#### AQUA SCHOLARS – A BAF (BANGALORE APARTMENTS FEDERATION) INITIATIVE

#### **REPORT BY AKARSH TUNUGUNTLA AND ARYAN MAHESHWARI**

### RESIDENTS OF PHOENIX ONE BANGALORE WEST APARTMENTS, RAJAJINAGAR, BANGALORE – INDIA

Water is one of the most essential resources that sustains all life forms on Mother Earth. From quenching thirst and sanitation to agriculture and industry, water plays a vital role in our daily lives. However, the growing global population and rapid urbanization are putting immense pressure on freshwater supplies. Climate change, pollution, and overuse have further intensified the water crisis in many parts of the world. Despite covering about 71% of the Earth's surface, only a small fraction of water is suitable for human use. This scarcity makes it crucial for individuals and communities to use water wisely and efficiently.

Furthermore, from a national perspective, India struggles to conserve water especially during the scorching heat during the gruelling 3 months of summer. It is a race that no one wins. Almost 600 million people experiencing high to extreme water stress as stated by the NITI Aayog's 2019 Composite Water Management Index. The country's per capita water availability is below the water stress threshold and 21 major cities are expected to deplete groundwater by 2030. India has recognised five states facing significant water scarcity: Rajasthan, Maharashtra, Tamil Nadu, Karnataka, and Gujarat.

In Karnataka specifically, Bengaluru's apartment sector is facing a significant water crisis with residents relying heavily on private borewells and water tankers due to a shortage of piped water supply from the Bangalore Water Supply and Sewage Board (BWSSB). The city's demand for water is estimated at 2,632 million litres per day (MLD), while the BWSSB's Cauvery connection only meets about 1,460 MLD. This leaves a shortfall that is primarily met by groundwater extraction, leading to a depletion of underground reserves. During summers, Apartment complexes in Rajajinagar and other areas of Bengaluru face a water shortage crisis, with residents resorting to various measures like protests, water rationing, and even using mall washrooms due to limited water supply. The crisis is largely due to a combination of factors including rapid urbanization, over-reliance on borewells, and the government's efforts to manage water resources.

We live in Phoenix One Bangalore West (OBW) apartments in Rajajinagar, Bengaluru. There are 5 towers with 472 individual flats. Towers 6 and 7 have been recently constructed with residents moving in slowly. In large residential complexes such as ours, water conservation requires a coordinated effort by the Management Committee of Resident Welfare Association, our in-house Facilities Team and our residents. Due to a large number of occupants, our water consumption is substantial.

#### Water Sources:

#### BWSSB Cauvery Water Source:

Our Sources of water include BWSSB Cauvery Water and water tanks to supplement the water requirement during summer months. Specifically, over the span of 6 months, we have recorded the average monthly BWSSB water inflow (in Litres) for towers 1 to 5:

Oct 2024 : 62,00,000 Litres Nov 2024: 66,29,000 Litres Dec 2024: 67,01,000 Litres Jan 2025: 62,00,000 Litres Feb 2025: 64,00,000 Litres March 2025: 66,71,000 Litres

The water inflow to OBW from BWSSB per day is roughly 4.3 lakh litres. The quantity varies based on the water in the River Cauvery which varies by around 10 to 15 Lakhs of water/day.

### Water Tankers:

When the BWSSB water is insufficient to meet the water consumption of residents during the peak summer months, Phoenix One Bangalore West buys water from tankers from vendor Ranganatha Water Supply which is filtered Cauvery water. Each tanker has a load of either 15000 litres or 7000 litres. Roughly about 45 loads of tanker water were purchased in summer of 2024 for a cost of 67000 Rs. Phoenix OBW does not have borewells.

### **Current infrastructure:**

# Sewage Treatment Plants:

Phoenix OBW is a large community with lot of common area, landscaping and indoor/outdoor swimming pools. Phoenix One Bangalore West has a 2 STP Plants in-house with a capacity of 180 KLD (Kilo Litres per day) and 120 KLD respectively. Around 30 to 35 lakhs of recycled and treated water is used for gardening/landscaping and bathroom flush water tanks. Hence, less water is wasted as our community conserves and recycles the waste water.

# Rainwater Harvesting:

Phoenix OBW has also implemented Rainwater Harvesting. We have piped infrastructure from the terraces leading to the Rainwater Harvesting tank which has a capacity of 5 lakh litres. The infrastructure is housed in the basements of the apartments. The Rainwater Harvested tank water is used for washing cars and common area cleaning.

