



**The Bhagirathi Co-op. Milk Producers' Union Ltd.**  
**Feeder Dairy: P.O-Berhampore: PIN -742101: Dist.-Murshidabad**  
 (03482) 250898, 260534 & FAX: 03482 – 251978  
e-mail: [bhagirathi6@rediffmail.com](mailto:bhagirathi6@rediffmail.com); Website:  
[www.bhagirathimilk.com](http://www.bhagirathimilk.com)

BU/DAIRY/ETP/OM/2866

Dated: 13.01.2023

## **NOTICE INVITING E-TENDER**

The Bhagirathi Cooperative Milk Producers' Union Limited invites Online Tender (E-Tender) in two bid system for Comprehensive Operation & Maintenance of 100KLD Effluent Treatment Plant at Feeder Dairy Unit of The Bhagirathi Cooperative Milk Producers' Union Ltd.

### **IMPORTANT DATE AND TIME SCHEDULE**

| Sl. No. | Particulars  | Date & Time  |
|---------|--|--|
| 1       | Date of uploading (Publishing)of N.I.T. Documents (Online) | 13.01.2023 at 1600 hrs                                   |
| 2       | Documents download start date (Online)                     | 13.01.2023 at 1605 hrs                                   |
| 3       | Technical Bid proposal submission start date (Online)      | 13.01.2023 at 1610 hrs                                   |
| 4       | Bid Submission end date (Online)                           | 28.01.2023 at 1600 hrs                                   |
| 5       | Technical bid opening date                                 | 30.01.2023 at 1600 hrs                                   |
| 6       | Pre bid Meeting  | 16/01/2023 to 21/01/2023<br>from<br>1100 hrs to 1600 hrs |
| 7       | Financial Bid Opening date                                 | To be notified later                                     |

**The details of work are given below:**

|                               |   |
|-------------------------------|---|
| <b>Nature of Work</b>         | Comprehensive Operation & Maintenance of Effluent Treatment Plant or Sewage Treatment Plant.  |
| <b>Scope of Work</b>          | Comprehensive Operation & Maintenance of Effluent Treatment Plant or Sewage Treatment Plant.  |
| <b>Estimated Cost of Work</b> | NIL. Rate should be quoted as per prevailing market rate.   |
| <b>Bid Inviting Authority</b> | The Managing Director of The Bhagirathi Cooperative Milk Producers' Union Limited   |
| <b>Eligibility Criteria</b>   | <b>Credentials:</b><br>1. <b>Experience:</b> Minimum 1 year experience within the last five years in Comprehensive Operation & Maintenance of Effluent Treatment Plant or Sewage Treatment Plant. Experience certificate from competent authority supporting the claim must be uploaded in the Technical Bid Folder.<br>2. <b>Turnover:</b> Average Annual Turnover from this business should be minimum 1 crore for the last financial year. Audited Balance Sheet |

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|   | <p>should be produced in support of the claim and must be uploaded in the Technical Bid Folder.</p>   |
| <p><b>Statutory &amp; Non Statutory Documents</b></p> | <ol style="list-style-type: none"> <li>1. GST Registration Certificate</li> <li>2. PAN Card</li> <li>3. IT Return (2019-20).</li> <li>4. Audited Balance Sheet for last 3 financial years</li> <li>5. Documents in support of Experience.</li> </ol> <p><b>All these documents are mandatory. Failure to upload the documents will result in disqualification during technical bid. No document is to be sent physically.</b></p>   |
| <p><b>Earnest Money Deposit</b></p>                   | <p>The EMD amounting to Rs. <b>40,000/-</b> should be deposited online through Net Banking, NEFT/RTGS in favour of the The Bhagirathi Cooperative Milk Producers' Union Limited payable at Berhampore.<br/>EMD shall not carry interest.</p> <p>Tenderers will select the Tender to bid and initiate payment of pre-defined EMD for that tender by selecting from either of the following payments modes (vide Finance Department Memorandum no. 3975-F(Y) Dt. 28/07/2016) :</p> <ol style="list-style-type: none"> <li>1. Net banking (any of the banks listed in the ICICI Bank Payment gateway) in case of payment through ICICI Bank Payment Gateway.</li> <li>2. RTGS/NEFT in case of offline payment through bank accounts in any Bank.</li> </ol> <p><b>Payment procedure.</b></p> <p><b>a) Payment by Net Banking (any listed bank) through ICICI Bank Payment Gateway :</b></p> <ol style="list-style-type: none"> <li>1. On selection of net banking as the payment mode, the bidder will be directed to ICICI Bank Payment Gateway webpage (along with a string containing a Unique ID) where he will select the Bank through which he wants to do the transaction.</li> <li>2. Bidder will make the payment after entering his Unique ID and password of the bank to process the transaction.</li> <li>3. Bidder will receive a confirmation message regarding success/failure of the transaction.</li> <li>3. If the transaction is successful, the amount paid by the bidder will get credited in the respective Pooling account of The Bhagirathi Cooperative Milk Producers' Union Limited maintained with the Focal Point Branch of ICICI Bank at R.N. Mukherjee Road, Kolkata for collection of EMD/Tender Fees.</li> <li>4. For transaction failure, the bidder will again try for payment by going back to the first step.</li> </ol> |

