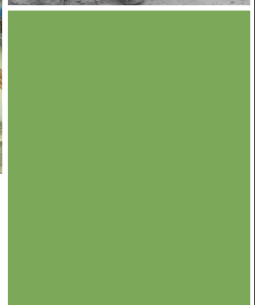
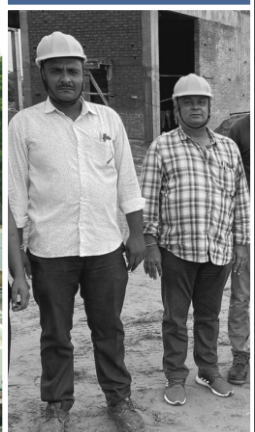
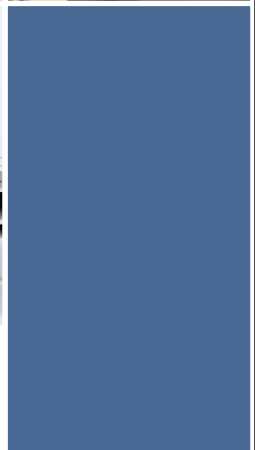
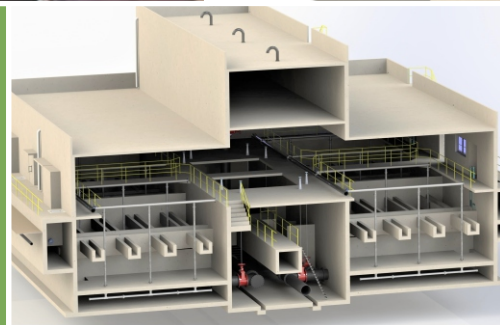
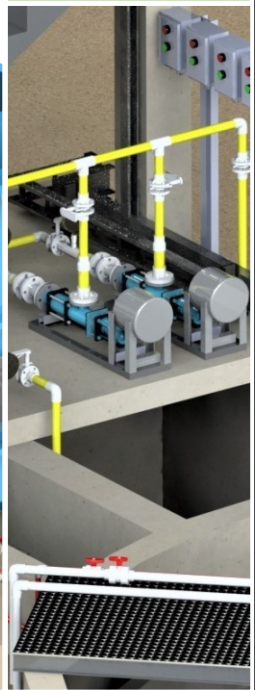




Environmental Private Limited



Testing



Design



Projects

We care, design, engineer and protect  
**Environment**

पर्यावरणम् रक्षति रक्षितः

## Who we are ?

SWA Environmental Consultants & Engineers is a pure play environmental engineering firm working in the water treatment & wastewater treatment design, turnkey projects and environmental monitoring. SWA Environmental Consultants & Engineers has been established by a group of highly trained technocrats, consultants and engineers with a vision to create **"ZERO WASTE CITIES"** and **"ZERO DISCHARGE INDUSTRIES"**.

We are and always be 100% for environment.

## Our Vision



- Become a market leader in manufacturing of Decentralized Wastewater Treatment Products
- Provide high quality Designing and Engineering Services for wastewater treatment, solid waste management and pipe network designing
- Become a mass producer of high quality Compressed Biogas Gas (CBG) to help replace non-renewable fossil fuels
- Achieve a model zero waste city with net zero carbon emission

## Infrastructure & People



**2400 sq.ft.**

carpet area head office at Ahmedabad

**4000 sq. yard**

Manufacturing facility with drilling, machining & fabrication shop



**1000 sq.ft.**

Water, soil, sludge and air quality testing laboratory NABL accredited



## Services & Products

### What we do?

SWA Environmental Consultants & Engineers offer variety of services under the umbrella of 3 divisions/ department namely—**Laboratory, Designing & Projects** . These departments are interdisciplinary & works closely with each other internally for providing our customers with impeccable delivery and service

### Projects

- Turnkey wastewater & water treatment plant—ETP, STP & WTP
- Zero liquid discharge plants—ZLD
- SITC works for electromechanical works of public water supply & sewerage schemes

### Products

- Packaged & Prefabricated STP (plug & play)
- Pan type electric evaporators
- Water & wastewater treatment plant chemicals & consumables

### Services

- Designing & engineering services
  - Pre Bid estimation services
  - Project management consultancy
  - Building information modelling & 3 D modelling
  - Pipe network design & engineering
- Environmental Testing—Water, Soil , Air & Emissions
- Enviro-legal services
- Environmental forensics & modelling

**Environmental 360**

## Projects



Use of  
Technology



In house  
Engineering



QMS - Quality  
Management  
System

### Turnkey project execution for water & wastewater infrastructure

From 0.1 MLD to 200 MLD



SWA Environmental is equipped with an integrated turnkey projects team with a strong team having diverse background in civil, mechanical, piping, electrical and instrumentation aspects of water, sewerage and effluent treatment projects.

