For final computations—see page 21.
Check computations

Paper on "A Digital Model Applied to Ground-water Recharge and Management" By Lee, Quay and Daniele.

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\[ N = 10,000 \text{ ft}^3 \quad K = 1.50 \text{ ft/sec} \]

<table>
<thead>
<tr>
<th>Month</th>
<th>Flow Volume A.F (G)</th>
<th>Flow Volume (ft³/sec)</th>
<th>( (N/K) \cdot \left( \frac{T}{4} \right) )</th>
<th>( \left( \frac{T}{Q} \right) )</th>
<th>( \Delta \left( \frac{T}{Q} \right) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>1126</td>
<td>1806.98</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Oct</td>
<td>3273</td>
<td>564.820</td>
<td>2.518327</td>
<td>0.00037</td>
<td>0.00037</td>
</tr>
<tr>
<td>Nov</td>
<td>2877.7</td>
<td>4768.73</td>
<td>1.78072</td>
<td>0.01179</td>
<td>0.01147</td>
</tr>
<tr>
<td>Dec</td>
<td>50.6</td>
<td>0.838711</td>
<td>1.45396</td>
<td>0.01112</td>
<td>0.01117</td>
</tr>
<tr>
<td>Jan 1975</td>
<td>0.0</td>
<td>0.0</td>
<td>1.12623</td>
<td>0.01122</td>
<td>0.01147</td>
</tr>
<tr>
<td>Feb</td>
<td>0.0</td>
<td>0.0</td>
<td>1.02818</td>
<td>0.03474</td>
<td>0.03474</td>
</tr>
<tr>
<td>Mar</td>
<td>0.0</td>
<td>0.0</td>
<td>0.95184</td>
<td>0.01724</td>
<td>0.03221</td>
</tr>
<tr>
<td>April</td>
<td>248.2</td>
<td>4.11400</td>
<td>0.89026</td>
<td>0.02796</td>
<td>0.02969</td>
</tr>
<tr>
<td>May</td>
<td>157.3</td>
<td>2.60730</td>
<td>0.83944</td>
<td>0.02717</td>
<td>0.02721</td>
</tr>
<tr>
<td>June</td>
<td>445.5</td>
<td>7.71582</td>
<td>0.79636</td>
<td>0.0207</td>
<td>0.01490</td>
</tr>
<tr>
<td>Total</td>
<td>1651.9</td>
<td></td>
<td>7.15 + 7.15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

First image in the barrier \( x = 10,000 + 2(16,000-10,000) = 22,000 \text{ ft} \)

<table>
<thead>
<tr>
<th>Month</th>
<th>Flow Volume A.F (G)</th>
<th>Flow Volume (ft³/sec)</th>
<th>( (N/K) \cdot \left( \frac{T}{4} \right) )</th>
<th>( \left( \frac{T}{Q} \right) )</th>
<th>( \Delta \left( \frac{T}{Q} \right) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>1.86638</td>
<td>5.54031</td>
<td>0.00000</td>
<td>0.00000</td>
<td>0.00000</td>
</tr>
<tr>
<td>Oct</td>
<td>5.64820</td>
<td>3.91759</td>
<td>0.00000</td>
<td>0.00000</td>
<td>0.00000</td>
</tr>
<tr>
<td>Nov</td>
<td>4.76873</td>
<td>3.19870</td>
<td>0.00000</td>
<td>0.00000</td>
<td>0.00000</td>
</tr>
<tr>
<td>Dec</td>
<td>0.83871</td>
<td>2.77016</td>
<td>0.00009</td>
<td>0.00970</td>
<td>0.05086</td>
</tr>
<tr>
<td>Jan 1975</td>
<td>0.0</td>
<td>2.47777</td>
<td>0.00046</td>
<td>0.00037</td>
<td>0.15066</td>
</tr>
<tr>
<td>Feb</td>
<td>0.0</td>
<td>2.24192</td>
<td>0.00138</td>
<td>0.00992</td>
<td>0.02520</td>
</tr>
<tr>
<td>Mar</td>
<td>0.0</td>
<td>2.09404</td>
<td>0.00305</td>
<td>0.00167</td>
<td>0.35988</td>
</tr>
<tr>
<td>Apr</td>
<td>4.11400</td>
<td>1.95880</td>
<td>0.00560</td>
<td>0.01255</td>
<td>0.42102</td>
</tr>
<tr>
<td>May</td>
<td>2.60730</td>
<td>1.84777</td>
<td>0.00901</td>
<td>0.00941</td>
<td>0.47716</td>
</tr>
<tr>
<td>June</td>
<td>7.71582</td>
<td>1.75200</td>
<td>0.01322</td>
<td>0.00421</td>
<td>0.52856</td>
</tr>
</tbody>
</table>

Notes: 1 See \( \Delta \) for 1 mo is \( 60.33058 \) (A.F/mo) \( H = 1.5 \text{ ft/sec} \).

I mo is \( 30.41667 \) days or \( 2628000 \text{ sec} \)
<table>
<thead>
<tr>
<th>Time Step (End of mo)</th>
<th>(148.5)</th>
<th>( \frac{2}{115} )</th>
<th>(( \frac{a}{Q} ))</th>
<th>( \Delta (\frac{a}{Q}) )</th>
<th>( \frac{\Delta (\frac{a}{Q})}{2} )</th>
<th>( \Delta (\frac{b}{Q}) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>2.51832</td>
<td>99.962</td>
<td>0.0038</td>
<td>0.0038</td>
<td>0.0075</td>
<td>0.0076</td>
</tr>
<tr>
<td>Oct.</td>
<td>1.79072</td>
<td>98.820</td>
<td>0.01174</td>
<td>0.01141</td>
<td>0.02359</td>
<td>0.02284</td>
</tr>
<tr>
<td>Nov.</td>
<td>1.45394</td>
<td>96.043</td>
<td>0.03974</td>
<td>0.02797</td>
<td>0.07952</td>
<td>0.07573</td>
</tr>
<tr>
<td>Dec.</td>
<td>1.25916</td>
<td>92.504</td>
<td>0.07496</td>
<td>0.03520</td>
<td>0.15010</td>
<td>0.07058</td>
</tr>
<tr>
<td>Jan. 1975</td>
<td>1.12623</td>
<td>88.878</td>
<td>0.1122</td>
<td>0.06246</td>
<td>0.22386</td>
<td>0.1326</td>
</tr>
<tr>
<td>Feb.</td>
<td>1.02810</td>
<td>85.404</td>
<td>0.14596</td>
<td>0.03474</td>
<td>0.29468</td>
<td>0.07132</td>
</tr>
<tr>
<td>Mar.</td>
<td>0.95184</td>
<td>82.273</td>
<td>0.17827</td>
<td>0.03231</td>
<td>0.36266</td>
<td>0.06798</td>
</tr>
<tr>
<td>Apr.</td>
<td>0.89036</td>
<td>79.202</td>
<td>0.20798</td>
<td>0.02971</td>
<td>0.42714</td>
<td>0.06450</td>
</tr>
<tr>
<td>May.</td>
<td>0.83944</td>
<td>76.483</td>
<td>0.23517</td>
<td>0.02719</td>
<td>0.48836</td>
<td>0.06120</td>
</tr>
<tr>
<td>June. 1975</td>
<td>0.77636</td>
<td>73.971</td>
<td>0.26087</td>
<td>0.02490</td>
<td>0.54658</td>
<td>0.05822</td>
</tr>
</tbody>
</table>

**Note:** The factors \( \Delta (\frac{a}{Q}) \) should have been used for the computations at left and below. The volume remaining will be \( \frac{324.346 - 162.173}{2} = 162.173 \text{ AF} \). The broken line curve area would be \( (162.173/2) - 0.006 - 0.06570 = \frac{129.445}{2} \text{ AF} \).
Estimate of the effect of the Pruitt drain.

As a basis for computation, the Pruitt drain will be represented by a straight line, at right angles to the direction of river flow, and extending across the middle of the recharge area from the river to the sand hill ditch, a distance of 10,000 ft.

The water table rise at the middle of the idealized drainage ditch will be computed and this rise will be used as an average for the entire ditch. The ditch flow will then be estimated by use of the line source equation previously described. In this case the ground water flow that feeds the Pruitt drain will move in a direction parallel to the river. The length of the sand hill ditch is 24,000 feet. From the state engineer's 1/24,000 scale photographic map the water table rise $h$, at a distance $X$, here 5000 ft, due to an increase of $(H^2/2g)$ is given by

$$h = \frac{144T^2}{2TKE} \left(\frac{X}{144T}\right) \int_{0}^{1} e^{-u^2} du$$

For one month.

$$\frac{144T^2}{144T} = \frac{144(1.5)(2628000)}{144(1.5)(2628000)} = 1.531,633 = 7038.225$$

$$\frac{X}{144T} = \frac{5000}{144(1.5)(2628000)} = 3970.894 = 1.259162$$

Length of the sand hill ditch 24,000 ft.

