

Water Consumption and Care

1- Consumption on campus

The University has proactive measures to implement a water conservation policy. As part of this initiative, the university has installed numerous water meters (refer to Figure 1) to accurately measure the volume of water used for drinking purposes. For irrigation of the fields and gardens, water is sourced from a nearby irrigation canal connected to the Euphrates River. The irrigation water flow is regulated using an open channel with a V-Notch weir to determine the discharge (see Figure 2). The water storage is managed through control panels (depicted in Figure 3) situated in each building, overseen by specialized engineers. The installation of these water meters and control panels serves not only to collect data on the amount of water consumed but also to encourage responsible water usage by discouraging wasteful practices.



Figure 1: Water meters installed in MU (on campus)



Figure 2: Irrigation channel inside Al-Mustaqbal University



Figure 3: Irrigation channel inside Al-Mustaqbal University

Furthermore, Al-Mustaqbal University is known for its green areas and landscaping and as a result these areas require water for irrigation. The installed water meters help the engineering unit to acquire data on the efficiency of their sprinkler and drip irrigation systems used for watering these green areas. As a result, achieving the use of a minimum amount water in watering the green areas spread on the vicinity of the campus.

The table below presents the total volume of water consumption, encompassing drinking, washing, and agricultural purposes. Additionally, Figure 4 illustrates the monthly water consumption on-campus. It is important to note that during the summer break, which



includes the months of June, July, and August, water consumption significantly decreases due to the reduced number of students and staff.

Table 1: Total volume of water consumed at Al-Mustaqbal University in year 2022

Year	Campus population	Volume of water used in the university (m ³ / yr)	Water consumption by campus population (m ³ /capita/yr)
2022	19105	137556	7.2±0.1

Water Consumption of 2022 per month

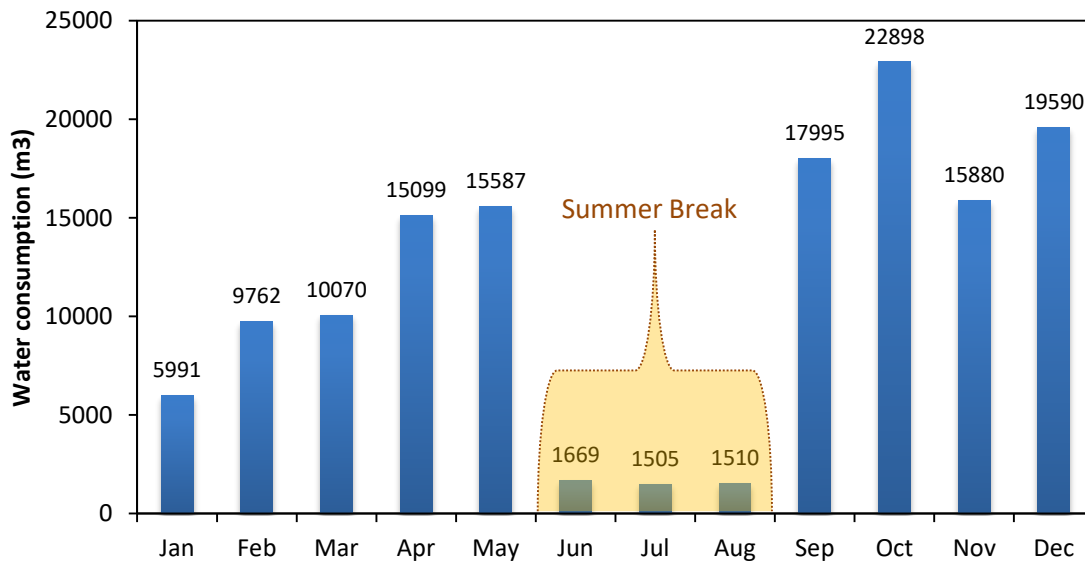


Figure 4: Water consumption (m³) per month

Furthermore, the graphical representation in Figure 5 provides a visual depiction of the annual water consumption spanning the years 2018 to 2022. This illustration effectively portrays the gradual increase in water consumption, a phenomenon primarily attributed to a consistent rise in the student population by an approximate annual rate of 3%. However, Due to the COVID-19 pandemic, there was a decline in the year 2020 as a result of the adoption of remote learning for many disciplines. This visualization not only highlights the incremental growth in water usage but also underscores the importance of adopting sustainable practices to meet the evolving demands of a growing campus community.



