बी एच ई एल BHEL	**BHARAT HEAVY ELECTRICALS LIMITED** (A Government of India Undertaking) Ramachandrapuram, Hyderabad, 502032, A.P. India Phone 040-23184526, 23182322 FAX:040-23021910, 1954	**भारत हेवी इलेक्ट्रिकल्स लिमिटेड** (भारत सरकार का उपक्रम) रामचन्द्रपुरम, हैदराबाद, 502032 आंध्र प्रदेश, भारत	RFQ NO :	**PURCHASE DEPARTMENT** **ENQUIRY** क्रय विभाग जांच (ई मेल : tenderbox@bhelhyd.co.in)	SHEET:1 OF :1

HY17001 C REV.NO.0	Phone 091-40-23184526 091-40-23182322	FAX : 091-40-23021910 091-40-23021954	E Mail: tenderbox@bhelhyd.co.in	**PURCHASE DEPARTMENT**

Enq/Collective Number :P8A1N18045	Enq.Date : 23.07.2014	No.Of Items :1	DUE DATE OF QUOTATION : 13.08.2014

Office Copy

Please submit your lowest quotation in sealed cover superscribed with Enquiry No./Collective No.(RFQ No .....) and due date subject to our terms and conditions attached ,for the materials mentioned below.Your offer has to reach us onor before due date by 11.00 Hours (IST) and will be opened at 14.00 Hours.(IST).If our Enquiry No./Collective No.(RFQ No .....) and tender due date are not super scribed on the tender cover , your offer shall be summarily rejected.Whosoever desires to send offers on their own risk (complete in all respects) via e-mail have to send offers to the common e-mail address : tenderbox@bhelhyd.co.in . Incomplete offers and late offers will not be considered.

SL NO	Purchase Req.no	item no	Material Code	Drg no - Ver , Rev & Spec - Ver , Rev	Description	Unit	Qty	Delivery Date	Schedule Qty
1	1200018045	10	CG2080918087	, NA,	RO SYSTEM 500 LPH	EA	1.000	25.08.2014	1.000

Special Remarks

1) TWO PART BID SYSTEM MAY BE FOLLOWED.
2) GCC & ITB ARE ENCLOSED.
3) SPECIFICATION IS ENCLOSED.

	TEST CERTIFICATE REQD: Y GUARANTEE REQ : Y SAMPLE REQD : N BID TYPE : TWO PART	For and on-behalf of Bharat Heavy Electricals Limited. SREENU K Pur.Officer/CMM

PRICE BID

ENQUIRY NO.

ITEM DESCRIPTION :

Sl. No	Description	Price in Rs.
01.	Cost of main equipment	
02.	Cost of spares (item wise) for two years	
03.	Cost of E&C	
04.	O&M cost for six months	

Applicable Taxes :

Sl. No.	Description of BHEL Requirements	The Suppliers Acceptance (Yes/ No)
1	**Technical Data**	
.		
1.1	**Filter Feed Pump**	
1.1.1	Pump Capacity : 1.5 m3/hr @ head sufficient upto UF permeate tank	
1.1.2	Material of construction : Casing-Cast Iron, Impeller - SS	
1.1.3	Qty : 1 no	
1.1.4	Type: Centrifugal Pump	
1.1.5	Make: Kirloskar or CRI or equivalent.	
1.2	**Dual Media Filter**	
1.2.1	Qty: 1No.	
1.2.2	Max Capacity : 1500LPH	
1.2.3	Diameter : 325 MM and Height 1350 mm	
1.2.4	MOC of vessel : FRP	
1.2.5	Media : Fine Sand, Anthracite and support bed.	
1.3	**Activated Carbon Filter (ACF)**	
1.3.1	Max Capacity : 1500LPH	
1.3.2	Diameter : 325 MM and Height 1350 mm	
1.3.3	MOC of vessel : FRP	
1.3.5	Media : Activated Carbon and support bed.	
1.3.6	Qty . 1 no.	
1.4.1	**Ultra Filtration System**	
a.	**No of unit : 1 no.**	
b	**Feed Capacity: 1400 LPH**	
c	**Recovery min. 90%**	
d	No of UF skid: 1 no.	
e	Area of each membrane : 20 m2	
f	Skid Comprising of Ultra Filtration	
g	Flux considered : 90 LMH (Lt/m2/Hr)	
1.4.2	**Back Wash Pump**	
a	Qty : 1 no.	
b	Capacity : Bidder to mention	
c	Material of construction : Casing-Cast Iron, Impeller - SS	
d	Make: Kirloskar or CRI or equivalent.	
1.4.3	**Interconnecting Pipe Works (ICPW)**	
a	MOC : Unplasticized Polyvinyl Chloride (UPVC)	
b	Qty : 1 lot	
1.4.4	**NaOCL Dosing System**	
a	Qty : 1 No.	
b	Capacity : 5 LPH @ 2 Kg/Cm2.	
c	Dosing Tank Capacity : 50 Lt. (min)	
1.4.5	**HCL Dosing System**	
a	Qty : 1 No.	
b	Capacity : 5 LPH @ 2 Kg/Cm2.	
c	Dosing Tank Capacity : 50 Lt. (min)	