#### Turnkey projects were completed by us in following water infrastructure sectors in private and public sector:

- Water Treatment Plant
- Sewage Treatment Plant
- Sewage Pumping Stations
- Effluent Treatment Plant
- Intake Well
- Drinking water pumping station
- Elevated Storage Reservoirs
- Sewerage network
- Water supply network
- De-mineralization & softening plant
- Reverse osmosis (RO) systems & ultrafiltration (UF) systems
- Biogas plants

#### Why Us?

- Use of building information modelling
- In house design & engineering
- ISO 9001 compliant QMS system

# SERVICES—DESIGNING & ENGINEERING SOLUTIONS

SWA Environmental Consultants & Engineers offers detailed design & engineering solutions by using state of the art design tools for most optimal process design for water & wastewater projects. Major services we offer

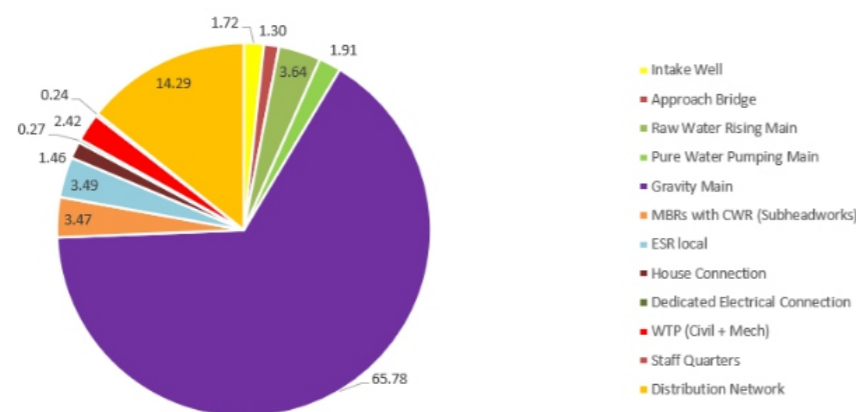
## PRE BID ESTIMATION

One of the services where we have an excellent track record of unprecedented speed of delivery is the time critical aspect of pre-bid cost estimation. We have an excellent track record of delivering pre bid estimated with projects worth more than 350 cr/3500 million Rs. in less than 10 days including site topographical survey, pipeline layout, detailed rate analysis and risk matrix analysis

*Engineering, Procurement, Construction, Testing, Commissioning, Trial Run and Operation & Maintenance of Various Components of Chhitakudri (Kundam-1) Multi-Village Scheme, District Mandla & Jabalpur in Single Package on 'Turn-Key Job Basis' including Trial Run and Operation & Maintenance of the Entire Water Supply Scheme for 10 Years*

EPC ONLY			
No	Main Works	Amount	
1	Construction of intake well cum pump house having minimum diameter 10 m and approximately 38 m deep (including 6 m height Pump house), 33.15 million litres in 20 hours (39.78 MLD) with provision for automation, electromagnetic flow meter, construction of RCC approach bridge of length approximately 150 metres, minimum 5 m wide (excluding space for pipeline, kerb, cable duct, railing, electric poles, etc.) & all other necessary/ ancillary structures, approach road required from Chhitakudari Dam near Chhita Kudari village, Kundam Block, District Jabalpur		
	Intake Well	30291418	
	Approach bridge	46036050	
2	Providing, laying & jointing of raw water pumping main having length and diameter as indicated below with in-lining and out-coating as per relevant specification including valves, sluice valves, air valves, scour valves, valve chambers, thrust blocks, crossings (rail/road/any other facility), Cross drainage works, specials & accessories, etc. complete including road restoration	128924200	
	Type of Pipe/ Class	Diameter in mm	Length in Metre
	DI K-9	600	7,200
3	Water treatment plant to provide 27.50 million litres treated clear water in 20 hours (33.00 MLD) near village Chaubasia Mal, District Jabalpur including automation, clear water sump cum pump house of one hour retention capacity, electromagnetic flow meter, boundary wall with MS gates, internal roads, electrification, laboratory, etc. complete and all other necessary/ ancillary structures required.	85588617	
	Providing, laying & jointing of clear water pumping main having length and diameter as indicated		

Kundam RWSS-MPJJ | Percentage contribution in total cost



## SAMPLE DELIVERABLES—PRE BID ESTIMATION

RISK MATRIX						
130 MLD WATER TREATMENT PLANT BHUBANESHWAR						
Sr No	Risk	Cost Risk Value	Saving	Saving Value	Probability of impact	Narration
1			ESR Location	30000000	50%	The location of ESR is not final and that may change the civil cost significantly. We were in touch with the COO, CEO and technical manager of the project, however they were not able to ensure the final location of the ESR. First time they showed a location with datum of +54 and second time a site on hill with datum of +80 to +110 m. Both locations were surveyed by DGPS. A written communication has been given to them for the clarification over email. If the location is on hill then the same will reduce the staging height to about 1/3 of the original for the ESR (10 m instead of 40 m).
			ESR costing	42000000	80%	Currently the ESR cost is taken as 25 Rs./liter however, the same is believed to cost < 18 Rs/liter even if the done in 40 meter staging height @ datum of +54-60. This has been ascertained by a staad model and detailed design for the ESR
2	MBR location	150000000			70%	Same problem as ESR. Both are supposed to be in the same compound however, locating the MBR on a hill is unrealistically costly. So we expect that there is a high probability that the MBR might be on the foothill and the ESR on the hill. This will have positive savings impact on both costing. However, if that is not the case then the MBR cost might go up significantly and the risk value cannot be ascertained with any confidence. In my opinion we can bet on the chance to influence the location of MBR and ESR after award of the contract
3			Pumping machinery sizing for the intake well	8450000	70%	The sizing for the pumping machinery proposed in the tender is double than what is required. There is an opportunity of saving in this case if the sizing is allowed to be reduced after the tender award to about 25%. The same issue was raised during the pre bid and the clarification provided was "the bidder is responsible for detailed survey and design, the sizes given are tentative" so there is a high probability that we can save in this matter
4			HT connection dedicated	37000000	30%	The dedicated HT connection is suspected to cost much less than the estimated cost (taken same as per tender i.e 5,50,00,000/-) as it is believed that the HT connection for WTP, Intake and MBR will be coming from much closer distance. The cost per km is estimated to be Rs. 12,00,000/km. However, the probability is highly subjective. As per discussion with a TPNDDL official the same cannot be ascertained unless we apply for the connection which can only happen after the tender. The level of certainty can be increased if there is a contact with the circle office of the TPCODL -Cuttack/Bhubaneswar office relevant to our project location
	<b>NET</b>	<b>150000000</b>		<b>117450000</b>		<b>FINAL WEIGHTED RISK</b>
	<b>WEIGHTED TOTAL BASED</b>	<b>105000000</b>		<b>65615000</b>		<b>-39385000</b>

