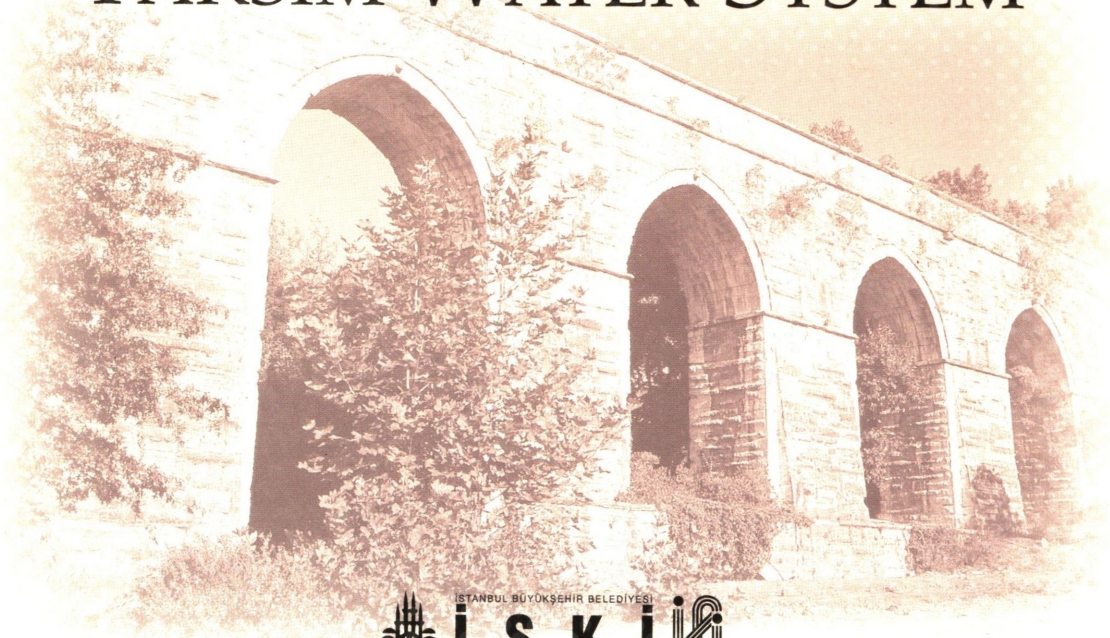


# TAKSİM WATER SYSTEM



İSTANBUL BÜYÜKŞEHİR BELEDİYESİ

İSKİ

İSTANBUL SU ve KANALİZASYON İDARESİ



# TAKSIM WATER SYSTEM



[ A COMPLIMENTARY OF  
ISTANBUL METROPOLITAN MUNICIPALITY  
GENERAL DIRECTORATE OF İSKİ ]



# ISTANBUL UNDISCOVERED

**Dr. Architect Kadir TOPBAŞ**

Mayor of Istanbul Metropolitan Municipality



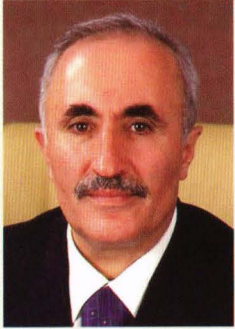
**I**stanbul, since the conquest (feth), while embracing people coming from all around Anatolia, has been also awarding a new identity. Getting richer and greater while transmitted between generations, this new identity was called "Istanbulian". Ones coming from intellectually and behaviorally different geographies, has been gaining parti-

cular color, confusion, traditions, architecture, Turkish of Istanbul the purest form of the Turkish language, lifestyle of Bosphorus and countless features of Istanbul, whose influence has been distinguished, from tradition to architecture, up to the farthest corner of the Empire, briefly have been becoming Istanbulian. Istanbul, today although is a crowded, great metropolis, the traces of the times when it was a 'wonderland' and when all its inhabitants were Istanbulians, still remain as an irremovable glaze. Now, this glaze is getting more obvious thanks to

