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(2002/5/22                      2001/10/30                      )

1999-1998

.100-1600 ppm

## **Hydrogeochemistry of Ground Water in Wadi Nini Basin – East Algeria**

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### **ABSTRACT**

Wadi Nini basin is located northeast of Algeria and it is part of Qasantina upper plateau basin. The main aquifers in this basin are in Tertiary-Quaternary and in the Upper Maestrichtian formations; the late is characterized by high fractures and karstified

limestones. For the purpose of detecting the quality of groundwater, groundwater samples were collected from deep and hand dug wells during the September of 1998-1999. The hydro-geochemical analysis give the concentration of the total dissolved solid in the water of the basin ranging from 100-1600 ppm. Due to different classifications applied in this study, it shows different structures of water within different parts of the basin, for it is Calcic-Bicarbonate near the recharge area, change to Calcic-Sulphic in the direction of flow, then to Sodic-Chloride near the Sabkhas (discharge area). Generally, the groundwater of Wadi Nini basin is considered to be applicable for using both in domestic and agricultural activities according to the World Standardization, except in few places where the concentrations exceeds the permissible limits.

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. (Plioquaternary aquifer) -

.(Alligui, 2000)

0.015

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0.006

0.02

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1999-1998

45

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(pH)

(EC)

Wells	T(C°)	EC (μmohs/cm)	Correction Factor	Corrected EC	PH
H <sub>1</sub>	17	1000	1.070	1070	7.1
H <sub>2</sub>	16.5	1600	1.084	1734.4	7.1
H <sub>3</sub>	17.5	1300	1.059	1588.5	7.3
H <sub>4</sub>	17	1600	1.023	1734.4	7.1
H <sub>5</sub>	19	2400	1.059	2455.2	6.9
H <sub>6</sub>	17.5	1900	1.070	2012.1	7.3
H <sub>7</sub>	17	1200	1.070	1284	7.3
H <sub>8</sub>	17	1200	1.070	1284	7.2
H <sub>9</sub>	17	2200	1.070	2354	7
H <sub>10</sub>	17	3450	1.070	3691.5	7.3
H <sub>11</sub>	17	2200	1.070	2354	7.1
H <sub>12</sub>	17	1300	1.070	1391	7
H <sub>13</sub>	17	2200	1.070	2354	7.2
H <sub>14</sub>	17	1500	1.070	1605	7.2
H <sub>15</sub>	17	1200	1.070	1284	7
H <sub>16</sub>	18	1300	1.046	1359.8	7.3
H <sub>17</sub>	18	1200	1.046	1255.2	7.2
H <sub>18</sub>	16	2200	1.096	2411.2	7.1
H <sub>19</sub>	17	1600	1.070	1712	7.1
H <sub>20</sub>	17	1300	1.070	1391	7.1
H <sub>21</sub>	17	1200	1.070	1284	7.1
H <sub>22</sub>	16	1600	1.096	1753.6	7.4
H <sub>23</sub>	17	2200	1.070	2354	7.5
H <sub>24</sub>	17	900	1.070	936	7.1
H <sub>25</sub>	17	900	1.070	963	7.6
H <sub>26</sub>	17	950	1.070	1016.5	7.4
H <sub>27</sub>	17	1000	1.070	1070	7.0
H <sub>28</sub>	17	1000	1.070	1070	7.2
H <sub>29</sub>	17	1400	1.070	1498	7.4
H <sub>30</sub>	16	1400	1.096	1534.4	7.2
H <sub>31</sub>	17	800	1.070	856	7.3
H <sub>32</sub>	16	1000	1.096	1096	7.2
H <sub>33</sub>	16	1200	1.096	1315.2	7.2
H <sub>34</sub>	17	2800	1.070	2996	7.1
H <sub>35</sub>	18	3200	1.046	3347	7.3
H <sub>36</sub>	18	2100	1.046	2196.6	7.0
H <sub>37</sub>	18	3000	1.046	3138	7.0
H <sub>38</sub>	18	1400	1.046	1464.4	7.0
H <sub>39</sub>	18	1600	1.046	1637.6	7.0
H <sub>40</sub>	18	2300	1.046	2405.8	7.1
I <sub>40</sub>	19	960	1.023	982	7
J <sub>40</sub>	18	820	1.046	857.7	7.2
H <sub>47</sub>	17	860	1.070	920.2	7
O <sub>45</sub>	19	640	1.023	879.7	7.1
G <sub>24</sub>	19	400	1.023	409.2	7.8

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19-16

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H<sub>5</sub>, H<sub>38</sub>

H<sub>10</sub>, H<sub>11</sub>, H<sub>12</sub>, H<sub>35</sub>, H<sub>36</sub>, H<sub>38</sub>

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-3

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-4

856-3347

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-5

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Mmohs/cm

(3

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	(pH)	<b>pH</b>	<b>-6</b>
pH		(H <sub>5</sub> )	) 6.9-7.8
			7-7.1
			: <b>-7</b>

	H <sub>35</sub>	1600 ppm
500-1600 ppm		41-450 m
		100-400 ppm

.(Al-Soudani,1998)

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.(5) (epm)

$$TH = (rCa + rMg) * 5$$

22- 96 F

H<sub>13</sub>, H<sub>38</sub>, H<sub>40</sub>,

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.(2 )

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:-1

48-232 ppm

.( 5 )



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90 ppm

.( 5 )

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122-396 ppm

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.( 5 ) (Ayres and Westcot, 1985)

: -2

78- 420 ppm

36-185 ppm

.( 5 )

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67-397 ppm

(3) 300ppm

.( 5 )

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: 5

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(r%)

pH TDS 15%

$$TDS = \frac{rHCO_3 * rCl * rSO_4}{rCa * rMg * r(Na + K)} * PH$$

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(6)

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(Rodier, 1975)

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(7)

(4 )

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(Piper Classification)

:6

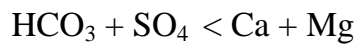
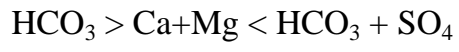
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(5 )



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Sulin, )

( 1946.

(8) .( Fetter, 1980 )

.CaCl<sub>2</sub>

.Na<sub>2</sub>SO<sub>4</sub>

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**-6**

$V_1$

$V_2$

(Al-Soudani, 1998)

(9)

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409.2-2405.8

16-19

6.9-7.9

Moho/cm

400-1600 ppm

(WHO, 1995)

(H<sub>5</sub> , H<sub>36</sub> , H<sub>35</sub>)

(SAR)

(Ayres and

Westcot, 1985)

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