**b) Payment through RTGS/NEFT:**

1. On selection of RTGS/NEFT as the payment mode, the e-Procurement portal will show a pre-filled challan having the details to process RTGS/NEFT transaction.
2. The bidder will print the challan and use the pre-filled information to make RTGS/NEFT payment using his Bank account.
3. Once payment is made, the bidder will come back to the e-Procurement portal after expiry of a reasonable time to enable the NEFT/RTGS process to complete, in order to verify the payment made and continue the bidding process.
4. If verification is successful, the fund will get credited to the respective Pooling account of The Bhagirathi Cooperative Milk Producers' Union Limited maintained with the Focal Point Branch of ICICI Bank at R.N. Mukherjee Road for collection of EMD/Tender Fees.
5. Hereafter, the bidder will go to e-Procurement portal for submission of his bid.
6. But if the payment verification is unsuccessful, the amount will be returned to the bidder's account.

**B. Refund/Settlement Process:**

- i. After opening of the bids and technical evaluation of the same by the Quotation inviting authority through electronic processing in the e-Procurement portal of the State Government, the Quotation inviting authority will declare the status of the bids as successful or unsuccessful which will be made available, along with the details of the unsuccessful bidders, to ICICI Bank by the e-Procurement portal through web services.
- ii. On receipt of the information from the e-Procurement portal, the Bank will refund, through an automated process, the EMD of the bidders disqualified at the technical evaluation to the respective bidders' bank accounts from which they made the payment transaction. Such refund will take place within T+2 Bank Working Days where T will mean the date on which information on rejection of bid is uploaded to the e-Procurement portal by the Tender inviting authority.
- iii. Once the financial bid evaluation is electronically processed in the e-Procurement portal, EMD of the technically qualified bidders other than that of the L1 and L2 bidders will be refunded, through an automated process, to the respective bidders' bank accounts from which they made the payment transaction. Such refund will take place within T+2 Bank Working Days where T will mean the date on which information on rejection of financial bid is uploaded to the e-Procurement portal by the Quotation inviting authority. However, the L2 bidder should not be rejected till the LOI process is successful.
- iv. If the L1 bidder accepts the LOI and the same is processed

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|                                   | <p>electronically in the e-Procurement portal, EMD of the L2 bidder will be refunded through an automated process, to his bank account from which he made the payment transaction. Such refund will take place within T+2 Bank Working Days where T will mean the date on which information on Award of Contract (AOC) to the L1 bidder is uploaded to the e-Procurement portal by the tender inviting authority.</p> <p>v. As soon as the L1 bidder is awarded the contract (AOC) and the same is processed electronically in the e-Procurement portal –</p> <p>a) EMD of the L1 bidder for tenders of State Government offices will automatically get transferred from the pooling account to the State Government deposit head “8443-00-103-001-07” through GRIPS along with the bank particulars of the L1 bidder.</p> <p>b) EMD of the L1 bidder for tenders of the State PSUs/Autonomous Bodies/Local Bodies/PRI, etc will automatically get transferred from the pooling account to their respective linked bank accounts along with the bank particulars of the L1 bidder. In both the above cases, such transfer will take place within T+1 Bank Working Days where T will mean the date on which the Award of Contract (AOC) is issued.</p> <p>vi. The Bank will share the details of the GRN No. generated on successful entry in GRIPS with the E-Procurement portal for updation.</p> <p>vii. Once the EMD of the L1 bidder is transferred in the manner mentioned above, Tender fees, if any, deposited by the bidders will be transferred electronically from the pooling account to the Government revenue receipt head “0070-60-800-013-27” through GRIPS for Government tenders and to the respective linked bank accounts for State PSU/Autonomous Body/Local Body/PRI, etc tenders.</p> <p>viii. All refunds will be made mandatorily to the Bank A/c from which the payment of EMD &amp; Tender Fees (if any) were initiated.</p> |
| Bid Document                      | The bid document is available in the E-Tendering Portal of Govt. of West Bengal <a href="https://wbtenders.gov.in">https://wbtenders.gov.in</a> .  |
| Technical Bid Evaluation          | The Technical Bid will be evaluated by the Tender Committee. Bidders shall upload all the necessary documents in the Technical Folder which will be verified and evaluated by the Tender Committee.  |
| Financial Bid                     | <p>Rate shall be quoted in the Financial bid</p> <p>The bidder shall quote the rate online through Computer only in the space marked for quoting rate in the Bill of Quantities (BOQ). Only downloaded copies of the above documents, digitally signed by the bidder are to be uploaded (Excel file).</p> <p>The rate quoted by the tenderer shall be inclusive of all elements of taxes and duties, demands, tolls etc.</p>   |
| Validity of Bid                   | 365 days   |
| E Tender registration and bidding | <p><b>ONLINE BIDDS:</b></p> <p>The bidders interested to submit the bid Online shall get registered and get a digital signature as per the procedure described below:</p> <p>Companies\ Agencies\ bidders who are interested in participating e tenders</p>  |

