CLIMATE         P1         AVERAGE HIGH & LOW TEMPERATURES         1930 – 2012           JAN         FEB         MAR         APR         MAY         JUN         JUL         AUG         SEP         OCT         NOV         DEC         ANNUAL           "FHCH         52.3         56.2         63.9         72.7         80.3         86.8         88.8         88.0         82.5         73.1         62.8         50.0         75.2           "C HUR         31.2         35.4         17.7         22.6         61.0         15.4         19.5         21.2         20.9         17.9         11.7         60.0         2.2         11.3           C LOW         1.0° F         41.1° C         JUN F         2012         20.9         17.9         17.7         60.0         2.2         11.1         12.2         22.1         13.3           C LOW         33.7°         F         41.1° C         JUN F         2012         20.9         17.9         17.7         60.0         29°N         0°         28°S           SOLAR-NOON ALTTUDE         ANSE         MOS OF DUE EAST THE SUN SETS <sup>2</sup> 0°         29°N         0°         28°S         30°         56°	ONE-PAGE PLACE ASSESSMENT: ATLANTA, GEORGIA LOCATED IN THE UPPER OCMULGEE & APALACHICOLA SUBWATERSHEDS WITHIN THE SOUTH ATLANTIC GULF WATERSHED.													
JAN         FEB         MAR         APR         MAY         JUN         JUL         AUG         SEP         OCT         NOV         DEC         ANNUAL           'F HIGH         52.3         56.2         63.9         72.7         80.3         86.8         88.8         88.0         82.5         73.1         62.8         54.0         71.8           'F LIGH         13.4         17.7         22.6         66.1         10.6         15.4         19.5         21.2         20.9         17.9         11.7         6.0         2.2         11.3           RECORD HIGH         106° F         41.1° C         June 30, 2012         RECORD LOW         -8° F         -22.2° C         January 21, 1985           LATITUDE         33.7°         DEGREES N or S of DUE EAST THE SUN RISES'         0°         29°N         0°         28°S           LEVATION         10.51         17.3         0.04.R-NOON ALTITUDE ANGLE (ABOVE HORIZON)* <sup>2.1</sup> 11.1.55        AND AZIMUTH'         0°           320         m         SOLAR-NOON ALTITUDE ANGLE (ABOVE HORIZON)* <sup>2.1</sup> 11.2.97        AND AZIMUTH'         0°           9AM & 3PM         VINDER-SOLSTICE SHADOW RATIO'         11.2.97        AND AZIMUTH'         0°	CLIMAT	<b>\TE</b> □ P1 AVERAGE HIGH & LOW TEMPERATURES <sup>1</sup> 1930 – 2012								)12				
F High       52.3       56.2       63.9       72.7       80.3       86.8       88.8       88.0       82.5       73.1       62.8       54.0       71.8         F Low       34.2       36.5       42.9       51.0       59.7       67.1       70.2       69.7       64.2       53.0       42.8       36.0       52.3         C High       11.3       13.4       17.7       22.6       26.8       30.4       31.6       31.1       28.1       22.8       17.7       12.2       22.1         C Iow       1.2       2.6       6.1       10.6       15.4       19.5       21.2       20.9       17.9       11.7       6.0       2.2       21.1         RECORD HIGH       10.6° F       41.1° C       June 30.2012       RECORD LOW       -8° F       -2.22° C       January 21,1985         LATITUDE       33.7°       DEGREES N or S of DUE EAST THE SUN RISES <sup>6</sup> 0°       29° N       0°       28° S         SOLAR-NOON MINTER-SOLSTICE SHADOW RATION       1       1.5      AND AZIMUTH       0°       28° S         SOLAR-NOON WINTER-SOLSTICE SHADOW RATION       1       2.90° N       0°       28° S         PREVAILING WIND       NW       NW	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC	<mark>ANNUAL</mark>	
