AQuA®©

Water **Supply** Water **Transportation**

Water Resource Department
Government of Bihar

meil

186.5 MLD
Ganga Water Supply for
Gaya

If **Gaya** is all about Hinduism *(with its legend of Lord Ram & SitaMata & the world famous Vishnu Pad Mandir which has a large footprint of Lord Vishnu))*; then **Bodh Gaya** is all about Buddhism *(with its famous Mahabodhi temple under which the Buddha attained enlightenment)*.

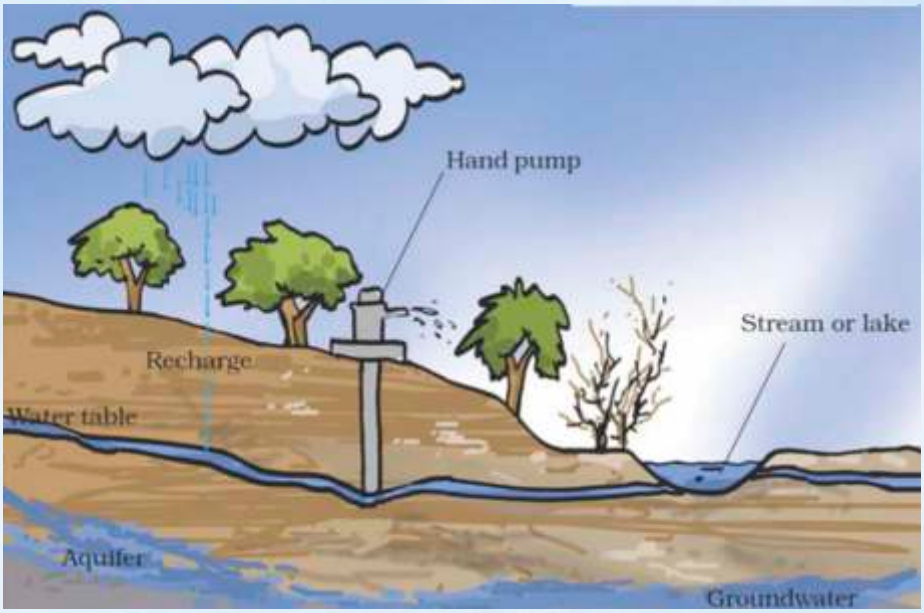
Gaya Municipal Corporation is the administrative headquarters of Gaya district & Magadh division & the 2nd largest city of Bihar - surrounded on three sides by small, rocky hills with the Phalgu River on its eastern side.

Situation

The Phalgu or **Falgu**, a river that flows past Gaya, is a sacred river for Hindus and Buddhists. .

Indiscriminate drilling of Wells has been blamed for depleting water tables in Bihar, where over-exploitation of groundwater is a concern, with irrigation being one of the leading causes for depletion of water tables.

Bihar **extracts** around **29 billion cubic metres** *(BCM)* of **groundwater annually** according to Dynamic Groundwater Resources of India *(2017)*.



Paradoxially, there are many districts of Bihar; where despite the river Ganga flowing nearby; **severe drinking water problems persist..!**

The groundwater level has fallen in eight of Bihar's 38 districts compared to last year, according to a recent survey by the state's Public Health Engineering Department *(PHED)* - as many as 11 districts have been put in the **"Water-Stressed"** category.

Solution

Under the **Jal Jeevan Hariyali** Project, **Gangajal Aapurti Yojna** was launched to improve underground water table & increase the availability of drinking water to the residents of urban as well as rural areas amid intense heat.This unique project dams & lifts **surplus flood/ river water** during the monsoons & stores it in a mega raw water reservoir - later on during dry season, this water would be lifted, treated & made potable for populace.

Tetar Reservoir Area is surrounded by mountains on three sides.

That this is a first-of-its-kind environment friendly project uses a **Rubber Dam** along the **Falgu River** which uses very few mechanical parts.

Aqua's Solution:

Aqua make Submerged Centrifugal Pumpsets are installed in the Raw Water Reservoir at Tetar; from where they lift this Raw Surplus Flood Water to the WTP. The entire job of construction reservoir with Electro- Mechanical job including pumping was executed by **Megha Engineering & Infrastructures Ltd.** ***(MEIL)***.