1 Acre foot per month is equivalent to 43560 ft$^3$ per month or

$$\frac{43560}{2628000} = 0.0165753 \text{ ft}^3/\text{sec}.$$  

For 1 Acre foot per month

$$g = \frac{0.0165753}{24000} = 0.690638 \times 10^{-6} \text{ ft}^3/\text{sec}.$$  

$$K = \frac{5000}{14400000} = 0.00347222$$

$$TKE = \frac{14400000}{14400000} = 1.000000$$

$$KD = \frac{144T^2}{14400000} = \frac{7038.225}{1.611637} = 4367.1288$$
Rise of the water table, at the middle of the recharge area, at the end of June 1975. \( t = 5000 \text{ ft} \)

<table>
<thead>
<tr>
<th>Time</th>
<th>( H )</th>
<th>( K )</th>
<th>( \frac{H}{K} )</th>
<th>( \Delta \frac{H}{K} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>1708.2</td>
<td>125916</td>
<td>0.29730</td>
<td>263.47476</td>
</tr>
<tr>
<td>Oct</td>
<td>99.53</td>
<td>0.89036</td>
<td>139714</td>
<td>1238.198</td>
</tr>
<tr>
<td>Nov</td>
<td>1219.06</td>
<td>0.724778</td>
<td>2412.259</td>
<td>1174.351</td>
</tr>
<tr>
<td>Dec</td>
<td>14076.4</td>
<td>0.629581</td>
<td>2460.681</td>
<td>1194.142</td>
</tr>
<tr>
<td>Jan 1975</td>
<td>15788.0</td>
<td>0.563114</td>
<td>2538.528</td>
<td>1165.709</td>
</tr>
<tr>
<td>Feb</td>
<td>17242.1</td>
<td>0.514050</td>
<td>2665.435</td>
<td>1124.677</td>
</tr>
<tr>
<td>March</td>
<td>18621.4</td>
<td>0.479519</td>
<td>2789.31</td>
<td>1097.818</td>
</tr>
<tr>
<td>April</td>
<td>19907.1</td>
<td>0.445181</td>
<td>2805.101</td>
<td>1055.212</td>
</tr>
<tr>
<td>May</td>
<td>21114.7</td>
<td>0.419720</td>
<td>2906.733</td>
<td>1016.334</td>
</tr>
<tr>
<td>June 1975</td>
<td>22252.8</td>
<td>0.398182</td>
<td>3098.724</td>
<td>974.714</td>
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</table>

<table>
<thead>
<tr>
<th>Inflow</th>
<th>WT. Rise at 5000 ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>112.6</td>
</tr>
<tr>
<td>Oct</td>
<td>329.9</td>
</tr>
<tr>
<td>Nov</td>
<td>287.7</td>
</tr>
<tr>
<td>Dec</td>
<td>50.6</td>
</tr>
<tr>
<td>Jan 1975</td>
<td>0.0</td>
</tr>
<tr>
<td>Feb</td>
<td>0.0</td>
</tr>
<tr>
<td>Mar</td>
<td>0.0</td>
</tr>
<tr>
<td>Apr</td>
<td>248.2</td>
</tr>
<tr>
<td>May</td>
<td>157.3</td>
</tr>
<tr>
<td>June 1975</td>
<td>465.5</td>
</tr>
</tbody>
</table>

\[ \text{Check Computation} \]

\[ \text{Correction. Figures in this column should be divided by } 1.611_537 \]
First image in the barrier \( \frac{x}{\text{kF/mo}} = 5000 + 6000 + 6000 = 17000 \text{F/mo} \)

\[ x = 1.5 \times \frac{\text{F}}{\text{m}^2} \]

\[ \frac{\text{F}}{\text{m}^2} = \frac{17000}{160} = 1062.5 \text{F/m}^2 \]

\[ \frac{\text{F}}{\text{m}^2} = 4.28115 \]

\[ \Delta (\frac{h}{q}) \]

<table>
<thead>
<tr>
<th>Time</th>
<th>End of month</th>
<th>A.F.</th>
<th>Delta (h/q) (Rev)</th>
<th>WTR (in.) (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 74</td>
<td>4267.129</td>
<td>4.28115</td>
<td>0.0000000</td>
<td>0.0000000</td>
</tr>
<tr>
<td>Oct</td>
<td>3.027231</td>
<td>0.0000000</td>
<td>0.0000000</td>
<td>0.0000000</td>
</tr>
<tr>
<td>Nov</td>
<td>756.409</td>
<td>2.471726</td>
<td>0.000060</td>
<td>1.121780</td>
</tr>
<tr>
<td>Dec 1974</td>
<td>8734.26</td>
<td>2.140576</td>
<td>0.000410</td>
<td>7.665502</td>
</tr>
<tr>
<td>Jan 75</td>
<td>9765.197</td>
<td>1.94587</td>
<td>0.0013635</td>
<td>1.240057</td>
</tr>
<tr>
<td>Feb</td>
<td>10667.127</td>
<td>1.747773</td>
<td>0.00315</td>
<td>5.888233</td>
</tr>
<tr>
<td>Mar</td>
<td>11554.337</td>
<td>1.618123</td>
<td>0.005866</td>
<td>10.67272</td>
</tr>
<tr>
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<td>12352.106</td>
<td>1.513616</td>
<td>0.00957</td>
<td>17.892402</td>
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<tr>
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<td>1.427005</td>
<td>0.011210</td>
<td>25.667510</td>
</tr>
<tr>
<td>June 1975</td>
<td>13810.974</td>
<td>1.353819</td>
<td>0.019709</td>
<td>36.845410</td>
</tr>
</tbody>
</table>

Note \[ \frac{\text{A.F.}}{\text{m}^2} = \frac{h}{q} \]

\[ \frac{\text{A.F.}}{\text{m}^2} = \frac{43560}{2428000} = 0.000018 \]

\[ \frac{\text{f}^2}{\text{m}^2} = \frac{43560}{(2428000)(24000)} \]

\[ 1(\text{AF/mo}) = 0.0165753 \text{ F/sec} = \frac{0.0165753}{24000} = 0.0165753 \times 10^{-6} \text{ F/m}^2 \]
Calculation of the computations for seepage losses from the Sand Hill Ditch recharge reaching the South Platte River by the end of June 1975. Use the State Engineer zone tables and postulate that the Sand Hill Ditch is at the middle of Zone C. This would put the barrier at a distance of \( \frac{8}{5} \times 10000 = 16000 \) feet from the river.

<table>
<thead>
<tr>
<th>Time (end of month)</th>
<th>DFE (15)</th>
<th>(B/Q)</th>
<th>( \Delta )</th>
<th>Flow A/F</th>
<th>Sum of products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>0.039496</td>
<td>0.98091</td>
<td>0.000969</td>
<td>112.6</td>
<td>0.109</td>
</tr>
<tr>
<td>Oct.</td>
<td>0.076992</td>
<td>0.15618</td>
<td>0.014649</td>
<td>329.7</td>
<td>1.969</td>
</tr>
<tr>
<td>Nov</td>
<td>0.116388</td>
<td>0.17418</td>
<td>0.029792</td>
<td>287.7</td>
<td>2.467</td>
</tr>
<tr>
<td>Dec</td>
<td>0.153844</td>
<td>0.18238</td>
<td>0.035824</td>
<td>50.6</td>
<td>18.128</td>
</tr>
<tr>
<td>Jan. 1975</td>
<td>0.192480</td>
<td>0.11782</td>
<td>0.036570</td>
<td>0.00</td>
<td>252.51</td>
</tr>
<tr>
<td>Feb.</td>
<td>0.230977</td>
<td>0.15322</td>
<td>0.035412</td>
<td>0.00</td>
<td>27.867</td>
</tr>
<tr>
<td>Mar.</td>
<td>0.269473</td>
<td>0.18692</td>
<td>0.033690</td>
<td>0.00</td>
<td>27.810</td>
</tr>
<tr>
<td>April</td>
<td>0.307969</td>
<td>0.21886</td>
<td>0.031752</td>
<td>248.2</td>
<td>26.971</td>
</tr>
<tr>
<td>May</td>
<td>0.346465</td>
<td>0.24919</td>
<td>0.030332</td>
<td>157.3</td>
<td>29.229</td>
</tr>
<tr>
<td>June</td>
<td>0.384961</td>
<td>0.27807</td>
<td>0.028878</td>
<td>46.55</td>
<td>34.307</td>
</tr>
</tbody>
</table>

\[
\frac{(200 \times 128) \times 1}{165.18} = 0.889223 \text{ Remaining}
\]

\[
\frac{182.974}{165.18} = 0.11077 \text{ gone}
\]

\[
R & G July 22, 1980
\]

\[
R & G July 3, 1980
\]

\[
L = (2 \times 1000) = 32000 \text{ ft} \quad \text{and} \quad \text{for one month,} \quad \frac{1}{1024} = 0.014648 \text{ ft}^2 \text{ sec.}
\]

\[
\phi / L^2 = (1.5 / 32000) = (1.5 / 1024) \quad \text{and} \quad \phi = 0.014648 \times 10 \quad \text{in} \quad \phi / L^2 = (10 / 2628000) = 0.003849 / 600^2
\]
Check of the computer AC report losses

\[ L = 3.00 \text{ ft}^2/\text{sec} \]

Use the State Engineer's zone tables, and perform that the head hill deluge is at the middle of Zone C.

(The water put the barriers at a distance of 1600 feet from the river.)