``F LOW       34.2       36.5       42.9       51.0       59.7       67.1       70.2       69.7       64.2       53.0       42.8       36.0       52.3         `C HIGH       11.3       13.4       17.7       22.6       26.8       30.4       31.6       31.1       28.1       22.8       17.1       12.2       22.1         `C HIGH       1.2       2.5       6.1       10.6       15.4       19.5       21.2       20.9       17.9       11.7       6.0       2.2       11.3         RECORD HIGH'       1.0 <sup>6</sup> T       41.1° C       June 3/       20.9       17.9       11.7       6.0       2.9       NO°       28°C         LATITUDE       33.7°       DEGRESS N or S of DUE EAST THE SUN RISES'       0°       2.9°N       0°       2.8°C       33°         ELEVATION       1.051       fT       SOLAR-NOON NUNTER-SOLSTICE SHADOW RATIO       1 : 1.55      AND AZ/WUTF'       43°         YIND       F3       SOLAR-NOON NUNTER-SOLSTICE SHADOW RATIO       1 : 2.97      AND AZ/WUTF'       43°         JAN       F8       MAR       APR       MAY       JUN       JUL       AUG       SEP       OCT       NOV       DEC       ANNUAL	<sup>°</sup> F нісн 52.3	56.2	63.9	72.7	80.3	86.8	88.8	88.0	82.5	73.1	62.8	54.0	71.8	
``C HIGH       11.3       13.4       17.7       22.6       26.8       30.4       31.6       31.1       28.1       22.8       17.1       12.2       22.1         ``C LOW       1.2       2.5       6.1       10.6       15.4       19.5       21.2       20.9       17.9       11.7       6.0       2.2       11.3         RECORD HIGH'       ``OE''       ¥ 11''       C       June 30, 2012       RECORD LOW'       -8" F       · 22.2" C       June 70, 28"S       Dec 2         SUN       ``DE''       ELEVATION       ``DE''       SUAR       DEGREES N or S of DUE EAST THE SUN RISE'       0"       29"N       0"       28"S       30"       28"S       30"       29"N       0"       28"S       30"       30"       30"       30"S       30	<sup>°</sup> F LOW 34.2	36.5	42.9	51.0	59.7	67.1	70.2	69.7	64.2	53.0	42.8	36.0	52.3	
************************************	°С нібн 11.3	13.4	17.7	22.6	26.8	30.4	31.6	31.1	28.1	22.8	17.1	12.2	22.1	
RECORD HIGH         106° F         41.1° C         June 30, 2012         RECORD LOW'         -8° F         -22.2° C         January 21, 1985           SUN         P2         DEGREES N or S of DUE EAST THE SUN RISES'         0°         29°N         0°         28°C           LATITUDE         33.7°         DEGREES N or S of DUE WEST THE SUN SETS'         0°         29°N         0°         28°S           SOLAR-NOON ALTITUDE ANGLE (ABOVE HORIZON)*23         56°         80°         56°         33°           ELEVATION         1,051 Fr        AND AZIMUTH'         0°         28°S           SOLAR-NOON WINTER-SOLSTICE SHADOW RATIO*         1 : 1.55        AND AZIMUTH'         0°           9AM & 3PM WINTER-SOLSTICE SHADOW RATIO*         1 : 1.57        AND AZIMUTH'         43°           WIND         F8         MAX         APR         MAY         JUN         JUL         AUG         SEP         OCT         NOV         DEC         ANNUAL           NW         NMX         NMX         NMX         NMX         NMX         NMX         NMX         NMX         NMX         NM	°C LOW 1.2	2.5	6.1	10.6	15.4	19.5	21.2	20.9	17.9	11.7	6.0	2.2	11.3	
SUN         P2         MAR 21         JUN 21         SEP 21         DEC 21           LATITUDE         33.7°         DEGREES N or S of DUE EAST THE SUN RISES <sup>2</sup> 0°         29°N         0°         28°S           LATITUDE         33.7°         DEGREES N or S of DUE WEST THE SUN RISES <sup>2</sup> 0°         29°N         0°         28°S           SOLAR-NOON ALTITUDE ANGLE (ABOVE HORIZON) <sup>42,3</sup> 56°         80°         56°         33°           ELEVATION         1,051         FT         SOLAR-NOON ALTITUDE ANGLE (ABOVE HORIZON) <sup>42,3</sup> 1: 1.55        AND AZIMUTH'         0°           9AM & 3PM WINTER-SOLSTICE SHADOW RATIO <sup>6,2</sup> 1: 2.97        AND AZIMUTH'         43°           WIND         FS         SOLAR-NOON WINTER-SOLSTICE SHADOW RATIO <sup>6,2</sup> 1: 2.97        AND AZIMUTH'         43°           WIND         FS         MAR         APR         MAY         JUN         JUL         AUG         SEP         OCT         NOV         DEC         ANNUAL           NW         NW         NW         NW         WW         WW         E         ENE         E         NWX         NW         NW         NW         NW         NW         NW         NW         NW         NW         NW <td>RECORD HIG</td> <td>5H<sup>1</sup> 1(</td> <td>06° F</td> <td>41.1° C</td> <td>June 30</td> <td>0, 2012</td> <td>RECO</td> <td>RD LOV</td> <td>V<sup>1</sup> -8°</td> <td>F -2</td> <td>2.2° C</td> <td>January</td> <td><mark>21, 1985</mark></td>	RECORD HIG	5H <sup>1</sup> 1(	06° F	41.1° C	June 30	0, 2012	RECO	RD LOV	V <sup>1</sup> -8°	F -2	2.2° C	January	<mark>21, 1985</mark>	