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|                               | <p>are requested to contact the representatives of NIC for registration, computer setting and clarification on e-tendering<br/>Online tenders can be submitted by logging in the e –Tendering portal of Govt. of West Bengal i.e. <a href="https://wbtenders.gov.in">https://wbtenders.gov.in</a> .</p> <p><b>ONLINE BID SUBMISSION:</b><br/>The bidders are required to submit the Technical and Financial bid documents ONLINE i.e. uploading of the documents complete in all respect by following the Online Bid submission procedure.</p>  |
| <p>Important Instructions</p> | <p>Names of the technically qualified bidders as per the bid criteria after verification with original &amp; evaluation will be displayed in the e-portal.</p> <p>The financial bid documents of the technically qualified bidders will only be opened.</p> <p>List of Financial comparison chart of bidders will be published after opening of Financial Bid. The Managing Director, Bhagirathi Cooperative Milk Producers’ Union Limited reserves the right to reject or cancel any or all pre-qualification documents and bid document without assigning any reasons whatsoever.</p> <p>All duties, taxes, toll and other levies payable by the Bidders under the Contract to the State / Central Government for any other cause, shall be included in the rates, prices and total Bid price submitted by the bidder.</p>  |
| <p>Download of Tender</p>     | <p>1. <b>Download of Tender</b></p> <p>Tender to be downloaded only from the e-Tendering portal of Govt. of West Bengal i.e. <a href="https://wbtenders.gov.in">https://wbtenders.gov.in</a> .The tender will be submitted in two bid system i.e. Technical bid &amp; Financial bid only through online.</p> <p>2. <b>Online Bid submission procedure</b></p> <p><b>Registration of Bidders:</b> Agencies/Bidders who are interested in participating e-tenders will have to get enrolled &amp; registered with the Government e-Procurement system. through logging on to <a href="https://wbtenders.gov.in">https://wbtenders.gov.in</a></p> <p><b>Digital Signature certificate (DSC):</b> Each bidders is required to obtain a class-II or Class-III Digital Signature Certificate (DSC) having Signing and Encryption certificate for submission of tenders from the approved service provider of the National Information's Centre (NIC) on payment of requisite amount or any service provide as may be allowed by the Finance Department, Govt. of West Bengal.</p> <p><b>Tender Download:</b> The bidders can search &amp; download NIT &amp; Tender Documents electronically from computer once he logs in to the e-Tendering portal <a href="https://wbtenders.gov.in">https://wbtenders.gov.in</a> using the Digital Signature Certificate. This is the only mode of collection of Tender Documents.</p> <p><b>Submission of Tenders:</b> General process of submission, Tenders are to be submitted through online to the stipulated website in two folders, (one is Technical Bid &amp; the other is Financial Bid) before the prescribed date &amp; time using the Digital Signature Certificate (DSC). The documents are to</p> |

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|                              | be uploaded duly digitally signed. The documents will get encrypted (transformed into non readable formats).   |
| <b>Award of Contract</b>     | The <b>bidder selected</b> after evaluation of financial bid by the tender committee and subsequent approval from the Competent Authority will be given Award of Contract, subject to fulfillment of Terms and Conditions provided in the tender.  |
| <b>Publication of Tender</b> | <ol style="list-style-type: none"> <li>1. E-Procurement Portal Govt. of West Bengal (<a href="https://wbtenders.gov.in">https://wbtenders.gov.in</a>)</li> <li>2. Website of the Milk Union (<a href="http://www.bhagirathimilk.com">www.bhagirathimilk.com</a> )</li> <li>3. Office Notice Board</li> </ol> |

### **SCOPE OF WORK**

1. Day to day operation 24x7 for 365 days & routine maintenance and to follow daily checks.
2. Provide professional, skilled & semi- skilled manpower for all the installed equipment's operation.
3. Preparation & Dosing Chemical Solutions of required concentration and quantity.
4. Collection, removal and disposal of sludge. Maintain the MLSS level in Bio reactor.
5. General cleaning and house-keeping.
6. Operation of all electrical & mechanical machinery including electrical panels.
7. Clean / Preventive / minor the air filters on Air Blowers regularly. Change ate air Filters periodically.
8. Oil & grease chamber, all screen bars (manual & auto) and all tank cleaning.

