14N - Conejos Médanos-Bolsón de la Mesilla

Geography
Total area TBA (km²): 13 000
No. countries sharing: 2
Countries sharing: Mexico, United States of America
Population: 1 000 000
Climate zone: Arid
Rainfall (mm/yr): 230

Hydrogeology
Aquifer type: Multiple layers hydraulically connected
Degree of confinement: Aquifer mostly unconfined, some parts confined
Main Lithology: Sediment – sand and sandstones

No cross-section available

Map and cross-section are only provided for illustrative purposes. Dimensions are only approximate.
14N - Conejos Médanos-Bolsón de la Mesilla

TWAP Groundwater Indicators from Global Inventory

<table>
<thead>
<tr>
<th></th>
<th>Recharge (mm/y) (1)</th>
<th>Renewable groundwater per capita (m³/y/capita)</th>
<th>Natural background groundwater quality (%) (2)</th>
<th>Human dependency on groundwater (%) (3)</th>
<th>Groundwater depletion (mm/y) (3)</th>
<th>Groundwater pollution (%) (3)</th>
<th>Population density (Persons/km²) (4)</th>
<th>Transboundary legal framework (Score) (5)</th>
<th>Transboundary institutional framework (Score) (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>3</td>
<td>25</td>
<td>80</td>
<td>100</td>
<td>0</td>
<td>A</td>
<td>120</td>
<td>A</td>
<td>D</td>
</tr>
<tr>
<td>United States of America</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>44</td>
<td>TBA level</td>
<td></td>
</tr>
</tbody>
</table>

(1) Recharge: This is the long term average recharge (in m³/yr) divided by the surface area (m²) of the complete country segment of the aquifer (i.e. not only the recharge area).

(2) Natural background groundwater quality: Estimate of percentage of surface area of aquifer where the natural groundwater quality satisfies local drinking water standards.

(3) Groundwater pollution: A. No pollution has been identified; B. Some pollution has been identified; Positive number: Significant pollution has been identified (% of surface area of aquifer).

(4) Groundwater development stress: Annual groundwater abstraction divided by recharge.

(5) Legal framework: A. Agreement with full scope for TBA management signed by all parties; B. Agreement with limited scope for TBA management signed by all parties; C. Agreement under preparation or available as an unsigned draft; D. No agreement exists, nor under preparation; E. Legal Framework differs between Aquifer States (see data at National level).

(6) Institutional Framework: A. Dedicated transboundary institution fully operational; B. Dedicated transboundary institution in place, but not fully operational; C. National/Domestic institution fully operational; D. National/Domestic institution in place, but not fully operational; E. No institution exists for TBA management; F. Institutional Framework differs between Aquifer States (see data at National level).

X A value was provided in the questionnaire, but it was considered un-realistic and therefore removed from the table.

Key parameters table from Global Inventory

<table>
<thead>
<tr>
<th></th>
<th>Distance from ground surface to groundwater table (m)</th>
<th>Depth to top of aquifer formation (m)</th>
<th>Full vertical thickness of the aquifer (system)* (m)</th>
<th>Degree of confinement</th>
<th>Predominant aquifer lithology</th>
<th>Predominant type of porosity (or voids)</th>
<th>Secondary Porosity</th>
<th>Transmissivity (m³/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>54</td>
<td>&lt;5</td>
<td>600</td>
<td>Aquifer Mostly unconfined, but some parts confined</td>
<td>Sediment – Sand and sandstones</td>
<td>High Primary porosity fine/medium sedimentary deposits</td>
<td>Secondary porosity: Fractures</td>
<td>240</td>
</tr>
<tr>
<td>United States of America</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TBA level</td>
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<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

* Including aquitards/aquicludes

X A value was provided in the questionnaire, but it was considered un-realistic and therefore removed from the table.
14N - Conejos Médanos-Bolsón de la Mesilla

Aquifer description

Only Mexico has provided information so most of the values relate to the portion of the aquifer within Mexico.