<table>
<thead>
<tr>
<th>Time (end of month)</th>
<th>(Qt/\text{ft})^2</th>
<th>(\lambda)</th>
<th>(\text{Flow} )</th>
<th>Sum of prod.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>0.07122</td>
<td>0.05626</td>
<td>0.015620</td>
<td>112.16</td>
</tr>
<tr>
<td>Oct</td>
<td>0.05398</td>
<td>0.081038</td>
<td>0.065619</td>
<td>329.99</td>
</tr>
<tr>
<td>Nov</td>
<td>0.023098</td>
<td>0.153219</td>
<td>0.072176</td>
<td>287.73</td>
</tr>
<tr>
<td>Dec 1974</td>
<td>0.030977</td>
<td>0.218862</td>
<td>0.065522</td>
<td>50.50</td>
</tr>
<tr>
<td>Jan 1975</td>
<td>0.033496</td>
<td>0.278072</td>
<td>0.059210</td>
<td>0.00</td>
</tr>
<tr>
<td>Feb</td>
<td>0.041953</td>
<td>0.331967</td>
<td>0.059210</td>
<td>0.00</td>
</tr>
<tr>
<td>Mar</td>
<td>0.053894</td>
<td>0.381378</td>
<td>0.049426</td>
<td>0.00</td>
</tr>
<tr>
<td>Apr</td>
<td>0.061595</td>
<td>0.449733</td>
<td>0.045540</td>
<td>248.27</td>
</tr>
<tr>
<td>May</td>
<td>0.069293</td>
<td>0.469004</td>
<td>0.042071</td>
<td>157.30</td>
</tr>
<tr>
<td>June 1975</td>
<td>0.076992</td>
<td>0.507938</td>
<td>0.038934</td>
<td>465.5</td>
</tr>
</tbody>
</table>

\[ \text{Sum of prod.} = \frac{413.085}{2} = 378.406 \text{ A.F.} \]

\[ \frac{378.406}{165.18} = 0.22908 \text{ Zone} \quad 0.77091 \text{ Remaining} \]

R.E.G. July 26, 1980

\[ L = (2)(16,000) = 32,000 \text{ A.F.} \quad \lambda = 3.0 \text{ ft}^2/\text{sec} \]

2628 on month \( (\lambda/\text{ft}^2) = (3200/32000) = 0.0029297 \text{ (10) } \]

For one month \( (\lambda/\text{ft}^2) = 0.0029297 \text{ (10) } (2628000) = 0.0076992 \)
Sand-Hill Ditch recharge computation using the State Engineer's zone tables.

<table>
<thead>
<tr>
<th>Month</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000</td>
<td>T</td>
</tr>
<tr>
<td>0000</td>
<td>+</td>
</tr>
<tr>
<td>0109</td>
<td>+</td>
</tr>
<tr>
<td>1969</td>
<td>+</td>
</tr>
<tr>
<td>8467</td>
<td>+</td>
</tr>
<tr>
<td>18128</td>
<td>+</td>
</tr>
<tr>
<td>25251</td>
<td>+</td>
</tr>
<tr>
<td>27867</td>
<td>+</td>
</tr>
<tr>
<td>27810</td>
<td>+</td>
</tr>
<tr>
<td>26991</td>
<td>+</td>
</tr>
<tr>
<td>23229</td>
<td>+</td>
</tr>
<tr>
<td>34307</td>
<td>+</td>
</tr>
<tr>
<td>34307</td>
<td>+</td>
</tr>
<tr>
<td>36594</td>
<td>+</td>
</tr>
</tbody>
</table>

Sum of end of Month of Values = 200.128 T

\[ 200.128 \times 200 = 400256 T \]

\[ 400256 + \]

\[ 0000 - \]

\[ 34307 - \]

\[ 365949 T \]

Approximate sq. ft = 182974 T AF.
<table>
<thead>
<tr>
<th>Time</th>
<th>(\frac{M}{(14+T)})</th>
<th>(f)</th>
<th>(\Delta f)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>5.54031</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Nov</td>
<td>3.91759</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Dec 1974</td>
<td>2.77016</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
<tr>
<td>Jan 1975</td>
<td>2.47770</td>
<td>0.0046</td>
<td>0.0046</td>
</tr>
<tr>
<td>Feb</td>
<td>2.26182</td>
<td>0.0138</td>
<td>0.0138</td>
</tr>
<tr>
<td>Mar</td>
<td>2.09404</td>
<td>0.0306</td>
<td>0.0306</td>
</tr>
<tr>
<td>Apr</td>
<td>1.95880</td>
<td>0.0560</td>
<td>0.0560</td>
</tr>
<tr>
<td>May</td>
<td>1.84677</td>
<td>0.0901</td>
<td>0.0901</td>
</tr>
<tr>
<td>June 1975</td>
<td>1.75200</td>
<td>0.1322</td>
<td>0.1322</td>
</tr>
</tbody>
</table>

\[\frac{(6.13111\times2)}{2} - 2.4148 = 4.9237\ \text{AF}\]

From page 2
\[4.9237\]
\[134.369\ \text{AF, Lost}\]
\[134.369 - 0.08134 = 134.28766\]

0.918 retained at the end of June
From page 44, for comparison
0.889 retained at the end of June.
\[
\frac{q}{Q} = 1 - \frac{2}{\pi} \int_0^\infty e^{-u^2} \, du
\]

Then by integration with respect to \( t \)

\[
\frac{q}{Q} = \left[ 1 - \frac{2}{\pi} \int_0^\infty e^{-u^2} \, du - \frac{2}{\pi} \left( \frac{\pi v^2}{4v^2 + \alpha^2} \right) \int_0^\infty e^{-u^2} \, du \right]
\]

With \( \alpha = 6.50 \text{ ft}^2 / \text{sec} \), \( v = 10000 \text{ ft} ^2 \text{.} \) One month is \( 2628000 \text{ seconds} \).

For one month

\[
\frac{q}{Q} = \left( \frac{\frac{\pi v^2}{4v^2 + \alpha^2}}{\sqrt{4 (1.5)(2628000)}} \right) = 2.518324 \left( \frac{\pi v^2}{4v^2 + \alpha^2} \right) = 0.004955
\]

<table>
<thead>
<tr>
<th>Time (End of Month)</th>
<th>( \frac{q}{Q} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>2.5183</td>
</tr>
<tr>
<td>Oct</td>
<td>1.7807</td>
</tr>
<tr>
<td>Nov</td>
<td>1.4540</td>
</tr>
<tr>
<td>Dec 1974</td>
<td>1.2592</td>
</tr>
<tr>
<td>Jan 1975</td>
<td>1.1262</td>
</tr>
<tr>
<td>Feb</td>
<td>1.0281</td>
</tr>
<tr>
<td>Mar</td>
<td>0.9518</td>
</tr>
<tr>
<td>Apr</td>
<td>0.8904</td>
</tr>
<tr>
<td>May</td>
<td>0.8394</td>
</tr>
<tr>
<td>June 1975</td>
<td>0.7964</td>
</tr>
<tr>
<td>July 1975</td>
<td>0.7400</td>
</tr>
</tbody>
</table>

\[
\frac{q}{Q} = 1.128379
\]
Check Computations, Sand-Hill Ditch.

Paper on "A Digital Model Applied to Ground Water Recharge and Management" by Lee, Guizi and Danielson.


The computation below made on the basis that the Sand-Hill Ditch is realized as a line of point sources which augment the stream flow by the amount \( Q = \frac{Q}{(1 - \frac{t}{I})} \). The flow \( Q \) is integrated with respect to time to give

\[
\int_{t_0}^{t} Q(t) \, dt = \frac{Q}{(1 - \frac{t}{I})} - Q(0)
\]

<table>
<thead>
<tr>
<th>Month</th>
<th>( \Delta t )</th>
<th>( Q ) (Reversed)</th>
<th>( Q \times \Delta t )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 74</td>
<td>0.40</td>
<td>12.6</td>
<td>247.30</td>
</tr>
<tr>
<td>Oct</td>
<td>0.44</td>
<td>29.9</td>
<td>22.190</td>
</tr>
<tr>
<td>Nov</td>
<td>0.24</td>
<td>28.7</td>
<td>19.3720</td>
</tr>
<tr>
<td>Dec 74</td>
<td>0.50</td>
<td>50.6</td>
<td>162.340</td>
</tr>
<tr>
<td>Jan 75</td>
<td>0.09</td>
<td>0.0</td>
<td>1.2857</td>
</tr>
<tr>
<td>Feb</td>
<td>0.12</td>
<td>0.0</td>
<td>0.093370</td>
</tr>
<tr>
<td>Mar</td>
<td>0.16</td>
<td>0.0</td>
<td>0.057090</td>
</tr>
<tr>
<td>Apr</td>
<td>0.19</td>
<td>248.2</td>
<td>0.024810</td>
</tr>
<tr>
<td>May</td>
<td>0.21</td>
<td>157.3</td>
<td>0.04460</td>
</tr>
<tr>
<td>June</td>
<td>0.47</td>
<td>465.5</td>
<td>0.00040</td>
</tr>
</tbody>
</table>

**Total** 1133000

**94.6% AF 183000v
at end of June.

\[ \alpha = 1.56 \](4/6e)