### **GENERAL INSTRUCTIONS TO THE BIDDER**

1. All the documents uploaded by the bidder must be clearly legible. Any illegible document shall not be accepted and the bid shall be cancelled outright. Any overwriting or cutting which is unavoidable shall be signed by the authorized signatory.
2. If in case the successful bidder declines to execute the contract the EMD deposited shall be forfeited and no claim in this regard shall be entertained.
3. EMD of the successful bidder shall be converted into Security Deposit and shall be released after 1 month of successful execution of the Contract. EMD of unsuccessful bidders shall be forfeited.
4. Each page of the NIT document should be signed and stamped by the tenderer or an Authorized representative of bidder in acceptance of the terms and conditions laid down by the Bhagirathi Cooperative Milk Producers' Union Limited. The NIT received without the signature of authorized person will not be entertained and will be rejected.
5. The competent authority reserves the right to accept/reject any or all tender in part or in whole without assigning any reason thereof.

6. The bidder must visit the site to acquaint with the site working condition in detail prior to tendering and no claim will be entertained on the ground of ignorance or otherwise of the conditions under which the work shall have to be executed. Once the tender is submitted, it will be presumed that the tenderer has seen and understood the complete work involved for the system.
7. The Contractor/s shall ensure all precautionary measures for safety of personnel engaged. Instructions on safety code shall be strictly followed.
8. Contractor/s will be solely responsible for any accidents to the personnel engaged by them.
9. Only trained supervisor/operators who are experienced in the respective field should be positioned.
10. The Bidders are required to consider while quoting their rates, all factors including any fluctuations in the Market rates etc., No claim regarding escalation will be entertained on this account after acceptance of the contract or during the contract.
11. It shall be the sole responsibility of the contractor to settle dispute if any, arising out of the engagement between himself and the personnel engaged by him and the Milk Union shall not in any way be responsible for such circumstances.
12. Rates quoted shall be fixed and are inclusive of cost of man power, materials, tools and plants etc., all taxes (including service tax) duties, levies and insurance etc., no escalation of whatsoever nature shall be payable during the contract period.
13. An one time investment on 200 nos. of metal electrodes( Size 300mmx600mm, Thickness:4mm)for Electro coagulation Chamber of the existing ETP which is a periodic consumable in terms of Daily Plant operation should be borne by the Contractor during taking handover of the Plant.
14. The contractor should fulfill all statutory requirements pertaining to satisfactory performance of the job etc.

### **TERMS & CONDITIONS**

1. The Plant should run as per the relevant rules/guidelines/ instructions issued by the Milk Union & Pollution Control Board (PCB).
2. Any Log book, Register pertaining to operation of ETP should be maintained as per the requirement and guidelines of the Milk Union.
3. Service should be offered round the clock, 365 days in one calendar year.
4. Contractor should provide all Tools & Tackles as required for proper functioning of ETP.

5. Contractor should provide uniform, safety kits, Shoe, gloves, Helmet and all PPEs to the personnel who shall carry out the operation and maintenance.
6. Any damages caused by the Contractor in existing facilities while carrying out the work shall be made good by the contractor to the entire satisfaction of the Milk Union at their own risk and cost.
7. The firm/ agency/ contractor must act according to the guidelines of various law enforcing agencies /local authorities, such as Pollution Control Board, Directorate of Electricity Safety, fire etc.
8. In case any staff is found not up to the mark and not able to do work properly, he will have to be changed by the Contractor as per the instruction of the Milk Union.
9. No advance payment will be made to the Contractor. Monthly payment/s will be released after submission of bill after 30 days (one month) and satisfactory completion of job, which is to be certified by the concerned Sectional In-Charge.
10. The Contractor at all times should indemnify the Milk Union against all claims, damages or compensation under the provisions of Payment of Wages Act, 1936; Minimum Wages Act, 1948; Employer's Liability Act, 1938; the Workman Compensation Act, 1923; Industrial Disputes Act, 1947; Maternity Benefit Act, 1961; or any modification thereof or any other law relating thereto and rules made there under from time to time. The Bhagirathi Milk Union will not own any responsibility in this regard.
11. The Contractor shall, throughout the execution and completion of the works :
  - a) Have full regard for the safety of all persons entitled to be upon the site and keep the site (so far as the same is under his control) and the works (so far as the same are not completed or occupied by the Employer) in an orderly state appropriate to the avoidance of danger to such persons.
  - b) Take all reasonable steps to protect the environment on and off the site and to avoid damage or nuisance to persons or to property of the public or others resulting from pollution, noise or other causes arising as a consequence of his methods or repair.
12. The Contractor shall, except if and so far as the Contract provides otherwise, indemnify the Employer against all losses and claims in respect of:
  - a) death of or injury to any person.
  - b) loss or damage to any property (other than the works).
13. The Operation and Maintenance contract may be extended on the written mutual consent of both employer and Contractor for a further period of 6 months. However, employer reserves its right to terminate the Operation and Maintenance contract by giving 15 days' notice at any time during the currency of the contract if the services of the agency are not satisfactory as per the Milk Union.
14. The Comprehensive Operation and Maintenance work shall be for a period as mentioned in the Award of Contract and shall start from the date of acceptance of Award of Contract.
15. The firm shall rectify any breakdown within 24 hours failing which penalty for nonperformance @ 0.5 % per week of delay subject to a maximum of 10% of the contract price will be imposed.