the services adorning and brightening the city. While providing Istanbul with services that shall meet the needs of modern era, the protection and promotion of historical works of art have great importance. Aquatic monuments, as the yielding of solutions given to water problem by our ancestors thousands of years ago, are just a part of undiscovered tourism riches. As the Istanbul Metropolitan Municipality, we are determined to invigorate those establishments without intervening in their peculiar tissue, as all the other historical monuments of Istanbul. We are working hard in order to revitalize historical fountains which are of the most important features of our cultural heritage. I believe by heart that this book, where you'll be introduced by the efforts of our ancestors, who have solved the water supply question, the common problem of the city's governors through history, with architecturally and technologically unique monuments, will be very beneficial in order to present inhabitants be aware and sensitive of Istanbul's riches.

# ISTANBUL; THE CAPITAL of WATER CIVILIZATION

Dursun Ali ÇODUR  
General Director of İSKİ



*"Why have they cut my water  
Who has stolen my brass "lüle"  
When and how I was buried in  
land?"*

**H**ow Reşat Ekrem Koçu, a lover of Istanbul, has told of an annihilated fountain's scream... fountains on every corner which has enlivened Istanbul and Istanbulians for many years, by sanitary system, have been alienated from view and hearts of people. Fountains have been offended of Istanbulians because of the negligence; as mentioned in the poem, some have hidden in the earth, some was leveled, some, being victim of rough hands, have got their "lüle" stolen. In spite of all these negativeness, as İSKİ, we are working hard in order to revitalize our remaining fountains by vital wa-

ter. Regarding that process, we are carrying out an extensive restoration program with the coordination of universities and other organizations. As İSKİ, we have prepared restoration and redesign projects of 23 fountains owned by General Directorate of Foundations (Vakıflar Genel Müdürlüğü) and municipality, and we have realized their repair.

We are already aware of the very precious and priceless monuments of Istanbul. One of these leading monuments is Taksim Water System Facilities. We want to promote aquatic facilities constructed in order to meet water need of European shore, from Yenikoy to Kasımpasa, and Beyoglu and Galata neighborhood.

Today, we all know that, we don't only rescue, rebuilt or promote an elegant fountain or an aquatic structure watching over a narrow street of old Istanbul, but values peculiar to us, our culture, our physical and moral heritage.



## TAKSIM WATER SYSTEM FACILITIES

**T**aksim Water System Facilities are the sum of the aquatic monuments which were built between 1731 and 1839 at various stages, in order to meet the need of water at European shore from Yeniköy to Kasımpasa and at Pera and Galata periphery. In regard of meeting water needs of increasing population at North of Golden Horn since the Conquest, firstly Ahmed III has intended to bring water from Bahçeköy, but he couldn't manage because of the Patrona Halil Revolt. Mahmud I who has ascended the throne in 1730, has put Taksim Water System in service. After these primary efforts, as the results of rearrangements and supplements, Taksim Water System has found its final form. Taking water of Topuzlu, Valide, Mahmud II Weirs built at the Bahçeköy periphery, of Balaban Brook, of Valide, Kameriçe, Sultan Mahmud, Acıbayırı addings, passing through Bahçeköy and Sultan Mahmud Aqueducts, by the route of Acielma, Derbent, Maslak, Ayazaga, Zincirlikuyu, Mecidiyeköy, Sisli, Harbiye, it results in water depot and cistern in Taksim. The name Taksim was inspired from portion of water among

three different directions in Cistern. System delivering 13.5 spouts of water in 1731, has delivered 23.5 spouts of water as a result of Topuzlu Weir's construction. Progressively, partial repair during Abdulhamid I. Era, raise of Topuzlu Weir by Cezayirli Gazi Hasan Pascha, increase of water, by means of adding realized by Grand Vizier Yusuf Pascha, the amount of water assigned were all mentioned in the inscription put on the Taksim Cistern. Afterwards, Valide Weir was added to the Taksim Water System, increasing the water amount by 23 "lüle"\*. European shore, by means of an additional connection to Kırkçeşme Water System, had benefit in certain cases, as well. In 19th century the population of the region has reincreased and Mahmud



MAHMUD I

II. has built a final weir which was called by his name. In 1890, 6131 m<sup>3</sup> (10700 m<sup>3</sup> according to the foundation (vakıf) register) water was delivered to 622 different quarters (141 fountains, 6 grand fountains) per day by Taksim Water System.