0.1039 Part lost at end of June

0.876068 Part retained at end of June

0.897238 retained. From zone table computation

0.918 retained. From line source with image (0.082 lost)
### ΣΩΔ in Store I

<table>
<thead>
<tr>
<th>Expression</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>247.310 + Σ</td>
<td>247.310</td>
</tr>
<tr>
<td>112600</td>
<td>112600</td>
</tr>
<tr>
<td>27.847106</td>
<td>27.847106</td>
</tr>
</tbody>
</table>

### ΣΩΔ in Store II

<table>
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<th>Expression</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>27847106 + Σ</td>
<td>27847106</td>
</tr>
<tr>
<td>221290 + Σ</td>
<td>221290</td>
</tr>
<tr>
<td>329900</td>
<td>329900</td>
</tr>
<tr>
<td>73003571</td>
<td>73003571</td>
</tr>
</tbody>
</table>

### ΣΩΔ (Exercise)

<table>
<thead>
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<th>Result</th>
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</thead>
<tbody>
<tr>
<td>1.41 + Σ</td>
<td>1.41</td>
</tr>
<tr>
<td>1.4</td>
<td>1.4</td>
</tr>
<tr>
<td>1.4</td>
<td>1.4</td>
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</table>

### Sand Hill ditch

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>4500 + Σ</td>
<td>4500</td>
</tr>
<tr>
<td>0040</td>
<td>0040</td>
</tr>
<tr>
<td>44600</td>
<td>44600</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>29310 + Σ</td>
<td>29310</td>
</tr>
<tr>
<td>4500</td>
<td>4500</td>
</tr>
<tr>
<td>24810</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>86400 + Σ</td>
<td>86400</td>
</tr>
<tr>
<td>29310</td>
<td>29310</td>
</tr>
<tr>
<td>57090</td>
<td>57090</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>179770 + Σ</td>
<td>179770</td>
</tr>
<tr>
<td>86400</td>
<td>86400</td>
</tr>
<tr>
<td>93370</td>
<td>93370</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>308340 + Σ</td>
<td>308340</td>
</tr>
<tr>
<td>179770</td>
<td>179770</td>
</tr>
<tr>
<td>128570</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Measurement</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>470680 + Σ</td>
<td>470680</td>
</tr>
<tr>
<td>308340</td>
<td>308340</td>
</tr>
<tr>
<td>162340</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>664400 + Σ</td>
<td>664400</td>
</tr>
<tr>
<td>470680</td>
<td>470680</td>
</tr>
<tr>
<td>193720</td>
<td>193720</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>885690 + Σ</td>
<td>885690</td>
</tr>
<tr>
<td>664400</td>
<td>664400</td>
</tr>
<tr>
<td>221290</td>
<td>221290</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1133000 + Σ</td>
<td>1133000</td>
</tr>
<tr>
<td>885690</td>
<td>885690</td>
</tr>
<tr>
<td>247310</td>
<td>247310</td>
</tr>
</tbody>
</table>

### ΣΩΔ (Final Check)

<table>
<thead>
<tr>
<th>Expression</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>171676345</td>
<td>171676345</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expression</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1133000</td>
<td>1133000</td>
</tr>
</tbody>
</table>

### ΣΩΔ (TII)

<table>
<thead>
<tr>
<th>Expression</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>18620 + Σ</td>
<td>18620</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expression</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>247310</td>
<td>247310</td>
</tr>
</tbody>
</table>
Refer to page 7. (First image in barrier)

By integration with respect to $t$

$$
\frac{\Delta r(t)}{\Delta t} = \left[ 1 - \frac{2}{\pi} \int e^{-u^2} \, du \right] = \frac{2}{\pi} \left( \frac{\pi}{4} \right) \int e^{-u^2} \, du
$$

| Time (end of mo) | $\frac{\pi}{4}$ | $\frac{\pi}{4}$ | $\frac{\pi}{4}$ | $\frac{\pi}{4}$ | $\frac{\pi}{4}$ | $\frac{\pi}{4}$ | $\frac{\pi}{4}$ | $\frac{\pi}{4}$ | $\frac{\pi}{4}$ | $\frac{\pi}{4}$ | $\frac{\pi}{4}$ | $\frac{\pi}{4}$ | $\frac{\pi}{4}$ | $\frac{\pi}{4}$ |
|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| 1 Sept 1974     | 2.040314        | 30.695079       | 1.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          |
| 2 Oct           | 3.397593        | 15.544960       | 1.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          |
| 3 Nov           | 3.198702        | 10.281849       | 1.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          |
| 4 Dec           | 4.770157        | 7.678727        | 9.9991          | 0.0001          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          |
| 5 Jan 1975      | 2.477701        | 6.159015        | 9.9954          | 0.0002          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          |
| 6 Feb           | 2.261824        | 5.115884        | 9.7867          | 0.0047          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          |
| 7 Mar           | 2.040422        | 4.385011        | 9.7694          | 0.0052          | 0.0003          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          |
| 8 Apr           | 1.958779        | 3.838785        | 9.9447          | 0.0108          | 0.0002          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          |
| 9 May           | 1.841771        | 3.511363        | 9.9699          | 0.0091          | 0.0016          | 0.0044          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          |
| 10 June 1975    | 1.752001        | 3.069508        | 9.8618          | 0.0030          | 0.0025          | 0.0154          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          | 0.0000          |

From computation on page 7.1 and overhead of the loss at the end of June is 17.626 A.F. For the first image in the barrier, the loss at the end of June is 5.002 A.F.

The total is: 17.626 + 5.002 = 17.628

$$
17.628 = 0.10693 \quad \text{then} \quad 0.893 \text{ remains (Diff 0.000)}
$$

From the State Engineer's Zone tables, computation 0.889 remains at the end of June.

The computation above includes the effects of images across the river. They upset the no-flow condition at the shale boundary by a small amount. If the first image across the river is imaged in the boundary, the $x_1$ value becomes 2 (10,000 + 16,000) = 50,000 feet. The contribution would be negative.

$$
\alpha = 1.5 \text{ft}^2 / \text{sec} \quad \text{w} = 22,000 \text{ ft} \quad \left( \frac{x_1}{144} \right) = \frac{22,000}{(14)(5)(22,500)} = 5.540 \text{ ft}^2 / \text{sec}  
$$

Ref. July 30, 1980
Rise of the water table at the middle of the recharge area at the end of June 1975. \( \alpha = 600 \text{ ft}^2/\text{sec} \).

<table>
<thead>
<tr>
<th>Time</th>
<th>( \frac{14\pi t}{2TKD} )</th>
<th>( \frac{X}{\sqrt{4\pi t}} )</th>
<th>( \int_{0}^{t} \frac{e^{u^2}}{u^2} du )</th>
<th>( \frac{h}{\alpha} )</th>
<th>( \Delta (\frac{h}{\alpha}) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>4.367128</td>
<td>0.298214</td>
<td>0.9259162</td>
<td>1.164027</td>
<td>1.164027</td>
</tr>
<tr>
<td>Oct</td>
<td>6.176.052</td>
<td>1.39714</td>
<td></td>
<td>7.68.275</td>
<td>6.04.248</td>
</tr>
<tr>
<td>Nov</td>
<td>7564.088</td>
<td>7.26978</td>
<td></td>
<td>14.97.082</td>
<td>7.728.009</td>
</tr>
<tr>
<td>Dec 1974</td>
<td>8.3344.257</td>
<td>6.29.581</td>
<td></td>
<td>2.237.907</td>
<td>7.74.0825</td>
</tr>
<tr>
<td>Jan 1975</td>
<td>9.7651.96</td>
<td>5.63.111</td>
<td></td>
<td>2.961.122</td>
<td>7.23.415</td>
</tr>
<tr>
<td>April</td>
<td>12.3521.055</td>
<td>4.451811</td>
<td></td>
<td>4.9757.755</td>
<td>6.45.474</td>
</tr>
<tr>
<td>May</td>
<td>13.10.1.385</td>
<td>4.19.741</td>
<td></td>
<td>5.59.7.357</td>
<td>6.02.602</td>
</tr>
</tbody>
</table>

\[ 14\pi t = \left( \frac{4\pi}{2TKD} \right) (15) (2628000) = 7038.226 \]

\[ 2TKD = \left( \frac{2\pi}{2.565} \right) = 1.611637 \]

\[ \alpha = \frac{KD}{\pi} \]

\[ \frac{X}{\sqrt{14\pi t}} = \frac{5000}{\sqrt{14\pi t}} = \frac{5000}{7038.226} = 1.257162 \]

\[ \frac{h}{\alpha} = \frac{3.644}{16.518} = 0.281\% \]

\[ \frac{X}{\sqrt{4\pi t}} \]

Sept 1974: 0.1125, \( \Sigma \Delta h = 0.0412575 \)

Oct: 0.0299, \( \Sigma \Delta h = 0.084352 + 0.12707 = 18.465 \)

Nov: 0.2877, \( \Sigma \Delta h = 0.3957 + 0.41337 = 5.7435 \)

Dec 1974: 0.526, \( \Sigma \Delta h = 0.3906 + 0.00078 = 47.728 \)

Jan 1975: 0.0, \( \Sigma \Delta h = 0.5667 + 0.00078 = 29.447 \)

Feb: 0.0, \( \Sigma \Delta h = 0.567 + 0.00078 = 29.447 \)

Mar: 0.0, \( \Sigma \Delta h = 0.5513 + 0.00078 = 29.447 \)

