Recession Curve Displacement Method

Groundwater Cycle Course

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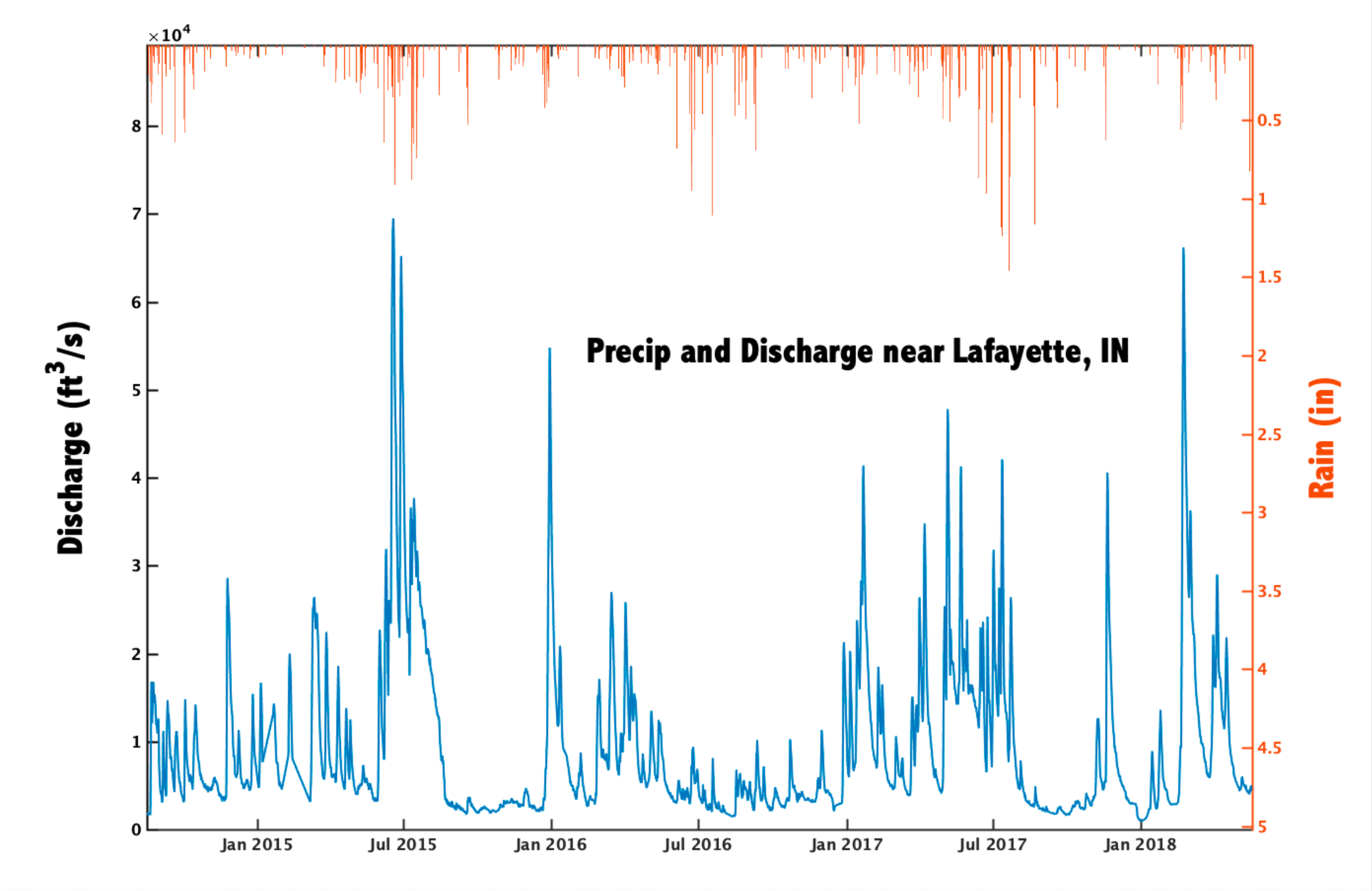
Displacement Method