LATITUDE         33.7°         DEGREES N or S of DUE EAST THE SUN RISES <sup>2</sup> 0°         29°N         0°         28°S           LATITUDE         33.7°         DEGREES N or S of DUE WEST THE SUN SETS <sup>2</sup> 0°         29°N         0°         28°S           SOLAR-NOON ALTITUDE ANGLE (ABOVE HORIZON) <sup>2,2,3</sup> 56°         80°         56°         33°           ELEVATION         1,051         FT         SOLAR-NOON WINTER-SOLSTICE SHADOW RATIO <sup>10</sup> 1:1.55        AND AZIMUTH <sup>2</sup> 43°           SOLAR-NOON WINTER-SOLSTICE SHADOW RATIO <sup>10</sup> 1:2.97        AND AZIMUTH <sup>2</sup> 43°           WIND         F1         SOLAR-NOON WINTER-SOLSTICE SHADOW RATIO <sup>10</sup> 1:2.97        AND AZIMUTH <sup>2</sup> 43°           WIND         F1         SOLAR-NOON WINTER-SOLSTICE SHADOW RATIO <sup>10</sup> 1:2.97        AND AZIMUTH <sup>2</sup> 43°           MAN         FEB         MAR         APR         MAY         JUN         JUL         AUG         SEP         OCT         NOV         DEC         ANNUAL           NW         NW         NW         NW         WNW         VERAGE RAINFALL (GAIN) <sup>1</sup> 1.3.8         15.0         13.8           MOH         15.4         15.8         16.1         15.0	SUN P2 MAR 21 JUN 21 SEP 21 DEC 21													
LATITUDE       33.7°       DEGREES N or S of DUE WEST THE SUN SETS 60°       0°       29°N       0°       28°S         SOLAR-NOON ALTITUDE ANGLE (ABOVE HORIZON) <sup>3,2,3</sup> 56°       80°       56°       33°         ELEVATION       1,320       FT       SOLAR-NOON NINTER-SOLSTICE SHADOW RATIO <sup>3,2,3</sup> 1 : J.5      AND AZIMUTH'       0°         9AM & 3PM WINTER-SOLSTICE SHADOW RATIO <sup>3</sup> 1 : J.5      AND AZIMUTH'       43°         VIND       F3      AND AZIMUTH'       43°         NW					DEGREE	S N or S o	f DUE EAS	ST THE SU	JN RISES <sup>2</sup>	0°	29°N	0°	28°S	
SOLAR-NOON ALTITUDE ANGLE (ABOVE HORIZON) <sup>4.23</sup> 56°       80°       56°       33°         ELEVATION       SOLAR-NOON ALTITUDE ANGLE (ABOVE HORIZON) <sup>4.23</sup> 56°       80°       56°       33°         SOLAR-NOON MINTER-SOLSTICE SHAD W RATIO <sup>6</sup> 1 : 1.55      AND AZIMUTH <sup>2</sup> 43°         MAR SPEN WINTER-SOLSTICE SHAD W RATIO <sup>6</sup> 1 : 2.97      AND AZIMUTH <sup>2</sup> 43°         WIND       PREVAILING WIND DIRECTION (FROM WHERE) <sup>4</sup> & AVERAGE SPEED <sup>4</sup> MAX SPEED <sup>5</sup> 60       97         MAR       APR       MAY       JUN       AUE       ADE       MAX       MAY       MAY <td c<="" td=""><td>LATITUDE</td><td>33.7</td><td></td><td></td><td>DEGREE</td><td>S N or S o</td><td>f DUE WE</td><td>ST THE S</td><td>UN SETS<sup>2</sup></td><td>0°</td><td>29°N</td><td>0°</td><td>28°S</td></td>	<td>LATITUDE</td> <td>33.7</td> <td></td> <td></td> <td>DEGREE</td> <td>S N or S o</td> <td>f DUE WE</td> <td>ST THE S</td> <td>UN SETS<sup>2</sup></td> <td>0°</td> <td>29°N</td> <td>0°</td> <td>28°S</td>	LATITUDE	33.7			DEGREE	S N or S o	f DUE WE	ST THE S	UN SETS <sup>2</sup>	0°	29°N	0°	28°S
LEVATION       1,051 320       FT m       SOLAR-NOON WINTER-SOLSTICE SHADOW RATIO <sup>6</sup> 1:1.55      AND AZIMUTH <sup>-0</sup> 9AM & 3PM WINTER-SOLSTICE SHADOW RATIO <sup>6</sup> 1:2.97      AND AZIMUTH <sup>-2</sup> 43°         WIND       P3         PREVAILING WIND DIRECTION (FROM WHERE) <sup>4</sup> & AVERAGE SPEED <sup>4</sup> MAX SPEED <sup>5</sup> 60       97         JAN       FEB       MAR       APR       MAY       JUN       JUL       AUG       SEP       OCT       NOV       DEC       ANNUAL         NW       NW       NW       NW       NW       WW       E       ENE       E       NW       NW <t< td=""><td></td><td></td><td></td><td>SOLAR-N</td><td>OON ALT</td><td>TTUDE AN</td><td>NGLE (AB</td><td>OVE HOR</td><td>IZON)<sup>a,2,3</sup></td><td>56°</td><td>80°</td><td>56°</td><td>33°</td></t<>				SOLAR-N	OON ALT	TTUDE AN	NGLE (AB	OVE HOR	IZON) <sup>a,2,3</sup>	56°	80°	56°	33°	