\* Note: 1 lüle= 52 m<sup>3</sup>/day





TAKSIM CISTERN





TOPUZLU WEIR



## WEIRS OF TAKSIM WATER SYSTEM

**Taksim** Water System was put into service during Mahmud I, while the weirs were built afterwards. Three of the weirs feeding the system were built on Acielma Brook which is of the Kağıthane Brook's branches. Initially, water of brooks was swelled by small connections and was delivered to the reservoir on Taksim Square, by means of glazed, clay water transmission line. When need of increasing population couldn't be met by these facilities, additional weirs were constructed.

### THE PERIOD of TOPUZLU WEIR

It was built during Mahmud I (1730-1754). Formerly it was called 'Mahmud I Weir' as well. It was known as Topuzlu Weir because of four spheres of 21.3 cm diameter hung by chains on both sides of projecting parts. It was built at Bahcekoy on the Eskibaglar Branch of Acielma Brook which would be connected to Kagithane Brook. While the height of the Weir was initially 14 zira'(10.612 m), it was elevated to 18 zira'(13.644m) by Cezayirli Hasan Pascha.

Construction Year	:	1750
Length	:	80.65 m
Depth	:	13.74 m
Crate Width	:	5.47 m
Base Width	:	7.00 m
Drainage Area	:	0.92 km <sup>2</sup>
Amount of Water Delivered	:	24 lüle







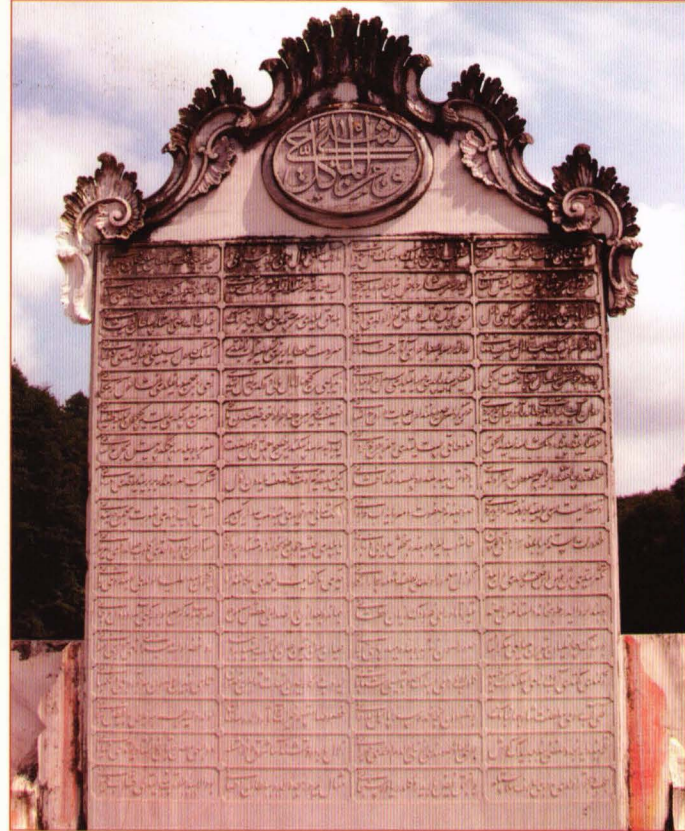
VALIDE WEIR



### THE PERIOD of VALİDE WEIR

It was built during Selim III. The secondary of the constructed Taksim Water System Weirs. It was built by Mihrişah Sultan the mother of Selim III. On the eastern branch of the Mandiraci Brook which is of the Acielma Brook's branches. Although, Valide Weir, is included in the Taksim Water System, it also used to deliver water to the Kirkcesme System through a secondary gallery as well.

