53} \cdot (1.04)^{-0.11} \cdot (2.05)^{-0.64} = 22 \]

\[ Q_{50} = (140) \cdot (1.28) \cdot (0.77)^{0.79} \cdot (0.44)^{0.46} \cdot (1.04)^{-0.10} \cdot (2.05)^{-0.70} = 60 \]

\[ Q_{100} = (198) \cdot (1.28) \cdot (0.77)^{0.77} \cdot (0.44)^{0.44} \cdot (1.04)^{-0.10} \cdot (2.05)^{-0.73} = 85 \]

\[ Q_{500} = (403) \cdot (1.29) \cdot (0.77)^{0.75} \cdot (0.44)^{0.39} \cdot (1.04)^{-0.10} \cdot (2.05)^{-0.98} = 177 \]

* DISCHARGE WAS DETERMINED USING THE REGRESSION EQUATION FROM REGIONAL FLOOD-FREQUENCY RELATIONS FOR WEST-CENTRAL FLORIDA. USGS WRI OPEN-FILE REPORT 79-1293.*
HATCHETT CR - DISCHARGE

Point of Interest - H - B

Drainage Area At -

Regression Constant (CR)
Geographic Zone Coeff. (CG)
Channel Slope = 0.43 ft/mi
Lake Area = 1.04
Soil Index (Institution) =

Regression Equation:

\[ Q_x = CR \cdot CG \cdot DA^{B1} \cdot SL^{B2} \cdot LK^{B3} \cdot SO^{B4} \]

\[ Q_{10} = (54.1)(1.27)(1.73)^{0.84}(0.43)^{0.53}(1.04)^{-11}(2.05)^{-0.64} = 44 \]
\[ Q_{50} = (140)(1.28)(1.73)^{0.99}(0.43)^{0.46}(1.04)^{-10}(2.05)^{-0.70} = 113 \]
\[ Q_{100} = (198)(1.28)(1.73)^{0.77}(0.43)^{0.44}(1.04)^{-10}(2.05)^{-0.73} = 157 \]
\[ Q_{500} = (403)(1.29)(1.73)^{0.75}(0.43)^{0.39}(1.04)^{-10}(2.05)^{-0.78} = 321 \]

* Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS WRI Open-File Report 79-1393.
HATCHETT CR - DISCHARGE

Point of Interest — H - C

Drainage Area At — = 5.47 SQ. MI

Regression Constant (C1)

Geographic Zone Coeff. (C2)

Channel Slope = 0.41 FT/MI

Lake Area = 1.17 %

Soil Index (Infiltration) = 2.05 IN

Regressions Equation:

\[ Q_x = C_1 \cdot C_2 \cdot DA^{b_1} \cdot SL \cdot LK \cdot SO^{b_4} \]

\[ Q_{10} = (54.1)(1.27)(2.47)(0.41) \cdot (1.17) \cdot (2.05) = 57 \]

\[ Q_{50} = (140)(1.28)(2.47)(0.41) \cdot (1.17) \cdot (2.05) = 145 \]

\[ Q_{100} = (198)(1.28)(2.47)(0.41) \cdot (1.17) \cdot (2.05) = 300 \]

\[ Q_{500} = (408)(1.29)(2.47)(0.41) \cdot (1.17) \cdot (2.05) = 407 \]

* Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS.WAF Open-File Report 79-1293.
HATCHETT CR - DISCHARGE

POINT OF INTEREST — H-D

DRAINAGE AREA AT —

REGRESSION CONSTANT (C_R)

REGRESSION CONSTANT (C_R)

GEOGRAPHIC ZONE COEFF. (C_G)

CHANNEL SLOPE = 0.41 FT/MI

LAKE AREA = 1.06 %

SOIL INDEX (INITIATION) = 2.05 IN

REGRESSION EQUATION:

\[ Q_x = C_R \cdot C_G \cdot DA^{b_1} \cdot SL \cdot LK^{b_3} \cdot SO^{b_4} \]

\[ Q_{10} = (54.1)(1.27)(1.93)^{0.84} \cdot (0.91)^{0.53} \cdot (1.06)^{-1.1} \cdot (2.05)^{-0.64} = 66 \]

\[ Q_{50} = (140)(1.28)(1.93)^{0.79} \cdot (0.91)^{0.46} \cdot (1.06)^{-1.10} \cdot (2.05)^{-0.70} = 165 \]

\[ Q_{100} = (198)(1.28)(1.93)^{0.77} \cdot (0.91)^{0.44} \cdot (1.06)^{-1.10} \cdot (2.05)^{-0.73} = 231 \]

\[ Q_{500} = (408)(1.29)(1.93)^{0.75} \cdot (0.91)^{0.39} \cdot (1.06)^{-1.10} \cdot (2.05)^{-0.78} = 467 \]

* DISCHARGE WAS DETERMINED USING THE REGRESSION EQUATION FROM REGIONAL FLOOD-FREQUENCY RELATIONS FOR WEST-CENTRAL FLORIDA. USGS WRI OPEN-FILE REPORT 79-1293. 
HATCHETT CR - DISCHARGE

POINT OF INTEREST - H - E

DRAINAGE AREA AT - = 4.54 SQ. MI
REGRESSION CONSTANT (CR)
GEOGRAPHIC ZONE COEFF. (CG)
CHANNEL SLOPE = 0.4 FT/MI
LAKE AREA = 1.38 %
SOIL INDEX (INERTIA) = 2.05 IN

REGRESSION EQUATION:

\[ Q_x = C_R \cdot C_G \cdot D_A^{B_1} \cdot S_L^{B_2} \cdot L_K^{B_3} \cdot S_O^{B_4} \]

\[ Q_{10} = (54.1)(1.27)(4.54)^{0.84}(0.4)^{0.53}(1.28)^{0.11}(2.05)^{-0.64} = 93 \]

\[ Q_{50} = (140)(1.28)(4.54)^{0.79}(0.4)^{0.46}(1.28)^{-0.10}(2.05)^{-0.70} = 229 \]

\[ Q_{100} = (198)(1.28)(4.54)^{0.77}(0.4)^{0.44}(1.28)^{-0.10}(2.05)^{-0.93} = 314 \]

\[ Q_{500} = (403)(1.29)(4.54)^{0.75}(0.4)^{0.39}(1.28)^{-0.10}(2.05)^{-0.98} = 630 \]

* DISCHARGE WAS DETERMINED USING THE REGRESSION EQUATION FROM REGIONAL FLOOD-FREQUENCY RELATIONS FOR WEST-CENTRAL FLORIDA. USGS WAI OPEN-FILE REPORT 79-1393.
HATCHETT CR — DISCHARGE

Point of Interest — H - F

Drainage Area At —

Regression Constant (C_F)

Geographic Zone Coef. (C_G)