Displacement Method

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Groundwater Cycle Course

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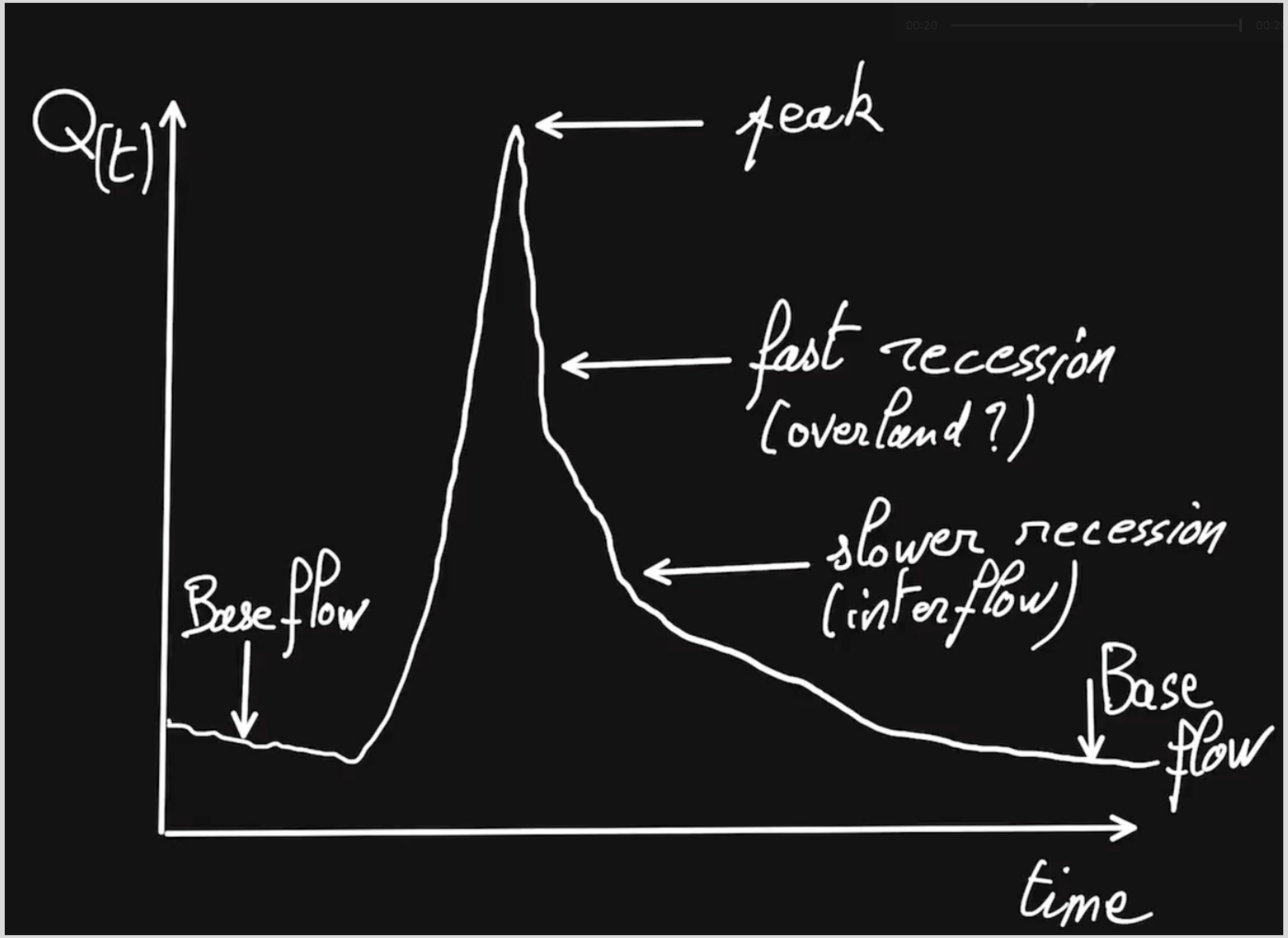
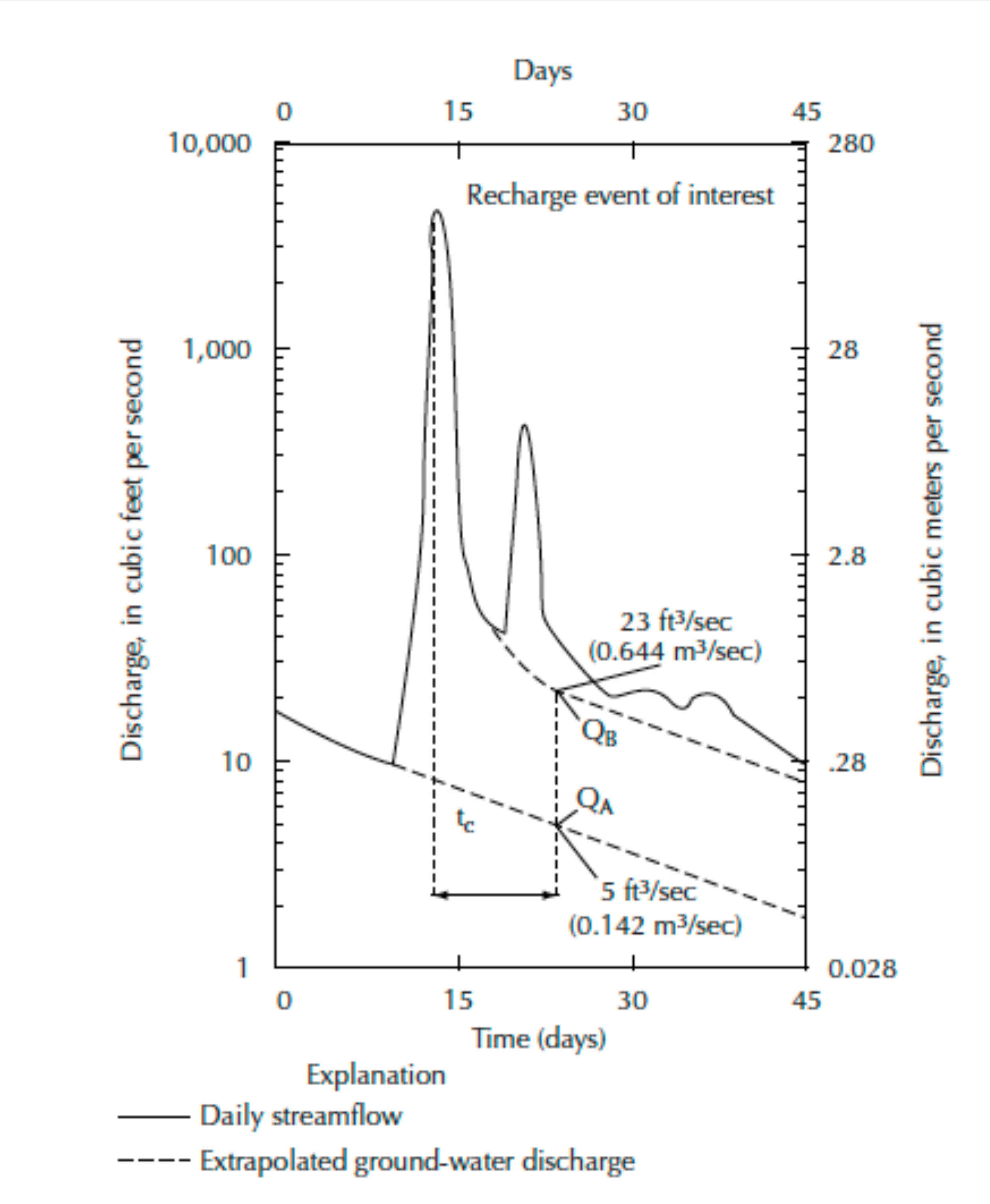


