



GRC India

GRC INDIA TRAINING & ANALYTICAL LABORATORY

(A unit of Grass Roots Research & Creation India (P) Ltd.)

An ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 (OH&S) Certified

NABL Accredited Laboratory (A Constituent Board of QCI), TC 7501 (Chemical & Biological)

Recognized by Ministry of Environment, Forest & Climate Change (MoEF&CC, GOI), under the E (P) Act, 1986

Head Office: F-375, Sector-63, Noida, Gautam Budh Nagar, U.P - 201 301

Phone No.: 0120 - 4044630, 4044660, 4323120, Fax: 0120 - 2406519, 0120 - 4044675

Website: <https://www.grc-india.com>, E-mail: lab@grc-india.com, info@grc-india.com



Test Report

Report Code: GW20220531-029(A)

Issue Date: 31.05.2022

Issued To: Greenfield Project of 100 KLPD Grain based Ethanol Plant along with 2.7 MW Co-generation Power Plant, by M/s Yash Biofuels Pvt. Ltd., Industrial Area, Lohat Ph-2, Madhubani, Bihar.

Sample Received on: 17.05.2022
Analysis Duration: 17.05.2022 to 30.05.2022

Sample Description: Ground Water

RESULTS (Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 15.05.2022
Sampling Location	: Project site
Sample Collected by	: Mr. Narender Singh
Sampling Protocol	: IS 3025(Part-1):1987, RA 2019
Weather Condition	: Clear Sky
Sample Quantity	: 5 L
Sample Packing & Marking	: Plastic Bottle & YBF /MAY/GW-01

S. No.	Parameters	Units	Standard Limits (IS:10500-2012; RA 2018)		Results	Test Method
			Desirable Limit	Permissible Limit		
1.	Color	Hazen	5	15	<5	IS 3025 (Part-4): 1983, RA 2017
2.	Odour	-	Agreeable	Agreeable	Agreeable	IS 3025 (Part-5): 2018
3.	Turbidity	NTU	1	5	<1	IS 3025 (Part-10): 1984, RA 2017
4.	pH Value	-	6.5-8.5	No Relaxation	7.65	IS 3025 (Part-11): 1983, RA 2017
5.	Total Dissolved Solids	mg/l	500	2000	640	IS 3025 (Part-16): 1984, RA 2017
6.	Total Hardness (as CaCO ₃)	mg/l	200	600	190	IS 3025 (Part-21): 2009, RA 2019
7.	Total Alkalinity (as CaCO ₃)	mg/l	200	600	286	IS 3025 (Part-23): 1986, RA 2019
8.	Chlorides (as Cl)	mg/l	250	1000	123	IS 3025 (Part-32): 1988, RA 2019
9.	Fluoride (as F)	mg/l	1	1.5	1.05	4500F-D, APHA 23 rd Ed. 2017
10.	Calcium (as Ca ²⁺)	mg/l	75	200	46	IS 3025 (Part-40): 1991, RA 2019
11.	Magnesium (as Mg ²⁺)	mg/l	30	100	18	IS 3025 (Part-46): 1994, RA 2019
12.	Sulphate (as SO ₄)	mg/l	200	400	65	IS 3025 (Part-24): 1986, RA 2019
13.	Nitrate (as NO ₃)	mg/l	45	No Relaxation	21	IS 3025 (Part-34): 1988, RA 2019
14.	Iron (as Fe)	mg/l	1	No Relaxation	0.69	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
15.	Aluminum (as Al)	mg/l	0.03	0.2	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)

Rahul Singh
(Sr. Chemist)
Authorized Signatory
(Seal & Signature)

GRC-LAB/QF-039

Rev.:00

Issue Date: 02.07.21

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16.	Copper (as Cu)	mg/l	0.05	1.5	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
17.	Manganese (as Mn)	mg/l	0.1	0.3	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
18.	Boron (as B)	mg/l	0.5	1	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
19.	Zinc (as Zn)	mg/l	5	15	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
20.	Selenium (as Se)	mg/l	0.01	No Relaxation	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
21.	Arsenic (as As)	mg/l	0.01	0.05	0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
22.	Cadmium (as Cd)	mg/l	0.003	No Relaxation	<0.001	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
23.	Total Chromium (as Cr ³⁺)	mg/l	0.05	No Relaxation	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
24.	Cyanide (as CN)	mg/l	0.05	No Relaxation	<0.01	IS 3025 (Part-27): 1986, RA 2019
25.	Lead (as Pb)	mg/l	0.01	No Relaxation	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
26.	Mercury (as Hg)	mg/l	0.001	No Relaxation	<0.001	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
27.	Nickel (as Ni)	mg/l	0.02	No Relaxation	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
28.	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	0.001	0.002	<0.001	IS 3025 (Part-43): 1992, RA 2019
29.	Anionic Detergent (as MBAS)	mg/l	0.2	1	<0.01	IS 3025 (Part-68): 2019
30.	Silica (as SiO ₂)	mg/l	--	--	8.6	4500-SiO ₂ (C/D), APHA 23 rd Ed. 2017
31.	Phosphate (as PO ₄)	mg/l	--	--	1.2	4500-P D, APHA 23 rd Ed. 2017
32.	Specific Conductivity	μS/cm	-	-	960	IS 3025 (Part-14): 1984, RA 2019