Channel Slope = 0.42 FT/MI

Lake Area = 1.2 %

Soil Index (Infiltration) =

Regression Equation:

\[ Q_x = C_F \cdot C_G \cdot DA \cdot SL \cdot LK \cdot SO \]

\[ Q_{10} = (54.1) \times (1.27) \times (5.44) \times (0.42) \times (1.2) \times (2.05) = 111 \]

\[ Q_{50} = (140) \times (1.28) \times (5.44) \times (0.42) \times (1.2) \times (2.05) = 292 \]

\[ Q_{100} = (198) \times (1.28) \times (5.44) \times (0.42) \times (1.2) \times (2.05) = 371 \]

\[ Q_{500} = (403) \times (1.29) \times (5.44) \times (0.42) \times (1.2) \times (2.05) = 741 \]

* Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS WAI open-file report 79-1293.
# Hatchett Creek - Discharge

<table>
<thead>
<tr>
<th>Point of Interest</th>
<th>Point of Interest (sq mi)</th>
<th>Discharge (cfs) 10-yr</th>
<th>Discharge (cfs) 50-yr</th>
<th>Discharge (cfs) 100-yr</th>
<th>Discharge (cfs) 500-yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>H-A</td>
<td>0.77</td>
<td>79</td>
<td>150</td>
<td>183</td>
<td>207</td>
</tr>
<tr>
<td>H-B</td>
<td>1.73</td>
<td>140</td>
<td>244</td>
<td>325</td>
<td>523</td>
</tr>
<tr>
<td>H-C</td>
<td>2.47</td>
<td>176</td>
<td>330</td>
<td>429</td>
<td>612</td>
</tr>
<tr>
<td>H-D</td>
<td>2.93</td>
<td>203</td>
<td>375</td>
<td>456</td>
<td>523</td>
</tr>
<tr>
<td>H-E</td>
<td>4.84</td>
<td>264</td>
<td>444</td>
<td>614</td>
<td>716</td>
</tr>
<tr>
<td>H-F</td>
<td>5.44</td>
<td>307</td>
<td>502</td>
<td>700</td>
<td>1114</td>
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</tbody>
</table>

*Discharge was determined using the regression equation for Region 'A' taken from U.S.G.S. Water Resources Investigations 82-4012.
### Hatchett Creek - Drainage and Lake Area

<table>
<thead>
<tr>
<th>POINT OF INTEREST</th>
<th>DRAINAGE AREA (SQMI)</th>
<th>LAKE AREA (SQMI)</th>
<th>PERCENT OF L.A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>INCREM.</td>
<td>ACCUM.</td>
<td>INCREM.</td>
</tr>
<tr>
<td>H-A</td>
<td>0.746</td>
<td>0.746</td>
<td>0.008</td>
</tr>
<tr>
<td>H-B</td>
<td>0.961</td>
<td>1.707</td>
<td>0.015</td>
</tr>
<tr>
<td>H-C</td>
<td>0.742</td>
<td>2.449</td>
<td>0.011</td>
</tr>
<tr>
<td>H-D</td>
<td>0.464</td>
<td>2.933</td>
<td>0.002</td>
</tr>
<tr>
<td>H-E</td>
<td>1.605</td>
<td>4.538</td>
<td>0.027</td>
</tr>
<tr>
<td>H-F</td>
<td>0.900</td>
<td>5.438</td>
<td>0.007</td>
</tr>
</tbody>
</table>

* DRAINAGE AREA AND LAKE AREA WERE DETERMINED AND TAKEN FROM U.S.G.S. QUAD MAPS AND AERIAL PHOTOS MADE BY SARASOTA COUNTY AND SOUTH WEST FLORIDA WATER MANAGEMENT DISTRICT.
HATCH ET AL. — DISCHARGE

Point of Interest - H-A

Drainage Area at Lake Area = 1.04 %
Channel Slope = 0.436 ft/mi

Regression Equation: \( Q_T = CD \cdot DA \cdot SL \cdot (LK + 3.0)^B_3 \)

10 - Year

\[ Q_{10} = 2.74 \cdot 0.74 \cdot 0.9 = 79 \text{ CF} \]

50 - Year

\[ Q_{50} = 4.96 \cdot 0.74 \cdot 0.9 = 150 \text{ CF} \]

100 - Year

\[ Q_{100} = 6.09 \cdot 0.74 \cdot 0.9 = 188 \text{ CF} \]

500 - Year

\[ Q_{500} = 9.85 \cdot 0.74 \cdot 0.9 = 309 \text{ CF} \]
HATCHETT CREEK — DISCHARGE

Point of Interest — H-B

Drainage Area at = 1.727 sq mi
Lake Area = 1.04%
Channel Slope = 0.431 ft/ft

Regression Equation: \( Q_T = C \cdot DA \cdot SL \cdot (LK + 3.0)^B \)

10-Year

\[ Q_{10} = 274 (1.727 \text{ sq mi}) \cdot (0.9) \cdot (0.348) \cdot (1.04 + 3) = 147 \text{ cfs} \]

50-Year

\[ Q_{50} = 496 (1.727 \text{ sq mi}) \cdot (0.9) \cdot (0.348) \cdot (1.04 + 3) = 264 \text{ cfs} \]

100-Year

\[ Q_{100} = 609 (1.727 \text{ sq mi}) \cdot (0.9) \cdot (0.348) \cdot (1.04 + 3) = 379 \text{ cfs} \]

500-Year

\[ Q_{500} = 985 (1.727 \text{ sq mi}) \cdot (0.9) \cdot (0.348) \cdot (1.04 + 3) = 533 \text{ cfs} \]
Hatchett Creek - Discharge

Point of Interest - H-C

Drainage Area = 2.469 sq mi

Lake Area = 1.17%

Channel Slope = 0.414 ft/m

Regression Equation: \( Q_T = C \cdot D \cdot A^B \cdot L \cdot K + 3.0 \)

10-Year

\[
Q_{10} = 2.74 \times 2.469 \times 0.9 \times 0.248 \times 0.708 = 19.4 \text{ cfs}
\]

50-Year

\[
Q_{50} = 4.96 \times 2.469 \times 0.9 \times 0.234 \times 0.64 = 38.0 \text{ cfs}
\]

100-Year

\[
Q_{100} = 6.09 \times 2.469 \times 0.9 \times 0.057 \times 0.685 = 40.9 \text{ cfs}
\]

500-Year

\[
Q_{500} = 9.85 \times 2.469 \times 0.9 \times 0.019 \times 0.687 = 64.2 \text{ cfs}
\]
Hatchett Creek — Discharge

Point of Interest – H-D

Drainage Area at

Lake Area = 1.04 sq.m

Channel Slope = 0.408 ft/m

Regression Equation: \( Q_T = C \cdot DA \cdot SL \cdot (LK + 3.0)^{0.5} \)

10 - Year

\( Q_{10} = 2.74 \cdot (2.933 \text{ sq.mi}) \cdot (0.9) \cdot (0.738 - 0.738) = 2.73 \text{ c.f.} \)

50 - Year

\( Q_{50} = 4.96 \cdot (2.933 \text{ sq.mi}) \cdot (0.9) \cdot (0.248 - 0.738) = 30.4 \text{ c.f.} \)