Aquifer geometry

It is a multiple 2-layered, hydraulically connected, system. The aquifer is mostly unconfined, but in some parts confined. The average distance to the groundwater level is 54m and the average total vertical thickness of the aquifer system is 600m.

Hydrogeological aspects

The main lithology is sediment-sand and sandstones that has a high primary porosity as well as secondary porosity: fractures. The average aquifer transmissivity is estimated as 242m²/d. The average annual aquifer recharge is estimated at 18.8 Mm³/annum that originates from a recharge area of 4800 km². The total groundwater volume is 140 km³.

Linkages with other water systems

Recharge to the aquifer system is from precipitation on the aquifer area and discharge from the system is through evapotranspiration.

Environmental aspects

22% of groundwater across the aquifer area is unsuitable for human consumption as a result of elevated natural salinity, fluoride and arsenic, occurring only in the superficial layers. No pollution has been identified. 5% of the aquifer contains shallow groundwater and groundwater dependent ecosystems.

Socio-economic aspects

The annual average groundwater abstraction has been estimated as 0.6 Mm³/annum, which is also the figure provided for total annual fresh water abstraction. There has been no groundwater depletion.

Legal and Institutional aspects

Mexico makes mention of a Bilateral Agreement with full scope. It also identifies its National Institution with a full mandate and full capacity. Groundwater management is undertaken according to National law and regulations.

Emerging issues

Nothing identified at this stage.

Contributors to Global Inventory

<table>
<thead>
<tr>
<th>Name</th>
<th>Organisation</th>
<th>Country</th>
<th>E-mail</th>
<th>Role</th>
</tr>
</thead>
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Transboundary Aquifer Information Sheet

14N - Conejos Médanos-Bolsón de la Mesilla

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<td>Contributing national expert</td>
</tr>
</tbody>
</table>

Considerations and recommendations

Most data in the tables and text above have been provided by national and regional experts (listed above) or have been derived from the global WaterGAP model. See colophon for more information, including references to data from other sources.

The TBA system could not be described fully, because only one of the TBA countries provided adequate numerical information.

Data gaps and also differences between data from national experts (Global Inventory) and data derived from WaterGAP highlight the need for further research on transboundary aquifers.

Colophon

This Transboundary Aquifers information sheet has been produced as part of the Groundwater Component of the GEF Transboundary Water Assessment Programme (GEF TWAP). GEF TWAP is the first truly global comparative assessment of transboundary groundwater, lakes, rivers, large marine ecosystems and the open ocean. More information on TWAP can be found on: www.geftwap.org. The Groundwater component of TWAP carried out a global comparison of 199 transboundary aquifers and the groundwater systems of 41 Small Island Developing States. The data used to compile this transboundary aquifer information sheet has been made available by national and regional experts from countries involved in the TWAP Groundwater project. For aquifers larger than 20 000 km² and which are not overlapping, additional data are available from modelling done by the Goethe University Frankfurt (Germany) as part of TWAP Groundwater. All data were compiled by UNESCO-IHP and the International Groundwater Resources Assessment Centre (IGRAC – UNESCO Category II Institute). Values given in the fact-sheet represent an approximate guide only and should not replace data obtained from recent local assessments. The editors of this information sheet are not responsible for the quality of the data.

For more information on TWAP Groundwater and for more data, please have a look at the TWAP Groundwater Information Management System which is accessible via www.twap.isarm.org or www.un-igrac.org.

Request:

If you have additional data or information about this transboundary aquifer that can improve the quality of this information sheet and the underlying database, please contact us via email at info@un-igrac.org. If appropriate, the information will be uploaded to the database of transboundary aquifers and will also be used in new versions of this information sheet.

References:
- Climate: Climate indicates the major climate zone which occurs in the aquifer area. If more than 1 climate zone is present the zone with the largest surface area was selected. Source climate data: ArcGIS Online (2015), Simplified World Climate zones. Owner: Mapping Our World GIS Education. Original map: National Geographic World Atlas for Young Explorers (1998).
- All other data: TWAP Groundwater (2015).

Version: October 2015