CIVIL ESTIMATION													
Sr No	Unit	Length (m)	Width (m)	SWD/ Height (Mt.)	F.B (m)	Dia (m)	Nos	Total Qty	Unit of Qty	Unit rate	Net Cost		
<b>A</b>	<b>Cascade Aerator</b>			<b>2.0</b>	<b>0.5</b>	<b>16.0</b>	<b>1</b>						
1	Column												
	Providing and casting in situ C.C. in grade M-30 (proportions as per mixdesign or as per table 9 of IS456 2000 in masses by weigh batching) using granite, quartzite trap metal of size 6 mm to 20 mm for RCC work, including scaffolding centering, formwork, needle vibrated consolidation, curing complete up to 6 meter depth or height (excluding cost of reinforcement and neat finishing) with centering and shuttering etc. complete for structure other than water retaining.	0.5	0.45	6.0			23	27.95	cum	7000	195615		
	Supplying, Cutting, Bending, Binding and placing in position steel as per plan and design and as per IS 2502 including cost of steel and binding wire for reservoir/ structures only including lift up to 6 mtr height or depth below GL for all diameters. -DO- Thermo Mechanically treated (TMT) bars Fe-415 grade for all diameters							5589.00	kg	75	419175	@ 200 kg/cum steel assumed	
2	Footing												
	Providing and casting in situ C.C. in grade M-30 (proportions as per mixdesign or as per table 9 of IS456 2000 in masses by weigh batching) using granite, quartzite trap metal of size 6 mm to 20 mm for RCC work, including scaffolding centering, formwork, needle vibrated consolidation, curing complete up to 6 meter depth or height (excluding cost of reinforcement and neat finishing) with centering and shuttering etc. complete for structure other than water retaining.	1.5	1.50	0.5			23	25.88	cum	7000	181125		
	Supplying, Cutting, Bending, Binding and placing in position steel as per plan and design and as per IS 2502 including cost of steel and binding wire for reservoir/ structures only including lift up to 6 mtr height or depth below GL for all diameters. -DO- Thermo Mechanically treated (TMT) bars Fe-415 grade for all diameters							5175.00	kg	75	388125	@ 200 kg/cum steel assumed	
3	Excavation for structure including removing and spreading the excavated soil directed with haul up to 90m in all strata and in all strata												
	Upto 1.5m	2.5	2.5	1.5			23	215.63	cum	150	32344		
	1.5 m to 2.5 m	2.5	2.5	1.0			23	143.75	cum	300	43125		
4	Plaster												
	Providing 20 mm thk sand faced cement plaster on wall upto 10 mt height above ground level consisting of 12 mm thick backing coat of cement mortar 1:3 and 8 mm thick finishing coat of cement mortar 1:1 (1 - cement : 1 sand) etc. complete.							100.48	sqm	250	25120		
5	Color												
	Applying any approved quality of cement paint in three coats incl. cleaning, washing etc. complete							100.48	sqm	50	5024		
6	Cascade Concrete Steps												
	Providing and casting in situ C.C. in grade M-30 (proportions as per mixdesign or as per table 9 of IS456 2000 in masses by weigh batching) using granite, quartzite trap metal of size 6 mm to 20 mm for RCC work, including scaffolding centering, formwork, needle vibrated consolidation, curing complete up to 6 meter depth or height (excluding cost of reinforcement and neat finishing) with centering and shuttering etc. complete for structure other than water retaining.												
	Net total CC							60.29	cum	7000	422016		
	Supplying, Cutting, Bending, Binding and placing in position steel as per plan and design and as per IS 2502 including cost of steel and binding wire for reservoir/ structures only including lift up to 6 mtr height or depth below GL for all diameters. -DO- Thermo Mechanically treated (TMT) bars Fe-415 grade for all diameters							6028.80	kg	75	452160	@100 kg/cum steel	
7	Peripheral launder	54.01		2.80	0.50								
a	Side wall												
	Providing and casting in situ C.C. in grade M-30 (proportions as per mixdesign or as per table 9 of IS456 2000 in masses by weigh batching) using granite, quartzite trap metal of size 6 mm to 20 mm for RCC work, including scaffolding centering, formwork, needle vibrated consolidation, curing complete up to 6 meter depth or height (excluding cost of reinforcement and neat finishing) with centering and shuttering etc. complete for structure other than water retaining.				0.2		1	10.80	cum	10000	108016		