16. In the event of any damage to the property or life or any machinery and installation in the ETP arising out of non-performance or negligence of the workers, contractor will be solely responsible and the cost of damage if any shall be deducted from the bills of the contractor.
17. Any spare/equipment/component other than chemicals and consumables shall be supplied by the Milk Union and the same should be replaced within 24 hours from receipt of material by the Contractor or his representative.
18. If the performance of the contractor is not satisfactory and not corrected within 15 days of receiving notice, then employer shall be at liberty to terminate the contract and get the work executed through other means at the risk and cost of the Contractor. In the event of termination of the contract, the Milk Union shall be at liberty to get balance work done at the risk and cost the contractor and due payment of the contractor, if any shall be released after the completion of whole of the works by making necessary adjustments from the cost of the contractor.
19. Conciliation & Arbitration: Any dispute, difference, whatsoever, arising between the parties out of or relating to the project under consideration meaning, scope, operation or effect of this Contract shall be settled between the Milk Union and the Contractor amicably. If however, the Milk Union and the Contractor are not able to resolve their disputes / differences amicably as mentioned above, the said disputes/ differences shall be settled by Conciliation, failing which, through Arbitration. Conciliation shall be resorted to prior to invoking Arbitration. The Arbitration clause is to be invoked by the parties to the Contract only on failure of conciliation proceedings to amicably settle the disputes. Subject to the stipulations made hereinabove, Arbitration shall be conducted as per forum specified below:

In case dispute or difference arising between Milk Union and Contractor relating to any matter arising out of or connected with this Contract, such disputes or difference shall be governed in accordance with the Arbitration and Conciliation Act, 1996 of India. The arbitral tribunal shall consist of 3 arbitrators one each to be appointed by the Purchaser and Contractor. The third arbitrator shall be chosen by the two arbitrators so appointed by the parties and shall act as presiding arbitrator.

The language of Arbitration shall be English.

Force Majeure: The terms and conditions, which have been enshrined in the tender, shall be subjected to the force majeure clauses. Neither the Milk Union nor the Contractor shall be considered in default in performance of its obligations herein contained. If such performance is prevented or delayed because of war, hostilities, revolution, civil commotion strikes, epidemics, accident, fire, wind flood, no availability of diesel, petrol and oil, earthquakes or because of any law and order proclamations, regulation or ordinance of any government or any act of God and for any other cause whether of similar or dissimilar nature beyond the control of the parties affected. Any of the both parties getting prevented from fulfilling its contractual obligation by state of force majeure lasting continuously for a period of three months, the parties should consult each other regarding further course of actions and future implementations of the agreement.

**Sd/-**  
Managing Director  
The Bhagirathi Cooperative Milk  
Producers' Union Limited

## ANNEXURE-A

### DESIGN BASIS

Design basis of the Effluent Treatment Plant is furnished hereunder:

#### **A. Input Parameters:**

The following Raw Effluent Quality will be considered while designing the plant:

|                    |   |           |
|--------------------|---|-----------|
| Capacity           | - | 100 KLD   |
| Hours of Operation | - | 20 hrs    |
| Average Flow rate  | - | 5 cum/hr  |
| pH                 | - | 6.0 – 8.5 |
| Total Solids       | - | 2850 mg/l |
| TDS                | - | 2400 mg/l |
| TSS                | - | 450 mg/l  |
| COD                | - | 2200 mg/l |
| BOD                | - | 1850 mg/l |
| FOG                | - | 7500 mg/l |

#### **B. Output Quality:**

The quality parameters of the output water will be according to the standards set by the West Bengal Pollution Control Board, which are as follows:

|                             |   |                |
|-----------------------------|---|----------------|
| Colour                      | - | Not specified  |
| pH                          | - | 5.5 – 9.0      |
| Suspended solids            | - | ≤ 50 mg/l      |
| Total Dissolved solids      | - | ≤ 2100.00 mg/l |
| Oil & Grease                | - | ≤ 10 mg/l      |
| COD                         | - | ≤ 100 mg/l     |
| BOD                         | - | ≤ 20 mg/l      |
| Sulphate as SO <sub>4</sub> | - | ≤ 1000 mg/l    |

#### **C. Treatment Scheme/ Process Flow Diagram:**

The proposed Treatment Scheme and Process Flow Diagram of the proposed ETP are furnished hereunder.