Construction Year	:	1796
Length	:	103.90 m
Depth	:	11.25 m
Crate Width	:	4.75 m
Base Width	:	6.32 m
Drainage Area	:	1.83 km <sup>2</sup>
Amount of Water Delivered	:	56 lüle







MAHMOUD II WEIR



## MAHMOUD II WEIR

It was built on the western branch of Arabacı Brook by Mahmoud II (1808 – 1839). The weir, which was also called Bend-i Cedit (The New Weir), in form of arch, was technically as good as its European identicals of the same era. An inscription (kitabe) which was written by famous calligrapher Hattat Mustafa İzzet and whose eulogy belongs to Ziver, was placed on the middle of the weir. The tugra (signature) of Mahmoud II on the top of the inscription was adorned by ray formed bars. It has fallen into the weir when it was intended to be stolen, and was placed at the entrance of General Directorate of İSKİ after being repaired.

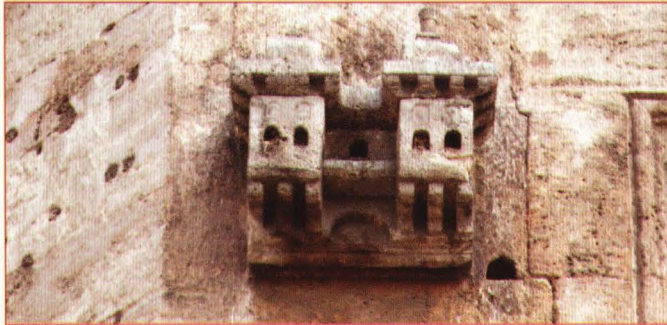
Construction Year	:	1839
Length	:	101.55 m
Depth	:	15.45 m
Crate Width	:	6.90 m
Base Width	:	9.40 m
Drainage Area	:	0.83 km <sup>2</sup>
Amount of Water Delivered	:	73 lüle





### TAKSIM CISTERN

Word "Taksim" means to divide and to deliver. Word "Maksem" means the place where delivery is held. "Taksim Maksemi", where water system of Mahmoud II was delivered to the city, is an eighth angled monument. "Maksem", which was constructed for water delivery was inspired the name of one of the famous squares of Istanbul; the Taksim Square and named the water system in question. It was situated on the corner of Istiklal Street, which was constructed in 1732, and Taksim Street. As well as 24 lüle, inscriptions for each of Cezayirli Gazi Hasan Pascha and Grand Vizier Yusuf Pascha, was also installed inside the cistern. Double bird nests were built on both sides of the window on the entrance door.





## LÜLE

In Ottoman water facilities, water was delivered according to certain debit and was absolutely calculated. In order to calculate the momentum and to deliver, usually a rectangular marble coffer with a gutter to release excessive water, was built. Water released from the gutter was n't wasted and was retransferred into the delivery system as well. Short brass pipes were installed on one side of the coffer, the momentum of water flowing through these pipes of 26 diameter, was called as '1 lüle'. A momentum of 1 "lüle" is equal to 36 lt. per minute. Smaller units from "lüle" were also called as "kamis", "masura", "cuvaldiz", "hilal".

1 Lüle		52 m <sup>3</sup> per day
1 Kamis	1/4 spout	13 m <sup>3</sup> per day
1 Masura	1/8 spout	6.5 m <sup>3</sup> per day
1 Cuvaldiz	1/32 spout	1.63 m <sup>3</sup> per day
1 Hilal	1/64 spout	0.83 m <sup>3</sup> per day







BALANCES



## WATER BALANCES

A number of water balances were constructed while building transmissionlines and networks in Ottoman era. These monuments constructed when there was no pumping system, were the buildings working according to the compound pots system and regulating pressure.