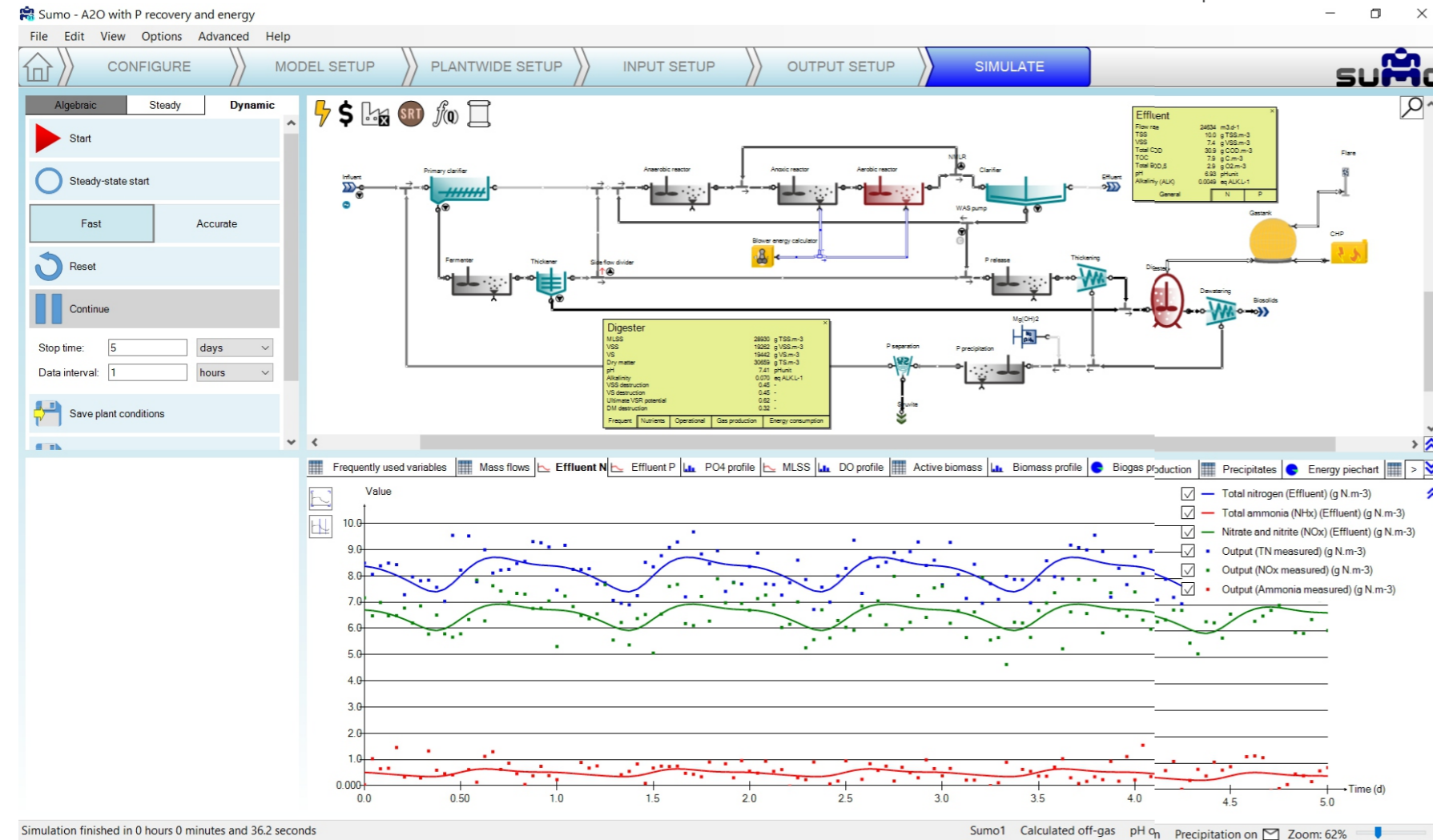
## DETAILED DESIGNING & ENGINEERING SOLUTIONS— WTP, STP, ETP

Our approach for process and hydraulic design & engineering not only integrate the client requirement for the treatment objectives but also the site conditions, such that not only the capital cost but the operations cost is also economized.