##### **A. Treatment Scheme:**

The Treatment Scheme can be broadly subdivided into two processes viz.

- a) **Primary Treatment** – Involving Electrochemical Treatment
- b) **Secondary Treatment** – Involving Biological Degradation

The raw effluent generated during manufacturing and other processes flows into a collection pit from where it enters the **Equalization Tank**. This tank is the first unit of the Effluent

Treatment Plant where the effluent is retained for some time before being pumped to the next stage of treatment. The existing Collection Tank will be converted into Equalization Tank after certain modifications and alterations, if required.

Prior to entering the Equalization Tank the effluent passes through **Bar Screens** which screens off the large, suspended, non-biodegradable substances and prevents their entry into the treatment system. If these large solids are not removed, they become entrained in pipes and moving parts of the treatment plant, and can cause substantial damage and malfunctioning/ inefficiency in the process.

There will be provision for aeration in the Equalization tank by means of an Air Blower and diffuser grid network. Aeration is provided to avoid the formation of septic conditions and to prevent it from becoming smelly. The process of biodegradation of some of the organic compounds present also occurs in these anoxic conditions. **Effluent Transfer Pump** of appropriate capacity is used to pump the effluent from Equalization tank to the next stage of treatment.

From the Equalization Tank the effluent is pumped to the **Zerochem Reactor (ZCR)** unit which offers an alternative to the use of metal salts or polymers and polyelectrolyte addition for breaking stable emulsions and suspensions. The technology removes metals, colloidal solids and particles, organic pollutants from aqueous media by introducing highly charged polymeric metal hydroxide species. These species neutralize the electrostatic charges on suspended solids and oil droplets to facilitate agglomeration or coagulation and resultant separation from the aqueous phase. The treatment prompts the precipitation of certain metals and salts.

The sludge from the **Zerochem Reactor** outlet is of floating nature and the **Dissolved Air Flootation (DAF)** offered by us will separate the sludge easily. The treated effluent from the **Zerochem Reactor** unit will be first directed into a **Flash Mixer** unit for necessary processing (flocculation by chemical dosing ) and onward transfer to **Aeration Tank** by gravity.

The overflowing effluent from DAF enters the **Aeration Tank** where biological oxidation of dissolved and fine suspended organic matter takes place aerobically i.e. in presence of air.

**Jet Aerators** will be employed to supply adequate air in the aeration tank. As need be, bacterial culture and food supplements will be added. This aerobic treatment will lead to lowering of the BOD (Biological Oxygen Demand) & COD (Chemical Oxygen Demand) of the effluent.

The treated effluent from the Aeration Tank overflows into the **Secondary Settling Tank** where the suspended solid particles and the excess biomass settle out as sludge by virtue of gravity. Square tube modules are provided in the tank which will aid in faster and efficient settling rates .Using square tube modules in place of conventional Settling Tank leads to increasing the efficiency and reduces footprint of the ETP.

The treated effluent from Secondary Settling Tank will then be collected in a storage tank which will also serve as the **Chlorine Contact Chamber (CCC)**.. Here Hypochlorite will be dosed for the purpose of disinfection. The treated effluent from the CCC will be discarded to drain or can be used for non-potable purpose like gardening, floor washing, toilet flushing etc.

Sludge from the **Secondary Settling Tank** will be pumped to a **Sludge Holding Tank** for storage and onward pumping into a **Filter Press** of suitable capacity for separation of the sludge. The filtrate from the **Filter Press** will be discarded and the dried sludge cakes should be discarded in secured landfills. The dried sludge cakes can also be used as manure after proper conditioning. The screenings from Bar Screens should also be discarded suitably.

### Description of Treatment Units

#### **1. EQUALIZATION TANK:**

The **Equalization Tank** serves to minimize and control the fluctuations in flow and effluent characteristics. The effluent is retained for some time in this tank to allow for dilution and distribution of batch discharges of toxic or high-strength waste which might otherwise inhibit biological secondary treatment. Homogenization of the distinct characteristics viz. pH, Temperature, Organic load etc. takes place in this tank.

#### **2. ZERO CHEM REACTOR (ZCR)**

It is a reactor made up of an electrolytic cell with anode and cathode electrodes suitably arranged inside. When connected to an external power source, the anode materials will electrochemically corrode due to oxidation, while the cathode will be subjected to passivation. Use of electrodes with large surface area is required. This is achieved by using cells with monopolar electrodes either in parallel or in series connections. It essentially consists of pairs of conductive metal plates and a DC power source. Operation of the ZCR will be automatic with Pneumatic valves controlled by PLC.

