Procurement of Continuous Real Time Water Quality Monitoring Data

Corrigendum in the International Competitive Bidding (ICB) Document dated 16.11.2018 in consequence to Pre bid meeting with representative of firms on 06.12.2018

S. No.	Reference in Bid document for corrigendum	Content as published in the Bid document	Revised content
1	**Section II. Bidding Data Sheet A. General 5.5(a), Page 29**	The minimum average annual turnover in Supply, Installation, commissioning, operation and maintenance of environmental monitoring equipment in the last five years (2013-14, 2014-15, 2015-16, 2016-17 and 2017-18) shall be USD $2 million or INR 136 million (1 $ = 68 INR)	The minimum average annual turnover in Supply, Installation, commissioning, operation and maintenance of environmental monitoring equipment in the last three years (2015-16, 2016-17 and 2017-18) shall be USD $2 million or INR 136 million (1 $ = 68 INR)
2	**Section II. Bidding Data Sheet A. General 5.5(b), Page 29**	The experience required to be demonstrated by the Bidder should include as a minimum that he has successfully executed at least one contract of value US$ 1.5 million or INR 102 million or two contracts aggregating to US$ 1.5 million or INR 102 million for supply of Real Time Water Quality Monitoring Data during the last 7 years. (1 $ = 68 INR)	The experience required to be demonstrated by the Bidder should include as a minimum that he has successfully executed at least one contract of value US$ 0.74 million or INR 50 million or two contracts aggregating to US$ 0.74 million or INR 50 million for supply of Real Time Water Quality Monitoring Data during the last 5 years. (1 $ = 68 INR). The experience of Supply, Installation and Maintenance and AMC/CAMC for similar type of online effluent monitoring stations with online Analyzers / Sensors for monitoring of COD, BOD, pH, TSS and Flow etc. will be considered.
3	**Section II. Bidding Data Sheet A. General 5.5(e), Page 29**	The minimum amount of liquid assets and/or credit facilities net of other contractual commitments of the successful Bidder shall be US$1 million or INR 68 million (1 US $= INR 68).	The minimum amount of liquid assets and/or credit facilities net of other contractual commitments of the successful Bidder shall be US$ 0.5 million or INR 34 million (1 US $= INR 68).
4	**Section II. Bidding Data Sheet, F. Award of Contract**	The Adjudicator proposed by the Employer shall be a Technical Expert which would be nominated with mutual consent. The Daily fee for this proposed Adjudicator shall be	The Adjudicator to be engaged by the Employer shall be as mentioned below : Name : Shri Swapan Kumar Sengupta, Retired Chief Engineer, Central Water Commission, Address for correspondence : E-21,

<table>
<tr><td></td><td>37.1, Page 32</td><td>INR 10,000 exclusive of boarding, lodging and transportation expenses which shall be reimbursed.</td><td>Swati Apartment, 12, I.P. Extension, Delhi-92, Phone : 9910289565 Email : senguptask@yahoo.co.in