**** End of Report ****

Rahul Singh
(Sr. Chemist)
Authorized Signatory
(Seal & Signature)

GRC-LAB/QF-039

Rev.:00

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Test Report

Report Code: GW20220531-029(B)

Issue Date: 31.05.2022

Issued To: Greenfield Project of 100 KLPD Grain based Ethanol
Plant along with 2.7 MW Co-generation Power Plant,
by M/s Yash Biofuels Pvt. Ltd., Industrial Area, Lohat Ph-2,
Madhubani, Bihar.

Sample Received on: 17.05.2022

Analysis Duration: 17.05.2022 to 21.05.2022

Sample Description: Ground Water

RESULTS (Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 15.05.2022
Sampling Location	: Project site
Sample Collected by	: Mr. Narender Singh
Sampling Protocol	: IS 1622:1981, RA 2019
Weather Condition	: Clear Sky
Sample Quantity	: 0.5 L
Sample Packing & Marking	: Glass Bottle & YBF/MAY/GW-01

S. No.	Parameters	Units	Standard Limits (IS 10500: 2012, RA 2018)	Results	Test Method
1.	Total Coliform Organism	MPN/100ml	Shall not be detectable in any 100ml Sample	Not Detected (<2)	IS 1622: 1981, RA 2019
2.	E. coli	MPN/100ml	Shall not be detectable in any 100ml Sample	Absent (<2)	IS 1622: 1981, RA 2019


Ajay K. Sharma
(Quality Manager/Microbiologist)
Authorized Signatory
(Seal & Signature)

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Test Report

Report Code: SW20220531-020(A)

Issue Date: 31.05.2022

Issued To: Greenfield Project of 100 KLPD Grain based Ethanol
Plant along with 2.7 MW Co-generation Power Plant,
by M/s Yash Biofuels Pvt. Ltd., Industrial Area, Lohat Ph-2,
Madhubani, Bihar.

Sample Received on: 17.05.2022

Analysis Duration: 17.05.2022 to 30.05.2022

Sample Description: Surface Water

RESULTS

(Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 15.05.2022
Sampling Location	: Pond Near Udaypur Bithuar Village
Sample Collected by	: Mr. Narender Singh
Sampling Protocol	: IS 3025(Part-1):1987, RA 2019
Weather Condition	: Clear Sky
Sample Quantity	: 5 L
Sample Packing & Marking	: Plastic Bottle & YBF/MAY/SW-01

S. No.	Parameters	Units	Results	Test Method
1.	Color	Hazen	8	IS 3025 (Part-4): 1983, RA 2017
2.	Turbidity	NTU	35	IS 3025 (Part-10): 1984, RA 2017
3.	Temperature	°C	26.5	IS 3025(Part-9): 1984, RA 2017
4.	pH Value	-	7.89	IS 3025 (Part-11): 1983, RA 2017
5.	Dissolved Oxygen	mg/l	5.6	IS 3025 (Part-38): 1989, RA 2019
6.	Biochemical Oxygen Demand (BOD) 3 Days at 27°C	mg/l	18.6	IS 3025 (Part-44): 1993, RA 2019
7.	Chemical Oxygen Demand	mg/l	56	IS 3025 (Part-58): 2006 RA 2017
8.	Total Dissolved Solids	mg/l	560	IS 3025 (Part-16): 1984, RA 2017
9.	Total Hardness (as CaCO ₃)	mg/l	201	IS 3025 (Part-21): 2009, RA 2019
10.	Total Alkalinity (as CaCO ₃)	mg/l	289	IS 3025 (Part-23): 1986, RA 2019
11.	Chlorides (as Cl)	mg/l	59	IS 3025 (Part-32): 1988, RA 2019
12.	Fluoride (as F)	mg/l	1.09	4500F-D, APHA 23 rd Ed. 2017
13.	Calcium (as Ca ²⁺)	mg/l	48	IS 3025 (Part-40): 1991, RA 2019
14.	Magnesium (as Mg ²⁺)	mg/l	19	IS 3025 (Part-46): 1994, RA 2019
15.	Sodium (as Na ⁺)	mg/l	30	IS 3025 (Part-45): 1993, RA 2019
16.	Potassium (as K ⁺)	mg/l	9.7	IS 3025 (Part-45): 1993, RA 2019
17.	Sulphate (as SO ₄)	mg/l	78	IS 3025 (Part-24): 1986, RA 2019
18.	Total Kjeldahl Nitrogen (as N)	mg/l	5.4	IS 3025 (Part-34): 1988, RA 2019