The ZCR will be provided with facilities for

- Auto Polarity reversing
- Adjustment of Voltage and Current
- Auto air pulse
- Flow adjustment
- Alarms
- Auto acid cleaning
- ZCR skid tripping

#### **3. FLASH MIXER**

The **Flash Mixer** is a treatment process that allows uniform mixing of desired chemicals with the effluent in a short residence time. Desired chemicals are dosed from a Dosing unit through Dosing Pumps. The equipment is equipped with Stirrer having electrical drive arrangement.

#### **4. DISSOLVED AIR FLOATATION CLARIFIER (DAF)**

The **Dissolved Air Floatation (DAF)** is a treatment process that removes suspended solids by using compressed air to create a blanket of sludge at the surface of a floatation cell. The separation is achieved by dissolving air into the waste water and then releasing the air at atmospheric pressure in a floatation tank. The released air forms tiny bubbles which adhere to the suspended solids, causing the particles to float at the surface of the water where it is then removed by a skimming mechanism. The DAF unit consists of the following major components:

- Main tank

- Spiral scoop
- Carriage system
- Level Control tank
- Sludge collection system
- Bottom scrapper etc.

### **5. AERATION TANK:**

The integral part of any Wastewater Treatment is the biological Secondary Treatment. Aeration tank is the unit where aerobic biodegradation of organic pollutants occur. The indigenous microbes in the effluent or the supplementary microbes added break down the organic pollutants. The tank provides adequate surface area and volume for the microbes to grow and sustain their population as biomass by breaking down organic components of the effluent. Sufficient Hydraulic Retention time is also provided in this tank to enable the biodegradation to occur.

### **6. SECONDARY SETTLING TANK (With Square Tube Modules):**

In wastewater treatment one of the most important problems is separation of suspended solids. The purpose of Secondary Settling Tank is sedimentation resulting in the removal of suspended particles or excess biomass, formed due to biological treatment. It uses the simple principle of solid-liquid separation by gravitational force. The settling efficiency of particles is increased with tube settler modules and hence, is high when compared to conventional sedimentation unit.

To reduce sedimentation costs several attempts have been made. One new advanced technique is high rate sedimentation, which reduces the detention time of settling device due to decrease in settling distance of floc particles. In these devices normally, parallel plates and tubes are placed horizontally or at an inclination / angles to the horizontal.

The use of tube settler decreases operating costs, improve effluent water quality and reduce installation footprints. Constructed lightweight PVC tube settler is supported easily with minimum structures that includes baffles and troughs. The settling capacity of rectangular sedimentation basins or circular clarifiers increase with the use of tube settlers and parallel plates by reducing the vertical distance of floc particles and agglomerating to form particles of larger size.

Tube settlers use multiple tubular channels at a certain angle/ slope and related to each other, which combine and increase effective settling area. This provides for a settling depth of particle that is less than the settling depth and reducing settling times of a conventional clarifier unit.