The Daily fee for the Adjudicator shall be INR 10,000 exclusive of boarding, lodging and transportation expenses which shall be reimbursed.</td></tr>
<tr><td>5</td><td>Section V (Activity Schedule) Para 1, Page 48</td><td>Table 1 and also in Appendix A/Annexure-I of the bidding documents.</td><td>Revised Tables are at page 9 and page 10 of this corrigendum (Revised Table contains 2 parameters under Category A and 10 parameters under category B).</td></tr>
<tr><td>6</td><td>Section VII. Special Conditions of Contract, Page 72-73 Para 6.4.2</td><td>Method for calculating price for data supply:
Payment for hourly data supplied from Fixed Stations:
Price payable for data supplied from Fixed Stations will be determined from the contract price as under:
Contract Price = ……(Assumed P-Total Contract Price)
<table>
<tr><th>Category of parameter</th><th>Weight of Parameter</th><th>Quantity of Parameters</th><th>Annual Price for hourly data under each category of parameter</th></tr>
<tr><td>A</td><td>Wa</td><td>Qa</td><td>P*Wa / [No. of Years *365*24*(Qa *Wa + Qa *Wb)]</td></tr>
<tr><td>B</td><td>Wb</td><td>Qb</td><td>P*Wb / [No. of Years *365*24*(Qa *Wa + Qa *Wb)]</td></tr>
</table>
As per Section V- Activity Schedule, total no. of parameters for 40 locations are as under;
<table>
<tr><th>Quantity of Parameters</th><th>No.s (A+B)</th></tr>
<tr><td>Qa</td><td>120</td></tr>
<tr><td>Qb</td><td>360</td></tr>
</table>
<table>
<tr><th>Weight of Category</th><th>Weight</th></tr>
<tr><td>Wa</td><td>10</td></tr>
</table></td><td>6.4.2 Method for calculating price for data supply:
Payment for hourly data supplied from Fixed and floating Stations:
Price payable for data supplied from Fixed and floating Stations will be determined from the contract price as under:
Contract Price = ……(Assumed P,Total Contract Price)
<table>
<tr><th>Category of parameter</th><th>Weight of Parameter</th><th>Quantity of Parameters</th><th>Annual Price for hourly data under each category of parameter</th></tr>
<tr><td>A</td><td>Wa</td><td>Qa</td><td>P*Wa / [No. of Years *365*24*(Qa *Wa + Qb *Wb)]</td></tr>
<tr><td>B</td><td>Wb</td><td>Qb</td><td>P*Wb / [No. of Years *365*24*(Qa *Wa + Qb *Wb)]</td></tr>
</table>
As per Section V- Activity Schedule, total no. of parameters for 40 locations are as under;
<table>
<tr><th>Quantity of Parameters</th><th>No.s (A+B)</th></tr>
<tr><td>Qa</td><td>80</td></tr>
<tr><td>Qb</td><td>400</td></tr>
</table>
<table>
<tr><th>Weight of Category</th><th>Weight</th></tr>
<tr><td>Wa</td><td>10</td></tr>
</table></td></tr>
</table>

		Wb 5	Wb 5
7	**Section VIII. Performance Specifications Page 78 2,0 Scope of Service**	**2.0 Scope of Service** The CPCB has a requirement for measurement and delivery of real-time water quality data from numerous points along the River Ganga. Measurement points that impact the River Ganga and its tributaries water quality. The measurements will occur in the States of Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal. Data Service Provider will set up, install and operationalize 40 RTWQM Stations which shall have also a PTZ camera with day and night vision at each of the station. The camera at each of the station should provide streamed footage/ visualization of the real time value (screen) and the nearby area including the sensors immersed in the River, at every 30 minutes. The connectivity of the camera is to be provided to CPCB through the web portals on 24x7 basis and should operate continuously. The output of the CCTV camera should also be connected with the DVR/NVR and the data for one month should be kept as backup retrievable through the software provided to CPCB. The resolution of the camera should be kept as 352 x 240 pixel or above. Some of the proposed locations may be changed within the same vicinity of the given locations. However, all the locations will be finalized before award of the Contract. The Appendix A of the Contract provides details of services to be provided by the Service Provider.	**2.0 Scope of Service** The CPCB has a requirement for measurement and delivery of real-time water quality data from numerous points along the River Ganga. Measurement points that impact the River Ganga and its tributaries water quality. The measurements will occur in the States of Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal. Data Service Provider will set up, install and operationalize 40 RTWQM Stations which shall have also a camera with day and night vision at each of the station. The camera at each of the station should provide footage/ visualization of the real time value (screen) and the nearby area including the sensors immersed in the River, at every hour. The connectivity of the camera is to be provided to CPCB through the web portals on 24x7 basis and should operate continuously. The data for one month should be kept as backup retrievable through the software provided to CPCB. The resolution of the camera should be kept as 352 x 240 pixel or above. It is clarified that streaming footage is not required to be supplied by the Data Service Provider . Every hour, only one view (photograph in form of an image) of surrounding will be sent along with hourly data. Time lag, if any, in submission of photographs, will not be considered, for payment as same (15 minutes) . Some of the proposed locations may be changed within the same vicinity of the given locations. The Appendix A of the Contract provides details of services to be provided by the Service Provider.