### KÜNK (PIPE)

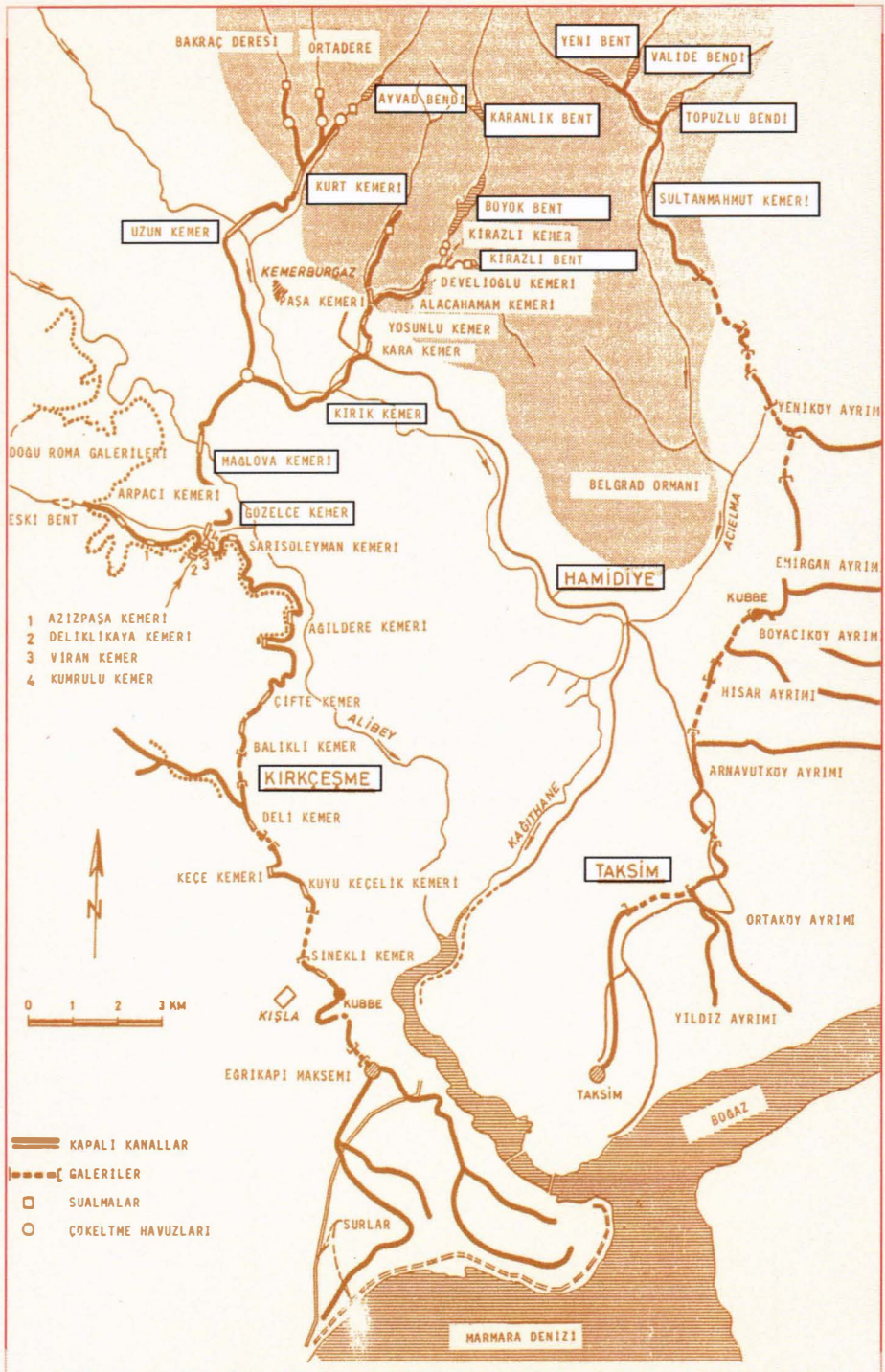
Ottomans have used clay water pipes in their water systems. Inner diameters of the pipes were calculated by 'parmak' 1/24 of architects' Turkish yard which was called as zira'. 1 parmak is equal to today's 1.35 cm and 6 or 7 parmak pipes were used in general. The connection points of the pipes were isolated by a particular plaster in order to prevent possible deformation after the trench, which had been excavated for pipe lay down, was filled. Ottomans, used to connect pipes with a kind of paste released from the mixture of 6 units of linen oil, 8 units of limestone powder and 1 unit of cotton. This paste, after preserving its plastic feature form for several months, used to toughen as a stone.

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