Apr: 248.2, \( \Sigma \Delta h = 0.535850 + 0.37008 - 0.10738 = 33.61599 \)

May: 1573, \( \Sigma \Delta h = 0.6871 + 0.4745 - 0.1046 = 52.87999 \)

June: 465.5, \( \Sigma \Delta h = 0.84547 + 0.58327 = 71.63745 \)
Check of water table rise at the river: \( x = 10000 \ ft^2 \)

<table>
<thead>
<tr>
<th>Time</th>
<th>End of mo</th>
<th>( T KD^* )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Sept 1974</td>
<td>228.783 (10)^7</td>
<td></td>
</tr>
<tr>
<td>Oct</td>
<td>161.916 (10)^5</td>
<td></td>
</tr>
<tr>
<td>Nov</td>
<td>130.649 (10)^5</td>
<td></td>
</tr>
<tr>
<td>Dec 1974</td>
<td>114.492 (10)^5</td>
<td></td>
</tr>
<tr>
<td>Jan</td>
<td>102.404 (10)^5</td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td>93.483 (10)^5</td>
<td></td>
</tr>
<tr>
<td>Mar</td>
<td>76.542 (10)^5</td>
<td></td>
</tr>
<tr>
<td>Apr</td>
<td>90.958 (10)^5</td>
<td></td>
</tr>
<tr>
<td>May</td>
<td>76.328 (10)^5</td>
<td></td>
</tr>
<tr>
<td>June</td>
<td>72.4109 (10)^5</td>
<td></td>
</tr>
</tbody>
</table>

\* See page 8.

\[ A + x = 0 \quad h_0 = \frac{Q_0 \sqrt{4 - T KD}}{2 \cdot T KD} \]

\[ Q_2 = \frac{Q_1}{(10000)} \]

\[ \frac{AF}{MD} = \frac{43520}{2628000} = 0.0165753 \frac{ft^3}{sec} \]
Results strongly determined.
Effect of depth of aquifer.

Suppose \( x_1 = 1320 \text{ feet} \quad Q = 2.0 \text{ ft}^3/\text{sec} \) (Well flow)

\[ x = 1.5 \text{ ft}^3/\text{sec} \quad t = 4 \text{ months} \]

\[ \phi = \left[ 1 - \frac{2}{\arctan(1x)} \right] \int_0^x e^{-u^2} du \]

Then \( x/(1.414t) = 1320/(1.414(10512000)) = \frac{1320}{1741.788} = 0.76209 \)

\[ \frac{2}{\sqrt{\pi}} \int_0^{0.76209} e^{-u^2} du = 0.185830 \quad \frac{\phi}{Q} = 0.817170 \quad \phi = 1.628340 \text{ ft}^3/\text{sec} \]

With \( x = 3.0 \text{ ft}^3/\text{sec} \quad t = 10512000 \text{ sec} \)

\( x/(1.414t) = 1320/(1.414(30)(10512000)) = \frac{1320}{1231.385} = 0.87528 \)

\[ \frac{2}{\sqrt{\pi}} \int_0^{0.87528} e^{-u^2} du = 0.132066 \quad \frac{\phi}{Q} = 0.867994 \quad \phi = 1.735788 \]

L.B. July 12, 1980

\[ \frac{1.735788}{1.735788} = 1.006609 \]

\[ \frac{1.628340}{1.628340} = 1.000000 \]

With \( t = 1 \text{ month} = 2628000 \text{ seconds} \)

\( x = 1.5 \text{ ft}^3/\text{sec} \quad x/(1.414t) = (1320)/(1.414(1.5)(2628000)) = \frac{1320}{370.8749} = 3.55249 \)

\[ \frac{2}{\sqrt{\pi}} \int_0^{0.355249} e^{-u^2} du = 0.361722 \quad \frac{\phi}{Q} = 0.638278 \quad \phi = 1.276556 \]

With \( x = 3.0 \text{ ft}^3/\text{sec} \quad x/(1.414t) = (1320)/(5615.6) = 0.235055 \)

\( \frac{2}{\sqrt{\pi}} \int_0^{0.235055} e^{-u^2} du = 0.256428 \quad 1 - \frac{2}{\sqrt{\pi}} \int_0^{0.235055} e^{-u^2} du = 0.737572 \quad \phi = 1.4799144 \)

\[ \frac{1.4799144}{1.4799144} = 1.000000 \]

<table>
<thead>
<tr>
<th>Time (months)</th>
<th>(Q/φ) values</th>
<th>φ (ft³/sec)</th>
<th>L.B. July 29, 1980</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.5</td>
<td>0.638</td>
<td>1.276</td>
</tr>
<tr>
<td>4</td>
<td>3.0</td>
<td>0.740</td>
<td>1.735</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.740</td>
<td>1.479</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.680</td>
<td>1.628</td>
</tr>
</tbody>
</table>

\( Q = 2.0 \text{ ft}^3/\text{sec} \)
Rise of Water Table at Middle of Recharge Area

\( \Delta (\frac{H}{q}) \)

599.654
621.602
645.474
671.121
727.838
723.415
740.825
728.807
604.948
164.027

600.000
114.000

\[ z = \frac{2 \cdot TKD}{v} \text{ or } (h_0) = \frac{2 \cdot TKD}{v^2} \text{ where, in this case } (h_0) \text{ is the water table rise at the Pruitt drain.} \]
Computation of water table rise due to recharge from the Jew Hill Ditch, use the line-source development - Page 86 - Transient Ground water Hydraulics

Formula 7-1 Page 86 is:

\[ h = \frac{8}{\pi^2 KO} \left( \frac{\pi^2 KO}{2 KO} \right) \int_0^\infty \frac{e^{-u^2}}{u^2} \ \text{d}u \cdot \frac{(\frac{h}{h_0})}{(\frac{h}{h_0})}\]

\[ h_1 = 8000 \ \text{ft} \]

<table>
<thead>
<tr>
<th>Date</th>
<th>Flow during the month</th>
<th>( \frac{141t \times 10^6 e^{-u^2}}{2\pi KO} )</th>
<th>( \frac{141t \times 10^6 e^{-u^2}}{2\pi KO} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>112.6</td>
<td>4967.13</td>
<td>2.01466</td>
</tr>
<tr>
<td>Oct 1974</td>
<td>329.7</td>
<td>6176.05</td>
<td>1.42458</td>
</tr>
<tr>
<td>Nov 1974</td>
<td>287.7</td>
<td>7564.09</td>
<td>1.16316</td>
</tr>
<tr>
<td>Dec 1974</td>
<td>50.6</td>
<td>8764.26</td>
<td>1.00783</td>
</tr>
<tr>
<td>Jan 1975</td>
<td>0.0</td>
<td>9765.20</td>
<td>0.90998</td>
</tr>
<tr>
<td>Feb 1975</td>
<td>0.0</td>
<td>10697.24</td>
<td>0.82248</td>
</tr>
<tr>
<td>Mar 1975</td>
<td>0.0</td>
<td>10554.34</td>
<td>0.76147</td>
</tr>
<tr>
<td>Apr 1975</td>
<td>248.2</td>
<td>12352.11</td>
<td>0.71229</td>
</tr>
<tr>
<td>May 1975</td>
<td>157.3</td>
<td>13101.39</td>
<td>0.67155</td>
</tr>
<tr>
<td>June 1975</td>
<td>465.5</td>
<td>13810.07</td>
<td>0.63709</td>
</tr>
</tbody>
</table>

\[ B = \frac{AF (48560)}{(2628000) (24000)} = 0.690639(10)^{-6} (A^{2/3}) \]

\[ h_1 = \frac{8000}{\sqrt{141t_{10}} (1.5) (2628000)} = 2.01466 \]

\[ 141t_{10} = 7038.2265 \]

\[ 2KO = 1.611637 \]

\[ 141t_{10} = (141t (1.5) (2628000)) = 149586.63 = 7038.2265 \]

\[ KO = TX = (0.171) (1.5) = 2565 \]

\[ 2KO = 1.611637 \]
Refer to pages 12 and 13. \(x = 8000 \text{ feet}\)

<table>
<thead>
<tr>
<th>Time (End of month)</th>
<th>Sum of products (h) (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>798.00</td>
</tr>
<tr>
<td>Oct</td>
<td>36658.00</td>
</tr>
<tr>
<td>Nov</td>
<td>71757.00</td>
</tr>
<tr>
<td>Dec 1974</td>
<td>164687.00</td>
</tr>
<tr>
<td>Jan 1975</td>
<td>250740.00</td>
</tr>
<tr>
<td>Feb</td>
<td>305976.00</td>
</tr>
<tr>
<td>Mar</td>
<td>336607.00</td>
</tr>
<tr>
<td>Apr</td>
<td>354351.00</td>
</tr>
<tr>
<td>May</td>
<td>390752.10</td>
</tr>
<tr>
<td>June 1975</td>
<td>450853.40</td>
</tr>
</tbody>
</table>

Simple computation for June:

\[
\text{Inflow} \times \Delta \frac{A}{Q} =
\]