Rahul Singh
(Sr. Chemist)
Authorized Signatory
(Seal & Signature)

GRC-LAB/QF-039

Rev.:00

Issue Date: 02.07.201

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TC-7501

Test Report**Report Code: SW20220531-020(A)****Issue Date: 31.05.2022**

19.	Free Ammonia (as NH ₃)	mg/l	1.2	IS 3025 (Part-34): 1988, RA 2019
20.	Nitrate (as NO ₃)	mg/l	17.8	IS 3025 (Part-34): 1988, RA 2019
21.	Silica (as SiO ₂)	mg/l	29.6	4500-SiO ₂ (C/D), APHA 23 rd Ed. 2017
22.	Phosphate (as PO ₄)	mg/l	4.1	4500-P D, APHA 23 rd Ed. 2017
23.	Iron (as Fe)	mg/l	0.89	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
24.	Aluminum (as Al)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
25.	Boron (as B)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
26.	Copper (as Cu)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
27.	Manganese (as Mn)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
28.	Zinc (as Zn)	mg/l	0.29	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
29.	Selenium (as Se)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
30.	Arsenic (as As)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
31.	Cadmium (as Cd)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
32.	Total Chromium (as Cr ³⁺)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
33.	Cyanide (as CN)	mg/l	<0.01	IS 3025 (Part-27): 1986, RA 2019
34.	Lead (as Pb)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
35.	Mercury (as Hg)	mg/l	<0.001	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
36.	Nickel (as Ni)	mg/l	<0.01	3120-B, APHA 23 rd Ed. 2017 (ICP-OES)
37.	Total Suspended Matter	mg/l	63	IS 3025 (Part-17): 1984, RA 2017
38.	Sodium Adsorption Ratio	-	2.7	IS 11624: 2019
39.	Phenolic Compounds (as C ₆ H ₅ OH)	mg/l	0.001	IS 3025 (Part-43): 1992, RA 2019
40.	Anionic Detergent (as MBAS)	mg/l	0.01	IS 3025 (Part-68): 2019
41.	Specific Conductivity	μS/cm	830	IS 3025 (Part-14): 1984, RA 2019

**** End of Report ****

Rahul Singh
(Sr. Chemist)
Authorized Signatory
(Seal & Signature)

GRC-LAB/QF-039

Rev:00

Issue Date: 02.07.2018

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Test Report

Report Code: SW20220531-020(B)

Issue Date: 31.05.2022

Issued To: Greenfield Project of 100 KLPD Grain based Ethanol
Plant along with 2.7 MW Co-generation Power Plant,
by M/s Yash Biofuels Pvt. Ltd., Industrial Area, Lohat Ph-2,
Madhubani, Bihar.

Sample Received on: 17.05.2022
Analysis Duration: 17.05.2022 to 21.05.2022

Sample Description: Surface Water

RESULTS (Water Quality Analysis)

SAMPLING DETAILS

Date of Sampling : 15.05.2022
Sampling Location : Pond Near Udaypur Bithuar Village
Sample Collected by : Mr. Narender Singh
Sampling Protocol : IS 1622:1981, RA 2019
Weather Condition : Clear Sky
Sample Quantity : 0.5 L
Sample Packing & Marking : Glass Bottle & YBF/MAY/SW-01

S. No.	Parameters	Units	Results	Test Method
1.	Total Coliform Organism	MPN/100ml	540	IS 1622: 1981, RA 2019
2.	Faecal Coliform Organism	MPN/100ml	97	IS 1622: 1981, RA 2019

**** End of Report ****


Ajay K. Sharma
(Quality Manager/Microbiologist)
Authorized Signatory
(Seal & Signature)

