

# Cours d'hydrogéologie – Illustrations et exercices sur la piézométrie

Aix-Marseille Université  
Licence et Master

## Cartes Piézométriques

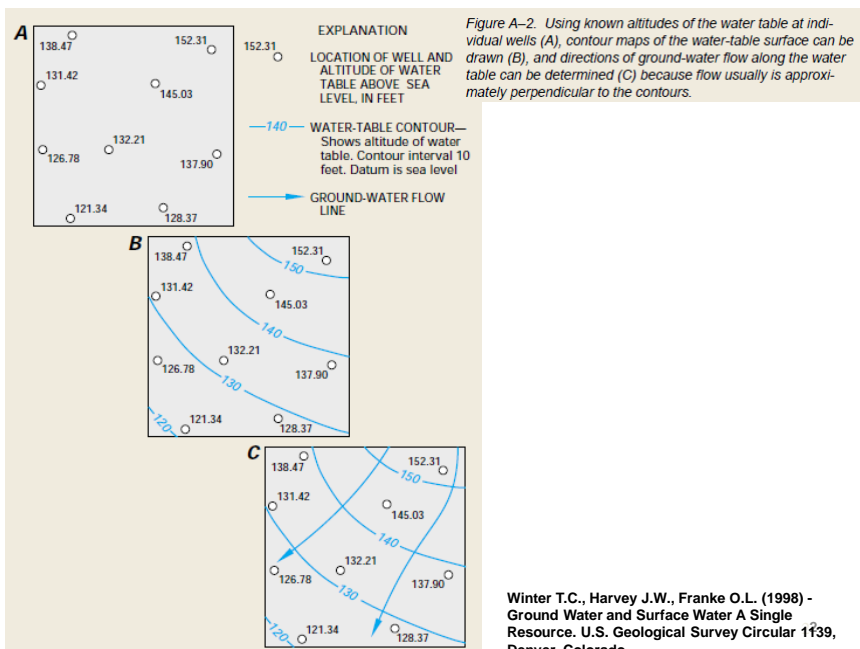
Bruno ARFIB

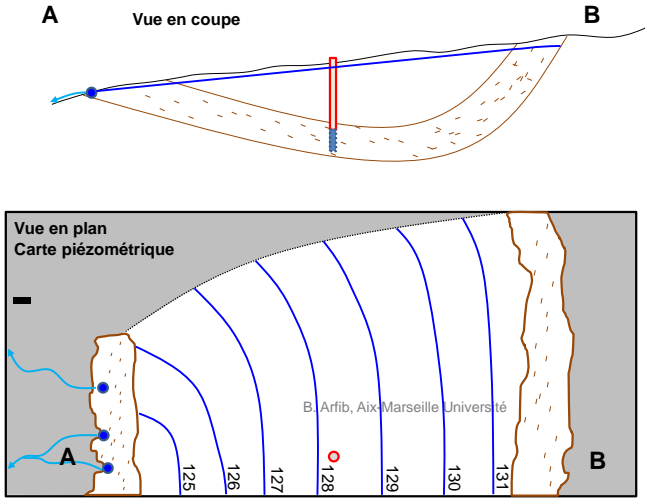
Maître de Conférences Université Aix-Marseille,  
CEREGE Centre Saint Charles

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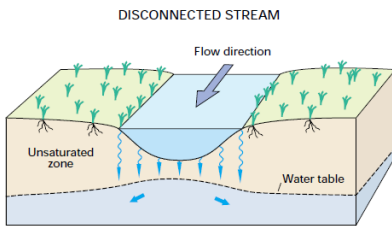


Figure 10. Disconnected streams are separated from the ground-water system by an unsaturated zone.

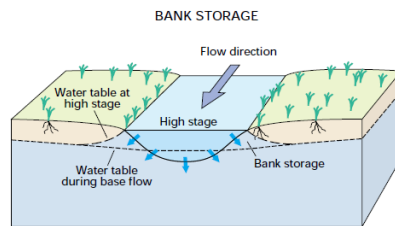
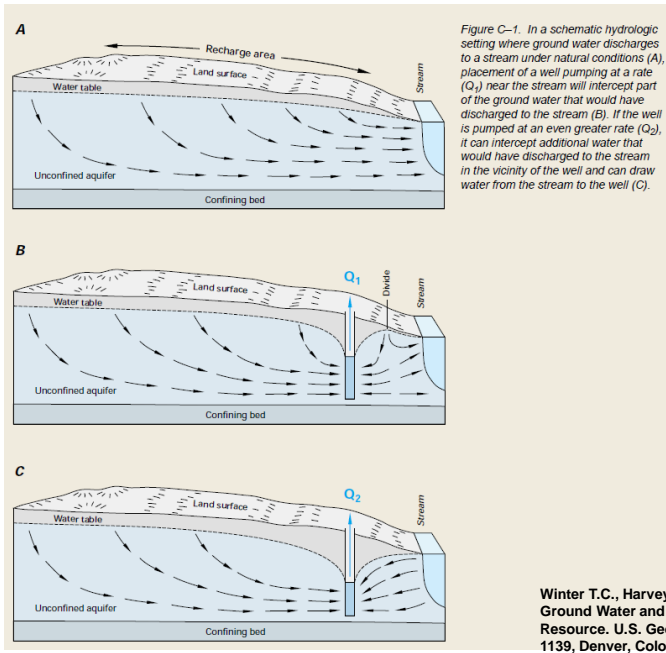