100 - Year

\( Q_{100} = 6.09 \cdot (2.933 \text{ sq.mi}) \cdot (0.9) \cdot (0.248 - 0.738) = 47.5 \text{ c.f.} \)

500 - Year

\( Q_{500} = 9.85 \cdot (2.933 \text{ sq.mi}) \cdot (0.9) \cdot (0.248 - 0.738) = 523 \text{ c.f.} \)
HATCHET CREEK -- Discharge

Point of Interest - H-E

Drainage Area at

Lake Area = 128

Channel Slope = 0.404

Regression Equation: \( Q_T = C \cdot DA \cdot SL \cdot (LK + 3.0)^B \)

10 - YEAR

\[
Q_{10} = 274 \times (4.538 \text{ sqmi}) \cdot (0.7) \cdot (0.248) \cdot (1.28 + 3) = 234 \text{ CF}
\]

50 - YEAR

\[
Q_{50} = 496 \times (4.538 \text{ sqmi}) \cdot (0.9) \cdot (0.348) \cdot (1.28 + 3) = 492 \text{ CF}
\]

100 - YEAR

\[
Q_{100} = 609 \times (4.538 \text{ sqmi}) \cdot (0.9) \cdot (0.347) \cdot (1.28 + 3) = 510 \text{ CF}
\]

500 - YEAR

\[
Q_{500} = 985 \times (4.538 \text{ sqmi}) \cdot (0.9) \cdot (0.196) \cdot (1.28 + 3) = 976 \text{ CF}
\]
HATCHETT CREEK — DISCHARGE

Point of Interest — H-F

Drainage Area at = \(5.438 \text{ sq mi}\)

Lake Area = 1.20 %

Channel Slope = 0.415 ft/mi

Regression Equation: \(Q_T = C \cdot DA^{B_1} \cdot (L + 3.0)^{B_3}\)

10-Year

\[Q_{10} = 274 (5.435 \text{ sq mi}) \cdot (0.7) \cdot 0.348 \cdot 0.798 = 251 \text{ ft}^3 \text{/sec}\]

50-Year

\[Q_{50} = 496 (5.435 \text{ sq mi}) \cdot (0.9) \cdot 0.324 \cdot 0.705 = 564 \text{ ft}^3 \text{/sec}\]

100-Year

\[Q_{100} = 609 (5.438 \text{ sq mi}) \cdot (0.9) \cdot 0.227 \cdot 0.685 = 700 \text{ ft}^3 \text{/sec}\]

500-Year

\[Q_{500} = 985 (5.438 \text{ sq mi}) \cdot (0.9) \cdot 0.196 \cdot 0.687 = 1110 \text{ ft}^3 \text{/sec}\]
HATCHITT CREEK - CHANNEL SLOPE

Point of Interest - H-A

CHANNEL LENGTH = 4843 ft x 1 mi/5280 x 75% = 0.688 MI

10% of CHANNEL LENGTH = 4843 x 10% = 484.3 FT

15% of CHANNEL LENGTH = 4843 x 15% = 726.5 FT

CHANNEL SLOPE

\[ SL = \frac{(8.5 - 3.2)ft}{0.688 \text{ MI}} = \frac{5.3 ft}{0.688 \text{ MI}} = 7.74 \text{ FT/MI} \]

Point of Interest - H-B

CHANNEL LENGTH = 8174 ft x 1 mi/5280 x 75% = 1.141 MI

10% of CHANNEL LENGTH = 8174 x 10% = 817.4 FT

15% of CHANNEL LENGTH = 8174 x 15% = 1226.1 FT

CHANNEL SLOPE

\[ SL = \frac{(8.5 - 8.0)ft}{1.141 \text{ MI}} = \frac{0.5 ft}{1.141 \text{ MI}} = 0.431 \text{ FT/MI} \]

Point of Interest - H-C

CHANNEL LENGTH = 11,897 ft x 1 mi/5280 x 75% = 1.670 MI

10% of CHANNEL LENGTH = 11,897 x 10% = 1189.7 FT

15% of CHANNEL LENGTH = 11,897 x 15% = 1784.6 FT

CHANNEL SLOPE

\[ SL = \frac{(8.5 - 7.8)ft}{1.670 \text{ MI}} = \frac{0.7 ft}{1.670 \text{ MI}} = 0.414 \text{ FT/MI} \]
HATCHETT CREEK - CHANNEL SLOPE

Point of Interest - H-D

Channel Length = 15,519 ft x 1 mi/5280' x 75% = 2.204 MI
10% of Channel Length = 15,519 ft x 10% = 1551.9 FT
15% of Channel Length = 15,519 ft x 15% = 2327.9 FT
Channel Slope
\[ SL = \frac{(8.5 - 7.2)}{2.204 \text{ MI}} = \frac{1.3}{2.204 \text{ MI}} = 0.592 \text{ FT/MI} \]

Point of Interest - H-E

Channel Length = 22,671 ft x 1 mi/5280' x 75% = 3.220 MI
10% of Channel Length = 22,671 ft x 10% = 2267.1 FT
15% of Channel Length = 22,671 ft x 15% = 3400.7 FT
Channel Slope
\[ SL = \frac{(8.5 - 7.2)}{3.220 \text{ MI}} = \frac{1.3}{3.220 \text{ MI}} = 0.404 \text{ FT/MI} \]

Point of Interest - H-F

Channel Length = 25,441 ft x 1 mi/5280' x 75% = 3.614 MI
10% of Channel Length = 25,441 ft x 10% = 2544.1 FT
15% of Channel Length = 25,441 ft x 15% = 3816.6 FT
Channel Slope
\[ SL = \frac{(8.5 - 7.0)}{3.614 \text{ MI}} = \frac{1.5}{3.614 \text{ MI}} = 0.415 \text{ FT/MI} \]
## Results of Wiff Hydrograph

<table>
<thead>
<tr>
<th>Point Code</th>
<th>Dimension</th>
<th>Qs</th>
<th>Qe</th>
<th>Qp</th>
<th>Qop</th>
<th>From</th>
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</thead>
<tbody>
<tr>
<td>A-A</td>
<td>315</td>
<td>383</td>
<td>429</td>
<td>501</td>
<td></td>
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<tr>
<td>1.50'</td>
<td>215</td>
<td>393</td>
<td>429</td>
<td>501</td>
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<tr>
<td>A-E</td>
<td>772</td>
<td>927</td>
<td>1032</td>
<td>1191</td>
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<tr>
<td>1.50'</td>
<td>675</td>
<td>1001</td>
<td>1118</td>
<td>1297</td>
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<tr>
<td>A-E</td>
<td>141</td>
<td>180</td>
<td>207</td>
<td>248</td>
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<tr>
<td>1.50'</td>
<td>738</td>
<td>1143</td>
<td>1283</td>
<td>1495</td>
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<tr>
<td>A-D</td>
<td>610</td>
<td>754</td>
<td>850</td>
<td>996</td>
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<tr>
<td>2.00'</td>
<td>1343</td>
<td>1657</td>
<td>1875</td>
<td>2200</td>
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<tr>
<td>A-G</td>
<td>161</td>
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<tr>
<td>0.24'</td>
<td>1463</td>
<td>1796</td>
<td>2023</td>
<td>2668</td>
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<tr>
<td>AT Minimum</td>
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<td></td>
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</table>
ALLIGATOR CREEK - SARASOTA CO.
### Alligator Creek