320 m       SOUR RECOMMENTATION OF MALLO SUMMENTATION         9AM & 3 PM WINTER-SOLSTICE SHADOW RATION         MAX SPEED <sup>5</sup> 60 97         PREVAILING WIND DIRECTION (FROM WHERE) <sup>4</sup> & AVERAGE SPEED <sup>4</sup> MAX SPEED <sup>5</sup> 60 97         PREVAILING WIND DIRECTION (FROM WHERE) <sup>4</sup> & AVERAGE SPEED <sup>4</sup> MAX SPEED <sup>5</sup> 60 97         MAX MAY       JUN       JUN       MAX SPEED <sup>5</sup> 60 97         MAX MAY       JUN       JUN       MAX SPEED <sup>5</sup> 60 97         MAX MAY       MAY       JUN       MAX SPEED <sup>5</sup> 60 97         MAX MAY       MAY       JUN       JUN       MAX SPEED <sup>5</sup> 60       OCT       NOV       DEC       ANNUAL         NW       NW       NW       NW       NW       NW       NW       MAX SPEED <sup>5</sup> 60       OT       NOV       DEC       ANNUAL         NW       NW       NW       NW       NW       NW       NW       NW	ELEVATION	1,051	FT			TER-SOLS	ΤΙζΕ SHAI		rıo <sup>₅</sup> 1:	1.55	AND AZ	IMUTH	0°	
MAX       SPM       WINTERSOLUTE SHADOW RATIO       1 12.97      AND AZIMUTH       43         WIND       F3       MAX       SPM       WIND DIRECTION (FROM WHERE) <sup>4</sup> & AVERAGE SPEED <sup>4</sup> MAX       SPEED <sup>5</sup> 60       97         JAN       FEB       MAR       APR       MAY       JUN       JUL       AUG       SEP       OCT       NOV       DEC       ANNUAL         NW       NW       NW       NW       NW       NW       WW       E       ENE       E       NW       NU		320	m S							2.07			4.2.0	
WIND         F3         MAX SPEED <sup>6</sup> M				9AM & 3	PM WINI	EK-SOLSI	ICE SHAL	DOW RAI	105,2	2.97	AND AZ	IMUIH <sup>c,2</sup>	45	
JAN       FEB       MAR       APR       MAY       JUN       JUL       AUG       SEP       OCT       NOV       DEC       ANNUAL         NW       NW <td< td=""><td colspan="13">MAX SPEED<sup>5</sup> 60 97 PREVAILING WIND DIRECTION (FROM WHERE)<sup>4</sup> &amp; AVERAGE SPEED<sup>4</sup> MPH km/h</td></td<>	MAX SPEED <sup>5</sup> 60 97 PREVAILING WIND DIRECTION (FROM WHERE) <sup>4</sup> & AVERAGE SPEED <sup>4</sup> MPH km/h													
NW         NW         NW         NW         NW         NW         WNW         E         ENE         E         NW         NW         NW           MPH         9.6         9.8         10.0         9.3         8.3         7.7         7.5         7.0         7.8         8.2         8.6         9.3         8.6           km/h         15.4         15.8         16.1         15.0         13.4         12.4         12.1         11.3         12.6         13.2         13.8         15.0         13.8           VATER         F4         AVERAGE RAINFALL (GAIN) <sup>1</sup> 1930 - 2012         2010         ANNUAL           INCHES         4.52         4.47         5.41         3.99         3.71         3.79         4.80         3.69         3.63         4.18         48.58           mm         114.8         113.5         137.4         101.3         94.2         96.3         121.9         93.7         90.4         71.9         92.2         106.2         1233.9           INCHES         2.12         2.73         4.28         5.78         7.03         710         7.07         6.70         5.22         4.14         2.89         2.26         57.32     <	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL	
MPH       9.6       9.8       10.0       9.3       8.3       7.7       7.5       7.0       7.8       8.2       8.6       9.3       8.6         km/h       15.4       15.8       16.1       15.0       13.4       12.4       12.1       11.3       12.6       13.2       13.8       15.0       13.8         WATER       P4       AVERAGE RAINFALL (GAIN) <sup>1</sup> 1930 - 2012         JAN       FEB       MAR       APR       MAY       JUN       AUG       SEP       OCT       NOV       DEC       ANNUAL         INCHES       4.52       4.47       5.41       3.99       3.71       3.79       4.80       3.69       3.56       2.83       3.63       4.18       48.58         mm       114.8       113.5       137.4       101.3       94.2       96.3       121.9       93.7       90.4       71.9       92.2       106.2       1233.9         INCHES       2.12       2.73       4.28       5.78       7.03       7.10       7.07       6.70       5.22       4.14       2.89       2.26       57.32         INCHES       2.12       2.73       4.28       5.78       7.03       <	NW	NW	NW	NW	NW	NW	WNW	E	ENE	E	NW	NW	NW	