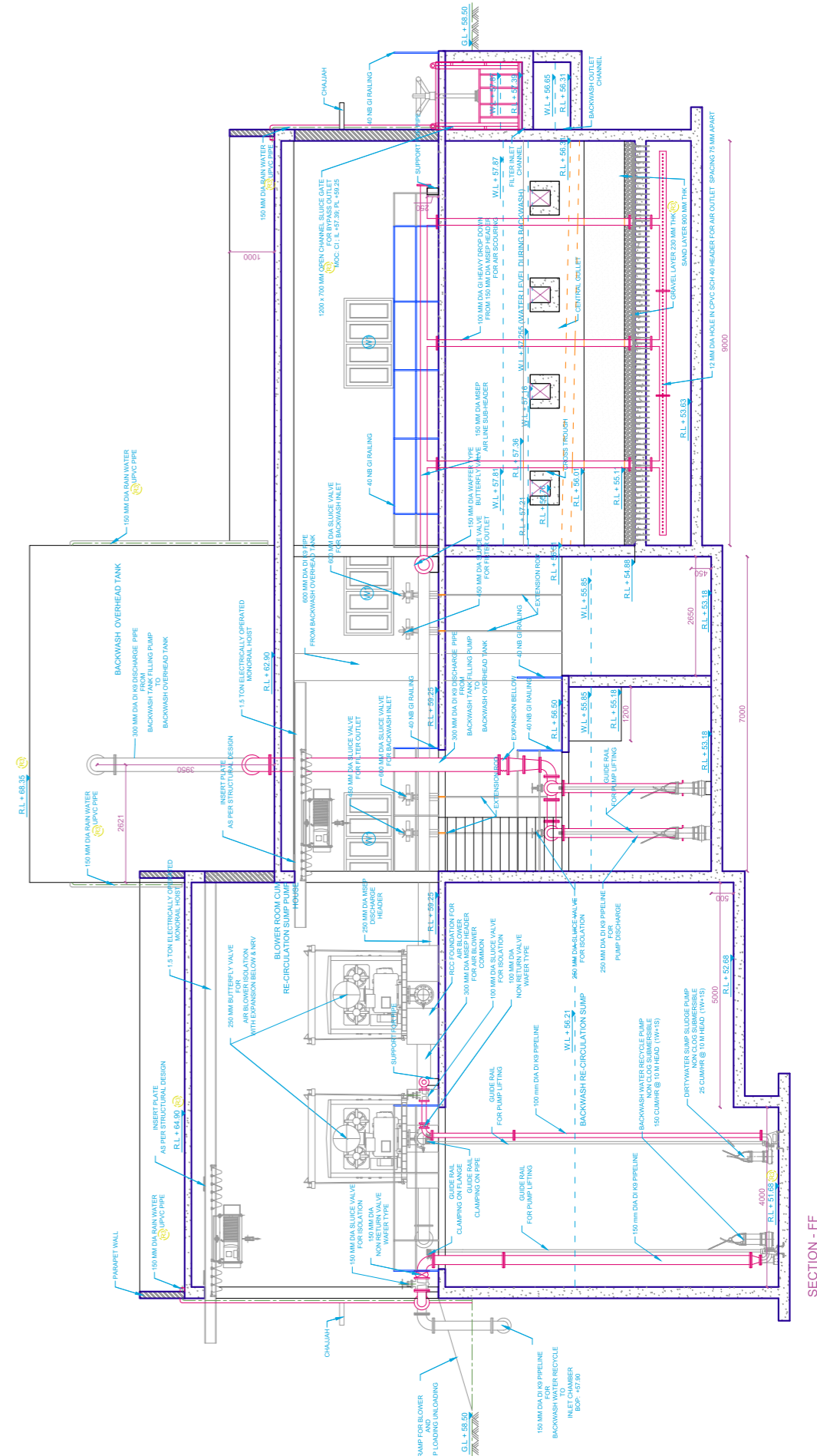
Our deliverables include but not limited to following:

- Process flow diagram
- Process design calculations
- Hydraulic design & HFD
- Plant Layout
- Structural design & drawings
- Electromechanical design & drawings—Piping & Instrumentation Diagram
- Electrical design & drawings - Load list, transformer sizing, capacitor sizing, SLD, power & instrumentation cable sizing, cable tray layout
- Control Philosophy & Instrumentation Design for PLC & SCADA programming
- General arrangement drawings (GAD)

## SAMPLE DELIVERABLES—DETAILED DESIGN & ENGINEERING



Note: Sumo is a proprietary model owned for dynamita



A TYPICAL SECTION OF A FILTER HOUSE IN WATER TREATMENT PLANT

## BUILDING INFORMATION MODELLING & 3 D MODELLING

We provide 3D modelling services for the complete plant civil, mechanical, piping, instrumentation and electrical utilities. We Not only 3D models are prepared, working drawings are also provided in the form of isometrics and detailed BOQ. We are sure you will definitely see value in this system to your projects and your company's bottom line.

- ✔ Highly accurate BOQ to avoid material shortage and frequent material reordering.  
Example: DI pipe fittings, adaptors, gauge adaptors, clamping for hose connections etc.
- ✔ Execution issue with mismatch of piping hardware like valves and fittings.  
Example: PCD mismatch, bolt thread pitch
- ✔ Fouling of piping is avoided with structural members like RCC beams and columns
- ✔ Accurate cable quantity with almost zero to no reordering requirement
- ✔ DI piping execution is 80% faster
- ✔ Electrical routing is more accurate and wastage is lower
- ✔ Structural steel quantity is also very accurate to limit wastage to last 1-2%