<table>
<thead>
<tr>
<th>Site-Branch</th>
<th>% Developed</th>
<th>Weighted Peak Rate (based on land factor from 15% to 100%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-A</td>
<td>15</td>
<td>120</td>
</tr>
<tr>
<td>A-B</td>
<td>75</td>
<td>300</td>
</tr>
<tr>
<td>A-C</td>
<td>75</td>
<td>300</td>
</tr>
<tr>
<td>A-D</td>
<td>90</td>
<td>330</td>
</tr>
<tr>
<td>A-E</td>
<td>90</td>
<td>330</td>
</tr>
</tbody>
</table>
Time of Concentration

A-11 \[ \frac{6000/15 + 7200/20}{1} \approx 13 \text{ min} \]
A-8 \[ \frac{100/15 + 6200/10}{1} = 3700/1.2 \approx 7.5 \text{ min} \]
A-6 \[ \frac{100/2 + 1800/12}{1} \approx 3 \text{ min} \]
A-4 \[ \frac{2800/2 + 7600/1 + 5000/6 + 1500/6}{1} \approx 7.0 \text{ min} \]
A-2 \[ \frac{2800/6 + 1300/2}{1} \approx 2.0 \text{ min} \]
<table>
<thead>
<tr>
<th>Path &amp; Inter. (E–)</th>
<th>Channel Length (F–)</th>
<th>Velocity (FPS)</th>
<th>Log Time (Hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>AA → AB</td>
<td>3000</td>
<td>1.5</td>
<td>6.95</td>
</tr>
<tr>
<td>AB → AC</td>
<td>5000</td>
<td>2.0</td>
<td>6.95</td>
</tr>
<tr>
<td>AC → AD</td>
<td>5000</td>
<td>2.0</td>
<td>1.0</td>
</tr>
<tr>
<td>AD → AE</td>
<td>3000</td>
<td>1.5</td>
<td>0.95</td>
</tr>
</tbody>
</table>

4 ALLIGATOR
\[
A - C
\]

\[
\begin{array}{cccc}
\text{High} & 610 & 210 & 25 \\
\text{Median} & 180 & 29 & 10 \\
\text{Low} & 91 & 180 & 30 \\
\text{Undeveloped} & 400 & 50 & 45 & 10 \\
\end{array}
\]

\[
\% \text{ Impervious} = \frac{[841(75) + 149(50) + 201(60) + 505(50)]}{1312} = 70.5
\]

\[
\text{Undeveloped} = 70.5
\]

\[
\text{Total Area} = 1990 \text{ Ac}
\]

\[
\text{Lake Area} = 174 \text{ Ac}
\]

\[
\text{Impervious} = 174 \text{ Ac}
\]

\[
\text{Pervious} = 1271 \text{ Ac}
\]

\[
CN_w = \left[ 610(80) + 210(90) + 29(95) + 610(70) + 100(60) + 30(90) + 100(80) + 201(90) + 45(75) + 100(95) + 174(60) \right] / 3520 = 70.5
\]

\[
\text{Lake Area} = 251 \text{ Ac}
\]

\[
\text{Total Area} = 4434 \text{ Ac}
\]

\[
\text{Impervious} = 663 \text{ Ac}
\]

\[
\text{Pervious} = 3871 \text{ Ac}
\]

\[
\text{Undeveloped} = 494.8 \text{ Ac - ft}
\]

\[
A - C \hspace{1cm} \begin{array}{cccc}
\text{High} & 112 & 10 & 25 \\
\text{Low} & 615 & 13 \\
\end{array}
\]
<table>
<thead>
<tr>
<th>Area</th>
<th>High</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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</thead>
<tbody>
<tr>
<td>Lake Area</td>
<td>257</td>
<td>219</td>
<td>181</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Total Area</td>
<td>1318</td>
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<td></td>
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<tr>
<td>Lake Area</td>
<td>280</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Area</td>
<td>164</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Lake Area</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Total Area</td>
<td>6150</td>
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</tbody>
</table>

**Impervious Calculations**

- **A-D (Normand)**
  - High: 210
  - Lake Area: 73 Ac
  - Total Area: 1318 Ac

- **A-E (Inwood)**
  - High: 130
  - Lake Area: 0
  - Total Area: 164 Ac

**Impervious Area Formulas**

- For A-D:
  \[
  S = \frac{1020}{82.9} - 10 = 1.93 \text{ in} = 211.7 \text{ Ac-ft}^{-2}
  \]

- For A-E:
  \[
  S = \frac{1020}{82.9} - 10 = 2.24 \text{ in} = 30.4 \text{ Ac-ft}^{-2}
  \]

**Impervious Area Calculations**

- **A-D**
  - Impervious: 210
  - Lake Area: 73 Ac

- **A-E**
  - Impervious: 130
  - Lake Area: 0

**UHC Calculations**

- **A-D**
  - \[ UHC = \frac{S}{T_e} \]

- **A-E**
  - \[ UHC = \frac{S}{T_e} \]
**Alligator CR - Discharge**

**Point of Interest - A - A**

**Drainage Area At** = 3.82 sq. mi

**Regression Constant (C_r)**

**Geographic Zone Coeff. (C_q)**

*Channel Slope* = 1.99 ft/mi

**Lake Area** = 3.17 %

**Soil Index (Infiltration)** = 2.05 in

**Regression Equation:**

\[
Q = C_r \cdot C_q \cdot DA^{b_1} \cdot SL^{b_2} \cdot LK^{b_3} \cdot SO^{b_4}
\]

\[
Q_{10} = (54.1)(1.27)(3.82)^{.84}(1.99)^{.53}(3.17)^{-1.11}(2.05)^{-1.64} = 170
\]

\[
Q_{50} = (140)(1.28)(3.82)^{.79}(1.99)^{.46}(3.17)^{-1.10}(2.05)^{-1.70} = 382
\]

\[
Q_{100} = (198)(1.28)(3.82)^{.77}(1.99)^{.44}(3.17)^{-1.10}(2.05)^{-1.73} = 508
\]

\[
Q_{500} = (403)(1.29)(3.82)^{.75}(1.99)^{.39}(3.17)^{-1.10}(2.05)^{-1.78} = 946
\]

*Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS WRI Open-File Report 79-1293.*
ALLIGATOR CR - DISCHARGE

Point of Interest - A-B
Drainage Area At - = 6.93 sq. mi
Regression Constant (C_r) =
Geographic Zone Coeff. (C_g) =
Channel Slope = 1.83 ft/mi
Lake Area = 5.67 %
Soil Index (Erodibility) = 2.05 in