Pump Model	Motor Rating *(kW/hp)*	Discharge	Head	Qty.
ARSDS_V_AC_1st_VoG_DS_.4052.M..6P_.250N_..415_NJ.	250hp	1954.8 m^3/hr	25m	3W+1S

Aqua's Client: meil **Megha Engineering & Infrastructures Ltd.** *(MEIL)*

End User: **PHED,** Bihar.

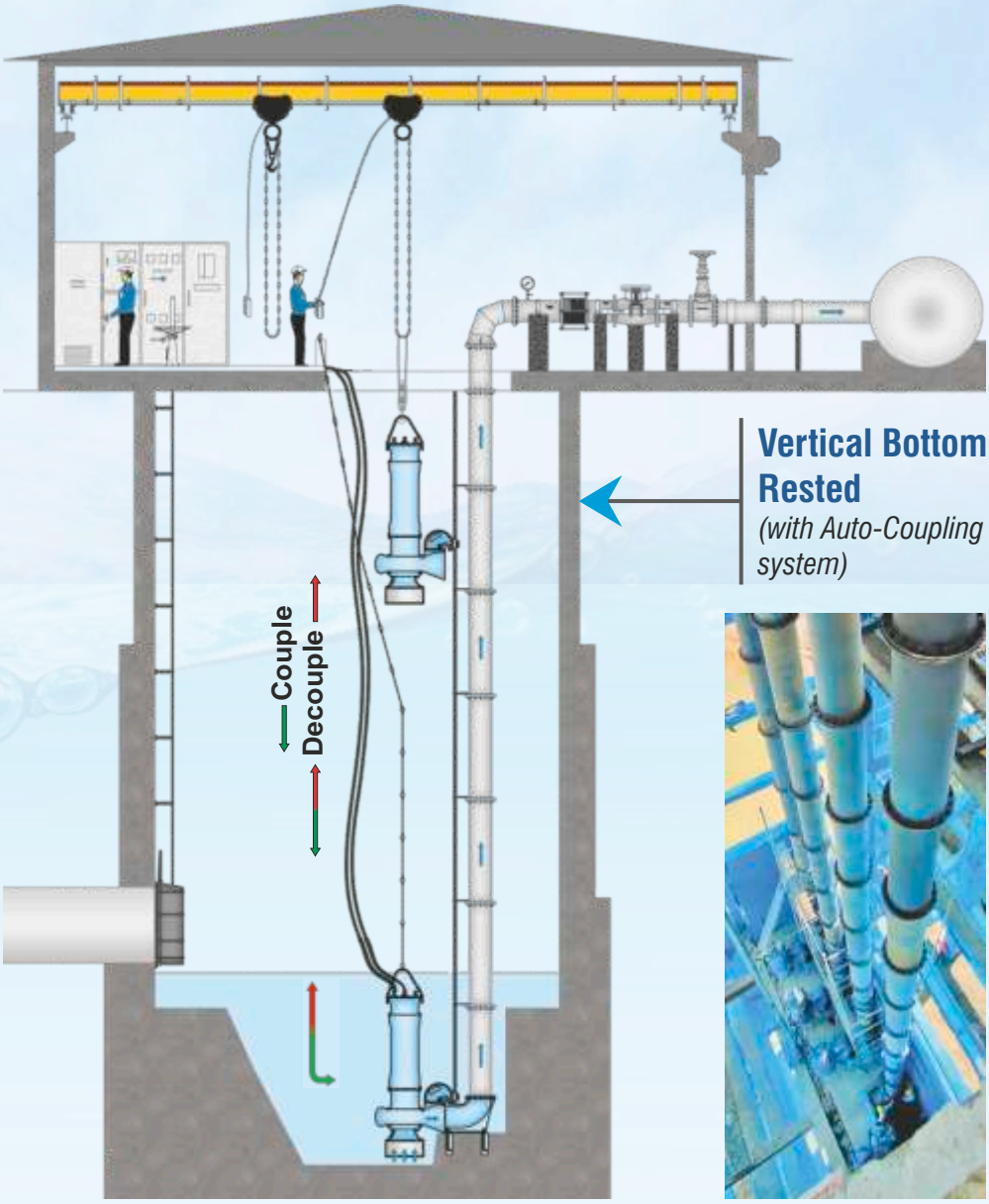
Inauguration

Bihar Chief Minister **Nitish Kumar** along with Deputy CM **Tejashwi Yadav** & others during the **inauguration** in 2022.