TYPICAL MODEL OF 3.6 MLD STP PLANT BASED ON SBR



TYPICAL MODEL OF STP PLANT SBR RAS, WAS AND AIR PIPELINE



TYPICAL MODEL OF STP PLANT SBR RAS, WAS AND AIR PIPELINE

SR NO.	ITEM	DESCRIPTION	LENGTH (mm)	MOC	QTY.
1	FLANGED PIPE	100ND	5500	DI	7
2	FLANGED PIPE	100ND	820	DI	4
3	FLANGED PIPE	100ND	200	DI	5
4	FLANGED PIPE	100ND	1340	DI	2
5	FLANGED PIPE	100ND	1100	DI	1
6	FLANGED PIPE	100ND	700	DI	1
7	FLANGED PIPE	100ND	1910	DI	1
8	FLANGED PIPE	100ND	990	DI	1
9	FLANGED PIPE	100ND	430	DI	1
10	FLANGED PIPE	100ND	3700	DI	1
11	FLANGED 90° BEND STD	100ND	-	DI	11
12	TEE STD	100ND	-	DI	5
13	REDUCER	100 ND TO 50 ND	200	DI	4
14	RAS, WAS PUMP	AUGA - 0523	-	-	4
15	Juice Valve 100mm	100ND	229 O/O	-	4
16	ND 100Dual Plate Check Valve	100ND	67 O/O	-	4
17	MOTORISED BUTTERFLY VALVE	100ND	64 O/O	CI	4
18	GASKET	Ø200 OD	-	EPDM RUBBER	4
19	GASKET	Ø220 OD	-	EPDM RUBBER	43
20	GASKET	50ND	-	EPDM RUBBER	4
21	NUT BOLT WITH 2 WASHER	M16	70	SS-304	48
22	NUT BOLT WITH 2 WASHER	M16	70	GI	312
23	NUT BOLT WITH 2 WASHER	M16	140	GI	64
24	FLANGED PIPE	100ND	4640	DI	1
25	FLANGED PIPE	100ND	2500	DI	1
26	100 ND Flow Meter	100ND	250 O/O	-	2

NOTE:- NO.25 DI PIPE SIZE MAY VARY AS PER ACTUAL AT SITE.

REV	DATE	DRN.	CHKD.	APPD.
	13/7/2021	P.S.	U.P.	U.P.

PROJECT	3.6 MLD ANKLAV, ANAND
CLIENT	GUJARAT WATER SUPPLY & SEWERAGE BOARD
P.M.C	MARS PLANNING & ENGG. SERVICE PVT LTD
CONTRACTOR	JAY CORPORATION SHIVAM BUILDERS JV
DESIGN CONSULTANT	SWA ENVIRONMENTAL CONSULTANT & ENGINEERS
TITLE	SBR DI PIPE ASSY
DRG. NO.	ISO.PIPE/SBR/DI/02-01
SCALE	-
DATE:	13-7-2021

SHEET SIZE: A2

## SERVICES- ENVIRONMENTAL TESTING

### WATER, AIR, AMBIENT, STACK, NOISE, SOIL, SLUDGE, SOLID WASTE TESTING



We are a NABL accredited, Gujarat Pollution Control Board (GPCB) ap-proved Schedule 2 environmental testing laboratory with more than 350 parameters for testing water, air, sludge, soil, ambient air, emissions in our **2000 sq. ft state of the art laboratory.**

We provide analysis for more than 350 parameters with state of the art analytical instruments like Gas Chromatography, Atomic Absorption Spectroscopy, UV-Visible Spectroscopy, VOC analyser, which is capable for highly sensitive ambient air quality and water quality parameters.

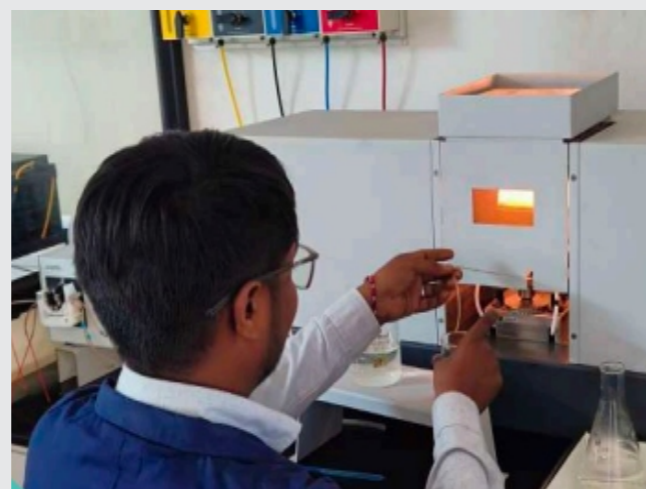


#### CERTIFICATION & RECOGNITION FROM VARIOUS STANDARDIZATION & REGULATORY BODIES



### Fast, Accurate & Reliable

### Utilities & Sectors Serviced



### Wastewater

- ✓ Cooling Tower
- ✓ Legal compliance for EHS department
- ✓ Packaged Drinking Water Plants
- ✓ Municipal Drinking Water Plants
- ✓ Construction & irrigation water
- ✓ Toxicology analysis (Bioassay)
- ✓ Ultra Filtration and Reverse Osmosis System OEMS

### Ambient & Indoor Air Quality

- ✓ Legal compliance for EHS department and post impact assessment
- ✓ Indoor air quality for work place safety
- ✓ Online Weather Monitoring

### Stack & Process Emission Monitoring

- ✓ Boiler combustion efficiency
- ✓ Efficiency of air pollution control measures
- ✓ Diesel Generator emission and efficiency
- ✓ Vehicular CO, O2 & CO2 emissions

#### What's New?

STEL & LTEL for VOCs, TACs and BTX compounds in budget friendly packages

#### What's New?

Pesticides and Heavy Metals assessment in water, soil and solid waste samples

#### What's New?

Get your ETP/STP Health report today

## Illumination Survey Noise Monitoring Soil, Sludge & Hazardous Waste

- ✓ Impact Assessment
- ✓ Pesticides and trace heavy metals assessment in soil, solid water and sludge samples