km/h       15.4       15.8       16.1       15.0       13.4       12.4       12.1       11.3       12.6       13.2       13.8       15.0       13.8         W       F       F       A       AVERAGE RAURAL (GAIN) <sup>1</sup> 1930 - 2012       13.8       15.0       ANNUAL         JAN       FEB       MAR       APR       MAY       JUN       JUL       AUG       SEP       OCT       NOV       DEC       ANNUAL         INCHES       4.52       4.47       5.41       3.99       3.71       3.79       4.80       3.69       3.56       2.83       3.63       4.18       48.58         mm       11.4.8       13.5       137.4       101.3       94.2       96.3       121.9       93.7       90.4       71.9       92.2       106.2       123.9         INCHES       2.12       2.73       4.28       5.78       7.03       71.0       7.07       6.70       5.22       4.14       2.89       2.26       57.32         INCHES       2.12       2.73       4.28       5.78       7.03       71.0       7.07       6.70       5.22       4.14       2.89       2.26       57.32         INCHES <th< td=""><td>MPH 9.6</td><td>9.8</td><td>10.0</td><td>9.3</td><td>8.3</td><td>7.7</td><td>7.5</td><td>7.0</td><td>7.8</td><td>8.2</td><td>8.6</td><td>9.3</td><td>8.6</td></th<>	MPH 9.6	9.8	10.0	9.3	8.3	7.7	7.5	7.0	7.8	8.2	8.6	9.3	8.6	
WATER       P4       AVERAGE RANFALL (GAIN) <sup>1</sup> $1930 - 2012$ JAN       FEB       MAR       APR       MAY       JUN       JUL       AUG       SEP       OCT       NOV       DEC       ANNUAL         INCHES       4.52       4.47       5.41       3.99       3.71       3.79       4.80       3.69       3.56       2.83       3.63       4.18       48.58         mm       114.8       113.5       137.4       101.3       94.2       96.3       121.9       93.7       90.4       71.9       92.2       106.2       1233.9         AVERAGE PANEVAPORATION (POTENTIAL LOSS) <sup>d.6</sup> $1956 - 1950 - 1950$ INCHES       2.12       2.73       4.28       5.78       7.03       7.10       7.07       6.70       5.22       4.14       2.89       2.26       57.32         INCHES       2.12       2.73       4.28       5.78       7.03       7.10       7.07       6.70       5.22       4.14       2.89       2.26       57.32         INCHES       2.12       2.73       4.28       5.78       7.03       17.0       7.07       6.70       5.22       4.14       2.89       2.26       57.32	km/h 15.4	15.8	16.1	15.0	13.4	12.4	12.1	11.3	12.6	13.2	13.8	15.0	13.8	
JAN       FEB       MAR       APR       MAY       JUN       JUL       AUG       SEP       OCT       NOV       DEC       ANNUAL         INCHES       4.52       4.47       5.41       3.99       3.71       3.79       4.80       3.69       3.56       2.83       3.63       4.18       48.58         mm       114.8       113.5       137.4       101.3       94.2       96.3       121.9       93.7       90.4       71.9       92.2       106.2       1233.9         AVERAGE PAN EVAPORATION (POTENTIAL LOSS) <sup>d,6</sup> 1956 – 1970         INCHES       2.12       2.73       4.28       5.78       7.03       710       7.07       6.70       5.22       4.14       2.89       2.26       57.32         mm       53.8       69.3       108.7       146.8       178.6       180.3       179.6       170.2       132.6       105.2       73.4       57.4       1,455.9         WETTEST YEAR'S RAIN <sup>1</sup> 71.45       INCHES       1815 mm       1948       DRIEST YEAR'S RAIN <sup>1</sup> 31.80 INCHES       808 mm       1954         LONGEST PERIOD WITH NO MEASURABLE PRECIPITATION <sup>7</sup> RAINFALL INCOME <sup>e</sup> 694       GPCD <t< td=""><td colspan="13">WATER P4 AVERAGE RAINFALL (GAIN)<sup>1</sup> 1930 – 2012</td></t<>	WATER P4 AVERAGE RAINFALL (GAIN) <sup>1</sup> 1930 – 2012													