8	**Section VIII. Performance Specifications Page 79 3.1.2 General Information Regarding Measurement Types**	**3.1.2 General Information Regarding Measurement Types** **3.1.2.1 Fixed / Floating Stations** Fixed station sites are points along the waterway reach which are indicated in Annexure I of Appendix A where measurements of water quality are required on hourly basis. Measurements will be made at or near the portion of the stream where maximum flow is experienced. Sensor packages can utilize bridge piers or other structures keeping in view the need for protecting the sensor package as also ensuring unobstructed flow of water in the vicinity of the sensor package as far possible. Since these stations are fixed by utilizing bridge piers or other structures, these are unmovable and hence called fixed stations. If the flow regime changes over a period of time, the instruments/equipment must be relocated to a point where maximum flow is experienced. On an average, such relocations may not be required more than twice per year.	**3.1.2 General Information Regarding Measurement Types** **3.1.2.1 Fixed Stations** Fixed station sites are points along the waterway reach which are indicated in Annexure I of Appendix A where measurements of water quality are required on hourly basis. Measurements will be made at or near the portion of the stream where there is a continuous water flow with a depth of atleast 0.5 m from the surface of water is experienced. Sensor packages can utilize bridge piers or other structures keeping in view the need for protecting the sensor package as also ensuring unobstructed flow of water in the vicinity of the sensor package as far possible. Since these stations are fixed by utilizing bridge piers or other structures, these are unmovable and hence called fixed stations. If the flow regime changes over a period of time, the instruments/equipment must be relocated in consultation and approval of CPCB to a point where maximum flow is experienced. On an average, such relocations may not be required more than twice per year.
9	**Section VIII. Performance Specifications Page 80, 3.3.2, Traceable Standards,**	**3.3.2 Traceable Standards** The Service Provider will use portable meters for calibration of the sensors and the calibration be traceable to American Public Health Association (APHA) (Water & Wastewater Examination Methodology Edition 22). In case of two consecutive calibrations the "drift" is found more than double of the accuracy ranges indicated in the table at para 3.8 of this section**,** the Service Provider will require to replace the instrument. The meters will be used to the extent possible; otherwise samples will be taken and subjected to laboratory analysis by the Service Provider. The laboratory process may be audited at any time by the Employer or the Data Qualification Consultant.	**3.3.2 Traceable Standards** The Service Provider will use portable meters for calibration of the sensors and the calibration be traceable to Bureau of Indian Standards / American Public Health Association (APHA) (Water & Wastewater Examination Methodology Edition 22). In case of two consecutive calibrations the "drift" is found more than double of the accuracy ranges indicated in the table at para 3.8 of this section**,** the Service Provider will require to replace the instrument. The meters will be used to the extent possible; otherwise samples will be taken and subjected to laboratory analysis by the Service Provider. The laboratory process may be audited at any time by the Employer or the Data Qualification Consultant. For BOD and COD, the Service Provider is required to collect

		For BOD, the Service Provider is to have a portable facility to process water samples immediately. The BOD analysis of the samples collected for calibration will be carried out by the Service Provider in accordance to the procedure provided by the Employer.	the sample, preserve it in the field during transportation and bring the same to any BIS/NABL certified laboratory for analysis . BOD will be measured at 27˚C for 3 days (Refer IS 3025, Part 44:1993) The BOD analysis of the samples collected for calibration will be carried out by the Service Provider in accordance to the procedure provided by the Employer.
10	**Section VIII. Performance Specifications Page 81,** **3.4.1 Representativeness of Data**	**3.4.1 Representativeness of Data** Measurement representativeness will be determined by self-audit in the presence of the Data Qualification Consultant at a minimum, with the Employer joining at times. If the minimum measurement conditions cannot be met, all data from the respective station will not qualified for payment. **3.4.1.1 Minimum Flow** In order to qualify for payment, the measurement must be representative of water conditions in the main channel of the river within two meters of the surface of the water. The main channel is defined as the portion of the river where the velocity of water is at a maximum. The measurement will be deemed non-representative if the velocity at the measurement point is less than 10% of that of the main channel. **3.4.1.2 Measurement Depth** The continuous monitoring sensors shall perform measurements with the available depth of water.	**3.4.1 Representativeness of Data** Measurement representativeness will be determined by self-audit in the presence of the Data Qualification Consultant at a minimum, with the Employer joining at times. If the minimum measurement conditions cannot be met, all data from the respective station will not qualified for payment. **3.4.1.1 Continuous Flow** Real time water quality monitoring sensors should provide real time water quality data that is representative in nature. The RTWQM systems are required to be installed in rivers where there is continuous flow of water. The measurement will be deemed non-representative if continuous flow of river water is not available to the real time water quality monitoring sensors. **3.4.1.2 Measurement Depth** Real Time Water Quality Monitoring sensors shall remain submerged in water at least 0.5 m from the surface water. Data Service Provider must install water level (depth) recorder in all 40 stations. Recording of water depth during each calibration visit is mandatory.