### **7. CHLORINE CONTACT TANK:**

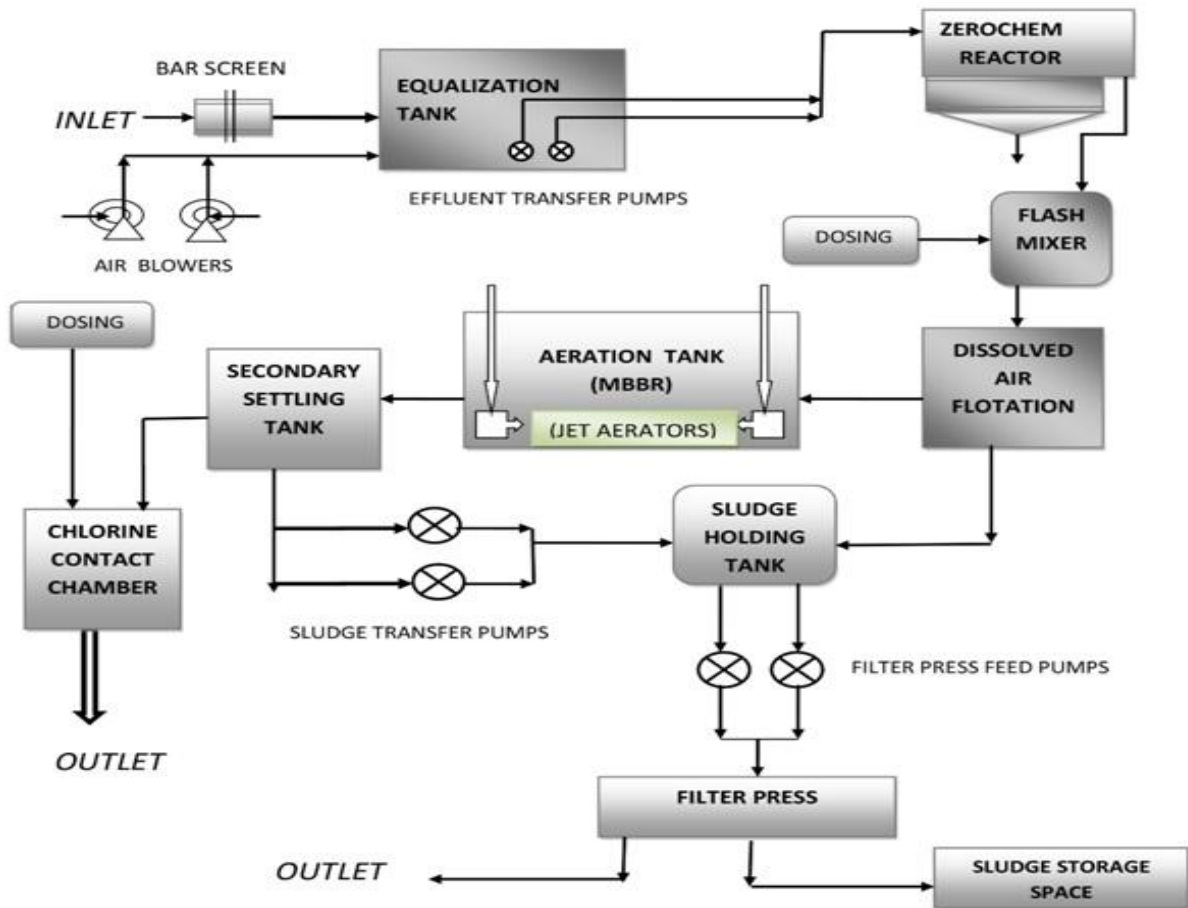
The purpose of disinfection in the treatment of waste water is to substantially reduce the number of microorganisms in the water to be discharged back into the environment. This tank provides the requisite contact time required for Chlorine in the form of Sodium Hypochlorite solution (the disinfectant used) to oxidize the residual organic matter and destroy the microbes in the treated water. The Chlorine Contact Tank will be equipped with necessary dosing arrangement which includes Dosing Tank and Dosing Pumps of suitable capacities.

### **8. FILTER PRESS**

A recessed plate **Filter Press** is made up of polypropylene squares at about 2 to 4 feet across with a concave depression and a hole in the center of each. Two plates join together to form a chamber in which the slurry is pressurized, and the filtrate is squeezed out through the filter cloth lining in the chamber.

Plate & Frame Filter Press is a very mature dewatering equipment which is widely used in Sludge Dewatering process. The filter plate with filtrate pathway and filter frame are arranged in parallel alternatively, each group of filter plate and filter frame are pressed tightly by pressing end. Sludge from the Sludge Holding Tank is pumped into the inlet which flows through the Filter press to the outlet. Mud / Sludge cakes are stacked in the filter cloth. Filter plate and filter frame are loosened after which the sludge cake is easily peeled down. This Filter press has many advantages e.g. simple operation, cake formation with high solid rate etc,

**Flow Diagram**



Sd/-  
 Managing Director  
 The Bhagirathi Cooperative Milk  
 Producers' Union Limited

## Annexure - II

### AFFIDAVIT

**(To be furnished in a Twenty Rupees Non-Judicial Stamp Paper duly certified by Notary Public)**

1. I/We the undersigned solemnly declare that all the statements made in the documents, records etc., attached with this application are true and correct to the best of my/our knowledge.
2. I/We the undersigned do hereby certify that neither my/our firm/company nor any of its constituent partners have abandoned any work/works of similar nature and magnitude in India, in the past.
3. I/We the undersigned do hereby certify that any of the contracts awarded to me/us has not been terminated rescinded, due to breach of contract on my/our part in the past.
4. I/We the undersigned authorize (s) and request any bank / person / firm / corporation / Government Departments to furnish pertinent information deemed necessary and requested by The Bhagirathi Cooperative Milk Producers' Union Ltd. to verify the statement made by me/us or to assess my/our competence and general reputation.
5. I/We the undersigned, understand(s) that further qualifying information / clarifications on the statement made by me / us may be requested by The Bhagirathi Cooperative Milk Producers' Union Ltd and agree(s) to furnish such information/clarification within SEVEN Days from the date of receipt of such request from The Bhagirathi Cooperative Milk Producers' Union Ltd

#### **Dated Signature of Applicant with Seal:**

To be signed by the officer authorized by the Firm/  
Company to sign on behalf, the Firm /  
(Company with company's seal)

**Note:** In case of sole proprietary concern, affidavit should be signed only by the Sole proprietor.

(Title of the Officer)

(Title of the firm/Company)

(Date)

The above named deponent has understood the contents well and

Solemnly and sincerely declared and affirmed by the deponent in my presence at.....and signed before me on this day of..... (Seal).

**(Signature of the Notary Public)**