INCHES       4.52       4.47       5.41       3.99       3.71       3.79       4.80       3.69       3.56       2.83       3.63       4.18       48.58         mm       114.8       113.5       137.4       101.3       94.2       96.3       121.9       93.7       90.4       71.9       92.2       106.2       1233.9         AVERAGE PANEVAPORATION (POTENTIAL LOSS) <sup>d,6</sup> 1956 – 1970         INCHES       2.12       2.73       4.28       5.78       7.03       7.10       7.07       6.70       5.22       4.14       2.89       2.26       57.32         mm       53.8       69.3       108.7       146.8       178.6       180.3       179.6       170.2       132.6       105.2       73.4       57.4       1,455.9         WETTEST YEAR'S RAIN' 71.45 INCHES       1815 mm       1948       DRIEST YEAR'S RAIN' 31.80       INCHES       88 mm       1954         LONGEST PERIOD WITH NO MEASURATELE       POPULATION       RAINFALL INCHES       694       GPCD         344.7       gr       90.4       133.15       SQ MILES       POPULATION <sup>6</sup> 443,775       UTILITY-WATER USE <sup>6</sup> 125       GPCD         344.7       gr2<	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC	ANNUAL	
mm       114.8       113.5       137.4       101.3       94.2       96.3       121.9       93.7       90.4       71.9       92.2       106.2       1233.9         AVERAGE PAN EVAPORATION (POTENTIAL LOSS) <sup>d,6</sup> 1956 – 1970         INCHES       2.12       2.73       4.28       5.78       7.03       7.10       7.07       6.70       5.22       4.14       2.89       2.26       57.32         mm       53.8       69.3       108.7       146.8       178.6       180.3       179.6       170.2       132.6       105.2       73.4       57.4       1,455.9         WETTEST YEAR'S RAIN <sup>1</sup> 71.45 INCHES       1815 mm       1948       DRIEST YEAR'S RAIN <sup>1</sup> 31.80 INCHES       808 mm       1954         LONGEST PERIOD WITH NO MEASURABLE PRECIPITATION <sup>7</sup> RAINFALL INCOME <sup>6</sup> 694       GPCD         33 DAYS: September 12 - October 15, 1935         UTILITY-WATER USE <sup>6,9</sup> 125       GPCD         344.7       M <sup>2</sup> 2012 est.	INCHES 4.52	4.47	5.41	3.99	3.71	3.79	4.80	3.69	3.56	2.83	3.63	4.18	48.58	
AVERAGE PAN EVAPORATION (POTENTIAL LOSS) <sup>d,6</sup> 1956 – 1970         INCHES       2.12       2.73       4.28       5.78       7.03       7.10       7.07       6.70       5.22       4.14       2.89       2.26       57.32         mm       53.8       69.3       108.7       146.8       178.6       180.3       179.6       170.2       132.6       105.2       73.4       57.4       1,455.9         WETTEST YEAR'S RAIN <sup>1</sup> 71.45 INCHES       1815 mm       1948       DRIEST YEAR'S RAIN <sup>1</sup> 31.80 INCHES       808 mm       1954         LONGEST PERIOD WITH NO MEASURABLE PRECIPITATION7       RAINFALL INCOME <sup>6</sup> 694       GPCD         33 DAYS: September 12 – October 15, 1935       UTILITY-WATER USE <sup>6</sup> 125       GPCD         AREA <sup>68</sup> 133.15       SQ MILES       POPULATION <sup>68</sup> 443,775       UTILITY-WATER USE <sup>6</sup> 125       GPCD         344.7       km <sup>2</sup> 2012 est.	mm 114.8	113.5	137.4	101.3	94.2	96.3	121.9	93.7	90.4	71.9	92.2	106.2	1233.9	
INCHES       2.12       2.73       4.28       5.78       7.03       7.10       7.07       6.70       5.22       4.14       2.89       2.26       57.32         mm       53.8       69.3       108.7       146.8       178.6       180.3       179.6       170.2       132.6       105.2       73.4       57.4       1,455.9         WETTEST YEAR'S RAIN <sup>1</sup> 71.45 INCHES       1815 mm       1948       DRIEST YEAR'S RAIN <sup>1</sup> 31.80 INCHES       808 mm       1954         LONGEST PERIOD WITH NO MEASURABLE PRECIPITATION       RAINFALL INCOME*       694       GPCD         33       DAYS: September 12 - October 15, 1935       UTILITY-WATER USE*       125       GPCD         AREA <sup>f8</sup> 133.15       SQ MILES       POPULATION <sup>f8</sup> 443,775       UTILITY-WATER USE*       125       GPCD         473       Ipcd       Ipcd       Ipcd       Ipcd       Ipcd       Ipcd       Ipcd       Ipcd			AVER	AGE PA	N EVAP	ORATIO	N (POTI	ENTIAL	LOSS) <sup>d,6</sup>	19	956 – 19	70		
mm       53.8       69.3       108.7       146.8       178.6       180.3       179.6       170.2       132.6       105.2       73.4       57.4       1,455.9         WETTEST YEAR'S RAIN <sup>1</sup> 71.45 INCHES       1815 mm       1948       DRIEST YEAR'S RAIN <sup>1</sup> 31.80 INCHES       808 mm       1954         LONGEST PERIOD WITH NO MEASURABLE PRECIPITATION7       RAINFALL INCOME®       694       GPCD         33       DAYS: September 12 – October 15, 1935       0       2,627       Ipcd         AREA <sup>68</sup> 133.15       SQ MILES       POPULATION <sup>68</sup> 443,775       UTILITY-WATER USE <sup>6.9</sup> 125       GPCD         344.7       km <sup>2</sup> DEPTH TO CROUND MATERPh <sup>10</sup> E 94 ET       1.0 mm       2012       support	INCHES 2.12	2.73	4.28	5.78	7.03	7.10	7.07	6.70	5.22	4.14	2.89	2.26	57.32	
WETTEST YEAR'S RAIN <sup>1</sup> 71.45 INCHES 1815 mm 1948 DRIEST YEAR'S RAIN <sup>1</sup> 31.80 INCHES 808 mm 1954 LONGEST PERIOD WITH NO MEASURABLE PRECIPITATION <sup>7</sup> RAINFALL INCOME <sup>e</sup> 694 GPCD 33 DAYS: September 12 – October 15, 1935 2,627 lpcd AREA <sup>f8</sup> 133.15 SQ MILES POPULATION <sup>f8</sup> 443,775 UTILITY-WATER USE <sup>g.9</sup> 125 GPCD 344.7 km <sup>2</sup> 2012 est. 10 CPOUNDWATER <sup>h10</sup> F 94 FT 1 0 cm 2012 cm 2012	mm 53.8	69.3	108.7	146.8	178.6	180.3	179.6	170.2	132.6	105.2	73.4	57.4	<mark>1,455.9</mark>	
LONGEST PERIOD WITH NO MEASURABLE PRECIPITATION <sup>7</sup> RAINFALL INCOME <sup>e</sup> 694 GPCD 33 DAYS: September 12 – October 15, 1935 AREA <sup>f8</sup> 133.15 SQ MILES POPULATION <sup>f8</sup> 443,775 UTILITY-WATER USE <sup>g.9</sup> 125 GPCD 344.7 km <sup>2</sup> 2012 est. UTILITY-WATER USE <sup>g.9</sup> 125 Jpcd	WETTEST YEAR'S RAIN <sup>1</sup> 71.45 INCHES 1815 mm 1948 DRIEST YEAR'S RAIN <sup>1</sup> 31.80 INCHES 808 mm 1954													
33 DAYS: September 12 – October 15, 1935       2,627 lpcd         AREA <sup>f,8</sup> 133.15 SQ MILES       POPULATION <sup>f,8</sup> 443,775 2012 est.         344.7       km <sup>2</sup> 2012 est.       UTILITY-WATER USE <sup>g,9</sup> 125 GPCD 473 lpcd	LONGEST PERIOD WITH NO MEASURABLE PRECIPITATION <sup>7</sup> RAINFALL INCOME <sup>®</sup> 694 GPCD													
AREA <sup>f,8</sup> 133.15       SQ MILES       POPULATION <sup>f,8</sup> 443,775       UTILITY-WATER USE <sup>g,9</sup> 125       GPCD         344.7       km <sup>2</sup> 2012 est.       UTILITY-WATER USE <sup>g,9</sup> 125       Ipcd	33 DAYS: September 12 – October 15, 1935         2,627         lpcd													
344.7 km²     2012 est.     473 lpcd	AREA <sup>f8</sup> 133.15 SQ MILES POPULATION <sup>f8</sup> 443,775 UTILITY-WATER USE <sup>g,9</sup> 125 GPCD													
	344.7 km²         2012 est.         473 lpcd													
HISTORICAL 1 2,4 FTTT 1,6 MTT 7973 TTDEPTH 1() (JRO)UNDWATER <sup>M*</sup> 1 2,84 FTTTT 1,8 MTT7073 TOURRENT														
CURRENT GROUNDWATER EXTRACTION NATURAL GROUNDWATER RECHARGE <sup>1,9</sup>														
WATERGY P5 # of AVG GA HOMES THAT COULD BE POWERED w/kWh USED TO MOVE & TREAT ATLANTA'S WATER 4.991	WATER	GY		# of AVG G	A HOMES T		D BE POWE	RED w/kWł	h USED TO /	MOVE & TR	REAT ATLAN		eri <b>4,991</b>	
		TOTEM SPECIES Dic PLANT. Pool sprite (Amphianthus pusillus) REPTILE. Queen spake (Regina centernuittata)												
IOTE/W SPECIES       P6       PLANT:       Pool sprite (Amphianthus pusillus)       REPTILE:       Queen snake (Regina septemvittata)         FIGUR:       Charakaa dattar (Ttheastare setti)       BIDD:       Colden winged worklast (to the start of the s														
MOLLUSK: Purple bankclimber (Elliptoideus sloatianus) MFGAFAUNA: AMPHIBIAN:														
Available online at HarvestingRainwater.com/one-page-place-assessments		1	Available	e online_a	at Harves	tingRaim	water.cor	n/one-pa	age-place	-assessm	ients			

## FOR MORE INFORMATION & HOW TO APPLY IT

- I. For more CLIMATE information, see the introduction, chapters 1, 2, & 4, and appendix 5 of *Rainwater Harvesting for Drylands and Beyond (RWHDB)*, Volume 1, 2nd Edition
- $\triangleright$ **2.** For more SUN information, see chapters 2 & 4 and appendices 5 & 7
- heal**3.** For more WIND information, see chapters 2 & 4 and appendices 5 & 9
- P4. For more WATER information, see the introduction, chapters 1–4, and appendices 1–5
- ₽**5.** For more WATERGY information, see chapters 2 & 4 and appendix 9
- **6.** For more TOTEM SPECIES information: the ethics, principles, and strategies throughout *RWHDB* help us shift from a negative to a positive impact on these species and their habitats and ecosystems, on which our quality of life also depends.