<table>
<thead>
<tr>
<th>Time (End of month)</th>
<th>(\Delta \frac{A}{Q})</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>11.2120</td>
<td>462100</td>
</tr>
<tr>
<td>Oct</td>
<td>327.9</td>
<td>462.86</td>
</tr>
<tr>
<td>Nov</td>
<td>287.7</td>
<td>465.51</td>
</tr>
<tr>
<td>Dec</td>
<td>50.6</td>
<td>458.30</td>
</tr>
<tr>
<td>Jan 1975</td>
<td>0</td>
<td>444.58</td>
</tr>
<tr>
<td>Feb</td>
<td>0</td>
<td>416.77</td>
</tr>
<tr>
<td>Mar</td>
<td>0</td>
<td>364.25</td>
</tr>
<tr>
<td>Apr</td>
<td>248.2</td>
<td>269.67</td>
</tr>
<tr>
<td>May</td>
<td>157.3</td>
<td>119.30</td>
</tr>
<tr>
<td>June</td>
<td>465.5</td>
<td>7038.62</td>
</tr>
</tbody>
</table>

\(*\text{reversed}\)

Detail of computation for the end of June:

\[
\begin{align*}
\text{Dec - A.F.} & = 1126000 \\
\Delta \frac{A}{Q} & = 462000 \\
\text{Product} & = 52021200 \text{.0T} \\
\text{Sum in II} & = 52021200 + 1126000 \\
\end{align*}
\]

\[
\begin{align*}
\text{June} & = 4655000 \\
\Delta \frac{A}{Q} & = 7038 \\
\text{Product} & = 3276189 \text{T} \\
\text{Cum in II} & = 3276189 + 45081094 \text{T} \\
\text{Total} & = 45081094 \text{.9T} \\
\text{Factor} & = \frac{12 \times 690639}{1074} \\
\text{Period} & = 0.311347032510 \text{T} \\
\text{Rise of Water table in feet} & = \text{at } x = \text{depth at the end of June 1975.}
\end{align*}
\]
Effect of angle on the point at \( x = 8000' \) (Dec, Jan 12)

\[ y_1 = 10000 + 2000 - 12000 = 0 \]

<table>
<thead>
<tr>
<th>Time (end of month)</th>
<th>Angle ( \theta ) (deg)</th>
<th>( \sqrt{14x^2} )</th>
<th>( x )</th>
<th>( \csc \theta )</th>
<th>( \frac{h}{f} )</th>
<th>( \Delta h/2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>112.6</td>
<td>4367.13</td>
<td>3.021989</td>
<td>0.000000</td>
<td>0.000000</td>
<td>0.000000</td>
</tr>
<tr>
<td>Oct</td>
<td>329.9</td>
<td>6176.05</td>
<td>2.13869</td>
<td>0.00041</td>
<td>0.510941</td>
<td>0.544</td>
</tr>
<tr>
<td>Nov</td>
<td>287.7</td>
<td>7564.09</td>
<td>1.744746</td>
<td>0.003185</td>
<td>0.303377</td>
<td>0.4149</td>
</tr>
<tr>
<td>Dec 1974</td>
<td>50.6</td>
<td>8734.26</td>
<td>1.510995</td>
<td>0.009690</td>
<td>1.2788</td>
<td>8.585</td>
</tr>
<tr>
<td>Jan 1975</td>
<td>0.0</td>
<td>9765.20</td>
<td>1.351475</td>
<td>0.019907</td>
<td>0.2672</td>
<td>13.584</td>
</tr>
<tr>
<td>Feb</td>
<td>0.0</td>
<td>10697.24</td>
<td>1.233722</td>
<td>0.033287</td>
<td>0.4393</td>
<td>170.61</td>
</tr>
<tr>
<td>Mar</td>
<td>0.0</td>
<td>11554.34</td>
<td>1.142205</td>
<td>0.049189</td>
<td>0.6480</td>
<td>208.71</td>
</tr>
<tr>
<td>Apr</td>
<td>248.2</td>
<td>12352.11</td>
<td>1.068435</td>
<td>0.067048</td>
<td>0.8648</td>
<td>236.82</td>
</tr>
<tr>
<td>May</td>
<td>157.3</td>
<td>13101.39</td>
<td>1.007330</td>
<td>0.084414</td>
<td>1.1404</td>
<td>255.58</td>
</tr>
<tr>
<td>June 1975</td>
<td>465.5</td>
<td>13810.07</td>
<td>0.955667</td>
<td>1.06930</td>
<td>1.4112</td>
<td>270.76</td>
</tr>
</tbody>
</table>

\[ \sum \left( \Delta h/2 \right)(\text{deg}) \text{ of yer, A.F.} = \text{Total} \]

\[ \text{From page 14 Total} \]

\[ \text{Total} \]

\[ \text{From page 14 Total} \]

\[ \frac{(y_1 - 12000)}{2770.894} = 3.021989 \]
Computation of Water-Table rise—End Hill Ditch recharge
Use Line Source development—P86-Trench 6H Stud.

see Formula on page 12. \( h_1 = 2000 \) Feet

<table>
<thead>
<tr>
<th>Time-End of mo</th>
<th>Flow AF/mo</th>
<th>( \sqrt{4HTW} )</th>
<th>( \frac{(2000)}{2HTD} )</th>
<th>( \int_{0}^{\infty} \frac{e^{-u^2}}{u^2} , du )</th>
<th>( \frac{h}{\delta} )</th>
<th>( \Delta \left( \frac{h}{\delta} \right) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>11.26</td>
<td>4367.13</td>
<td>0.50367</td>
<td>0.69638</td>
<td>1531.75</td>
<td>1531.75</td>
</tr>
<tr>
<td>Oct</td>
<td>32.99</td>
<td>6176.05</td>
<td>0.35614</td>
<td>1.38423</td>
<td>3044.67</td>
<td>1512.92</td>
</tr>
<tr>
<td>Nov</td>
<td>28.77</td>
<td>7564.09</td>
<td>0.29079</td>
<td>1.95312</td>
<td>4248.2</td>
<td>1251.53</td>
</tr>
<tr>
<td>Dec 1974</td>
<td>50.65</td>
<td>8734.26</td>
<td>0.25183</td>
<td>2.44769</td>
<td>5383.81</td>
<td>1087.61</td>
</tr>
<tr>
<td>Jan 1975</td>
<td>0.0</td>
<td>9765.26</td>
<td>0.21525</td>
<td>2.89044</td>
<td>6357.84</td>
<td>974.03</td>
</tr>
<tr>
<td>Feb</td>
<td>0.0</td>
<td>10697.24</td>
<td>0.20562</td>
<td>3.29510</td>
<td>7247.79</td>
<td>889.95</td>
</tr>
<tr>
<td>Mar</td>
<td>0.0</td>
<td>11554.34</td>
<td>0.19037</td>
<td>3.66974</td>
<td>8074.96</td>
<td>824.17</td>
</tr>
<tr>
<td>Apr</td>
<td>248.2</td>
<td>12352.11</td>
<td>0.17807</td>
<td>4.02046</td>
<td>8843.16</td>
<td>771.2</td>
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<tr>
<td>May</td>
<td>157.31</td>
<td>13101.39</td>
<td>0.16789</td>
<td>4.35095</td>
<td>9570.85</td>
<td>727.14</td>
</tr>
<tr>
<td>June 1975</td>
<td>465.67</td>
<td>13810.67</td>
<td>0.15927</td>
<td>4.64884</td>
<td>10260.4</td>
<td>690.13</td>
</tr>
</tbody>
</table>

For an image across the river \( x = (10000 + 10000 - 2000) = 18000 \) ft

\[
\left( \frac{18000}{\sqrt{4xt}} \right) \int_{0}^{\infty} \frac{e^{-u^2}}{u^2} \, du = 0.11912
\]

Sept 1974
Oct
Nov
Dec
Jan 1975
Feb
Mar
Apr
May
June

R.G. July 23 1976

\[
\text{(2)} (6.57723) - 0 - 1272.73/2 = 5.940865
\]

\[
\frac{2000}{\sqrt{4xt}} = \frac{2000}{3970.89} = 0.503665\]

\[
h(t) = 3970.8941
\]

(See page 12.)