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Engineer ... Workshop
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RADHIKA
Sr. M

MANISH KUMAR
Dy. Manager

1.4.6	**NaOH Dosing System**	
a	Qty : 1 No.	
b	Capacity : 5 LPH @ 2 Kg/Cm2.	
c	Dosing Tank Capacity : 50 Lt. (min)	
1.4.7	**UF Permeate Tank**	
a	Qty : 1 no.	
b	Capacity : 3000 Lt.	
c	MOC:HDPE (High Density Poly Ethylene)	
1.5	**RO Feed Pump**	
1.5.1	Qty : 1 no.	
1.5.2	Capacity : 1300 LPH.	
1.5.3	Max Discharge Pressure : 10.5 Kg/Cm2. (Bidder to ensure adequacy)	
1.5.4	MOC : SS	
1.5.5	Make: Kirloskar or CRI or equivalent.	
1.6	**Antiscalant Dosing System**	
1.6.1	**Dosing Pump**	
a	Qty : 01 No.	
b	Type : Electro Magnetic	
c	Capacity : 0-1.5 LPH.	
d	Max Discharge Pressure : 2.5 Kg/Cm2.	
e	Make: Kirloskar or CRI or equivalent.	
1.6.2	**Dosing Tank**	
a	Qty : 1 no.	
b	Capacity : 50 Lt.	
c	MOC : HDPE(High Density Poly Ethylene)	
1.7	**Micron Cartridge Filter(MCF)**	
1.7.1	Qty : 1 no	
1.7.2	Capacity : 1300LPH	
1.7.3	Micron Rating of Cartridge : 5 Micron	
1.7.4	Size of Cartridge : 20"	
1.7.5	MOC : Poly Propylene (PP)	
1.8	**High Pressure Pump**	
1.8.1	Qty : 1 no	
1.8.2	Capacity : 1300 LPH	
1.8.3	Max Discharge Pressure : 10.5 Kg/Cm2	
1.8.4	MOC: SS304	
1.8.5	Make: Kirloskar or CRI or equivalent.	
1.9	**Reverse Osmosis System**	
1.9.1	Qty : 1 no	
1.9.2	Permeate capacity : 500 LPH	
1.9.3	Membrane type : Spiral wound	
1.9.4	Membrane specification : TFC polyamide (Thin Film composit Polyamide)	
1.9.5	Size of Membrane : Dia 4" X 40" Long	
1.9.6	No. of Membranes : 3 nos.	
1.9.7	No. of Membrane Housing : 1 no.	
1.9.8	Skid Material : Mild Steel - Powder Coated	

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1.10	**pH Dosing System**	
1.10.1	**Dosing Pump**	
a	Qty : 1 no	
b	Type : Electromagnetic	
c	Capacity : 0 - 1.5 LPH	
d	Discharge Pressure : 2.5 Kg/ Cm2	
e	Make: Kirloskar or CRI or equivalent.	
1.10.2	**Dosing Tank**	
a	Qty : 1 no	
b	Capacity : 50 Lt	
c	MOC:HDPE(High Density Poly Ethylene)	
1.11	**Interconnecting Pipe Works (ICPW)**	
1.11.1	MOC : Unplasticized Poly Venyl Chloride (UPVC)	
1.11.2	Qty : 1 lot	
1.12	**Control Panel (UF-RO)**	
1.12.1	Qty : 1 no	
1.12.2	Type : Non- Compartmentlized	
1.12.3	Cabling (As per Termination) : 1 Lot	
1.13	**Instruments (Bidder to ensure adequate no of instruments are supplied to operate the system in auto mode)**	
1.13.1	Pressure Gauges : 1 lot, Bourden type	
1.13.2	Pressure Switches: 4 nos, High & Low	
i)	Type : S.S. Below type	
ii)	Enclosure: Die cast Aluminium	
1.13.3	Conductivity meters : 1 no.	
1.13.4	pH meter : 1no.	
1.13.5	Oxidation Reduction Potential meter (ORP) : 1 no.	
1.13.6	Rota meter : 6 nos.	
1.13.7	AutoFlush valve: 1 no.	
1.13.8	Level switch : 4 nos.	
1.13.8	Make and model of the instruments to be submitted.	
2	**Features**	
2.1	The Equipment to have an electrical panel with LCD Screen and Over load Panel	
2.2	Operation of the equipment shall be safe. Wherever required safety valves/ switches shall be provided.	
2.3	The equipment shall be easy to operate and maintain.	
2.4	The equipment shall be capable of working at room temperature. The room temperature at Hyderabad in summer will be around 45 °C and in winter around 10°C	
3	**Calibration**	
3.1	All gauges and electrical equipments shall be calibrated by the authorised certifying agency	
4	**Spares**	
4.1	Essential spares for two years shall be indicated and quoted with split price for each item	

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5	**Documentation:**	
5.1	The Vendor to give the three copies of the O&M Manual in English language	
5.2	The vendor shall give a list of customers to whom similar instruments are supplied, preferably Govt./ public Sector	
5.3	The vendor has to submit the General arrangement drawing of the RO Plant along with the offer.	
6	The suppliers shall also indicate the approximate annual maintenance charges after the guarantee period. He shall also indicate if any authorized servicing center in Hyderabad	
7	**Guarantee**: The instrument shall be guaranteed for its satisfactory performance for at least two years from the date of commissioning.	
8	**Installation:**	
8.1	The Supplier shall install and commission the equipment at BHEL and impart O&M training to the BHEL technical Personnel.	
8.2	The required piping for giving inlet and outlet connections to the respective holding tanks will be in the suppliers scope. All pipings and necessary items to be supplied by the vendor.	
8.3	**Prove Out:** The supplier after the installation has to run and maintain the plant for six months. Cost of O&M may be quoted seperately. The supplier has to test the the quality of water.i.e. the output water of RO shall meet the requirement of IS:10500:1991 latest revision. The testing should be carried out by approved laboratory at Hyderabad. Testing charges will be in the supplier's scope.	
8.4	In case any special foundation is required for installing the machine, detailed foundation drawings to be submitted. The supplier should agree to supply 5 copies of machine layout and foundation drawings with one month of placement of LOI/Order	
8.5	The equipment shall fulfill safety regulation and guidelines. If any environmental protection is required, it should be built in the machine by the supplier.	
9	After the Installation. Performance of the equipement supplied by the L1 party will be observed for six months. If found satisfactory BHEL may place a repeat order for one more no. of the same equipment. The L1 vendor shall supply the same at the same rate, terms and conditions.	
10	**INPUT FOR RO**	
10.1	Input water for RO is from output water of ETP.	
10.2	The reject water line of RO shall be as per the scheme enclosed.	

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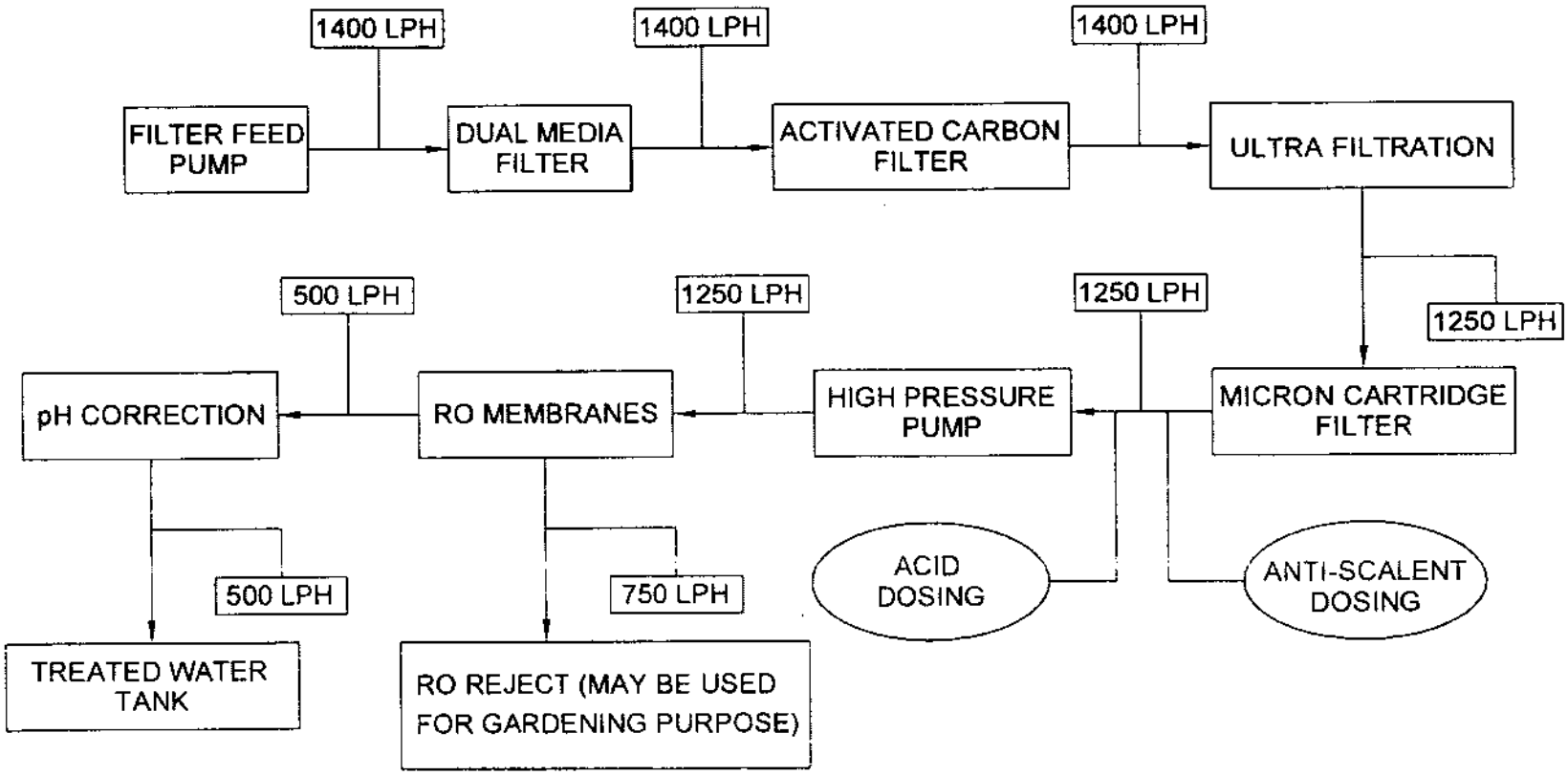
RO SCHEME


1400 LPH
1400 LPH
1400 LPH
FILTER FEED PUMP
DUAL MEDIA FILTER
ACTIVATED CARBON FILTER
ULTRA FILTRATION
1250 LPH
1250 LPH
500 LPH
1250 LPH
pH CORRECTION
RO MEMBRANES
HIGH PRESSURE PUMP
MICRON CARTRIDGE FILTER
500 LPH
750 LPH
ACID DOSING
ANTI-SCALENT DOSING
TREATED WATER TANK
RO REJECT (MAY BE USED FOR GARDENING PURPOSE)

JOB SPECIFICATION

OF

RO SYSTEM

FOR

THE ZERO DISCHARGE PLANT

(Ref. No. HY/CW/2014/STS/RO/036 Dated 17.05.2014)

राधिका शिष्टा
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INTENT OF SPECIFICATION

1.1 This specification is intended to cover the design, engineering, manufacture assembly, supply, erection and commissioning along with all accessories as specified hereinafter and as required for safe and trouble-free operation of the plant. This section sets out the scope of supply of the RO treatment plant, covered by this specification but without excluding other necessary components, which are not mentioned.

PROCESS DESCRIPTION

1.1 The effluents generated from electroplating, phosphate and other related chemical treatments are chemically treated in ETP to remove/reduce the toxicity.

1.2 This chemically treated effluent is then passed to the proposed RO plant for further treatment.

1.3 The treated water i.e. RO permeate, pertaining to IS: 10500 standard, is collected in a tank.

1.4 The RO-reject is partially re-cycled in the system and partially sent for other uses such as gardening purposes.

RO SCHEME

1.1 The scheme consists of the following equipment:

a. Dual Media Filter
b. Activated Carbon Filter
c. Ultra Filtration unit
d. Cartridge filter
e. RO-Membrane
f. Chemical Dosing system
g. Associated piping.
h. Associated Electricals

SCOPE OF SUPPLY

This section sets out the scope of supply of the Water Treatment Plant, covered by this specification but without excluding other necessary components, which are not mentioned. All materials supplied under this contract shall be new and unused.

The quantities and rating of the equipment indicated in this specification is only for the guidance of the bidder. All material required to make the system complete but not specifically mentioned in this specification shall also be deemed to be included in the scope of bidder.

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Treatment plant

a. 1 X 100% Dual Media filter with head and capacity as per requirement.
b. 1 X 100% Activated Carbon Filter of net continuous capacity as required by the system with required filter scour blower system.
c. Ultra-filtration unit of max capacity of 1500 lph and required head.
d. Cartridge Filter system of capacity sufficient to meet the continuous requirement of downstream RO plant.
e. Required dosing systems complete with necessary dosing tanks and dosing pumps, upstream of RO system, namely (i) Anti-scalant Dosing System, (ii) Acid dosing system
f. 1 x 100% RO Booster Pump system, of capacity and head as per requirement.
g. RO membrane required to produce permeate of 500 LPH.
h. Associated piping and electrical.

MECHANICAL

I. Dual Media Filter

Filtration plant shall be used to reduce the silt density index (SDI) and turbidity of the effluent to provide safe operating conditions for the RO Plant.

The dual media filter shall be capable of processing all required feed water to the RO streams. The backwashing of the dual media filter shall be accomplished with treated water.

The filtering medium shall be graded sand and anthracite. The flow velocity for filtration shall not exceed 18m/hr to meet the specified capacity. The filter shall be of vertical, cylindrical type. It shall have shells and dished ends both constructed of FRP. The filters shall be designed to contain filter media, distribution system and under drain system. The filters shall be supplied with frontal pipe work with valves and fittings, instrument and accessories.

II. Activated Carbon Filters

The water from the dual media filters shall be passed through the ACF. The filtering medium shall be activated carbon grade in granular form and good quality. The flow velocity for filtration shall not exceed 15M/hr to meet the specified capacity. The vessels shall be vertical shell type with dished ends. The material of construction shall be FRP.

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III Ultrafiltration Unit

The water from the filtration plant shall be passed to the Ultrafiltration unit for achieving a SDI of < 3 and make the water suitable for membrane treatment. One no. 100% UF of hollow fiber housed in PP construction shall be of max. 1500 LPH capacity. The UF skid shall also be provided with backwash pump of suitable capacity.

IV. RO Membrane unit

The effluent shall be passed through the cartridge filter prior to the RO unit. The cartridge filter shall be of PP construction with a rating of 5 micron. The water from the filter outlet will be led to the membrane unit. One skid of 100% capacity shall be provided to produce permeate of 500 LPH. The Reverse osmosis modules shall be of spiral wound or hollow fiber type and membranes of composite polyamide acetate material. Only one type of membrane shall be used for the RO modules. The membrane housing shall be of FRP material

V. Chemical Dosing

The RO feed shall be chemically treated with suitable chemicals for anti-scalant and pH correction. Suitable capacity of dosing tanks and pumps to be provided. The capacity of the dosing tanks shall be min. 50 liters and of HDPE construction. The dosing pumps shall be controlled volume metering pumps of material suitable for the chemical.

VI. Interconnecting Piping

One complete set of interconnecting piping from the effluent feed to the permeate storage tank and reject piping shall be in the scope of bidder. This shall cover all interconnection between equipment and pumps along with the necessary fittings and valves. The pipes shall be of UPVC material. The system shall be provided with required valves to necessitate feasible operation. Valves shall be designed, manufactured, tested and marked as per relevant Indian Standards. Bidder shall indicate the type of valves considered for the services. Valves shall be of pressure rating to suit the system requirements at the points of installation. Valves shall be suitable for frequent operation as well as for operation after periods of prolonged idleness in either open or closed positions. The required piping for giving inlet and outlet connections to the respective holding tanks will be in the Bidder's scope.

Electrical and Instrumentation

The electrical installation shall meet the requirements of Indian Electricity Rules. The scope of supply shall include motors for the pumps and other drives, all power, signal and control cables required for the system and earthing. The UF-RO system shall be provided with an electrical panel with LCD Screen and over load Panel. The power supply upto the panel shall be provided by the customer and the subsequent cabling upto individual equipment shall be by the Bidder. All the power and control cables shall be as per the approved make only. The following listed instruments shall be provided as minimum. All gauges and electrical equipment shall be calibrated by the authorized certifying agency.

a. Pressure Gauge – At the outlet of raw water pump and each filter.
b. Flow indicator – Online type to be provided on the permeate line and reject line.
c. Pressure switches –

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d. Level switch – In the chemical dosing tank.
e. Auto Flush valve – In the RO stream.
f. ORP and pH meter – In the RO feed line.
g. Conductivity meter – At RO outlet.

Civil

The civil works i.e. construction/execution is in the scope of customer but the civil design for the entire system is in the scope of work of the Bidder.

Erection & Commissioning

Bidder scope of work includes erection of the entire system. The Bidder shall install and commission the equipment at BHEL and demonstrate its features and working principle to the BHEL technical Personnel.

INPUTS

The following documents are enclosed:

a) Flow diagram / Scheme – Annex-1.
b) Waste water analysis (RO system feed) – Annex-2
c) Technical Data Sheet – Annex-3

Duly filled Technical data sheet shall be submitted along with the offer.

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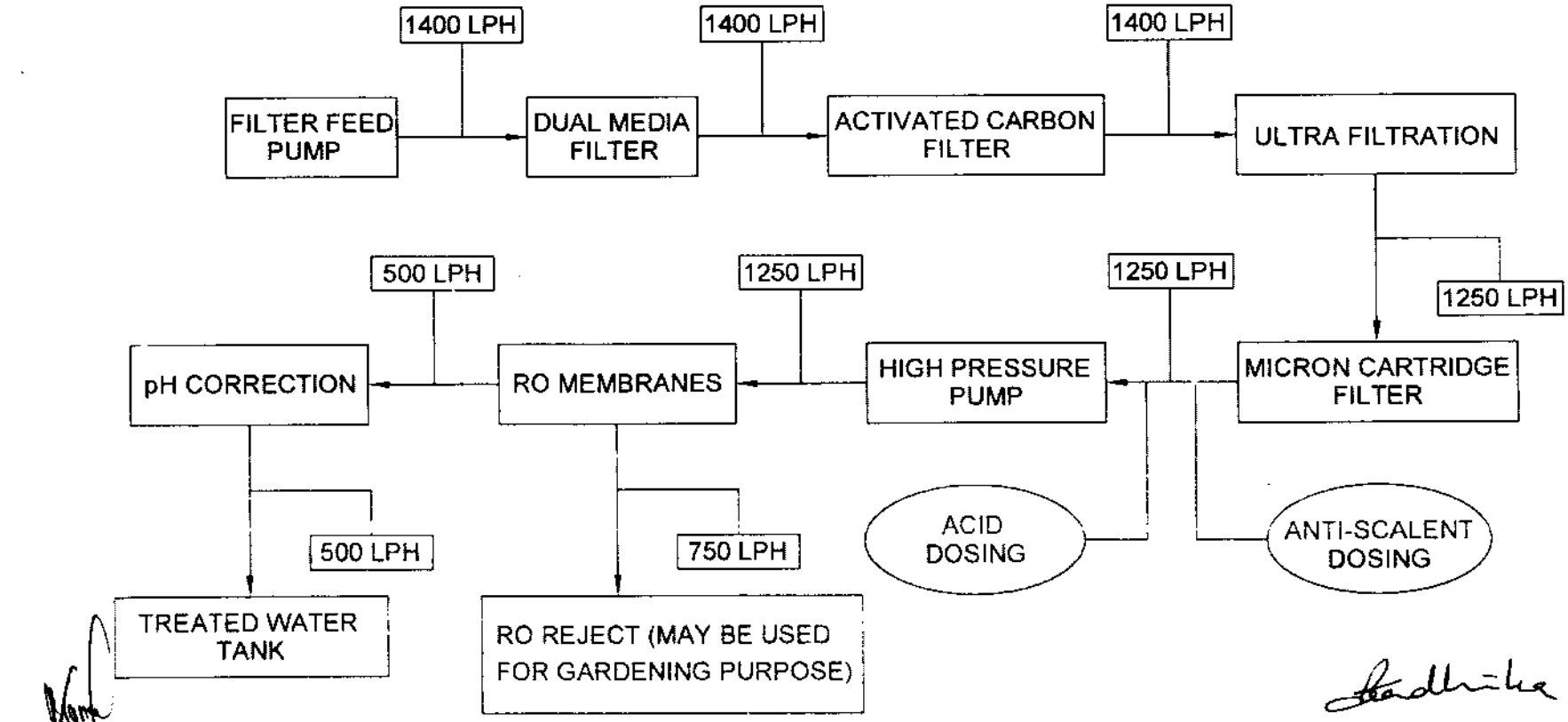
Radhika

मनीश कुमार
MANISH KUMAR

RO SCHEME



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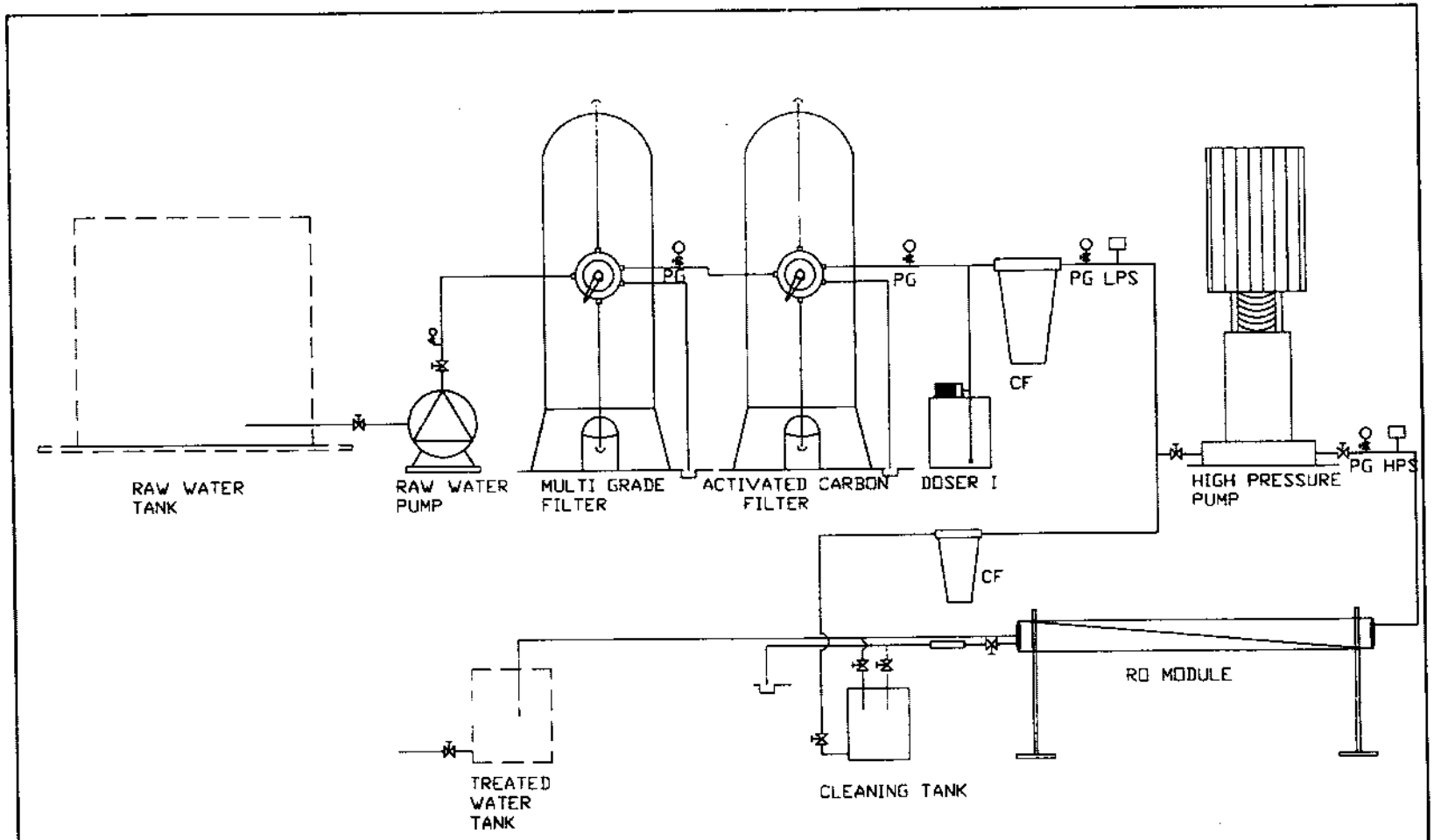

S. NO.	DESCRIPTION	S. NO.	DESCRIPTION

CLIENT:
M/S RAJOURI GARDEN
NEW DELHI

BIOTIC WATER SOLUTIONS PVT. LTD.
H829/B1, 60 Ft Road,
Pul Prahladpur, Bedar Pur
NEW DELHI - 44

DIMENSION: NOT IN SCALE

DRAWN BY:

CHECKED BY:

CAD FILE LOC.:

REV.:

EPTRI
CPCB & DSIR
Recognized Laboratory

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ANALYSIS REPORT

Encl. report no.12/WWC-111 **TEST RESULT**

S.No	Test Parameter(s)	Unit	IS: 10500 Desirable Limits	IS: 10500 Permissible Limits	Test Method	Result WW -1
1.	Colour	Pt. co	5	25	2120. B	15
2.	Odour	TON	Unobjectionable	--	2150. B	1
3.	Taste#	--	--		--	NP
4.	Total Hardness as CaCO	/L	30		2340.C	229
5.	Residual free Chlorine				4500-Cl.B	BDL
6.	Calcium as Ca			200	3500-Ca.B	17
7.	Magnesium as Mg	mg/L	0	100	3500-Mg.B	46
8.	Nitrates as NO_3^-	mg/L	45	100	PDA	1.36
9.	Anionic Detergents	mg/L	0.2	1.0	IS:13428:2005, Annex K	<0.2
10.	Mineral Oil*	mg/L	0.01	0.03	IS:3025 (part 39)	Absent
11.	Total Alkalinity as $CaCO_3$	mg/L	200	600	2320.B	56
12.	**Polyaromatic Hydrocarbons (PAH's):** Acenaphthene, Acenaphthylene, Anthracene, B(a)A, B(a)P, B F, B(k)F, Pyrene, Dibenz anthracene, Flu Fluorene, Indeno Pyrene, Naphthal Phenanthrene, Py 1. Methyl Naphth 2. Methyl Naphthalene	µg/L	--	--	6440.C	ND

Opinion and Interpretation: Not Applica

 # Not performed
** Out sourcing*
TON – Threshold Odour Number
BDL:- Below Detection Limit.
Detection Limit – Residual free chlorine – 1 mg/L;
ND – Not detected; Detection Limit - PAHs – 1 ppm.

Note: The test result relates to the only ms tested.

Authorized Signatory
Dr. J. Sesha Srinivas
Sr. Scientist - Laboratory

EPTRI
CPCB & DSIR
Recognized Laboratory

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NABL ACCREDITED
No: T-0612 & T-1451
As per ISO/IEC 17025:2005

ANALYSIS REPORT

Registration Number	: 12/WWC-111	**Issue date**	:	20.11.2012
Sample received	: 31.10.2012	**Customer ref**	:	HY/CW/2012/EFF.TEST/ 101
Date of Commencement	: 01.11.2012			
Date of Completion	: 02.11.2012	**and date**	:	29.10.2012

Name & Address of the customer : Sri S.K. Bandoyopadhyay,
Sr. Dy. General Manager,
Common Workshop,
08 Block,
Bharat Heavy Electri[illegible]mited,
Ramachandra[illegible]
[illegible]derabad.

Sample Particulars : [illegible]ewa[illegible]
Qty-received : [illegible]
Type of Sampling : Gra[illegible]
Sample condition : Suitab[illegible]or analysis. Sample was submitted in glass bottle.
Sampling Procedure : Sampl[illegible] Collected and submitted by the customer
Sample Code **Sampl[illegible] Location**
WW-1 : Acid/ A[illegible]kali Effluent
Date of Sampling : 31.10.[illegible]012
Sampled by : Custo[illegible]er
Industry representative : Sri S.K[illegible] Bandoyopadhyay, Sr. Dy. General Manager.

Sub-Contracting : N.A.
Deviation from Standard methods : N.A.
Sample Tested : As per the Standard Methods for the Examination of water & waste[illegible]ter by APHA, WEF, & AWWA, 21st Ed
Remarks : N.A.

TEST RESULT

S. No	Test Parameter[illegible]	[illegible]	IS: 10[illegible] Des[illegible] Limit	[illegible]de	Test Method	Result WW-1
1	**Pesticides:** (α-BHC, β-BHC, γ-BHC, δ-BHC, Heptachlor, Heptachlor epoxide, Endosulfan, p,p'-DDE, p,p'-DDD, Endrin, p,p'-DDT, Aldrin, Dieldrin, Endrinaldehyde, Endosulfan sulfate)	µg/l			APHA-6630-D	ND

Opinion and interpretation: Not Applicable.
ND – Not detected. Detection Limit – Pesticides – 0.1 ppm
NOTE : The test result relates to the only item[illegible]ested.