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TC-7501

Test Report**Report Code: A20220530-024****Issue Date: 30.05.2022****Issued To:** Greenfield Project of 60 KLPD Grain based Ethanol Plant along with 1.8 MW Co-generation Power Plant, by M/s Yash Biofuels Pvt. Ltd., Industrial Area, Lohat Ph-2, Madhubani, Bihar.**Analysis Duration:** 03.05.2022 to 28.05.2022**Sample Description:** Ambient Air**RESULTS****(Ambient Air Quality Analysis)****SAMPLING DETAILS****Sampling Location**

: Project Site

Sample Collected by

: Mr. Rahul Singh

Sampling Protocol

: GRC/LAB/STP/AIR/01; 2018

Weather Condition

: Clear Sky

Sampling Duration

: 24 Hours

Sampling Duration for CO

: 1 Hour

Sampler Location w.r.t. Height

: 4.0 Meter above Ground Level

Sample Packing & Marking

: Plastic Bottle / Zip Polybag & YBF/MAY/A001-008

S. No.	Date	Test Parameter				
		Particulate Matter (PM10); $\mu\text{g}/\text{m}^3$	Particulate Matter (PM2.5); $\mu\text{g}/\text{m}^3$	Sulphur Dioxide (SO_2); $\mu\text{g}/\text{m}^3$	Nitrogen Dioxide (NO_2); $\mu\text{g}/\text{m}^3$	Carbon Monoxide, (CO) $\mu\text{g}/\text{m}^3$
		IS 5182 (Part 23):2006 (RA 2017)	GRC/LAB/STP/AIR/03, Gravimetric Method	IS 5182 (Part 2):2001, (RA 2017)	IS 5182 (Part 6):2006 (RA 2017)	IS 5182 (Part 10):1999, (RA 2014)
1	01.05.2022	63.9	36.4	7.7	13.4	350
2	05.05.2022	73.6	41.3	6.3	10.9	330
3	10.05.2022	70.4	38.1	7.2	14.0	360
4	14.05.2022	61.5	36.8	6.6	11.9	280
5	18.05.2022	75.9	44.7	8.4	14.8	380
6	21.05.2022	58.2	34.4	6.8	14.1	330
7	24.05.2022	67.4	37.1	6.5	11.8	370
8	26.05.2022	70.1	40.6	8.7	12.7	400

****End of Report****

Narender Singh (Sr. Chemist)
Authorized Signatory
(Seal & Signature)



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TC-7501

Test Report

Report Code: N20220517-024

Issue Date: 17.05.2022

Issued To: Greenfield Project of 100 KLPD Grain based Ethanol
Plant along with 2.7 MW Co-generation Power Plant,
by M/s Yash Biofuels Pvt. Ltd., Industrial Area, Lohat Ph-2,
Madhubani, Bihar.

Data Received on: 16.05.2022

Sample Description: Ambient Noise

RESULTS (Ambient Noise Level)

MONITORING DETAILS

Date of Monitoring : 14.05.2022
Monitoring Done by : Mr. Rahul Singh
Monitoring Protocol : GRC/LAB/STP/NOISE/01, 2018
Weather Condition : Clear Sky
Monitoring Duration : 24 Hours

S. No.	LOCATION	ZONE	Limit for As Per E(P)A,1986 ; Leq, dB (A)		Observed Value Leq, dB (A)	
			Day Time*	Night Time**	Day Time*	Night Time**
1	Project Site	Industrial Area	75	70	58.8	39.6
	* Day Time	6.00 a.m. to 10.00 p.m				
	**Night Time	10.00 p.m. to 6.00 a.m.				

****End of Report****

Narinder Singh (Sr. Chemist)
Authorized Signatory
(Seal & Signature)

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GRC INDIA TRAINING & ANALYTICAL LABORATORY

(A unit of Grass Roots Research & Creation India (P) Ltd.)

An ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 (OH&S) Certified
NABL Accredited Laboratory (A Constituent Board of QCI), TC 7501 (Chemical & Biological)
Recognized by Ministry of Environment, Forest & Climate Change (MoEF&CC, GOI),
under the E (P) Act, 1986

Head Office: F-375, Sector-63, Noida, Gautam Budh Nagar, U.P - 201 301
Phone No.: 0120 - 4044630, 4044660, 4323120, Fax: 0120 - 2406519, 0120 - 4044675
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Test Report

Report Code: S20220531-024

Issued To: Greenfield Project of 100 KLPD Grain based Ethanol
Plant along with 2.7 MW Co-generation Power Plant,
by M/s Yash Biofuels Pvt. Ltd., Industrial Area, Lohat Ph-2,
Madhubani, Bihar.