Regression Equation:

\[ Q = C_r \cdot C_g \cdot DA^{B_1} \cdot SL^{B_2} \cdot LK^{B_3} \cdot SO^{B_4} \]

\[ Q_{10} = (54.1) \cdot (1.27) \cdot (6.93)^{0.84} \cdot (1.83)^{0.53} \cdot (5.67)^{-0.11} \cdot (2.05)^{-0.64} = 251 \]

\[ Q_{50} = (140) \cdot (1.28) \cdot (6.93)^{0.79} \cdot (1.83)^{0.46} \cdot (5.67)^{-0.10} \cdot (2.05)^{-0.70} = 555 \]

\[ Q_{100} = (198) \cdot (1.28) \cdot (6.93)^{0.77} \cdot (1.83)^{0.44} \cdot (5.67)^{-0.10} \cdot (2.05)^{-0.73} = 781 \]

\[ Q_{500} = (403) \cdot (1.29) \cdot (6.93)^{0.75} \cdot (1.83)^{0.39} \cdot (5.67)^{-0.10} \cdot (2.05)^{-0.78} = 135 \]

* Discharge was determined using the regression equation from Regional Flood-Frequency Relations for West-Central Florida, USGS WRI Open-File Report 79-1393.
ALLIGATOR CR. - DISCHARGE

POINT OF INTEREST - A-C

DRAINAGE AREA AT - = 7.29 SQ. MI

REGRESSION CONSTANT (C_R)

GEOGRAPHIC ZONE COEFF. (C_G)

CHANNEL SLOPE = 1.92 FT/MI

LAKE AREA = 5.91 %

SOIL INDEX (INCHES) = 2.05 IN

REGRESSION EQUATION:

\[ Q_x = C_R \cdot C_G \cdot DA^b_1 \cdot SL \cdot LK \cdot SO^b_4 \]

\[ Q_{10} = (54.1) (1.27) (7.29) (1.72) (5.51) (2.05) = 254 \]

\[ Q_{50} = (140) (1.28) (7.29) (1.72) (5.51) (2.05) = 563 \]

\[ Q_{100} = (198) (1.28) (7.29) (1.72) (5.51) (2.05) = 942 \]

\[ Q_{500} = (403) (1.28) (7.29) (1.72) (5.51) (2.05) = 1373 \]

* DISCHARGE WAS DETERMINED USING THE REGRESSION EQUATION FROM REGIONAL FLOOD-FREQUENCY RELATIONS FOR WEST-CENTRAL FLORIDA. USGS WAI OPEN-FILE REPORT 79-1393.
Alligator CR - Discharge

Point of Interest - A-D

Drainage Area At - = 9,35 sq. mi
Regression Constant (CR)
Geographic Zone Coeff. (CG)
Channel Slope = 1.50 ft/mi
Lake Area = 4.68
Soil Index (Infiltration) = 2.05 in

Regression Equation:

\[ Q_x = C_R \cdot C_g \cdot D_A^{b_1} \cdot S_L^{b_2} \cdot L_K^{b_3} \cdot S_O^{b_4} \]

\[ Q_{10} = (54.1) \cdot (1.27) \cdot (9.25)^{0.53} \cdot (4.68)^{-1.11} \cdot (2.05)^{-0.64} = 297 \]
\[ Q_{50} = (140) \cdot (1.28) \cdot (9.35)^{0.79} \cdot (1.5)^{0.46} \cdot (4.68)^{-1.10} \cdot (2.05)^{-0.70} = 655 \]
\[ Q_{100} = (198) \cdot (1.28) \cdot (9.35)^{0.77} \cdot (1.5)^{0.44} \cdot (4.68)^{-1.10} \cdot (2.05)^{-0.73} = 860 \]
\[ Q_{500} = (403) \cdot (1.29) \cdot (9.35)^{0.75} \cdot (1.5)^{0.39} \cdot (4.68)^{-1.10} \cdot (2.05)^{-0.78} = 1594 \]

*Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS WAF Open-File Report 79-1393.*
Alligator Cr. - Discharge

Point of Interest - A-E

Drainage Area At - = 9.61 sq. mi

Regression Constant (Cr)

Geographic Zone Diff. (Cg)

Channel Slope = 1.39 ft/mi

Lake Area = 4.56 %

Soil Index (Infiltration) = 2.05 in

Regression Equation:

\[ Q_x = c_r \cdot c_g \cdot DA \cdot SL \cdot LK \cdot SD \]

\[ Q_{10} = (54.1)(1.27)(9.61)(1.39)(4.56)^{-1.1}(2.05)^{-0.64} = 29.4 \]

\[ Q_{50} = (140)(1.28)(9.61)(1.39)(4.56)(2.05) = 648 \]

\[ Q_{100} = (198)(1.28)(9.61)(1.39)(4.56)(2.05) = 855 \]

\[ Q_{500} = (408)(1.28)(9.61)(1.39)(4.56)(2.05) = 152 \]

* Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS Water Resources Investigations Report 79-1298.
### ILLIACATOR CREEK — DISCHARGE

<table>
<thead>
<tr>
<th>POINT OF INTEREST (SOMI)</th>
<th>DISCHARGE (CFS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10-YR</td>
</tr>
<tr>
<td>A-A</td>
<td>219</td>
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<tr>
<td>A-B</td>
<td>255</td>
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<td>A-C</td>
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<td>A-D</td>
<td>328</td>
</tr>
<tr>
<td>A-E</td>
<td>332</td>
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</table>

*DISCHARGE WAS DETERMINED USING THE REGRESSION EQUATION FOR REGION 'A' TAKEN FROM U.S.G.S. WATER RESOURCES INVESTIGATIONS 82-4012.*
## Alligator Creek - Drainage and Lake Area

<table>
<thead>
<tr>
<th>Point of Interest</th>
<th>Drainage Area (SQMi)</th>
<th>Lake Area (SQMi)</th>
<th>Percent of LA</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-A</td>
<td>3.52</td>
<td>3.82</td>
<td>0.121</td>
</tr>
<tr>
<td>A-B</td>
<td>3.11</td>
<td>6.93</td>
<td>0.272</td>
</tr>
<tr>
<td>A-C</td>
<td>0.36</td>
<td>7.29</td>
<td>0.009</td>
</tr>
<tr>
<td>A-D</td>
<td>2.04</td>
<td>9.35</td>
<td>0.086</td>
</tr>
<tr>
<td>A-E</td>
<td>0.26</td>
<td>9.61</td>
<td>0</td>
</tr>
</tbody>
</table>

* Drainage area and lake area were determined and taken from U.S.G.S. Quad Maps and Aerial Photos made by Sarasota County and South West Florida Water Management District.
Alligator Creek — Discharge

Point of Interest — A-A
DRAINAGE AREA AT
LAKE AREA = 3.17 %
CHANNEL SLOPE = 1.99 FT/MI

Regression Equation:

\[ Q_t = C \cdot DA \cdot SL \cdot (LK + 3.0)^{B_1} \cdot (LK + 3.0)^{B_2} \]

10-Year

\[ Q_{10} = 2.74 \cdot (3.82 \text{ sqmi}) \cdot (1.99 \text{ ft/mi}) \cdot (3.17 + 3) = 219 \text{ cfs} \]