Installation Benefits:

This represents the **most Economical** & **most User-friendly** pumping station design.

The Pumpset is installed directly at the bottom of the wet pit using **Aqua's Automatic Coupling System.** This system ensures that the Pumpset is properly Lowered *(& firmly connected to the discharge piping)* or Lifted out *(disengaged from discharge piping)* in a **simple, precise** & **within minutes...!**



Vertical Bottom Rested
(with Auto-Coupling system)

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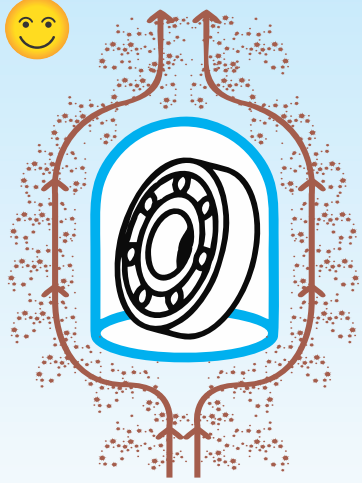
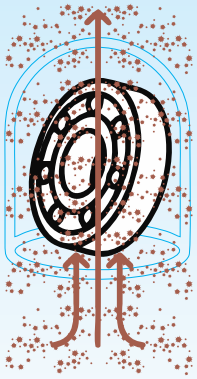
Aqua's Submerged Centrifugal pumps are Inherently Resistant to Silty Raw Water - due to the use of an Oil-Lubricated, Rust-Proof; Sleeve Less Shaft & Mechanical Seals, and the use of Sealed Grease Lubricated Ball Bearing; Submerged CF pumps run **safely with increased silt expected in flood waters of Ganga.**

Submerged CF Pumpset



Pumps **Bearings** are Located Deep inside the motor & are Totally **Sealed** by **Two Mechanical Seals** thereby **Isolated** from Water & **Silt** for 100% **Bullet Proof performance**

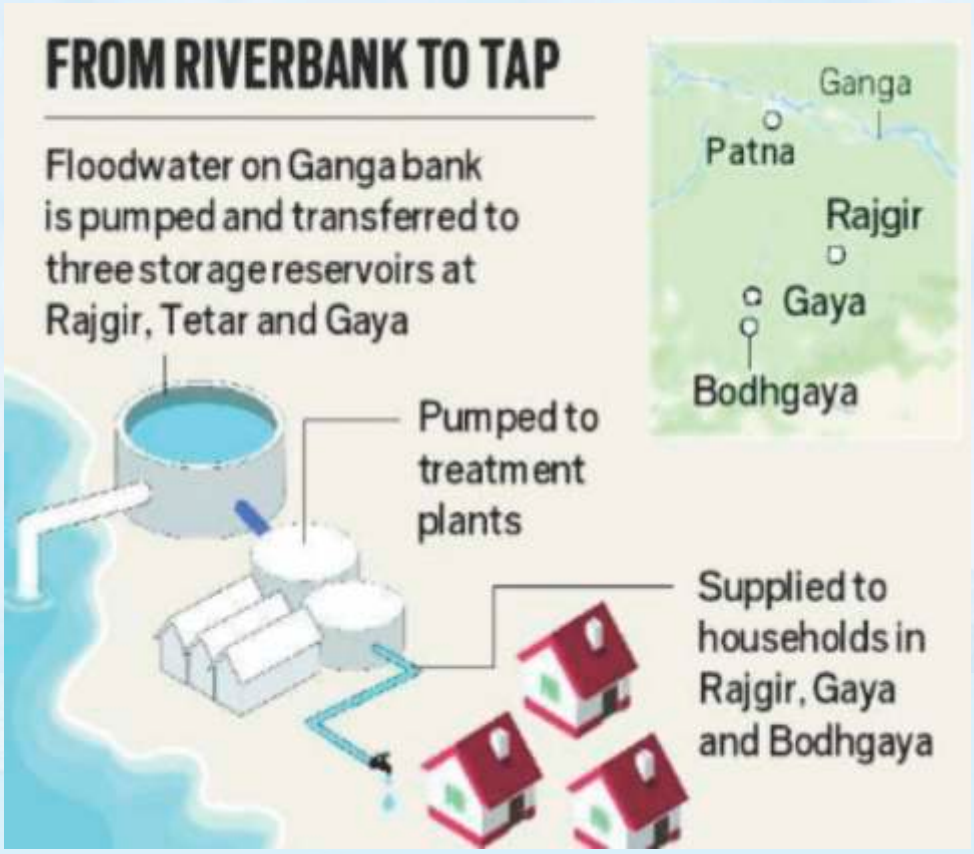
Bare Shaft VT Pumpset



Bearings & **Gland Sleeves** in VT pumps are **exposed** to **Silt** & **Rust** laden **water** which can lead to frequent failures.