Sample Description: Soil Sample

Issue Date: 31.05.2022

Sample Received on: 17.05.2022

Analysis Duration: 17.05.2022 to 30.05.2022

RESULTS (Soil Quality Analysis)

SAMPLING DETAILS

Date of Sampling	: 15.05.2022
Sampling Location	: Project Site
Sample Collected by	: Mr. Rahul Singh
Sampling Protocol	: GRC-LAB/STP-SOIL/03; 2018
Weather Condition	: Clear Sky
Sample Quantity	: 5 kg
Sample Packing & Marking	: Zip Polybag; YBF/MAY/SQ-01

S. No.	Parameters	Units	Results	Test Method
1.	Texture	-	Sandy Clay	GRC-LAB/STP-SOIL/02; 2018
2.	Particle Size Distribution	-		IS 2720 (Part-4): 1985, RA 2015
	Sand	%	53.5	
	Silt	%	9.7	
	Clay	%	36.8	
3.	pH (1:2 Suspension)	-	7.89	IS 2720 (Part-26): 1987, RA 2016
4.	Electrical Conductivity (1:2 Suspension)	$\mu\text{S/cm}$	419	IS 14767: 2000, RA 2016
5.	Moisture Content	%	12.8	IS 14767: 2000, RA 2016
6.	Cation Exchange Capacity (CEC)	meq/100 gm	14.1	IS 2720 (Part-24): 1976, RA 2015
7.	Available Potassium (as K)	mg/kg	33.6	GRC-LAB/STP-SOIL/04; 2018
8.	Exchangeable Sodium (as Na)	mg/kg	97	GRC-LAB/STP-SOIL/03; 2018
9.	Exchangeable Calcium (as Ca)	mg/kg	2186	GRC-LAB/STP-SOIL/05; 2018
10.	Exchangeable Magnesium (as Mg)	mg/kg	319	GRC-LAB/STP-SOIL/06; 2018
11.	Sodium Absorption Ratio (SAR)	-	0.51	GRC-LAB/STP-SOIL/10; 2018
12.	Organic Matter	%	0.98	GRC/LAB/STP/SOIL/08 dt: 2018
13.	Total Nitrogen (as N)	mg/kg	52	GRC-LAB/STP-SOIL/09; 2018
14.	Nitrate (as NO_3)	mg/kg	6.3	IS 14684: 1999 RA 2014
15.	Total Phosphate (as PO_4)	mg/kg	7.5	GRC-LAB/STP-SOIL/08; 2018

R.S. Bhawani (DGM-LAB)
Authorized Signatory
(Seal & Signature)

GRC-LAB/QF-039

Rev.:00

Issue Date: 02.07.2018

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TC-7501

Test Report

Report Code: S20220531-024

Issue Date: 31.05.2022

16.	Iron (as Fe)	mg/kg	28	3050-B, PP 1-12, USEPA 2nd Rev, Dec.1996/ 3120-B, APHA 23rd Ed. 2017 (ICP-OES)
17.	Zinc (as Zn)	mg/kg	14.6	3050-B, PP 1-12, USEPA 2nd Rev, Dec.1996/ 3120-B, APHA 23rd Ed. 2017 (ICP-OES)
18.	Copper (as Cu)	mg/kg	3.8	3050-B, PP 1-12, USEPA 2nd Rev, Dec.1996/ 3120-B, APHA 23rd Ed. 2017 (ICP-OES)
19.	Boron (as B)	mg/kg	2.1	3050-B, PP 1-12, USEPA 2nd Rev, Dec.1996/ 3120-B, APHA 23rd Ed. 2017 (ICP-OES)
20.	Manganese (as Mn)	mg/kg	18.7	3050-B, PP 1-12, USEPA 2nd Rev, Dec.1996/ 3120-B, APHA 23rd Ed. 2017 (ICP-OES)
21.	Water Holding Capacity	%	36.7	GRC-LAB/STP-SOIL/11; 2020
22.	Permeability	cm/hr	1.9	IS 2720 (Part-17): 1986, RA 2016
23.	Porosity	%	23.5	GRC-LAB/STP-SOIL/12; 2020
24.	Bulk Density	gm/cc	1.38	GRC-LAB/STP-SOIL/13; 2020

****End of Report****

R.S. Bhawsar (DGM-LAB)
Authorized Signatory
(Seal & Signature)

GRC-LAB/QF-039

Rev.:00

Issue Date: 02.07.2018

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