For 1 (AF/Mo) is 0.67639 (ft/1000)
Computation of water table rise at $y = 6000$ ft
(Line source formula - p 86)

<table>
<thead>
<tr>
<th>Time (End of mo)</th>
<th>$(\frac{14\pi R^2}{217.9})$</th>
<th>$\frac{6000}{\sqrt{14\pi H}}$</th>
<th>$\int_{0}^{t} \frac{e^{-u^2}}{u^2} du$</th>
<th>$(\frac{h}{\Delta})$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>4367.13</td>
<td>1.51099</td>
<td>0.02969</td>
<td>63.90</td>
</tr>
<tr>
<td>Oct</td>
<td>6176.05</td>
<td>1.06843</td>
<td>0.06704</td>
<td>442.57</td>
</tr>
<tr>
<td>Nov</td>
<td>7564.07</td>
<td>0.87237</td>
<td>0.15036</td>
<td>1592.41</td>
</tr>
<tr>
<td>Dec 1974</td>
<td>8734.46</td>
<td>0.75550</td>
<td>0.24228</td>
<td>1592.41</td>
</tr>
<tr>
<td>Jan 1975</td>
<td>9765.20</td>
<td>0.67574</td>
<td>0.33606</td>
<td>2217.57</td>
</tr>
<tr>
<td>Feb</td>
<td>10697.24</td>
<td>0.61686</td>
<td>0.42918</td>
<td>2832.08</td>
</tr>
<tr>
<td>Mar</td>
<td>11557.34</td>
<td>0.57110</td>
<td>0.52052</td>
<td>3434.74</td>
</tr>
<tr>
<td>Apr</td>
<td>12352.11</td>
<td>0.53422</td>
<td>0.60762</td>
<td>4022.73</td>
</tr>
<tr>
<td>May</td>
<td>13101.39</td>
<td>0.50346</td>
<td>0.69644</td>
<td>4595.36</td>
</tr>
<tr>
<td>June 1975</td>
<td>13810.07</td>
<td>0.47782</td>
<td>0.78082</td>
<td>5152.42</td>
</tr>
</tbody>
</table>

Computation of the effect of the image in the rise

$$W = 10000 - 6000 + 10000 = 14000$$

<table>
<thead>
<tr>
<th>Time</th>
<th>$-14000$</th>
<th>$\int_{0}^{t} \frac{e^{-u^2}}{u^2} du$</th>
<th>$(\frac{h}{\Delta})$ Line source and image</th>
<th>$\Delta$ (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>-3.52565</td>
<td>0.00000</td>
<td>0.00000</td>
<td>63.90</td>
</tr>
<tr>
<td>Oct</td>
<td>-2.49301</td>
<td>0.00050</td>
<td>0.071</td>
<td>441.61</td>
</tr>
<tr>
<td>Nov</td>
<td>-2.03554</td>
<td>0.00072</td>
<td>-0.0108</td>
<td>981.00</td>
</tr>
<tr>
<td>Dec</td>
<td>-1.76283</td>
<td>0.00291</td>
<td>-0.04485</td>
<td>1553.56</td>
</tr>
<tr>
<td>Jan</td>
<td>-1.57672</td>
<td>0.00714</td>
<td>-0.10993</td>
<td>2107.64</td>
</tr>
<tr>
<td>Feb</td>
<td>-1.43934</td>
<td>0.01344</td>
<td>-0.20694</td>
<td>2625.09</td>
</tr>
<tr>
<td>Mar</td>
<td>-1.33157</td>
<td>0.02164</td>
<td>-0.33319</td>
<td>3101.56</td>
</tr>
<tr>
<td>Apr</td>
<td>-1.24651</td>
<td>0.03150</td>
<td>-0.48501</td>
<td>4764.47</td>
</tr>
<tr>
<td>May</td>
<td>-1.17522</td>
<td>0.04276</td>
<td>-0.65838</td>
<td>554.08</td>
</tr>
<tr>
<td>June 1975</td>
<td>-1.1491</td>
<td>0.05519</td>
<td>-0.84776</td>
<td>366.08</td>
</tr>
</tbody>
</table>

Total $2.27953$
Average 0.147953

$q = 2.690639(10)^{-4}$ per ft. (See page 12)

$$\frac{(2)(2.97953)}{2} - 0.376714 = 2.091173 - \int_{0}^{10} dt$$

Mean $= 0.409 117$
Mean water table rise along the 8000 feet of the Pruitt drainage ditch.

\[
0.594086 + (2)(0.209117) + 0 = 0.25308 \text{ feet},
\]

From page 86 of "Transient Ground-Water Hydraulics",

\[
Q = \frac{8 \sqrt{\frac{4K\pi t}{2TKD}}} = 4.367.13 \; \text{ft}^2/\text{sec}, \quad h_0 = \frac{2TKD}{\sqrt{4\pi xt}}
\]

\[
Q = \frac{h_0}{4.367.13} = 0.25308
\]

8000 \(Q = \frac{(8000)(0.25308)}{4.367.13} = 0.463609 \; \text{ft}^3/\text{sec. (Average Flow)}
\]

\[
(0.463609)(15)(2.628000) = \frac{20.7}{40.2} = 0.517
\]

\[
(0.517 + 1.19) = 0.751 \; \text{ft.} \quad 0.745 \; \text{ft. obtained}
\]
Rise of water table at beginning of the fruit drain

\( x = 2000 \) feet, \( \alpha = 1.50 \) ft/week.

Rise in water table due to Sand-Hill ditch recharge.

<table>
<thead>
<tr>
<th>Month</th>
<th>End of month</th>
<th>( \frac{14 \pi x}{2 \pi \text{ KD}} )</th>
<th>( \Delta (\frac{x}{8}) )</th>
<th>( \Delta (\frac{\pi}{8}) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>4367.13</td>
<td>5036.62</td>
<td>1531.79</td>
<td>1531.79</td>
</tr>
<tr>
<td>Oct</td>
<td>6176.05</td>
<td>5361.14</td>
<td>1.38493</td>
<td>3.04467</td>
</tr>
<tr>
<td>Nov</td>
<td>7564.08</td>
<td>2.97092</td>
<td>1.95322</td>
<td>4.296.22</td>
</tr>
<tr>
<td>Dec</td>
<td>8734.25</td>
<td>2.5125</td>
<td>2.44769</td>
<td>2.583.81</td>
</tr>
<tr>
<td>Jan 1975</td>
<td>9756.20</td>
<td>225.25</td>
<td>2.89444</td>
<td>6.537.84</td>
</tr>
<tr>
<td>Feb</td>
<td>10697.24</td>
<td>2.0562</td>
<td>3.29510</td>
<td>5.247.79</td>
</tr>
<tr>
<td>Mar</td>
<td>11554.34</td>
<td>1.9037</td>
<td>3.06914</td>
<td>8.071.96</td>
</tr>
<tr>
<td>Apr</td>
<td>12352.11</td>
<td>1.7807</td>
<td>4.02046</td>
<td>8.848.16</td>
</tr>
<tr>
<td>May</td>
<td>13101.39</td>
<td>1.6789</td>
<td>4.35995</td>
<td>9.570.32</td>
</tr>
<tr>
<td>June 1975</td>
<td>13810.07</td>
<td>1.5927</td>
<td>4.66484</td>
<td>10.228.70</td>
</tr>
</tbody>
</table>

\( x = 114000 \) ft Rise of water table due to image in barriers.

\[ \Sigma \left( \frac{h}{8} \right) \] 

\[ \Delta \Sigma \left( \frac{h}{8} \right) \]

\[ K_d = \frac{1}{\Delta x} = 0.17 \] (1.5) = 0.2565

\[ 2 \pi \text{ KD} = 1.61163 \]

\[ \left( \frac{x}{4 \alpha + 1} \right) = \frac{2000}{4(1.5)2628000} = 0.00005 \]

\[ \frac{14 \pi x}{2 \pi \text{ KD}} = \frac{7038.225}{1.61163} = 4367.1288 \]
Sinking of the water table at the beginning of the Pruitt Drain due to impervious across the river \( h = 18000 \) ft

<table>
<thead>
<tr>
<th>End of Month</th>
<th>( \frac{14.4560}{27.071} )</th>
<th>( 18000 )</th>
<th>( \int_0^h \frac{1}{\sqrt{h+t}} , dt )</th>
<th>( \frac{1}{\sqrt{h+t}} )</th>
<th>( \sqrt{h+t} )</th>
<th>( \Delta \theta )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1947</td>
<td>4367.13</td>
<td>7.55497</td>
<td>0.0000</td>
<td>0.00</td>
<td>0.00</td>
<td>13.379</td>
</tr>
<tr>
<td>Oct</td>
<td>6176.05</td>
<td>3.34217</td>
<td>0.0000</td>
<td>0.00</td>
<td>0.00</td>
<td>15.365</td>
</tr>
<tr>
<td>Nov</td>
<td>7564.08</td>
<td>4.36187</td>
<td>0.0000</td>
<td>-0.39</td>
<td>-0.39</td>
<td>12.4147</td>
</tr>
<tr>
<td>Dec</td>
<td>8344.25</td>
<td>8.77748</td>
<td>0.0000</td>
<td>-3.96</td>
<td>-3.96</td>
<td>11.7174</td>
</tr>
<tr>
<td>Jan 1975</td>
<td>9765.20</td>
<td>3.37668</td>
<td>0.0000</td>
<td>-14.85</td>
<td>-10.89</td>
<td>10.3226</td>
</tr>
<tr>
<td>Feb</td>
<td>10697.24</td>
<td>3.08430</td>
<td>0.0000</td>
<td>-31.02</td>
<td>-22.17</td>
<td>9.6478</td>
</tr>
<tr>
<td>Mar</td>
<td>11554.34</td>
<td>2.85551</td>
<td>0.0001</td>
<td>-3.33</td>
<td>-7.37</td>
<td>9.1368</td>
</tr>
<tr>
<td>Apr</td>
<td>12352.11</td>
<td>2.67109</td>
<td>0.0000</td>
<td>-0.66</td>
<td>-12.57</td>
<td>8.7122</td>
</tr>
<tr>
<td>May</td>
<td>13101.39</td>
<td>2.51832</td>
<td>0.0000</td>
<td>-1.65</td>
<td>-19.47</td>
<td>8.3263</td>
</tr>
<tr>
<td>June 1975</td>
<td>13810.07</td>
<td>2.38909</td>
<td>0.0010</td>
<td>-3.30</td>
<td>-27.64</td>
<td>7.9349</td>
</tr>
</tbody>
</table>

\[ \text{Total} \]

\[ \Delta \theta = 79.849 \]

\[ \frac{18000}{\sqrt{18000}} = 3970.89 \]

\[ \frac{43560}{\sqrt{18000}} = 60.330578 \]

\[ \frac{f^3}{\text{month}} \]

\[ (A.F./mo) = \frac{f^3}{27.071} \]

\[ (A.F./mo) = \frac{f^3}{60.330578} \]

\[ q = \frac{(60.330578)(24.000)}{1447934(10^6)} \]

\[ q = 0.167 \times 10^{-6} \]
Computation of Pratt drain flow. The quantity $h$ is the water table rise due to the Sand-Hill Dutch recharge operation.