<table>
<tr>
<td>11</td>
<td>Section VIII. Performance Specifications Page 82, 3.7, Weightage of parameters for purpose of payment</td>
<td>
3.7 Weightage of parameters for purpose of payment
Payments for the data supplied by the Service Provider shall be determined in the manner stipulated in SCC 6.4. For this purpose various parameters of water quality have been classified under 2 Categories and A, B. Each category of parameters of water quality has been assigned certain weightage depending upon the relative importance of the parameters, as given in the Table 2.0 below:
<table>
<tr><th>S. No.</th><th>Parameters of water quality</th><th>Category of parameters</th><th>Relative weight of each category</th></tr>
<tr><td>1.</td><td>BOD</td><td>A</td><td>10</td></tr>
<tr><td>2.</td><td>DO</td><td>A</td><td>10</td></tr>
<tr><td>3.</td><td>Ammonia</td><td>A</td><td>10</td></tr>
<tr><td>4.</td><td>Temperature</td><td>B</td><td>5</td></tr>
<tr><td>5.</td><td>EC</td><td>B</td><td>5</td></tr>
<tr><td>6.</td><td>pH</td><td>B</td><td>5</td></tr>
<tr><td>7.</td><td>COD</td><td>B</td><td>5</td></tr>
<tr><td>8.</td><td>Turbidity</td><td>B</td><td>5</td></tr>
<tr><td>9.</td><td>Sulphate</td><td>B</td><td>5</td></tr>
<tr><td>10.</td><td>Nitrate</td><td>B</td><td>5</td></tr>
<tr><td>11.</td><td>TOC</td><td>B</td><td>5</td></tr>
<tr><td>12.</td><td>Water level</td><td>B</td><td>5</td></tr>
</table>
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<tr><td>7</td><td>Turbidity</td><td>B</td><td>5</td></tr>
<tr><td>8</td><td>Chloride</td><td>B</td><td>5</td></tr>
<tr><td>9</td><td>Nitrate</td><td>B</td><td>5</td></tr>
<tr><td>10</td><td>TOC</td><td>B</td><td>5</td></tr>
<tr><td>11</td><td>Water level</td><td>B</td><td>5</td></tr>
<tr><td>12</td><td>Water Depth</td><td>B</td><td>5</td></tr>
</table>
</td>
</tr>
<tr>
<td>12</td>
<td>Section VIII. Performance Specifications Page 82, Clause 3.8</td>
<td>
3.8 Parameters to be measured and Specifications
The parameters wise Ranges, Accuracy and the Resolution are given below:
<table>
<tr><th>S.No.</th><th>Parameter</th><th>Range*</th><th>Accuracy (the greater of)</th><th>Resolution</th></tr>
<tr><td>1</td><td>Ammonia</td><td>0.2 to 100 mg/L</td><td>± 10%</td><td>0.1 mg/L</td></tr>
<tr><td>2</td><td>BOD</td><td>0.0 to 50 mg/L (River Ganga)
0.0 to 500mg/l (drain or tributaries)</td><td>± 10%</td><td>1.0 mg/L</td></tr>
<tr><td>3</td><td>COD</td><td>5.0 to 500 mg/L (in River Ganga</td><td>±10%</td><td>5.0 mg/L</td></tr>
</table>
</td>
<td>
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<table>
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<tr><td>2</td><td>COD</td><td>5.0 to 500 mg/L</td><td>±10%</td><td>1.0 mg/L</td></tr>
</table>
</td>
</tr>
</table>