## ATLANTA PLACE-ASSESSMENT NOTES

- a. The solar-noon altitude angle (a.k.a., solar-noon elevation angle) refers to the number of degrees the sun is located above the equator-facing horizon at solar noon on the given date. In the northern hemisphere, the equator-facing horizon is to the south. In the southern hemisphere, the equator-facing horizon is to the north.
- b. The solar-noon winter-solstice shadow ratio is the object's height : length of object's shadow cast on December 21 at noon (the longest noontime shadow of the year). The ratio is 1 : x, where x = 1 ÷ tangent (90 (latitude + 23.44)).
- c. Azimuth is the angle formed between a reference direction (here, due south) to the point on the horizon directly below a given object. Solar noon is the time on any day when the sun's azimuth is 0°. The 9 am & 3 pm winter-solstice azimuth indicates the sun's deviation, in degrees, east/west of due south at those times (-/+ 3 hours from solar noon) on December 21.
- **d.** An evaporation pan holds water whose depth is measured daily as water evaporates. These data allow us to determine evaporation rates at a given location. Compare average rainfall (water gain) to potential water loss via evaporation by looking up pan-evaporation rates for your area. According to one definition, if pan-evaporation rates exceed rainfall rates, you are in a dryland environment. Another definition states that drylands are "land areas where the mean annual precipitation is less than two thirds of potential evaportanspiration (potential evaporation from soil plus transpiration by plants), excluding polar regions and some high mountain areas which meet this criterion but have completely different ecological characteristics" (Greenfacts.org). The higher the ratio of potential evaporation to rainfall, the more important evaporation-reducing strategies such as mulch, windbreaks, shading, and covered water storage become.
- e. Calculated in situ w/ average rainfall, area, & population
- f. City proper
- **g.** Per capita water use was calculated by summing all water used ... from surface and groundwater sources, including public and private water systems and dividing it by the total population. Does not include water sold outside of the 15-county region. The Atlanta Service Area includes the entire city of Atlanta (including portions in DeKalb Co.), unincorporated Fulton County south of the Chattahoochee River, the municipalities of Fairburn, Hapeville, and Union City, and the portion of the Atlanta Hartsfield-Jackson International Airport area in Clayton County. Per Capita figure does not include Palmetto. The per-capita-use rate is trending down. However, the dramatic reductions in 2007–09 are primarily due to the outdoor-water restrictions put in place during the drought, the economic recession and the wet weather in 2009. Single-family residential water use by county is available in a subsequent table in this resource (ref. 10).
- h. Site Number: 334207084254801-10DD02, Latitude 33°42'07", Longitude -84°25'48". Well completed in "Piedmont and Blue Ridge crystalline-rock aquifers" (N400PDMBRX) national aquifer. Well completed in "Crystalline Rocks" (320CRSL) local
- i. Metro Atlanta is located in the headwaters of six major river basins. The counties within the Metro Water District withdraw drinking water from the Chattahoochee, Coosa, Flint, Ocmulgee, Oconee, and Tallapoosa river basins. The vast majority of the water supply for the Metro Water District, over 99%, is from these surface water sources. Groundwater sources make up less than one percent of the total available water supply in the Metro Water District due to geologic conditions. Groundwater supplies several small towns and is used as a supplemental source (ref. 9). Still, the groundwater levels appear to be dropping slowly. The reason for this has been suggested by a local engineer to be Atlanta's excessive paving and drainage infrastructure which prevent rainfall from infiltrating, instead draining it away from the metro region.
- j. The City uses approximately 77,247,130 kWh in one year to pump & treat Atlanta's water (ref. 11). In 2013, 54,296,000,000 were used by the residential sector in Georgia (ref. 12). The total number of households in Georgia is 3,508,477 (ref. 8). Based on this, the average GA household uses 15,476 kWh/year (54,296,000,000 kWh/year ÷ 3,508,477 households). So total kWh pump & treat water (54,296,000,000 kWh/year) ÷ average household usage (15,476 kWh/household/year) = 4,991

## CREDITS: Brad Lancaster, Resource concept | Megan Hartman, Resource creation, research

## ALANTA PLACE-ASSESSMENT REFERENCES

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- **11.** Richard T. Parker, Atlanta Department of Watershed Management, via email 3/28/2014
- 12. Electricity Data Browser, eia.gov/data/electricity/browser, Retail Sales of Electricity, Annual, accessed 3/28/2014