Groundwater Cycle Course

Displacement Method

Fetter Ch.2-12-2



Groundwater recharge from baseflow This is from Fetter, Fig. 2.22, originally from Bevans 1986 and used in Rutledge and Daniel,1994 (see papers online if interested)

First, compute t_1, the time it takes to drop one log:

t_1 ~ ? days

Critical time* (tc) ~0.21 t_1 ~ ? days

Read Q_B and Q_A tc days past the peak of the hydrograph

Compute recharge with the following equation:

$$G = \frac{2(Q_B - Q_A)t_1}{2.3} = \frac{2(23-5)3.8\,10^6}{2.3} = 6\,10^7 ft^3$$

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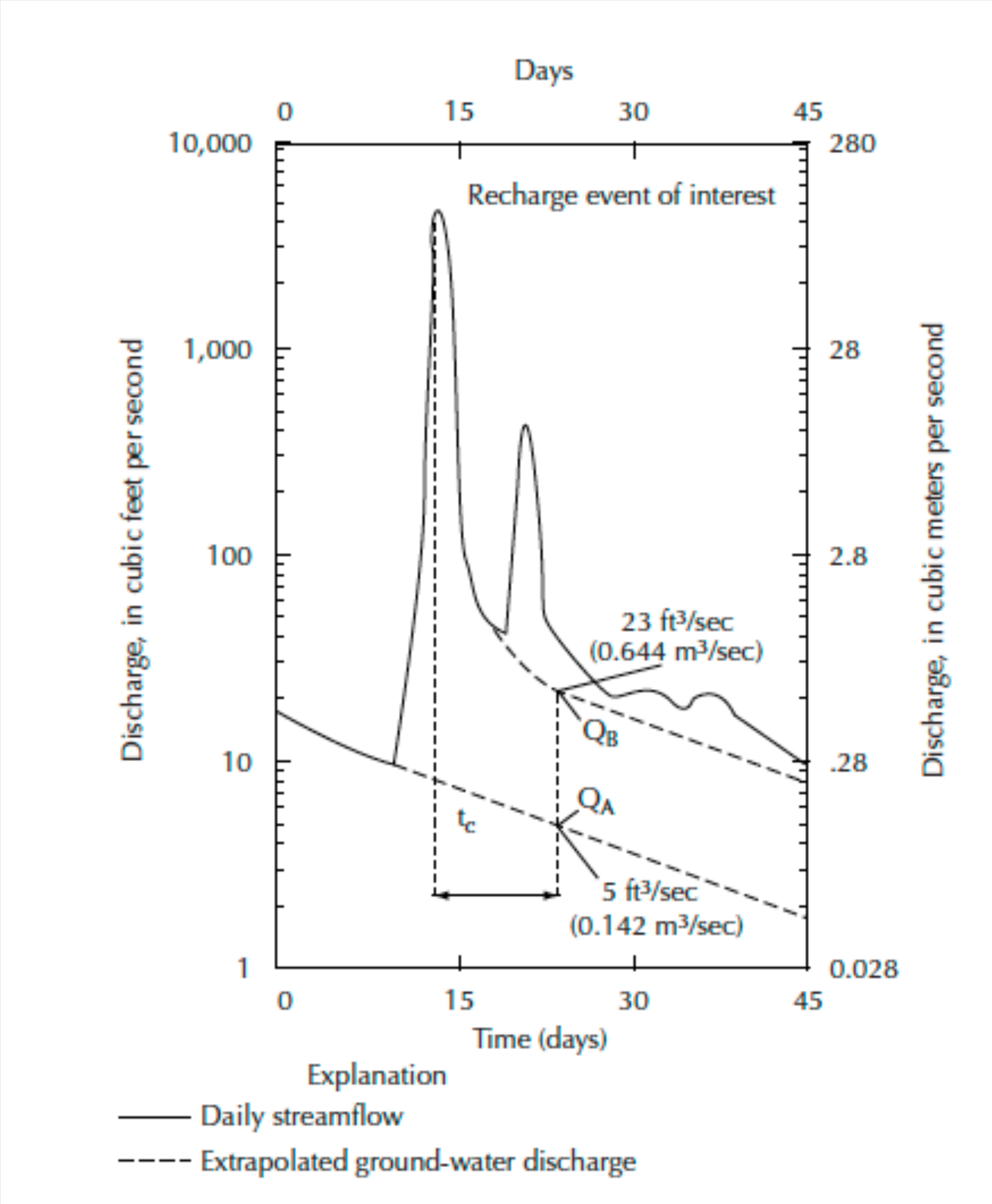
Groundwater Cycle Course

Displacement Method

Critical time* : This is the time when the volume of total potential groundwater discharge is equal to half the total recharge



$$V_{t_p}\,[L^3] = \frac{Q\left[\frac{L^3}{T}\right] \times t_1\,[T]}{2.3}\,[L^3]$$

$$\Delta V_{t_p} = \Delta \frac{Qt}{2.3} = \frac{Q_B t_1 - Q_A t_1}{2.3}$$

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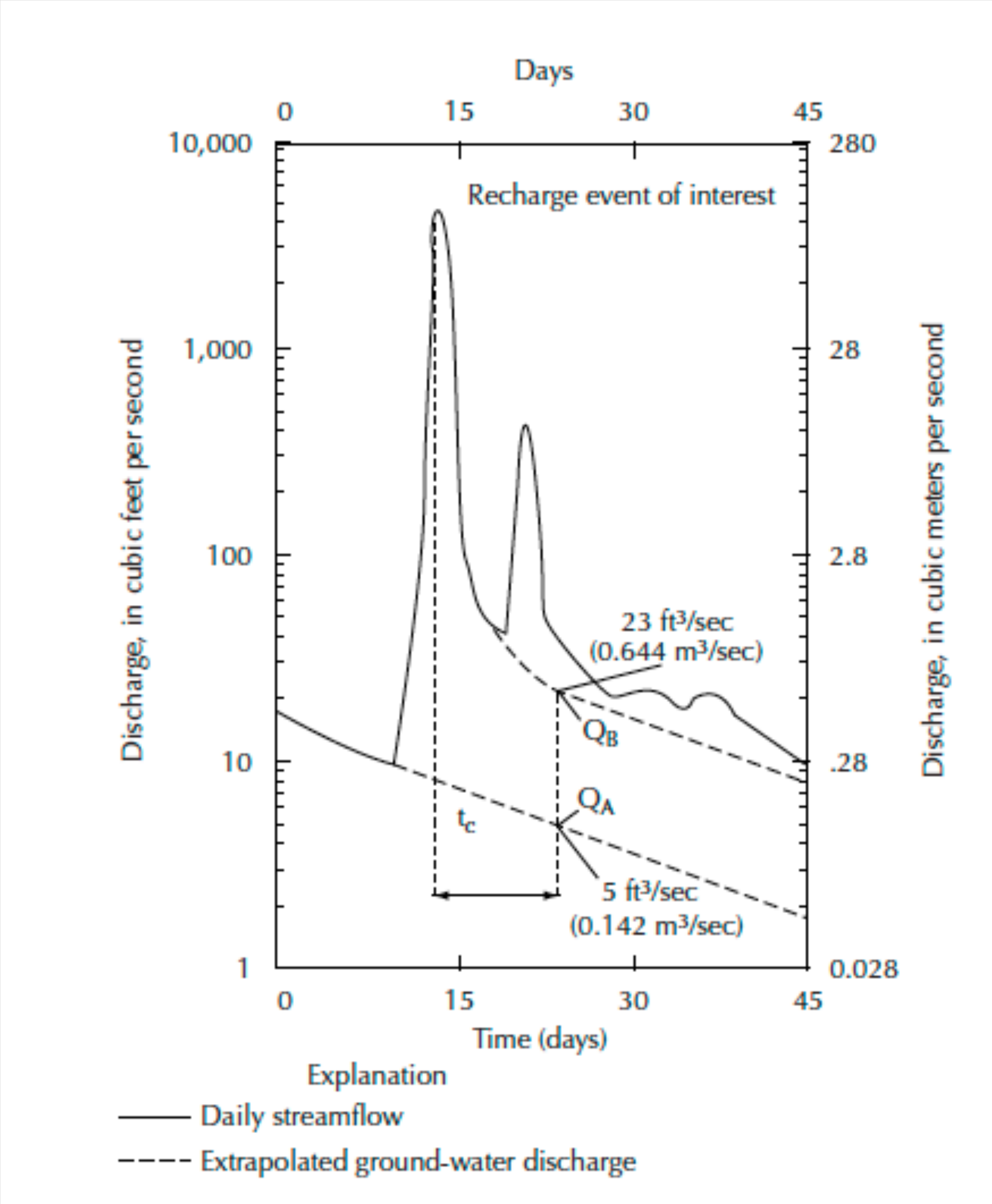