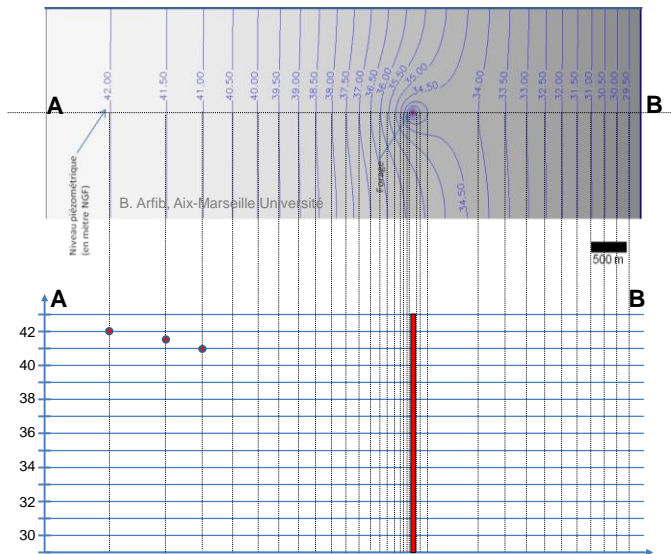
Figure 11. If stream levels rise higher than adjacent ground-water levels, stream water moves into the streambanks as bank storage.

Winter T.C., Harvey J.W., Franke O.L. (1998) - Ground Water and Surface Water A Single Resource. U.S. Geological Survey Circular 1139, Denver, Colorado.

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### Effet du prélèvement sur un forage



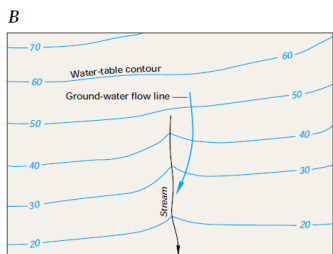
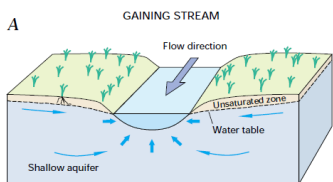


Figure 8. Gaining streams receive water from the ground-water system (A). This can be determined from water-table contour maps because the contour lines point in the upstream direction where they cross the stream (B).

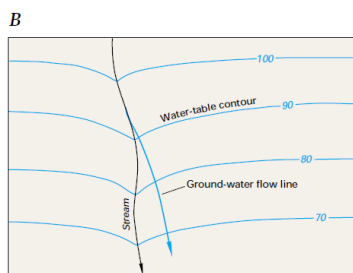
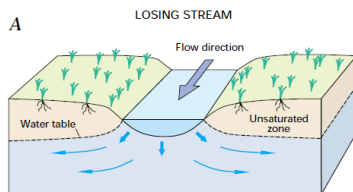


Figure 9. Losing streams lose water to the ground-water system (A). This can be determined from water-table contour maps because the contour lines point in the downstream direction where they cross the stream (B).

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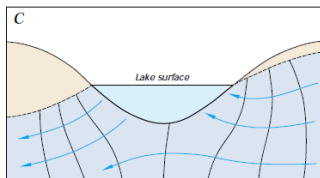
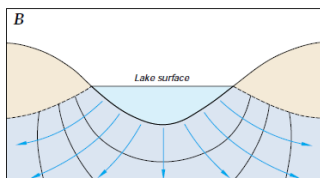
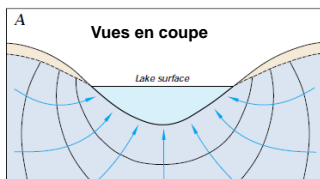
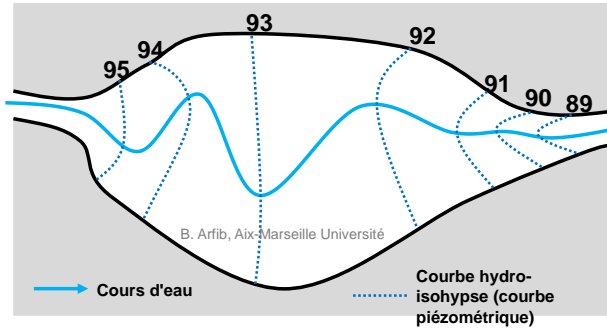


Figure 16. Lakes can receive ground-water inflow (A), lose water as seepage to ground water (B), or both

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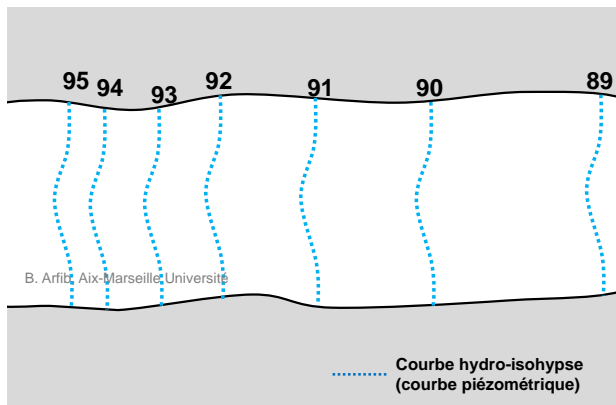
### Nappe libre alluviale, en relation avec la rivière



+ rivière = Limite à charge imposée (condition de Dirichlet)

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### Limite à flux imposé (condition de Neumann) Cas particulier : flux nul



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Carte piézométrique (Nappe libre de la Durance, mesures effectuées le 13/09/1997)