50-Year

\[ Q_{50} = 4.96 \cdot (3.82 \text{ sqmi}) \cdot (1.99 \text{ ft/mi}) \cdot (3.17 + 3) = 477 \text{ cfs} \]

100-Year

\[ Q_{100} = 6.09 \cdot (3.82 \text{ sqmi}) \cdot (1.99 \text{ ft/mi}) \cdot (3.17 + 3) = 503 \text{ cfs} \]

500-Year

\[ Q_{500} = 9.85 \cdot (3.82 \text{ sqmi}) \cdot (1.99 \text{ ft/mi}) \cdot (3.17 + 3) = 791 \text{ cfs} \]
# RESULTS OF UNIT HYDROGRAPH

<table>
<thead>
<tr>
<th>Site of Interest</th>
<th>D.A.</th>
<th>Q10</th>
<th>Q22</th>
<th>Q50</th>
<th>Q100</th>
<th>Q1000</th>
<th>Precip</th>
</tr>
</thead>
<tbody>
<tr>
<td>W-H-2, NW of a.</td>
<td>112</td>
<td>(112)</td>
<td>142</td>
<td>(142)</td>
<td>162</td>
<td>(192)</td>
<td>(220)</td>
</tr>
<tr>
<td>W-B-2, NW of a.</td>
<td>0.24</td>
<td>(237)</td>
<td>183</td>
<td>(298)</td>
<td>208</td>
<td>(401)</td>
<td>(450)</td>
</tr>
<tr>
<td>W-C-1, NW of a.</td>
<td>0.15</td>
<td>(311)</td>
<td>93</td>
<td>(390)</td>
<td>106</td>
<td>(523)</td>
<td>(590)</td>
</tr>
<tr>
<td>W-D-1, MOUTH</td>
<td>0.15</td>
<td>(506)</td>
<td>297</td>
<td>(636)</td>
<td>337</td>
<td>(855)</td>
<td>(970)</td>
</tr>
<tr>
<td>Subject</td>
<td>% Development</td>
<td>Weighted Peak Rate (based on range)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>---------</td>
<td>--------------</td>
<td>-----------------------------------</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>W-1</td>
<td>30</td>
<td>210</td>
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<tr>
<td>W-2</td>
<td>90</td>
<td>330</td>
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<td>W-C</td>
<td>90</td>
<td>530</td>
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<td>W-L</td>
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<td>280</td>
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<td></td>
</tr>
</tbody>
</table>
Time of Concentration

Wood Ekt

\[ \frac{\sqrt{b} \times \frac{1}{2} + 7000/1.5 + 5000/0.3}{1800} = 6.5 \text{ sec} \]

\[ \frac{500/1 + 2000/0.5}{1800} = 2.00 \text{ HR} \]

\[ \frac{1200/1.5 + 2000/0.5}{1800} = 1.5 \text{ HR} \]

\[ \frac{1200/1 + 1000/1 + 2200/0.2}{1800} = 4.00 \text{ HR} \]
<table>
<thead>
<tr>
<th>Point of Interest</th>
<th>Channel Length (FR)</th>
<th>Velocity (FRS)</th>
<th>Lag time (FRS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WA</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>WA → WB</td>
<td>500</td>
<td>1.5</td>
<td>0.5</td>
</tr>
<tr>
<td>WB → WC</td>
<td>500</td>
<td>1.5</td>
<td>0.5</td>
</tr>
<tr>
<td>WC → WD</td>
<td>500</td>
<td>1.5</td>
<td>0.5</td>
</tr>
</tbody>
</table>
(13°: Improved)

Initial: 52 \text{ Hc}, Previous: 231 \text{ Hc}, Loss: 12 \text{ Hc}
CN: 77 \Rightarrow C = 2.97 \text{ Hc} = 0.0 \text{ R.0.0}\#
T_c = 2.14

(15°: Improved)

Initial: 20 \text{ Hc}, Previous: 126 \text{ Hc}, Loss: 0 \text{ Hc}
CN: 80 \Rightarrow S = 2.50 \text{ in} = 32.00 \text{ Hc}\#
T_c = 2.21

(18°: Improved)

Initial: 37 \text{ Hc}, Previous: 79 \text{ Hc}, Loss: 0 \text{ Hc}
CN: 80 \Rightarrow S = 2.50 \text{ in} = 20.00 \text{ Hc}\#
T_c = 2.65

(13°: Improved)

Initial: 92 \text{ Hc}, Previous: 615 \text{ Hc}, Loss: 16 \text{ Hc}
CN: 80 \Rightarrow S = 2.50 \text{ in} = 150.7 \text{ Ac}\#
T_c = 2.87
From: E. H. Arndt

W-E-A:

Improvises = 52.8 Acre

Previous = 210.9 Acre

Lake = 12 Acre

CN (initial) = 2.8

1/CN (initial) = 0.37

Kc = 0.37

S = 17.5

Tc = 0.37

W-E (Incremental):

Improvises = 53.8 Acre

Previous = 99.8 Acre

Lake = 0 Acre

CN (residual) = 0

1/CN (residual) = ∞

Kc = 1

S = 1.36

Tc = 1.36

W-C (Incremental):

Improvises = 26.8 Acre

Previous = 172.2 Acre

Lake = 0 Acre

CN (residual) = 0.25

1/CN (residual) = 4

Kc = 4

S = 1.36

Tc = 5.44

Project: 3000 ft

Sheets:

Work:

Job No.

Date:

3/26/84

E. H. Arndt

3/26/84

E. H. Arndt

W. E. J.
W.D. (Incremental):

Improving = 247.5 Ac, Previous = 459.7 Ac, Lake = 10 Ac

\( \text{SU} \times (20", \text{ min. avg. } 90\% \text{ residential }) \times \text{acre} = 8.8 \)

\( S = \frac{1000}{8.8} - 10 = 136 \text{ in} = 8.82 \text{ Ac} \)

\( \text{(Cumulative)} \)

Improving = 242.9 Ac, Previous = 977.7 Ac

Lake = 28 Ac

\( S = 239.7 \text{ Ac} - A \)

\( T_e = 2.85 + \frac{7300}{9200} = 2.87 \text{ HR} \)
WOODMERE CR - DISCHARGE

Point of Interest - W - A

Drainage Area At - = 0.43 SQ. MI

Regression Constant (CR)

Geographic Zone Coeff. (Cf)