#### Water Tap Aerators:

Recently, Phoenix MC has taken the initiative to install tap aerators which are devices that reduce the water flow and hence result in considerable water savings. Around 650 tap aerators for 300 plus apartments have been installed so far that saves almost 25 percent of water. The current Managing Committee (MC) is making every effort to ensure all apartments use aerators by end of this summer and are actively advertising using email communication and campaigns.

It's not possible to get the water consumption pattern per apartment as OBW does not have water meters installed per apartment. Water is charged in our annual maintenance amount.

#### Water usage patterns:

Water consumption in individual apartments depends on number of family members. Most of the water capacity (around 80%) is used for domestic use which includes cooking, RO water

filtering, washing dishes, running washing machines, bathroom usage, cleaning of home floors, bathrooms and windows. The rest of the water is used for common areas like individual towers cleaning, washing of basements and common areas, cleaning building windows, washing of cars, filling swimming pools. Maintaining the landscaping and watering of plants becomes essential in a landscaped community like ours.

# Water Conservation Techniques:

We have conducted interviews with a few residents to understand their water needs. Based on the collated information, we recommend the following measures.

# Domestic Water Conservation Initiatives:

Residents can use bucket baths rather than showers to save water. All apartments are already fitted with dual flush toilets which can save water based on solid/liquid flushes. Ensure flush valves are in good working condition and any leaks in flushes/pipes/showers/health faucets are fixed immediately to prevent water wastage. Every individual should incorporate water saving techniques in our daily routine like taking shorter baths, not letting the water run while shaving and brushing teeth or while filling buckets to mop floors.

Residents who have not yet installed water tap aerators are encouraged to fit them at the earliest to reduce water flow.

While Reverse Osmosis (RO) technique provides purified drinking water, it also generates a huge amount reject water which can be a huge wastage. Residents are encouraged to collect and reuse this reject water for mopping floors and cleaning bathrooms.

We have advised residents during our interviews to run their dishwasher and washing machines only on full loads. The latest models of washing machines have sensors to sense the load quantities and adjust the water in-flow accordingly. Front load washing machines use less water than top load washing machines.

While residents are aware of water shortage, education of water conservation with our domestic help is very important to conserve water.

The advantage of living in communities is we have plumbers who are available round the clock. Hence, any dripping taps, leaks, old fittings should be replaced by professional plumbers immediately. This will ensure water savings in the long run.

Community Water Conservation Initiatives:

Our suggestions for improving water conservation in Phoenix OBW apartments are:

Ensuring all taps in all apartments are fitted with aerators. Regular reminders to residents who haven't yet fixed aerators will help.

Actively fixing leaks/pipes in the building infrastructure as and when a leak is detected. Moreover, following a regular schedule to check for leaks and pipe quality will work better.

While STP water has already been implemented, ensuring there is no wastage of STP water will go a long way in water conservation. Watering the plants with treated STP water during the early hours of the day will greatly help in conserving water.

MC can look into fitting individual water meters for apartments. This will make residents aware of their water usage and will become conscious about water wastage.

Optimizing water pressure in distribution lines, as excessive water pressure increases water flow and stress on pipes/fixtures thereby causing pipe bursts and water wastage. Phoenix OBW maintains 5 kg/cm-squared for lower-level apartments and around 6.5 kg/cm-squared for higher level apartments.

Swimming Pools are subject to water evaporation during the summer months. Using covers for the outdoor pool regularly reduces evaporation by 90 to 95%. Keep the pool and filters clean to reduce the frequency of backwashing. Only backwash long enough for the water in the sight glass to run clean. Frequent backwashing can reduce the effectiveness of the filters. The backwash water can be used to water the plants. For the indoor swimming pool heater, try reducing the temperature during the summer. Doing so reduces the occurrence of water loss to evaporation, and is especially important when the pool isn't being used. Better yet, use a pool cover.

Phoenix OBW Association is doing a great job in raising awareness among residents about the importance of water conservation. However, they can continue to provide timely reminders about water conservation through their My Gate Notices, notice boards and emails.

# <u>Pictures:</u> <u>Sewage Treatment Plant:</u>

















# <u>Rainwater Harvesting Plant:</u>











# Tap Aerators:



