



Godavari Biorefineries Ltd

Distillery Division  
Date: 28.11.2019

GBL/SMR/MoEF&CC/2019-20/ 297

To,  
The Additional Principal Chief Conservator Of Forests(C )  
Ministry of Environment, Forests and Climate Change  
4<sup>th</sup> Floor, E & F Wing, Kendriyasadan, Koramangala  
Bengaluru - 560034

Respected Sir,

Sub: Half yearly compliance report for the period April 2019 to September 2019 –Reg  
Ref: Environmental Clearance

- i) J-11011/191/2007-IA II(1) dated 20<sup>th</sup> March 2008
- ii) J-11011/191/2007-IA II(1) dated 10<sup>th</sup> April 2008
- iii) J-11011/191/2007-IA II(1) dated 02<sup>nd</sup> September 2008
- iv) J-11011/191/2007-IA(II) I dated 25<sup>th</sup> April 2017

With reference to the above subject herewith we are submitting the half yearly compliance report for the period April 2019 to September 2019. The details are as follows

Sl No	Description	Details
1.	Name of the Industry	Godavari Biorefineries Limited (Distillery Division) Sameerwadi-587316 Tal: Mudhol, Dist : Bagalkot
2.	Person Responsible	Shri. Suhas. U. Godage General Manager
3.	Email.ID	suhas@somaiya.com
4.	Phone No/ Mobile	08350-260081 +917259009663
5.	Web site details	www.somaiya.com
6.	Environmental Clearance details	J-11011/191/2007-IA II(1) dated 20 <sup>th</sup> March 2008 J-11011/191/2007-IA II(1) dated 10 <sup>th</sup> April 2008 J-11011/191/2007-IA II(1) dated 02 <sup>nd</sup> September 2008 J-11011/191/2007-IA(II) I dated 25 <sup>th</sup> April 2017
7.	Working days (Days)	113.1

Works : P O Sameerwadi, Tal Mudhol, Dist Bagalkot, Karnataka State - 587 316. INDIA  
Tel : (91-08350) 260046/ 47/ 48 / 81/ 260181 Fax : (91-08350) 260037 / 260022 Gram : "SUGAR MILLS" Sameerwadi

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CIN No U67120MH1956PLC009707 • GST No 29AABCG2543C1ZZ w.e.f. 1-07-2017





**Pointwise Compliance to the Environment Clearance conditions**

- i) J-11011/191/2007-IA II(1) dated 20<sup>th</sup> March 2008
- ii) J-11011/191/2007-IA II(1) dated 10<sup>th</sup> April 2008
- iii) J-11011/191/2007-IA II(1) dated 02<sup>nd</sup> September 2008
- iv) J-11011/191/2007-IA(II) I dated 25<sup>th</sup> April 2017.

**A. Specific conditions**

Sl No	CONDITIONS	COMPLIANCES
1	The operating days of the plant will be 330 days	Industry ensures the operating days will not increase 330 days. For the period from April 2019 to September 2019 distillery working days is 113.1 only.
2	The unit shall be using bio-composting methods of Spentwash treatment technology along with Multiple Effect evaporator (MEE) followed by Incineration boiler to achieve zero liquid discharge	As per new amended Environmental clearance No J-11011 / 191/ 2007IA (II)-I dated 25 <sup>th</sup> April 2017, industry utilizing dual treatment technology for the Spentwash treatment and installed Incineration boiler of capacity 40 TPH. 25% of the Spentwash generated (325 KLPD) is utilized for Biogas followed by Biocomposting and remaining 75% of the Spentwash (i.e. 975 KLPD) after two stage multiple effect evaporation used in Incineration boiler as fuel
3	The company shall adopt continuous fermentation technology. The spent wash shall not increase 600 m <sup>3</sup> /day i.e. @3 KL/KL of Rectified spirit produced. The Spentwash after biomethanisation in the anaerobic digester shall be composted with pressmud. An area of 26 Acres shall be earmarked for compost yard The compost yard shall be lined with HDPE sheets and construction of compost yard shall be as per CPCB guidelines	Industry already adopted continuous fermentation technology. We are generating around 600 m <sup>3</sup> /day spent wash. As per new amended Environmental clearance No J-11011/191/2007IA(II)-I dated 25 <sup>th</sup> April 2017, industry has installed Incineration boiler of capacity 40 TPH. 25% of the spentwash generated is utilized for Biogas followed by biocomposting and remaining 75% of the spentwash after two stage multiple effect evaporation used in Incineration boiler as fuel.
4	The emissions from the bagasse fired boiler shall be controlled by multi cyclone dust collector and emissions shall be dispersed through stack of height as per State Pollution Control Board/CPCB standards	The industry utilizes coal and spentwash as a fuel in the newly commissioned 40 TPH boiler. The fuel ratio are 20: 80. The industry installed six field ESP as air pollution control equipment and the emission limits are not exceeding the limits of KSPCB & CPCB guidelines
5	The spent wash shall be stored in impervious pucca lagoons. The spent wash lagoons shall have proper lining with HDPE and shall be kept in proper condition to prevent ground water	The spent wash is stored in impervious pucca lagoons. The spent wash lagoons have proper lining of HDPE and is always kept in good condition to prevent ground water pollution. As per the CPCB recommendation, storage

	pollution. As per the CPCB recommendation, storage shall not exceed 30 days capacity	capacity does not exceed more than 30 days of spentwash generation
6	Adequate numbers of ground water quality monitoring stations by providing Piezometers around the project area shall be set up. Sampling and trend analysis monitoring must be made on monthly a basis and report submitted to SPCB and this Ministries Regional Office at Bangalore	We are monitoring ground water samples regularly of nine borewells and are being monitored regularly and reports are submitted to KSPCB .We have also installed Five Piezometers around compost yard. Sampling and trend analysis are monitored on monthly basis and reports are submitted to KSPCB
7	As per reflected in the EIA/EMP green belt of adequate width and density in 33% of plant area shall be provided to mitigate the effects of fugitive emissions all around the plant and compost yard as per the CPCB guidelines in consultation with the local DFO	In and around the factory & compost area green belt has been developed. We have taken up massive programme of plantation of trees to mitigate the effects of fugitive emissions all around the plant. Totally 32058 trees Rain tree,Ficus, Eucalyptus, Sisam, Jali, Coconut, Gauva, Sapota, Lime, Mango and Jamun(Nerale) have been planted by us in the campus
8	The company shall obtain permission from the Central Ground Water Board to draw ground water	Industry utilizing surface water and drawing from Ghatapharbha River, permission is obtained from Water Resource department GOK.

**B) General Conditions:-**

1	The industry shall ensure that the treated effluent and stack emissions from the unit are within the norms stipulated under the EPA rules or SPCB whichever more stringent In case of process disturbances/ failure of pollution control equipment adopted by the unit the respective unit shall be shutdown and shall not be restarted until the control measures are rectified to achieve the desired efficiency	Industry has full-fledged effluent treatment plant for the treatment of the trade effluent generated from the plant. Industry has also set up 40 TPH incineration boiler for the trade effluent disposal. Electrostatic precipitator is installed as air pollution control equipment and the emissions from the boiler are within the limits prescribed by the State pollution control board.
2	The project authorities must strictly adhere to the stipulation made by the Karnataka State Pollution Control Board and the state government	Industry abide by the conditions of Karnataka State Pollution Control board.
3	No further expansion or modification in the plant shall be carried out without prior approval of the Ministry of Environment and forests	Industry abide by the conditions.
4	Ambient Air quality Monitoring shall be set up in the downwind direction as well as	The Ambient Air quality Monitoring stations are identified in consultation with Regional

	where maximum ground level concentration of SPM,SO <sub>2</sub> ,Nox, are anticipated in consultation with state pollution control board	Officer KSPCB in the downwind direction as well as where maximum ground level concentration of SPM,SO <sub>2</sub> ,Nox, are anticipated and regularly monitored & results are sent to KSPCB office .Three Ambient Air Quality Monitoring stations are established
5	Adequate number of influent and effluent quality monitoring stations shall be set up in consultation with the State Pollution Control board. Regular monitoring should be carried out for relevant parameters	Adequate number of influent and effluent quality monitoring stations are set up in consultation with the State Pollution Control board. We are regularly monitoring influent & effluent quality for relevant parameters like pH, BOD, Suspend solids, COD, Chlorides, etc. Industry is also monitoring the trade effluent samples and emission samples from the EP approved third agency Dr. Subbarao's Environment Center Sangli. Reports are enclosed as Annexure No-1
6	The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers etc. On all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under EPA Rules ,1989 viz.75 dBA (daytime) and 70dBA (night time)	The Diesel generator is provided with acoustic measures to control the noise levels. As the industry is having it's own Co-generation plant for the production of power ,the diesel generator utilization is minimized. The noise levels at three locations around plant are regularly monitored and have been found well within the standard limits as prescribed under EPA Rules 1989
7	Company shall adopt rainwater harvesting measures to recharge the groundwater	Industry provided the rain water harvesting at the western side of the plant.
8	Occupational health surveillance programme shall be undertaken as equal exercise for all the employees. The first aid facilities in the occupational health centre shall be strengthened and the medical records of each employee shall be maintained separately	The occupational health surveillance programme is undertaken regularly for the employees. The first aid facilities are already strengthened and medical records for each employee is also maintained at our Primary health center
9	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP report and suggestions made during the public hearing meeting	Industry strictly adhere and complying with the recommendations to the environmental protection measures and safeguards mentioned in the EIA/EMP report.
10	A separate environmental management cell equipped with full fledged laboratory facilities must be set up to carry out the environmental management and monitoring functions	A full fledged laboratory is existing in the campus and Environmental management cell is available to carry out the Environmental management & monitoring functions. The following are team members 1.Mr.B.R.Bakshi, Director(Works) 2.,Mr. S.U.Godage G.M.(Distillery)

		<p>3. Mr. B.M.Baragi, Sr.officer.(Distillery)  4. Mr.A.V. Kulkarni, Sr.Officer(Envi.).  5. Mr.K.S.Malabadi, Officer(Envi.).  6. Mr.K.V. Goudar, Sr.Manager (Agri)  7.Mr.B.B.Khandgave, DY.Manager (Env)  8.Mr.R.V. Deshpande Sr. Officer(Safety)  9. Mr Bandekar , Officer(Safety)  10. Dr. Andani ( Medical Officer)</p>
11	The project authorities shall provide requisite funds for both recurring and nonrecurring expenditure to implement the conditions stipulated by the Ministry of environment and Forests as well as the state Government along with the implementation schedule for all the conditions stipulated here in. The funds so provided shall not be diverted for any other purpose.	Industry abide by the condition.
12	The implantation of the project vis-à-vis environmental action plans will be monitored by Ministry's Regional office at Banglore/central Pollution control Board. A six monthly compliance status report along with the monitored data shall be submitted to the monitoring agencies	Half yearly compliance report along with monitored data are submitted regularly to your office
13	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and the copies of the clearance letter are available with the state Pollution Control Board/committee and may also be seen at website of the Ministry of Environment and Forests at <a href="http://envfor.nic.in">http://envfor.nic.in</a> .This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular of the locality concerned and a copy of the same shall be forwarded to the Regional office.	Industry abide by the conditions. Information was submitted in the local newspaper
14	The project Authorities shall inform the Regional Office as well as the ministry the date of financial approval of the project by the concerned authorities and the date of start of land development work.	Industry commissioned the 200 KLPD distillery plant on 29th Dec 2009. The date of financial approval to start land development work on 2nd May 2008
15	The Ministry may revoke or suspend the clearance if implementation of any of the above conditions is not satisfactory	Industry abide by the conditions.
16	The Ministry reserves the right to stipulate	Industry abide by the conditions

	additional conditions if found necessary. The company will implement these conditions in a time bound manner	
17	The above conditions will be enforced, inter-alia under the provisions of the water ( Prevention & Control of Pollution) Act,1974 ,the Air( Prevention &control of Pollution) Act,1981, the environment( Protection) Act,1986 and the public Liability Insurance Act ,1991 along with their amendments and rules	Industry abide by the conditions.

This is for your kind information

Thanking You  
Yours Faithfully  
For Godavari Biorefineries Limited (Distillery Division)



General Manager

Encl: as above





**Godavari Bio Refineries Limited  
(Distillery Division), Sameerwadi**

**Annexure No-1**

❖ **Boiler Stack monitoring results:-**

Month & Year	Stack No-3, 40 TPH Incineration boiler Stack ID- 1.7 mtr, Height – 81 mtr Fuel : Concentrated Spentwash & Coal, Fuel Ratio : 80 : 20				
	Flue gas velocity (m/Sec)	Flue gas Outlet temp deg C	Particulate matter(SPM) mg/Nm3	SO2 mg/nm3	NOX mg/Nm3
July.2019	12.2	158	102	65	37
September.19	13.1	161	105	67	50

❖ **ESP – Electrical meter reading:-**

Month & Year	Working days	ESP Electrical meter reading			
		Initial	Final	Total (MW)	In KWH units
April. 2019	22	527.40	551.89	24.49	24490
May.2019	10.8	551.89	568.37	16.18	16180
June.2019	0	568.37	568.37	0	0
July.2019	27	568.37	602.82	34.45	34450
August.2019	29.5	602.82	634.46	31.64	31640
September.19	23.8	634.46	654.22	19.76	19760
	113.1				
Average unit consumption = $126520 / 113.1 = 1118.65$ KWH units per day					



❖ Ambient Air quality monitoring details:

Month & Year	Location	Wind direction	Parameters			
			PM <sub>2.5</sub> µg/m <sup>3</sup>	PM <sub>10</sub> µg/m <sup>3</sup>	NO <sub>x</sub> µg/m <sup>3</sup>	SO <sub>2</sub> µg/m <sup>3</sup>
July.2019	Near distillery main gate	Easterly	23	69	12.00	7.00
	Near BTP Plant	Easterly	20	62	10.00	6.00
September 2019	Near distillery main gate	Easterly	21	67	10.00	8.00
	Near BTP Plant	Easterly	18	60	8.00	6.00

❖ Effluent Sample Analysis report: Biomethanated Sample:

Sl No	Parameter	Unit	Results		Test method
			1	2	
			23.07.2019	21.09.2019	
1	pH		7.88	7.37	IS: 3025(P-11)1983
2	Alkalinity	mg/lit	9630	9140	IS: 3025(P-23)1986
3	Volatile solids	mg/lit	3710	3490	APHA 22 <sup>nd</sup> edition2012,5056C
4	COD	mg/lit	47120	46192	IS: 3025(P-58) 2006
5	BOD	mg/lit	5170	5120	IS: 3025(P-44)1993
6	Total solids	mg/lit	79630	78240	APHA 22 <sup>nd</sup> edition2012,2540 B
7	Total Volatile solids	mg/lit	32660	33150	APHA 22 <sup>nd</sup> edition2012, 240- E,G
8.	Total Inorganic solids	mg/lit	46970	45090	APHA 22 <sup>nd</sup> edition2012, 2540 C
9.	Chlorides	mg/lit	7125	7092	IS: 3025(P-32)1988



10.	Sulphates	mg/lit	4508	4269	IS: 3025(P-24)1986
11.	Potash	mg/lit	14760	14100	IS: 3025(P-45)1993

❖ Trade sample Analysis report: Raw Spentwash sample

SI No	Parameter	Unit	Results		Test method
			1	2	
			23.07.2019	21.09.2019	
1	pH		4.14	3.8	IS: 3025(P-11)1983
2	COD	mg/lit	102630	153760	IS: 3025(P-58) 2006
3	BOD	mg/lit	48310	68130	IS: 3025(P-44)1993
4	Total solids	mg/lit	153910	197580	APHA 22 <sup>nd</sup> edition2012,2540 B
5	Total Volatile solids	mg/lit	75140	84130	APHA 22 <sup>nd</sup> edition2012, 240- E,G
6.	Total Inorganic solids	mg/lit	89250	113450	APHA 22 <sup>nd</sup> edition2012, 2540 C
7.	Chlorides	mg/lit	14110	17032	IS: 3025(P-32)1988
8.	Sulphates	mg/lit	10974	12910	IS: 3025(P-24)1986
9.	Potash	mg/lit	14300		IS: 3025(P-45)1993

❖ Trade sample Analysis report: Spentwash sample after 1<sup>st</sup> Stage Evaporation

SI No	Parameter	Unit	Results		Test method
			1	2	
			23.07.2019	21.09.2019	
1	pH		4.04	3.86	IS: 3025(P-11)1983
2	COD	mg/lit	213580	259120	IS: 3025(P-58) 2006
3	BOD	mg/lit	98290	112180	IS: 3025(P-44)1993
4	Total solids	mg/lit	320940	389650	APHA 22 <sup>nd</sup> edition2012,2540 B
5	Total Volatile solids	mg/lit	165380	176170	APHA 22 <sup>nd</sup> edition2012, 240- E,G



6.	Total Inorganic solids	mg/lit	189130	213480	APHA 22 <sup>nd</sup> edition 2012, 2540 C
7.	Chlorides	mg/lit	23750	27937	IS: 3025(P-32)1988
8.	Sulphates	mg/lit	18738	20608	IS: 3025(P-24)1986
9.	Potash	mg/lit	30140	29600	IS: 3025(P-45)1993

❖ Trade sample Analysis report: Spentwash 58 Brix sample after II<sup>nd</sup> Stage Evaporation

Sl No	Parameter	Unit	Results	Test method
			1	
			23.07.2019	
1	pH		3.89	IS: 3025(P-11)1983
2	COD	mg/lit	4,79,430	IS: 3025(P-58) 2006
3	BOD	mg/lit	1,84,210	IS: 3025(P-44)1993
4	Total solids	mg/lit	5,54,830	APHA 22 <sup>nd</sup> edition 2012, 2540 B
5	Total Volatile solids	mg/lit	2,21,741	APHA 22 <sup>nd</sup> edition 2012, 240- E,G
6.	Total Inorganic solids	mg/lit	3,33,089	APHA 22 <sup>nd</sup> edition 2012, 2540 C
7.	Chlorides	mg/lit	34,504	IS: 3025(P-32)1988
8.	Sulphates	mg/lit	27,990	IS: 3025(P-24)1986
9.	Potash	mg/lit	31,420	IS: 3025(P-45)1993

❖ Noise Level Measurement Report:  
Date of measurement: 20.09.2019

Sl No	Location	Sampling time	dB(A) Leq
1	Distillery main gate	Day	55.7
		Night	51.2
2.	BTP Plant	Day	59.5
		Night	53.1
3.	Incineration Boiler	Day	72.4
		Night	66.3
4.	Power Turbine	Day	73.9
		Night	68.7
5.	Distillery Time Office	Day	57.1
		Night	53.9



❖ Borewell Analysis report:

Date of Sampling: 22.07.2019

SI No	Test parameter	Unit	CBSE School Sameerwadi	Iswar Terdal, Bisnal village	KIAAR Bisnal	Test Method
			1	2	3	
1	Color	Hazen	<5	<5	<5	IS: 3025(P-04)1983
2	Odor		Agreeable	Agreeable	Agreeable	IS: 3025(P-05) 1983
3	pH		7.30	7.56	7.37	IS: 3025(P-11)1983
4	Turbidity	NTU	0.1	0.2	0.3	IS: 3025(P-10)1984
5	Total Alkalinity	mg/lit	210	212	190	IS: 3025(P-23) 1986
6	COD	mg/lit	18	12	15	IS: 3025(P-58) 2006
7	BOD( 3days @270 C	mg/lit	4	< 4	< 4	IS: 3025(P-44)1993
8	TDS	mg/lit	570	430	412	IS: 3025(P-16) 1984
9	Chlorides	mg/lit	163	102	45	IS: 3025(P-32)1988
10	Hadness	mg/lit	255	290	371	IS: 3025(P-21)1983
11	Calcium	mg/lit	69	84	106	IS: 3025(P-40) 1991
12	Magnesium	mg/lit	20	20	26	IS: 3025(P-46)1994
13	Sodium	mg/lit	85.7	76.2	92.7	IS: 3025(P-45) 1993
14	Potassium	mg/lit	2.6	1.8	2.1	IS: 3025(P-44)1993
15	%sodium	%	41.95	36	35	By calculation
16	SAR		2.33	1.93	2.09	By calculation
17	RSC	Meq/l	-0.91	-1.62	-3.67	By calculation
18	EC	µmhos/cm	930	792	592	IS: 3025(P-14)1984



Sl No	Test parameter	Unit	Basappa R Wali, Bisnal	Hanumanth S Banaj, Bisnal	Test Method
			4	5	
1	Color	Hazen	<5	<5	IS: 3025(P-04)1983
2	Odor		Agreeable	Agreeable	IS: 3025(P-05) 1983
3	pH		7.38	7.74	IS: 3025(P-11)1983
4	Turbidity	NTU	0.1	0.1	IS: 3025(P-10)1984
5	Total Alkalinity	mg/lit	154	154	IS: 3025(P-23) 1986
6	COD	mg/lit	10	29	IS: 3025(P-58) 2006
7	BOD( 3days @270 C	mg/lit	< 4	< 4	IS: 3025(P-44)1993
8	TDS	mg/lit	445	492	IS: 3025(P-16) 1984
9	Chlorides	mg/lit	82	128	IS: 3025(P-32)1988
10	Hadness	mg/lit	452	391	IS: 3025(P-21)1983
11	Calcium	mg/lit	134	107	IS: 3025(P-40) 1991
12	Magnesium	mg/lit	29	30	IS: 3025(P-46)1994
13	Sodium	mg/lit	79.3	92.5	IS: 3025(P-45) 1993
14	Potassium	mg/lit	5.6	3.8	IS: 3025(P-44)1993
15	%sodium	%	27.02	33.72	By calculation
16	SAR		1.61	2.03	By calculation
17	RSC	Meq/l	-6.03	-4.77	By calculation
18	EC	µmhos/cm	708	832	IS: 3025(P-14)1984



❖ Borewell Analysis report:

Date of Sampling: 21.09.2019

Sl No	Test parameter	Unit	Sujata Bhadrashetty, Handigund	Girish R Kulkarni, Handigund	Ullappa Chanal, Handigund	Test Method
			1	2	3	
1	Color	Hazen	<5	<5	<5	IS: 3025(P-04)1983
2	Odor		Agreeable	Agreeable	Agreeable	IS: 3025(P-05) 1983
3	pH		7.67	7.74	7.23	IS: 3025(P-11)1983
4	Turbidity	NTU	0.4	0.3	0.1	IS: 3025(P-10)1984
5	Total Alkalinity	mg/lit	148	120	270	IS: 3025(P-23) 1986
6	COD	mg/lit	16	23	29	IS: 3025(P-58) 2006
7	BOD( 3days @270 C	mg/lit	< 4	< 4	< 4	IS: 3025(P-44)1993
8	TDS	mg/lit	264	281	647	IS: 3025(P-16) 1984
9	Chlorides	mg/lit	38	56	140	IS: 3025(P-32)1988
10	Hardness	mg/lit	162	290	710	IS: 3025(P-21)1983
11	Calcium	mg/lit	73	102	241	IS: 3025(P-40) 1991
12	Magnesium	mg/lit	5	9	26	IS: 3025(P-46)1994
13	Sodium	mg/lit	22.5	23.7	80.3	IS: 3025(P-45) 1993
14	Potassium	mg/lit	2.6	2.0	2.4	IS: 3025(P-44)1993
15	%sodium	%	19.18	14.9	19.7	By calculation
16	SAR		0.68	0.6	1.31	By calculation
17	RSC	Meq/l	-1.1	-3.45	-8.81	By calculation
18	EC	µmhos/cm	408	464	910	IS: 3025(P-14)1984



Sl No	Test parameter	Unit	Satyappa Koligud, Handigund	Devendra Kuribagi, Handigund	Test Method
			4	5	
1	Color	Hazen	<5	<5	IS: 3025(P-04)1983
2	Odor		Agreeable	Agreeable	IS: 3025(P-05) 1983
3	pH		7.10	7.10	IS: 3025(P-11)1983
4	Turbidity	NTU	0.1	0.2	IS: 3025(P-10)1984
5	Total Alkalinity	mg/lit	360	284	IS: 3025(P-23) 1986
6	COD	mg/lit	37	30	IS: 3025(P-58) 2006
7	BOD( 3days @270 C	mg/lit	< 4	< 4	IS: 3025(P-44)1993
8	TDS	mg/lit	1016	843	IS: 3025(P-16) 1984
9	Chlorides	mg/lit	315	229	IS: 3025(P-32)1988
10	Hadness	mg/lit	921	830	IS: 3025(P-21)1983
11	Calcium	mg/lit	284	286	IS: 3025(P-40) 1991
12	Magnesium	mg/lit	51	28	IS: 3025(P-46)1994
13	Sodium	mg/lit	68.5	72.3	IS: 3025(P-45) 1993
14	Potassium	mg/lit	2.6	3.0	IS: 3025(P-44)1993
15	%sodium	%	13.91	15.88	By calculation
16	SAR		0.98	1.09	By calculation
17	RSC	Meq/l	-11.25	-10.95	By calculation
18	EC	µmhos/cm	1520	1390	IS: 3025(P-14)1984