Site Photos :

Results:



This key project transports water that is lifted from the Ganga by constructing an "Intake Well-cum-Pump House" at Hathidah Mokama in Patna District. Water is then stored in reservoirs at three locations—Rajgir, along with Tetar, & Abgila, in Gaya district. Water treatment is done at plants in Rajgir, Gaya, & Nawada. So far, Rajgir, Gaya, & Bodh Gaya have been covered by the scheme. The government says the Nawada phase of the programme will be completed by the end of this year.

In this, Water Management studies have been carried out for fulfilling the water requirement of Tetar Vilage, thereby saving the resettlement of village & families displaced & acquisition of fertile/forest land. This is a true example of sustainable development without using existing resources and using untapped monsoon flows.

AQUA®©

Water **Supply** Water **Transportation**

Concept Benefits:

Saves *(upto 75%)* **Spare Parts & Consumables***

Saves *(upto 45%)* **Capital Cost** of Entire Pumping Stations*

Saves *(upto 66%)* **O&M Staff***

Intelligent InBuilt Monitoring

Easily Remote Control # **of your Pumpset's Health**

#*requires additional communication hardware*

No need for Frequent Periodic....

...Aligning / Replacing **Shafts/Sleeves &/or Coupling**

...Adjusting / Replacing **Gland Packing**

...Refilling **Oil &/or Grease**

Minimal Noise, Vibration & Heat Emission; due to **elimination** of Auxiliary & Ancillary systems *(like Forced Water Lubrication, Thrust Bearing Cooling system, Motor Hear Exchanger)*.

(refermarketing@aquapumps.com for additional white papers)

Aqua's Benefits:

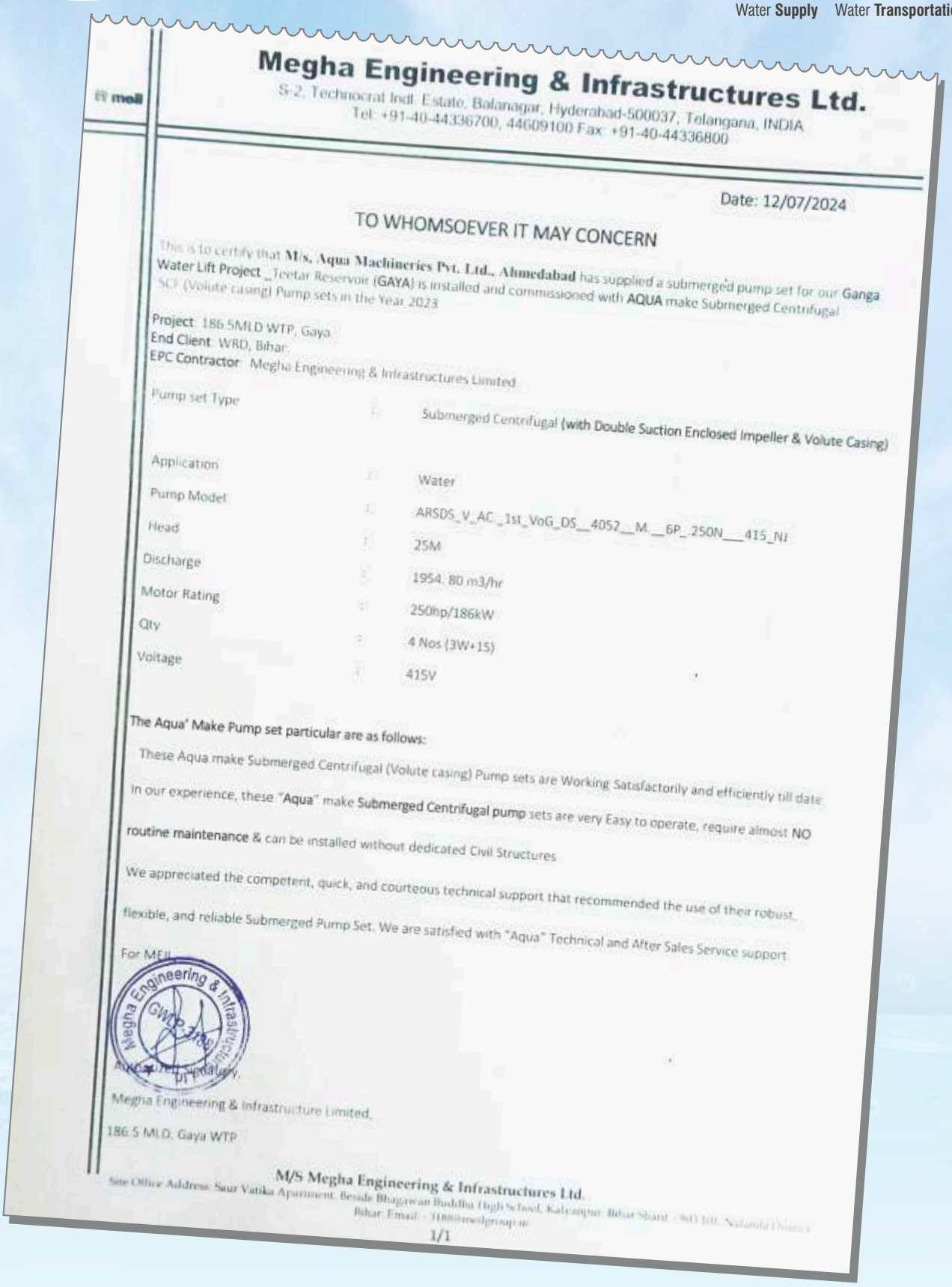
Requires No Special Pre – Post / Ancillary-Auxillary Operations; like Operating & Maintaining the Forced Water Lubrication systems operation.