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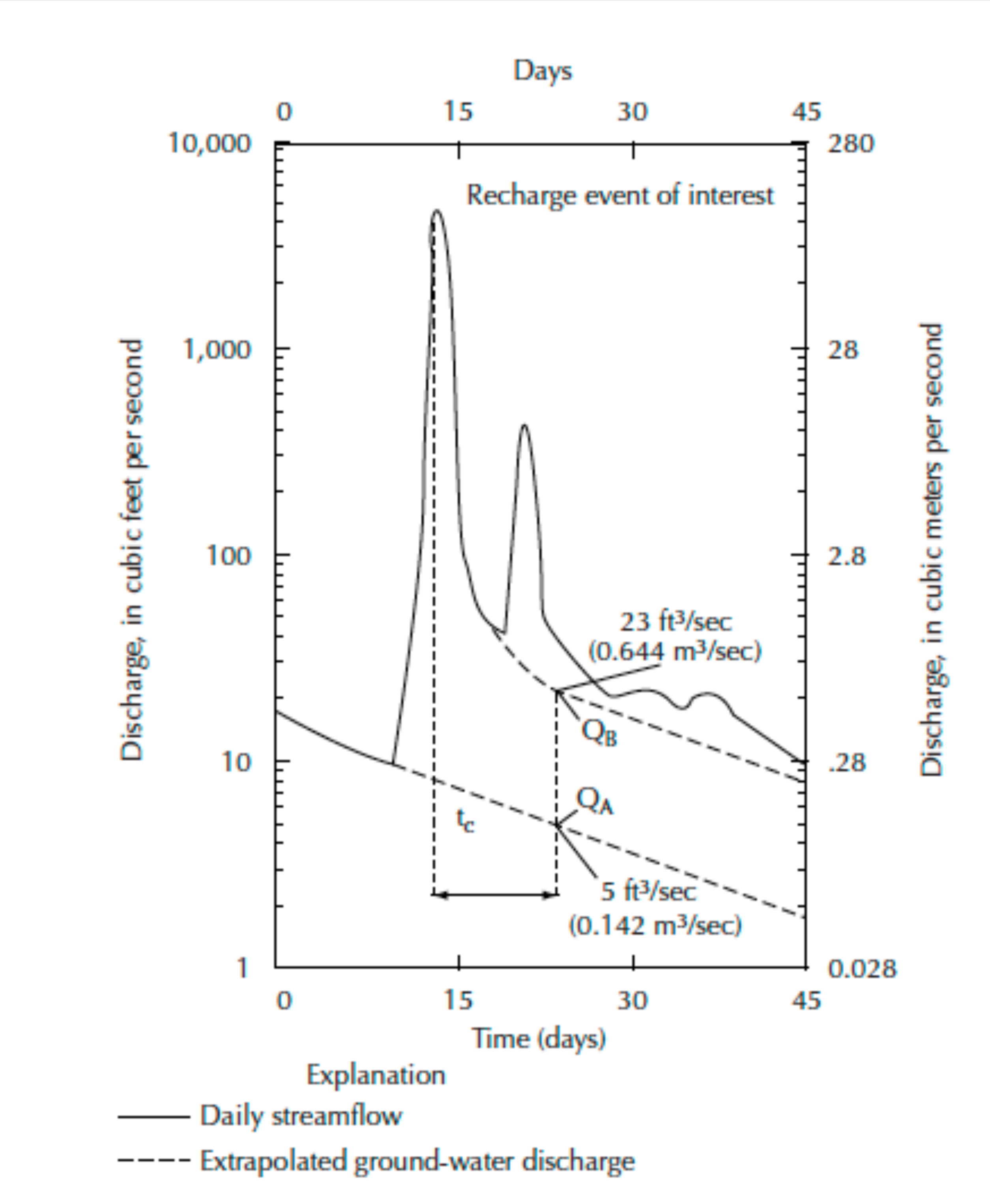
$$G = 2\Delta V_{t_p}$$

$$\boxed{G = \frac{2(Q_B - Q_A)\,t_1}{2.3}}$$

Displacement Method

Fetter Ch.2-12-2



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Displacement Method