❖ Soil Sample:-

Sample collected on: 22.07.2019

Sl No	Test parameter	Unit	Ishwar Terdal, Bisnal	KIAAR	Basappa R Wali
			1	2	3
1	pH		7.90	8.31	8.11
2	Conductivity	µmhos/cm	0.285	0.305	0.370
3	Available Nitrogen	Kg/ha	340	390	438
4	Available Phosphorus	Kg/ha	19	14	23
5	Available Potassium	Kg/ha	210	260	307
6	Organic Carbon	%	0.75	0.58	0.69
7	Calcium	%	2.89	2.57	1.92
8	Magnesium	%	0.07	0.08	0.04
9	Cation Exchange capacity	Meq/100gm	54	48	56
Sl No	Test parameter	Unit	Hanumanth S Banaj	Test Method	
			4		
1	pH		8.29	PP-77-78	
2	Conductivity	µmhos/cm	0.315	PP-81-82	
3	Available Nitrogen	Kg/ha	484	PP-89-91	
4	Available Phosphorus	Kg/ha	31	PP-96-98	
5	Available Potassium	Kg/ha	240	PP -99-100	
6	Organic Carbon	%	0.73	PP -84-85	
7	Calcium	%	2.65	PP-103-104	
8	Magnesium	%	0.09	PP-104-105	
9	Cation Exchange capacity	Meq/100gm	54	PP-74-76	

❖ Soil Sample:-

Sample collected on: 21.09.2019

Sl No	Test parameter	Unit	Sujata Bhadrashetty	Girish Kulkarni	Ulleppe Chanal
			1	2	3
1	pH		6.86	6.90	6.49
2	Conductivity	µmhos/cm	0.695	0.905	0.582
3	Mineralizable Nitrogen	Kg/ha	0.0036	0.0049	0.0086
4	Available Phosphorus	Kg/ha	47	45	47
5	Available Potassium	Kg/ha	805	457	821
6	Organic Carbon	%	0.81	0.34	1.14
7	Calcium	%	2.62	2.48	3.86
8	Magnesium	%	0.03	1.2	0.73

Sl No	Test parameter	Unit	Devraj Kuribagi	Satyappa Koligud	Test Method
			4	5	
1	pH		6.51	7.30	PP-77-78
2	Conductivity	µmhos/cm	0.507	0.697	PP-81-82
3	Mineralizable Nitrogen	Kg/ha	0.0056	0.0047	PP-89-91
4	Available Phosphorus	Kg/ha	38	43	PP-96-98
5	Available Potassium	Kg/ha	888	873	PP -99-100
6	Organic Carbon	%	0.79	0.92	PP -84-85
7	Calcium	%	3.6	4	PP-103-104
8	Magnesium	%	0.9	2.24	PP-104-105





❖ Bio- organic Manure (Bhumilabh) Analysis Report:-

Sl No	Parameter	Unit	Result	
			22.07.2019	21.09.2019
1	Moisture	%	27.14	29.13
2	pH(Saturated)		7.70	7.54
3	Total Volatile Solids	%	62.81	63.04
4	Residual ash	%	37.19	36.96
5	Nitrogen	%	1.72	1.62
6	Phosphorus	%	1.84	1.81
7	Potassium	%	4.76	4.16
8	Organic carbon	%	28.15	27.31
9	C/N ratio		16.37	16.85
	Leachate Water(Filtrate)			
10	pH		8.16	8.02
11	COD	mg/lit	237	241
12	BOD	mg/lit	25	27
13	Chlorides	mg/lit	115	123
14	EC	$\mu$ hos/cm	1470	1504



❖ Condensate polishing unit (BTP) Inlet & Outlet parameter details:

Sl nO	Test Parameter	Unit	Inlet	Outlet	Test Method
1	pH	-	5.89	6.84	IS: 3025(P-11)1986
2	Chemical Oxygen demand	mg/lit	1640	205	IS: 3025(P-58) 2006
3	BOD (3days @ 27 OC)	mg/lit	680	92	IS:3025(P-44)1993
4	Total dissolved solids	mg/lit	915	630	IS:3025(P-16)1984
5	Total suspended solids	mg/lit	140	70	IS:3025(P-17)1984
6	Chloride as Cl-	mg/lit	110	40	IS:3025(P-32)1988
7	Sulphate as SO4	mg/lit	171	65	IS:3025(P-24)1986
8	Oil & Grease	mg/lit	ND	ND	IS:3025(P-39)1993(RA 2003)

❖ Boiler Ash analysis report:

Sl No	Parameter	Unit	Result
			1
			22.07.2019
1	Moisture	%	1.7
2	pH(Saturated)		11.59
3	Total Volatile Solids	%	1.37
4	Residual ash	%	98.63
5	Nitrogen	%	0.14
6	Phosphorus as P2O5	%	2.23
7	Potassium as K2O	%	20.1
8	Organic carbon	%	8.44
9	C/N ratio		60