Low Energy Cost : Due to Elimination of Suction Losses, Ancillary & Auxiliaries; **Wire to Water Power Consumption** of SCF based Pumping Station **is slightly Lower** *(compared to Conventional VT Pumpset based Pumping Stations)**

Low Life Cycle Costs *(LCC)**

Anti Drip, Fully Synthetic; **Super Premium Synthetic Grease** ensures a minimum Regreasing Interval ***(F_{10H})*** of **75,000h** *(for Pumpsets rated upto 650kW)*.

Seals are rated for at least **16** / **25 bar** pressure capability for **L_{10H}** life in excess of **50,000** hours &/or **5** years.



Megha Engineering & Infrastructures Ltd.

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Date: 12/07/2024

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **M/s. Aqua Machineries Pvt. Ltd., Ahmedabad** has supplied a submerged pump set for our **Ganga Water Lift Project** _Teetar Reservoir (**GAYA**) is installed and commissioned with **AQUA** make Submerged Centrifugal SCF (Volute casing) Pump sets in the Year 2023

Project: 186.5MLD WTP, Gaya
End Client: WRD, Bihar.
EPC Contractor: Megha Engineering & Infrastructures Limited

Pump set Type	:	Submerged Centrifugal **(with Double Suction Enclosed Impeller & Volute Casing)**
Application	:	Water
Pump Model	:	ARSDS_V_AC_1st_VoG_DS__4052__M__6P_250N___415_NI
Head	:	25M
Discharge	:	1954. 80 m3/hr
Motor Rating	:	250hp/186kW
Qty	:	4 Nos (3W+1S)
Voltage	:	415V

The Aqua' Make Pump set particular are as follows:

These Aqua make Submerged Centrifugal (Volute casing) Pump sets are Working Satisfactorily and efficiently till date

In our experience, these "**Aqua**" make **Submerged Centrifugal pump** sets are very Easy to operate, require almost **NO routine maintenance** & can be installed without dedicated Civil Structures

We appreciated the competent, quick, and courteous technical support that recommended the use of their robust, flexible, and reliable Submerged Pump Set. We are satisfied with "Aqua" Technical and After Sales Service support

For MEIL

Megha Engineering & Infrastructure Limited,
186.5 MLD, Gaya WTP

M/S Megha Engineering & Infrastructures Ltd.

Site Office Address: Saur Vatika Apartment, Beside Bhagawan Buddha High School, Kalyanpur, Bihar Sharif - 803 101, Nalanda District, Bihar. Email: - ...@meilgroup.in

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