		5.0 to 1500 mg/L (drain or tributaries)		
4	DO	0.2 to 20 mg/L	± 10%	0.2 mg/L
5	EC	1.0 to 5000 µS/cm	± 10%	1.0 µS/cm
6	Nitrate	0.3 to 50 mg/L	± 10%	0.1 mg/L as N
7	pH	0.0 to 14 units of pH	± 0.2	0.01 units of pH
8	Turbidity	0-2000 NTU	± 10%	1.0 NTU
9	Temperature	-5 to 50º C	± .5 C	0.1º C
10	TOC	1-500 mg/l	± 10%	1 mg/L
11	Sulphate	1 to 200 mg/l	± 10%	1.0 mg/L
12	Water Level	0 to 5 m	± 15 cm	0.01 m

*Maximum value of the range indicated is only indicative. These can be extended by dilution /as per requirement.

The parameters will be analyzed as per American Public Health Association (APHA) Methodology of Examination of Water & Wastewater.

3	DO	0.2 to 20 mg/L	± 10%	0.2 mg/L
4	EC	1.0 to 5000 µS/cm	± 10%	1.0 µS/cm
5	Nitrate	0.3 to 50 mg/L	± 10%	0.1 mg/L as N
6	pH	0.0 to 14 units of pH	± 0.2	0.01 units of pH
7	Turbidity	0-2000 NTU	± 10%	1.0 NTU
8	Temperature	0 to 50º C	± .5 C	0.1º C
9	TOC	1-500 mg/l	± 10%	1 mg/L
10	Chloride	5 to 200 mg/l	± 10%	1.0 mg/L
11	Water Level	0 to 5 m	± 15 cm	0.01 m
12	Water Depth	0 to 1 m	± 0.01 m	0.01 m

*Maximum value of the range indicated is only indicative. These can be extended by dilution /as per requirement. The range, accuracy and the resolution mentioned above is generic based on analysis of water quality parameters in laboratory.

The parameters will be analyzed as per Indian Standard (IS) / American Public Health Association (APHA) Methodology of Examination of Water & Wastewater. The data generated by the service provider should consider all likely scenario / events which could be resulted because of accidental discharges in river.

Amended Table, (Reference : Page 49 of Bid Document)