Channel Slope = 2.24 FT/MI

Lake Area = 4.19 %

Soil Index (Infiltration) = 2.05 IN

Regression Equation:

\[ Q_x = C_R \cdot C_f \cdot DA^{B_1} \cdot SL \cdot LK^{B_3} \cdot SO^{B_4} \]

\[ Q_{10} = (54.1) \cdot (1.27) \cdot (0.43) \cdot (2.24)^{.53} \cdot (4.19)^{-.11} \cdot (2.05)^{-1.64} = 88 \]

\[ Q_{50} = (140) \cdot (1.28) \cdot (0.43) \cdot (2.24)^{.46} \cdot (4.19) \cdot (2.05) = 70 \]

\[ Q_{100} = (198) \cdot (1.28) \cdot (0.43)^{.77} \cdot (2.24)^{.44} \cdot (4.19)^{-.10} \cdot (2.05)^{-1.73} = 97 \]

\[ Q_{500} = (403) \cdot (1.29) \cdot (0.43)^{.75} \cdot (2.24)^{39} \cdot (4.19)^{-.10} \cdot (2.05)^{-1.98} = 187 \]

* DISCHARGE WAS DETERMINED USING THE REGRESSION EQUATION FROM REGIONAL FLOOD-FREQUENCY RELATIONS FOR WEST-CENTRAL FLORIDA. USGS WRI OPEN-FILE REPORT 79-1293.
Woodmere CR — Discharge

Point of Interest — W-B

Drainage Area At — = 0.67 sq. mi
Regression Constant (C_r) = 0.79
Geographic Zone Coeff. (C_g) = 0.69
Channel Slope = 2.41 ft/mi
Lake Area = 2.69 %
Soil Index (Infiltration) = 2.05 in

Regression Equation:

\[ Q_x = C_r \cdot C_g \cdot DA \cdot B_1 \cdot SL \cdot LK \cdot SD \]

\[ Q_{10} = (54.1) (1.27) (0.67) \cdot (2.41) \cdot (2.69) \cdot (2.05) = 44 \]
\[ Q_{50} = (140) (1.28) (0.67) \cdot (2.41) \cdot (2.69) \cdot (2.05) = 107 \]
\[ Q_{100} = (198) (1.28) (0.67) \cdot (2.41) \cdot (2.69) \cdot (2.05) = 147 \]
\[ Q_{500} = (403) (1.29) (0.67) \cdot (2.41) \cdot (2.69) \cdot (2.05) = 286 \]

*Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. USGS WAI Open-File Report 79-1893.*
WOODMERE CR - DISCHARGE

POINT OF INTEREST - W-C

DRAINAGE AREA AT - = 0.83 SQ. MI

REGRESSION CONSTANT (Cp)

GEOGRAPHIC ZONE COEFF. (CG)

CHANNEL SLOPE = 2.47 FT/MI

LAKE AREA = 2.2%

SOIL INDEX (Immiutav) = 2.05 IN

REGRESSION EQUATION:

\[ Q_x = C_p \cdot C_g \cdot DA \cdot SL \cdot LK \cdot SD \]

\[ Q_{10} = (54.1) \cdot (1.27) \cdot (0.82) \cdot (2.47) \cdot (2.2) \cdot (2.05) = 54 \]

\[ Q_{50} = (140) \cdot (1.28) \cdot (0.82) \cdot (2.47) \cdot (2.2) \cdot (2.05) = 130 \]

\[ Q_{100} = (198) \cdot (1.28) \cdot (0.82) \cdot (2.47) \cdot (2.2) \cdot (2.05) = 177 \]

\[ Q_{500} = (403) \cdot (1.29) \cdot (0.82) \cdot (2.47) \cdot (2.2) \cdot (2.05) = 337 \]

* DISCHARGE WAS DETERMINED USING THE REGRESSION EQUATION FROM REGIONAL FLOOD-FREQUENCY RELATIONS FOR WEST-CENTRAL FLORIDA. USGS WAI OPEN-FILE REPORT 79-1293.
WODMERE CR - DISCHARGE

Point of Interest  -  W-D

Drainage Area At  -  =  1.95 SQ. M1

Regression Constant (CR)

Geographic Zone Coeff. (CG)

Channel Slope  =  2.55 FT/MI

Lake Area  =  2.21  %

Soil Index (Imitation)  =  2.05  %

Regression Equation:

\[ Q_x = CR \cdot CG \cdot DA^{B1} \cdot SL \cdot LK^{B3} \cdot SO^{B4} \]

\[ Q_{10} = (54.1) (1.27) (1.95) \cdot (2.55) \cdot (2.21) \cdot (2.05) = 115 \]

\[ Q_{50} = (140) (1.28) (1.95) \cdot (2.55) \cdot (2.21) \cdot (2.05) = 262 \]

\[ Q_{100} = (198) (1.28) (1.95) \cdot (2.55) \cdot (2.21) \cdot (2.05) = 352 \]

\[ Q_{500} = (403) (1.29) (1.95) \cdot (2.55) \cdot (2.21) \cdot (2.05) = 652 \]

* Discharge was determined using the regression equation from regional flood-frequency relations for West-Central Florida. U.S.G.S. WAI OPEN-FILE REPORT 79-1293.
### Woodmere Creek - Discharge

<table>
<thead>
<tr>
<th>POINT OF INTEREST (SQMI)</th>
<th>DISCHARGE (C CRS)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10 - YR</td>
</tr>
<tr>
<td>W-A 0.43</td>
<td>43</td>
</tr>
<tr>
<td>W-B 0.67</td>
<td>71</td>
</tr>
<tr>
<td>W-C 0.82</td>
<td>88</td>
</tr>
<tr>
<td>W-D 1.95</td>
<td>164</td>
</tr>
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</table>

*Discharge was determined using the regression equation for region 'A' taken from U.S.G.S. Water Resources Investigations B2 - 4012.*
**WOODMERE CREEK - DRAINAGE AND LAKE AREA**

<table>
<thead>
<tr>
<th>POINT OF INTEREST</th>
<th>DRAINAGE AREA (SQMI)</th>
<th>LAKE AREA (SQMI)</th>
<th>PERCENT OF L.A</th>
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</thead>
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<tr>
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<td>INCREM.</td>
<td>ACCUM.</td>
<td>INCREM.</td>
</tr>
<tr>
<td>W-A</td>
<td>0.43</td>
<td>0.43</td>
<td>0.013</td>
</tr>
<tr>
<td>W-B</td>
<td>0.24</td>
<td>0.67</td>
<td>0</td>
</tr>
<tr>
<td>W-C</td>
<td>0.15</td>
<td>0.82</td>
<td>0</td>
</tr>
<tr>
<td>W-D</td>
<td>1.13</td>
<td>1.95</td>
<td>0.025</td>
</tr>
</tbody>
</table>

* Drainage area and lake area were determined and taken from U.S.G.S. quad maps and aerial photos made by Sarasota County and South West Florida Water Management District.
Woolf PPP Check - Discharge

Point of Interest - W-A

Drainage Area at = 0.43 SQMI
Lake Area = 4.19%
Channel Slope = 2.24 FT/MI

Regression Equation: 
\[ Q_T = C \cdot DA \cdot SL \cdot (Lk + 3.0)^B \]

10 - YEAR
\[ Q_{10} = 2.74 \cdot (0.43 \text{ SQMI}) \cdot (2.24 \text{ FT/MI}) \cdot (4.19 + 3) = 43 \text{ CF} \]