## Special Services

- ✓ Certified Standard Solution for analyser calibration and reference solution
- ✓ Turnkey onsite laboratory services
- ✓ Personnel training for environmental analysis
- ✓ Health report for ETPS & STPS
- ✓ Treatability studies for effluent treatment
- ✓ Consultancy for ISO 17025 accreditation



## PRODUCTS

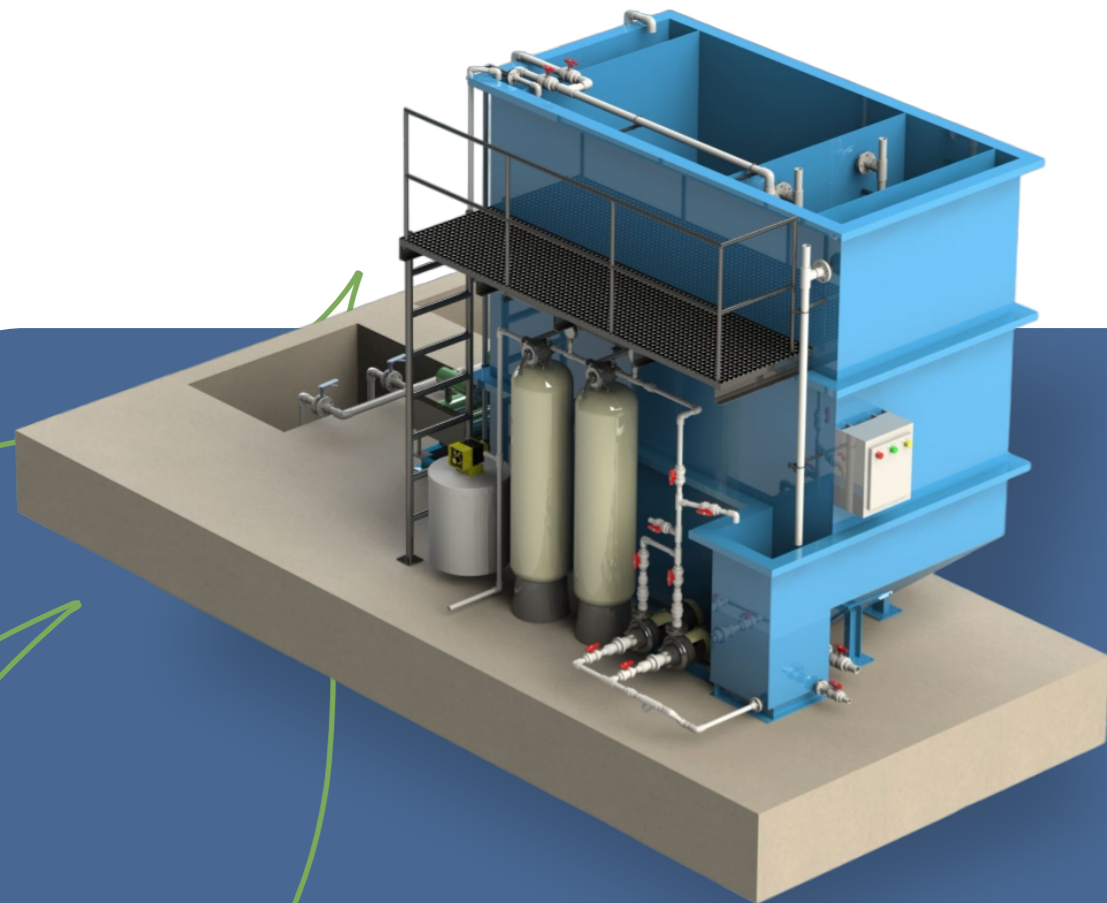
We provide our customers with compact & economical solutions for their water & wastewater treatment in form of 3 major product lines— **Packaged STP, Pan type electric evaporators and treatment plant chemicals & consumables**

### PACKAGED SEWAGE TREATMENT PLANT

We provide 3D modelling services for the complete plant civil, mechanical, piping, offer wide capacity of packaged/ modularized Sewage Treatment Plant (STP) & Effluent Treatment Plant (ETP) ranging from **10 KLD to 500 KLD**. These plants are designed based on following technologies, tailored to client's requirement for meeting most stringent biological nutrient removal (BNR) requirements:

#### Salient features

- 24x7 remote operation assistance
- High quality treated water
- Low operation cost < 5 Rs/KL
- Fully or semi auto operation through advanced sensing algorithm



**TYPICAL 40 KLD SEWAGE TREATMENT PLANT**

#### Technologies offered

- Moving Bed Bio Reactor (MBBR)
- Membrane Bio Reactor (MBR)
- Extended Aeration
- Sequencing Batch Reactor (SBR)
- Activated Sludge Process (ASP)

## PAN TYPE EVAPORATORS— ELECTRIC & STEAM BASED

We offer low cost Pan-type Evaporators for capacities ranging from 0.1 KLD to 5 KLD. These are available in both electric as well as steam based evaporation based on customer requirement.