Table 1. List of RTWQM Stations and number of parameters category wise

S. No.	State	Name of the site	Latitude	Longitude	Number of Category A Parameters	Number of Category B Parameters	Total number of parameters
1	Uttarakhand	D/s of Rudraprayag, Bypass Bridge, Rudraprayag	30.2755	78.9647	2	10	12
2	Uttarakhand	D/s of Srinagar, Kirtinagar	30.2136	78.7464	2	10	12
3	Uttarakhand	D/s of Tehri Dam	30.3719	78.4777	2	10	12
4	Uttarakhand	Distributing Canal, Left Bank, Rishikesh	30.0725	78.2920	2	10	12
5	Uttarakhand	D/s of Har Ki Pauri, Dam Kothi, Haridwar	29.9423	78.1569	2	10	12
6	Haryana	D/s of Yamuna river, Mohana, Sonipat	28.9870	77.2018	2	10	12
7	Uttar Pradesh	Road Bridge on Hindon river, Rajnagar Extension	28.6856	77.3920	2	10	12
8	Uttar Pradesh	River Kali East, D/s Meerut city, Kaul village	28.8608	77.7956	2	10	12
9	Uttar Pradesh	River Kali East, D/s of Bulandsahar	28.3942	77.8634	2	10	12
10	Uttar Pradesh	Upstream of Gokul Barrage, D/s of Mathura city	27.4474	77.7135	2	10	12
11	Uttar Pradesh	Near Galhita on River Hindon, Barnawa,Bagpat	29.1143	77.4406	2	10	12
12	Uttar Pradesh	River Kosi, D/s of Kashipur, Darhiyal	29.0528	79.0196	2	10	12
13	Uttar Pradesh	River Yamuna, U/s to Sangam at Allahabad	25.4281	81.8558	2	10	12
14	Uttar Pradesh	Fafamau, Lord Curzon Bridge, Allahabad	25.5075	81.8658	2	10	12
15	Uttar Pradesh	River Ganga at downstream of Mirzapur	25.1594	82.9586	2	10	12
16	Uttar Pradesh	D/s of Ghazipur, Abdul Hameed Setu on River Ganga	25.5884	83.6065	2	10	12
17	Uttar Pradesh	Bela Pratapgarh at Sai River	25.9357	82.0061	2	10	12
18	Uttar Pradesh	Bridge on Confluence of Ken & Yamuna, Chila Ghat, Banda	25.7746	80.5238	2	10	12
19	Uttar Pradesh	Bridge d/s Confluence of Chambal & Yamuna, Kanjausa, Auraiya	26.4372	79.2088	2	10	12
20	Uttar Pradesh	Bridge on Confluence of Betwa & Yamuna River, Hamirpur	25.9434	80.1541	2	10	12
21	Uttar Pradesh	Beldandi bridge on River Ramganga	28.2953	79.3702	2	10	12
22	Bihar	Rive Ganga at Chausa, U/s of Buxar	25.5204	83.9002	2	10	12
23	Bihar	Bridge on Ghagra near Manjhi, Chappra	25.8230	84.5796	2	10	12
24	Bihar	Road bridge on River Ganga, D/s of Buxar	25.5918	83.9861	2	10	12
25	Bihar	D/s of Bhagalpur, Road Bridge on River Ganga	25.2777	87.0280	2	10	12
26	Bihar	Road bridge at Fathua on Punpun, Patna	25.5152	85.2993	2	10	12
27	Bihar	New Bridge, U/s of Patna city, Khurji	25.6533	85.0952	2	10	12
28	Bihar	Road bridge on Burhi Gandak, Khagaria	25.5010	86.4812	2	10	12
29	Bihar	Road bridge on Kosi, Kursela	25.4238	87.2336	2	10	12
30	Bihar	Road bridge on Son, Arrah	25.5672	84.7961	2	10	12
31	Bihar	Road Bridge on Gandak, Hajipur	25.6997	85.1937	2	10	12
32	Jharkhand	Dhanbad, Sindri (D/s), Road Bridge	23.6307	86.4624	2	10	12
33	Jharkhand	Sahebganj	25.2489	87.6417	2	10	12
34	Jharkhand	Rajmahal at Malgodam	25.0546	87.8381	2	10	12
35	Jharkhand & West Bengal	Panchet Dam (D/s), Road Bridge	23.6813	86.7480	2	10	12
36	West Bengal	Farakka Barrage, Road Bridge	24.8010	87.9220	2	10	12
37	West Bengal	D/s of Nabadwip, Road Bridge	23.3864	88.3665	2	10	12
38	West Bengal	Chinsura , Near Hooghly, Road Bridge	22.9068	88.4039	2	10	12
39	West Bengal	Durgapur barrage, Road Bridge	23.4774	87.3040	2	10	12
40	West Bengal	River Damodar, Ramgarh , Road Bridge	23.6505	85.5559	2	10	12
Total number of parameters					80	400	**480**

Amended Table (Reference : Page 94 of Bid Document)

Annexure III -Location of Stations and water quality parameters parameter measurement