<table>
<thead>
<tr>
<th>Time (End of mo)</th>
<th>$h_0$ (ft)</th>
<th>$(h_0)$ (ft)</th>
<th>For Pratt Drain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept. 1974</td>
<td>0.11912</td>
<td>+0.11912</td>
<td>0.00002728</td>
</tr>
<tr>
<td>Oct.</td>
<td>0.46672</td>
<td>+0.34760</td>
<td>0.00009888</td>
</tr>
<tr>
<td>Nov.</td>
<td>0.74736</td>
<td>+0.28064</td>
<td>0.00013611</td>
</tr>
<tr>
<td>Dec.</td>
<td>0.72899</td>
<td>-0.01837</td>
<td>0.00010018</td>
</tr>
<tr>
<td>Jan. 1975</td>
<td>0.62992</td>
<td>-0.05770</td>
<td>0.00006522</td>
</tr>
<tr>
<td>Feb.</td>
<td>0.58041</td>
<td>+0.05840</td>
<td>0.00048333</td>
</tr>
<tr>
<td>Mar.</td>
<td>0.54944</td>
<td>+0.03697</td>
<td>0.00039948</td>
</tr>
<tr>
<td>Apr.</td>
<td>0.78332</td>
<td>+0.23888</td>
<td>0.00094986</td>
</tr>
<tr>
<td>May.</td>
<td>0.92954</td>
<td>+0.14022</td>
<td>0.00111438</td>
</tr>
<tr>
<td>June 1975</td>
<td>1.36354</td>
<td>+0.48400</td>
<td>0.00019201</td>
</tr>
</tbody>
</table>

For the Pratt Drain:

$$F = \frac{2\pi KD(h_0)}{4\pi \text{act}} \times \frac{0.0009142}{10} = 0.0009142$$

Average $F$ per $\text{ft}^2$ (Preliminary Estimate)

$$(2628000) / (24000)$$

The sum of the figures is the length of the Sand-Hill ditch, in feet. This factor was applied to the sum of products.

Example: For Nov 1974

$$+0.11912 \times 130.649 (10)^{-1}$$

$$(136.107) (0.690636) = 94.600 \times 10^{-6}$$

**Note** Computed by use of the factors to be found on the reverse side of page 11.

**Average** $F$ per $\text{ft}^2$ (Preliminary Estimate)

For Pratt drain figures, as given on the reverse of page 13 and by the factor $0.690636 (10)^{-1}$.

### Sum of Products

- Oct. 1974: 675,774
- Nov. 1974: 675,774
- Dec. 1974: (675,774) (0.690636) (10)^{-1} = 0.46672

This is the estimated rise of the water table at X-2000 at the end of October 1974.
Rise of the water table at the middle of the Pahrett Drain, L25

\[ x = 6000 \text{ feet} \quad k = 1.50 \text{ ft/year} \]

Rise in the water-table due to Sand-Hill Ditch recharge.

(Computation for \( x = 6000 \), \( x = 18000 \) and \( x = 14000 \) are to be found on pages 19, 22 and 21.

For \( x = 6000 \) feet,

<table>
<thead>
<tr>
<th>Month</th>
<th>( 1 + h )</th>
<th>( \frac{(26000 \text{ feet})}{(1 + h)} )</th>
<th>( h )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept. 1974</td>
<td>4367.13</td>
<td>6.54764 \times 10^{-6}</td>
<td>0.0</td>
</tr>
<tr>
<td>Oct. 1974</td>
<td>6176.05</td>
<td>4.61988</td>
<td></td>
</tr>
<tr>
<td>Nov. 1974</td>
<td>7564.08</td>
<td>3.78028</td>
<td></td>
</tr>
<tr>
<td>Dec. 1974</td>
<td>8734.25</td>
<td>3.27322</td>
<td></td>
</tr>
<tr>
<td>Jan. 1975</td>
<td>9765.26</td>
<td>2.92820 \times 10^{-6}</td>
<td>0.0</td>
</tr>
<tr>
<td>Feb. 1975</td>
<td>10697.24</td>
<td>2.67306 \times 10^{-6}</td>
<td>-57189</td>
</tr>
<tr>
<td>Mar. 1975</td>
<td>11544.34</td>
<td>2.47478 \times 10^{-6}</td>
<td>-1.71567</td>
</tr>
<tr>
<td>Apr. 1975</td>
<td>12352.11</td>
<td>2.31494 \times 10^{-6}</td>
<td>-4.28916</td>
</tr>
<tr>
<td>May 1975</td>
<td>13101.39</td>
<td>2.18255 \times 10^{-6}</td>
<td>-9.15022</td>
</tr>
<tr>
<td>June 1975</td>
<td>13810.07</td>
<td>2.07055 \times 10^{-6}</td>
<td>-16.87072</td>
</tr>
</tbody>
</table>

(From previous work)

For the Sand-Hill Ditch recharge,

<table>
<thead>
<tr>
<th>Month</th>
<th>( h )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept. 1974</td>
<td>0.00</td>
</tr>
<tr>
<td>Oct. 1974</td>
<td>0.00</td>
</tr>
<tr>
<td>Nov. 1974</td>
<td>0.00</td>
</tr>
<tr>
<td>Dec. 1974</td>
<td>0.00</td>
</tr>
<tr>
<td>Jan. 1975</td>
<td>0.00</td>
</tr>
<tr>
<td>Feb. 1975</td>
<td>0.00</td>
</tr>
<tr>
<td>Mar. 1975</td>
<td>0.00</td>
</tr>
<tr>
<td>Apr. 1975</td>
<td>0.00</td>
</tr>
<tr>
<td>May 1975</td>
<td>0.00</td>
</tr>
<tr>
<td>June 1975</td>
<td>0.00</td>
</tr>
</tbody>
</table>

\( \Sigma \frac{1}{h} \) \quad \Delta \Sigma \left( \frac{1}{h} \right)
Rise of water table at the middle of the Pruitt Drain
See page 25 for $\Delta \Sigma(\frac{g}{2})$ and reverse of page 11 for value of $\frac{2T/KD}{\sqrt{4\pi t}}$ (Reversed $x=6000$ ft middle of Pruitt Drain).

<table>
<thead>
<tr>
<th>Time of month</th>
<th>$h_0$</th>
<th>$\Delta h_0$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 1974</td>
<td>0.004969</td>
<td>0.00001138</td>
</tr>
<tr>
<td>Oct</td>
<td>0.048932</td>
<td>0.038963</td>
</tr>
<tr>
<td>Nov</td>
<td>1.45757+101820</td>
<td>0.00030273</td>
</tr>
<tr>
<td>Dec</td>
<td>1.245087+099337</td>
<td>0.00044892</td>
</tr>
<tr>
<td>Jan 1975</td>
<td>2.95659+050570</td>
<td>0.00045936</td>
</tr>
<tr>
<td>Feb</td>
<td>3.03964+008305</td>
<td>0.00039180</td>
</tr>
<tr>
<td>Mar</td>
<td>2.94993-008972</td>
<td>0.00031802</td>
</tr>
<tr>
<td>April</td>
<td>1.90019-004983</td>
<td>0.00027746</td>
</tr>
<tr>
<td>May</td>
<td>3.35598+048589</td>
<td>0.00036909</td>
</tr>
<tr>
<td>June</td>
<td>4.07657+069059</td>
<td>0.00047754</td>
</tr>
</tbody>
</table>

Average by the ten months: 0.000315356

By Simpson's rule:
$$\frac{1}{6}(000009142)+(4)(00003154)+(10)(8000) \quad \text{ (ft}^3/\text{sec})$$
$$= \frac{6}{8000}(00003626)=0.290107$$
For 10 months:
$$10(0.290107)(2628000) = 175. \text{Acre feet}$$

From line source computation for loss directly to the river:
$$172. \text{AF}$$
$$175 \text{ A.F.}$$
Total loss: 347. AF

$$\frac{347}{1651.8} = 0.2100 \text{ lost}$$
Then $(1-0.2100) = 0.79$ is lost in the ten months.

22.9 Aug 8 1980
<table>
<thead>
<tr>
<th>Flow Volume AF</th>
</tr>
</thead>
<tbody>
<tr>
<td>465.5</td>
</tr>
<tr>
<td>157.3</td>
</tr>
<tr>
<td>248.2</td>
</tr>
<tr>
<td>0.0</td>
</tr>
<tr>
<td>0.0</td>
</tr>
<tr>
<td>0.0</td>
</tr>
<tr>
<td>50.6</td>
</tr>
<tr>
<td>287.7</td>
</tr>
<tr>
<td>329.9</td>
</tr>
<tr>
<td>112.6</td>
</tr>
</tbody>
</table>