Water Consumption of 2022 per month

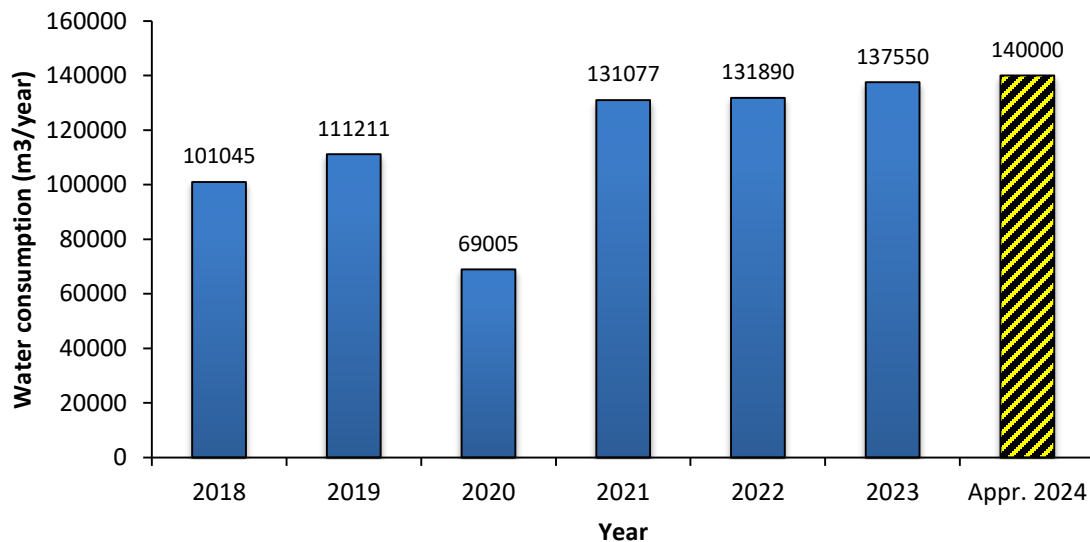


Figure 5: Water consumption on campus pear year

2- Prevention water from pollution

At Al-Mustaqbal University, a clear demarcation between rainwater and wastewater collection systems is maintained (separate system), preventing any cross-contamination between the two. Rainwater is channelled into a sizable subterranean storage tank. This collected rainwater finds purpose in two ways: it is either reused for irrigation purposes or employed for spraying the streets within the university premises.

Conversely, the treated wastewater undergoes a distinct route. It is conveyed into the primary wastewater treatment collection system, in accordance with the details outlined in section 6.3 titled “*Water usage and care*”.

Furthermore, Al-Mustaqbal University has implemented a comprehensive [water conservation policy](#) that outlines recommended methods to prevent any instances of pollution on the campus. To bolster this initiative, the Engineering Unit collaborates closely with the chemical laboratory of the College of Health and Medical Techniques (depicted in Figure 6). This collaboration involves the regular analysis of water samples collected from various locations across the university. These analyses encompass a range of parameters including BOD₅, COD, pH, TDS, EC, turbidity, and total hardness. Additionally, thorough examinations are conducted on the potable water carriers responsible for supplying buildings with Reverse Osmosis water

bottles. This rigorous testing regimen ensures the maintenance of water quality and safety standards within the university environment.



Figure 6: Laboratory of College of Health and Medical Techniques used to test water samples

The following table presents the results of the chemical and biochemical tests conducted at the Al-Mustaqbal wastewater treatment plant:

Table 2: Data gathered from Al-Mustaqbal wastewater treatment plant

ITEM	UNIT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Inflow	m ³ /day	90	75	89	110	71	35	45	33	40	73	91	80
pH INF.	mg/L	8.1	9.0	8.8	7.9	8.2	8.2	8.4	8.1	7.9	7.8	8.6	8.5
pH EFF.	mg/L	7.6	8.1	7.23	7.73	7.67	7.9	8.0	8.0	7.7	7.7	7.7	8.1
TDS INF.	mg/L	1890	1880	2450	2309	3358	3104	2056	2229	1089	2020	2006	1890
TDS EFF.	mg/L	1120	992	1328	1136	1360	1192	1016	890	830	980	1020	994
TSS INF.	mg/L	990	870	590	666	801	776	406	816	1376	1036	989	792
TSS EFF.	mg/L	56	60	55	26	28	32	58	59	20	30	33	37
BOD5 INF.	mg/L	1450	1090	1088	1801	1040	1581	1642	1172	1123	1115	980	779
BOD5 INF.	mg/L	8	11	9	10	11	14	9.5	9.5	22	17	18	8