### SALIENT FEATURES & SPECIFICATIONS

- ✔ Material of Construction: SS 304/SS 316/SS 316L
- ✔ High quality Insulation
- ✔ Low capital cost suitable for small scale operations
- ✔ Package includes following components:
  - ✔ Process vessel
  - ✔ Process piping – SS 304/ SS 316/ SS 316L
  - ✔ Non-clog self-priming pumps for FEED
  - ✔ Vacuum pump (optional)
  - ✔ Quartz type level gauge (up to total tank height)
  - ✔ Fully automatic operation available
  - ✔ Pressure Sand Filter (PSF)
  - ✔ Standard IP 45/55/65 protection control panel

## WATER & WASTEWATER TREATMENT PLANT CHEMICALS, CONSUMABLES & COMPONENTS



Activated Carbon



Casutic Soda



Diffuser



Ion Exchange resin



MBBR Media



PAC (Poly Aluminum Chloride)



Pressure Vessel



RO Membrane

At SWA, we don't just supply chemicals and consumables, but **"help you buy them"**. Our team of expert chemists & engineers, provide with the most optimal selection as well as implementation of the chemical & installation of components.

### How we help you choose the right solutions?

Date: 21-Dec-22	<b>R&amp;D Report</b>	Prepared by: Pankaj Gothi
Document Code:	R&D/18/.2/22/RA CHEM	
Company Name	RA CHEM PHARMA PVT.LTD	
Sample Characteristics	Fluid Waste (HI TDS/BIO SLUDGE/COOLING TOWER)	
Sample Drawn by	Vikul Chaudhary	
Treatability Carried out by	Harshad Salvi	

#### 1. Objective:

- a. Assessment of sludge volume removing efficiency and Polyelectrolyte for effectiveness in coagulating the raw water provided from RA CHEM PHARMA PVT.LTD
- b. Testing sludge concentration

#### 2. Methodology:

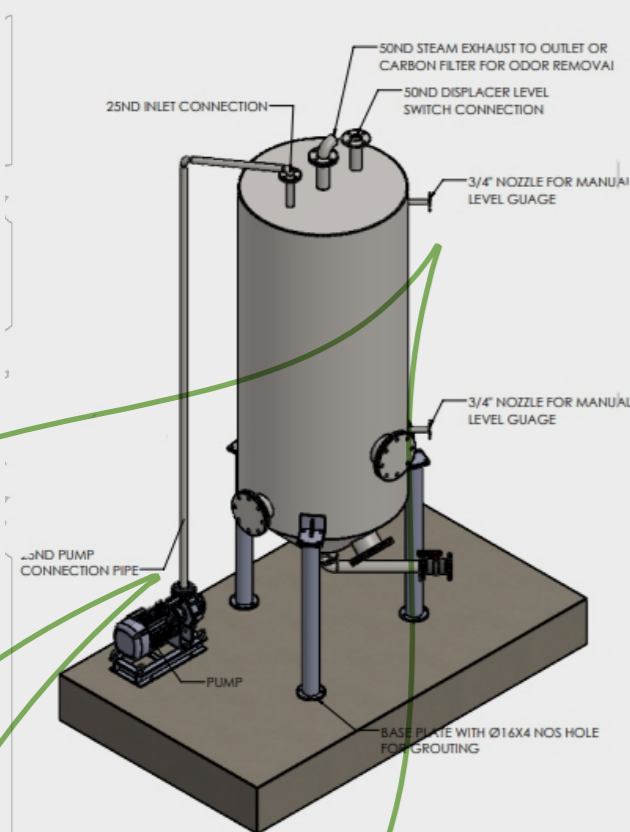
##### a) Study – 01: Sludge volume removing efficiency (% of sludge volume settles in 500 ml beaker)

- The effectiveness of different kinds of poly is examined through random dose to the samples and select the poly for the further treatment
- The fluid sludge samples were divided in 200 ml of each sample and Industrial Grade Poly

#### 3. Results & discussion

Company Name	RA CHEM PHARMA PVT.LTD		
Flocculent	Poly electrolyte		
Sample Name	<b>High TDS</b>	<b>Bio Sludge</b>	<b>Cooling Tower</b>
Sample Taken for analysis	200 ml	200 ml	200 ml
Dilution of sludge	2 times	4 times	2 times
Initial pH	6.90	6.80	6.60
Initial TSS	67384 mg/l	53559.17 mg/l	2321.17 mg/l
Initial Chloride	64086.40 mg/l	13931.50 mg/l	2786.30 mg/l
Used Poly electrolyte type (Cationic)	245 CHC	245 CHC	245 CHC
PAC Concentration	-	1%	-
PAC dosing mg	-	70 mg	-
Poly Concentration	0.1 %	0.1 %	0.1 %
Poly dosing mg	3.5 mg	20 mg	6 mg
After Treatment pH	7.10	6.90	6.70
After Treatment TSS	4248.30 mg/l	308.10 mg/l	110.25 mg/l
After Treatment Chloride	75437.60 mg/l	754.36 mg/l	1320.14 mg/l
Ability of flocculation	90-95 %	95 %	95 %

#### 4. General discussion, results and observation



Raw Sample



Coagulated supernatant and sludge separated by decanting into a beaker



Environmental Private Limited

## CLIENTELE & ASSOCIATIONS



& many more...

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urvpatel@swaenviro.com / swa@swaenviro.com

www.swaenviro.com

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Mfg. Facility & Laboratory | Survey No. 645, Miroli village, Near Navapura Village, Kamod Circle to Dholka Road, Ahmedabad