50 - YEAR
\[ Q_{50} = 4.96 \cdot (0.43 \text{ SQMI}) \cdot (2.24 \text{ FT/MI}) \cdot (4.19 + 3) = 83 \text{ CF} \]

100 - YEAR
\[ Q_{100} = 6.09 \cdot (0.43 \text{ SQMI}) \cdot (2.24 \text{ FT/MI}) \cdot (4.19 + 3) = 104 \text{ CF} \]

500 - YEAR
\[ Q_{500} = 9.85 \cdot (0.43 \text{ SQMI}) \cdot (2.24 \text{ FT/MI}) \cdot (4.19 + 3) = 169 \text{ CF} \]
WOODMERE CREEK — DISCHARGE

Point of Interest - W-B

Drainage Area at W-B = 0.67 sq mi
Lake Area = 2.69 %
Channel Slope = 2.41 ft/mi

Regression Equation: \( Q_T = C \cdot D_A^b \cdot S_L^a \cdot (LK + 3.0)^b \)

10 - YEAR
\[ Q_{10} = 2.74 (0.67 \text{ sq mi}) \cdot (2.41 \text{ ft/mi}) \cdot (2.69 + 3) = 71 \text{ cf} \]

50 - YEAR
\[ Q_{50} = 4.96 (0.67 \text{ sq mi}) \cdot (2.41 \text{ ft/mi}) \cdot (2.69 + 3) = 134 \text{ cf} \]

100 - YEAR
\[ Q_{100} = 6.09 (0.67 \text{ sq mi}) \cdot (2.41 \text{ ft/mi}) \cdot (2.69 + 3) = 169 \text{ cf} \]

500 - YEAR
\[ Q_{500} = 9.85 (0.67 \text{ sq mi}) \cdot (2.41 \text{ ft/mi}) \cdot (2.69 + 3) = 271 \text{ cf} \]
WOODMERE CREEK — Discharge

Point of Interest — W-C

DRAINAGE AREA AT
LAKE AREA = 2.20  %
CHANNEL SLOPE = 2.47  FT/MI

REGRESSION EQUATION:  \( Q_T = C \cdot DA^B \cdot \left( LK + 3.0 \right)^B \)

10 - YEAR
\[
Q_{10} = 2.74 \left( 0.82 \text{ SQMI} \right) \cdot (2.47 \text{ FT/MI}) \cdot (2.20 + 3) = 88 \text{ CF}
\]

50 - YEAR
\[
Q_{50} = 4.96 \left( 0.82 \text{ SQMI} \right) \cdot (2.47 \text{ FT/MI}) \cdot (2.20 + 3) = 167 \text{ CF}
\]

100 - YEAR
\[
Q_{100} = 6.09 \left( 0.82 \text{ SQMI} \right) \cdot (2.47 \text{ FT/MI}) \cdot (2.20 + 3) = 208 \text{ CF}
\]

500 - YEAR
\[
Q_{500} = 9.85 \left( 0.82 \text{ SQMI} \right) \cdot (2.47 \text{ FT/MI}) \cdot (2.20 + 3) = 332 \text{ CF}
\]
WOODMORE CREEK— Discharge

Point of Interest - N-D

Drainage Area at

Lake Area = 2.21

Channel Slope = 2.53

Regression Equation: \( Q_T = C \cdot D_A \cdot S_L \cdot (Lk + 3.0) \)

10 - Year

\[
Q_{10} = 274 \cdot (1.95) \cdot (2.53) \cdot (2.21 + 3) = 164 \text{ cu ft}
\]

50 - Year

\[
Q_{50} = 496 \cdot (1.95) \cdot (2.53) \cdot (2.21 + 3) = 307 \text{ cu ft}
\]

100 - Year

\[
Q_{100} = 609 \cdot (1.95) \cdot (2.53) \cdot (2.21 + 3) = 379 \text{ cu ft}
\]

500 - Year

\[
Q_{500} = 985 \cdot (1.95) \cdot (2.53) \cdot (2.21 + 3) = 594 \text{ cu ft}
\]
Woolmer Creek - Channel Slope

Point of Interest - W-A

Channel Length = 4736 ft x 1 mi/5280 x 75% = 0.67 mi
10% of Channel Length = 4736 ft x 10% = 474 ft
15% of Channel Length = 4736 ft x 15% = 710 ft
Channel Slope

\[
SL = \frac{(7.5 - 6.9)}{0.67 \text{ mi}} = \frac{1.5 \text{ ft}}{0.67 \text{ mi}} = 2.24 \text{ ft/mi}
\]

Point of Interest - W-B

Channel Length = 7592 ft x 1 mi/5280 x 75% = 1.08 mi
10% of Channel Length = 7592 ft x 10% = 759 ft
15% of Channel Length = 7592 ft x 15% = 1139 ft
Channel Slope

\[
SL = \frac{(7.5 - 4.9)}{1.08 \text{ mi}} = \frac{2.6 \text{ ft}}{1.08 \text{ mi}} = 2.41 \text{ ft/mi}
\]

Point of Interest - W-C

Channel Length = 10,584 ft x 1 mi/5280 x 75% = 1.50 mi
10% of Channel Length = 10,584 ft x 10% = 1058 ft
15% of Channel Length = 10,584 ft x 15% = 1583 ft
Channel Slope

\[
SL = \frac{(7.5 - 3.8)}{1.50 \text{ mi}} = \frac{3.7 \text{ ft}}{1.50 \text{ mi}} = 2.47 \text{ ft/mi}
\]
WOODMERE CREEK - CHANNEL SLOPE

Point of Interest - W-D

CHANNEL LENGTH = 12,566 ft x 1 mi / 5,280' x 75% = 1.78 mi
10% of CHANNEL LENGTH = 12,566 ft x 10% = 1257 ft
15% of CHANNEL LENGTH = 12,566 ft x 15% = 1885 ft

CHANNEL SLOPE

\[ SL = \frac{(7.5 - 3) ft}{1.78 \text{ mi}} = \frac{4.5 ft}{1.78 \text{ mi}} = 2.52 \text{ ft/mi} \]

Point of Interest -

CHANNEL LENGTH = x 1 mi / 5,280' x 75% = Mi
10% of CHANNEL LENGTH = x 10% = FT
15% of CHANNEL LENGTH = x 15% = FT

CHANNEL SLOPE

\[ SL = \frac{\text{ }}{\text{mi}} = \frac{\text{ }}{\text{mi}} = \text{ FT/mi} \]

Point of Interest -

CHANNEL LENGTH = x 1 mi / 5,280' x 75% = Mi
10% of CHANNEL LENGTH = x 10% = FT
15% of CHANNEL LENGTH = x 15% = FT

CHANNEL SLOPE

\[ SL = \frac{\text{ }}{\text{mi}} = \frac{\text{ }}{\text{mi}} = \text{ FT/mi} \]
Comparisons of Discharges (UH vs CDM)
Results from Regression Equation (USGS 79-799)
for Sarasota County (100 yr Frequency)

- Phillippi Creek
- Mather Creek
- Curry Creek
- Hatchett Creek
- Alligator Creek
- Woodmore Creek