Authorized Signatory
C. Satish
Project Faculty - Laboratory

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NABL ACCREDITED
No: T-0512 & T-1451
As per ISO/IEC 17025:2005

ANALYSIS REPORT

Registration Number	: 12/WWC-111	**Issue date**	: 20.11.2012
Sample received	: 31.10.2012	**Customer ref**	: HY/CW/2012/EFF.TEST/
Date of Commencement	: 31.10.2012		101
Date of Completion	: 20.11.2012	**and date**	: 29.10.2012
Name & Address of the customer	: Sri S.K. Bandoyopadhyay, Sr. Dy. General Mana... Common Work... Block, ...rat H... ...s Limited, ...c..., Hyd... 502032.		
Sample Particulars	: Wast... ater		
Qty-received	: ~ 5 L... + 5 Ltrs		
Type of Sampling	: Grab ...ample		
Sample condition	: Suita... for analysis. Samples were submitted in plastic containers.		
Sampling Procedure	: Samp...s Collected and submitted by the customer		
Sample Code	**Samp... Location**		
WW-1	: Acid/ ...lkali Effluent		
Date of Sampling	: 31.10...012		
Sampled by	: Custo...er		
Industry representative	: Sri S... Bandoyopadhyay, Sr. Dy. General Manager.		
Sub-Contracting	: N.A.		
Deviation from S... methods	...A.		
Sample Tested	...he Stand... ...or the Examination of water & ...ater b... AWWA, 21st Ed		
Remarks	: N...		

Authorized Signatory
Dr. J. Sesha Srinivas
Sr. Scientist – Laboratory

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NABL ACCREDITED
No: T-0812 & T-1461
As per ISO/IEC 17025:2005

ANALYSIS REPORT

Encl. report no.12/WWC-111 **TEST RESULT**

S.No	Test Parameter(s)	Unit	IS: 10500 Desirable Limits	IS: 10500 Permissible Limits	Test Method	Result WW -1
1.	pH	--	6.5 to 8.5	No relaxation		5.4
	Temperature	°C			4500-H^+B	25.2
2.	Turbidity	NTU	5		2130. B	6.7
3.	Chlorides as Cl^-	mg/L	250	0	4500-Cl^-.B	212
4.	Fluoride as F^-	/L	1	5	4500-F^-.C	2.92
5.	Total Dissolved Solids at 180°C			2000	2540. C	1020
6.	Sulphates as SO_4	mg	0	400	4500-SO_4^{2-}.E	391
7.	Phenolic Compounds as C_6H_5OH	mg/L	0.001	0.002	5530-D	0.43
8.	Mercury as Hg	µg/L	0.001	No relaxation	3500-Hg.B	BDL
9.	Cyanide as CN^-	mg/L	0.05	No relaxation	4500-CN^-.F	BDL
10.	Hexavalent Chromium as Cr^{+6}	mg/L	0.05	No relaxation	3500-Cr^{+6}.B	2.71
11.	Copper as Cu	mg/L	0.05	1.5	3120-B	3.62
12.	Manganese as Mn	mg/L	0.1	0.3	3120-B	8.24
13.	Cadmium as Cd	mg/L	0.01	No relaxation	3120-B	0.08
14.	Selenium as Se	mg/L	0.01	No relaxation	3120-B	7.38
15.	Arsenic as As	mg/L	0.05	No relaxation	3120-B	BDL
16.	Lead as Pb	mg/L	0.05	No relaxation	3120-B	BDL
17.	Zinc as Zn	mg/L	5	15	3120-B	1.4
18.	Aluminum as Al	/L	0.03	0.2	3120-B	BDL
19.	Boron as B		1		3120-B	0.21
20.	Iron as Fe	mg	0		3120-B	0.30

Opinion and Interpretation: Not Applicable

BDL – Below Detection Limit

Minimum Detection Limit – Hg – 20 µg/L, CN – 0.05 mg/L, As – 0.04 mg/L, Pb – 0.04 mg/L, Al – 0.04 mg/L

Note: The test result relates to the only items tested.

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ANALYSIS REPORT

Registration Number	:	12/WWC-111	**Issue date**	:	20.11.2012
Sample received	:	31.10.2012	**Customer ref**	:	HY/CW/2012/EFF.TEST/
Date of Commencement	:	31.10.2012			101
Date of Completion	:	20.11.2012	**and date**	:	29.10.2012
Name & Address of the customer	:	Sri S.K. Bandoyopadhyay Sr. Dy. General Mana Common Wor Block, at H s Limited, m, Hyde – 502032.			
Sample Particulars	:	Waste ater			
Qty-received	:	~ 5 L + 5 Ltrs			
Type of Sampling	:	Grab ample			
Sample condition	:	Suita for analysis. Samples were submitted in plastic containers.			
Sampling Procedure	:	Samp s Collected and submitted by the customer			
Sample Code		**Samp Location**			
WW-1	:	Acid/ kali Effluent			
Date of Sampling	:	31.10 012			
Sampled by	:	Cust er			
Industry repres tative	:	Sri S Bandoyopadhyay, Sr. Dy. General Manager.			
Sub-Contracting	:	Yes			
Deviation from S methods		A.			
Sample Tested		he St or the Examination of water & ater AWWA, 21st Ed			
Remarks	:	N.A			

Authorized Signatory
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Sr. Scientist - Laboratory