State	Location	Parameters											
		1	2	3	4	5	6	7	8	9	10	11	12
		Category A		Category B									
		BOD	DO	EC	pH	COD	Turbidity	Chloride	Nitrate	ToC	Water depth	Water Level	Temperature
Uttarakhand	D/s of Rudraprayag, Bypass Bridge, Rudraprayag	√	√	√	√	√	√	√	√	√	√	√	√
Uttarakhand	D/s of Srinagar, Kirtinagar	√	√	√	√	√	√	√	√	√	√	√	√
Uttarakhand	D/s of Tehri Dam	√	√	√	√	√	√	√	√	√	√	√	√
Uttarakhand	Distributing Canal, Left Bank, Rishikesh	√	√	√	√	√	√	√	√	√	√	√	√
Uttarakhand	D/s of Har Ki Pauri, Dam Kothi, Haridwar	√	√	√	√	√	√	√	√	√	√	√	√
Uttar Pradesh	River Kali East ,D/S Meerut city, Kaul village	√	√	√	√	√	√	√	√	√	√	√	√
Uttar Pradesh	Road Bridge on Hindon river, Rajnagar Extension	√	√	√	√	√	√	√	√	√	√	√	√
Uttar Pradesh	River Kali East , D/S of Bulandsahar	√	√	√	√	√	√	√	√	√	√	√	√
Uttar Pradesh	Upstream of Gokul Barrage, D/s of Mathura city	√	√	√	√	√	√	√	√	√	√	√	√
Uttar Pradesh	Near Galhita on River Hindon , Barnawa,Bagpat	√	√	√	√	√	√	√	√	√	√	√	√
Haryana	D/s of Yamuna river, Mohana, Sonipat,	√	√	√	√	√	√	√	√	√	√	√	√
Uttar Pradesh	River Kosi, D/s of Kashipur, Darhiyal	√	√	√	√	√	√	√	√	√	√	√	√
Uttar Pradesh	River Yamuna, U/s to Sangam at Allahabad	√	√	√	√	√	√	√	√	√	√	√	√
Uttar Pradesh	Fafamau, Lord Curzon Bridge, Allahabad	√	√	√	√	√	√	√	√	√	√	√	√
Uttar Pradesh	River Ganga at downstream of Mirzapur	√	√	√	√	√	√	√	√	√	√	√	√
Uttar Pradesh	D/s of Ghazipur, Abdul Hameed Setu on River Gar	√	√	√	√	√	√	√	√	√	√	√	√
Uttar Pradesh	Bela Pratapgarh at Sai River	√	√	√	√	√	√	√	√	√	√	√	√
Uttar Pradesh	Road Bridge on Confluence of Ken & Yamuna Riv	√	√	√	√	√	√	√	√	√	√	√	√
Uttar Pradesh	Road Bridge on Confluence of Chambal & Yamur	√	√	√	√	√	√	√	√	√	√	√	√
Uttar Pradesh	Road Bridge on Confluence of Betwa & Yamuna I	√	√	√	√	√	√	√	√	√	√	√	√
Uttar Pradesh	Beldandi bridge on River Ramganga	√	√	√	√	√	√	√	√	√	√	√	√
Bihar	River Ganga at Chausa, U/s of Buxar	√	√	√	√	√	√	√	√	√	√	√	√
Bihar	Bridge on River Ghagra near Manjhi , Chhapra	√	√	√	√	√	√	√	√	√	√	√	√
Bihar	Road bridge on River Ganga, D/s of Buxar	√	√	√	√	√	√	√	√	√	√	√	√
Bihar	D/s of Bhagalpur, Road Bridge on River Ganga	√	√	√	√	√	√	√	√	√	√	√	√
Bihar	Road bridge at Fathua on Punpun, Patna	√	√	√	√	√	√	√	√	√	√	√	√
Bihar	New Bridge, U/s of Patna city, Khurji	√	√	√	√	√	√	√	√	√	√	√	√
West Bengal	Farakka Barrage, Road Bridge	√	√	√	√	√	√	√	√	√	√	√	√
West Bengal	D/s of Nabadwip, Road Bridge	√	√	√	√	√	√	√	√	√	√	√	√
West Bengal	Chinsura , Near Hooghly, Road Bridge	√	√	√	√	√	√	√	√	√	√	√	√
Bihar	Road bridge on Burhi Gandak, Khagaria	√	√	√	√	√	√	√	√	√	√	√	√
Bihar	Road bridge on Kosi, Kursela	√	√	√	√	√	√	√	√	√	√	√	√
Bihar	Road bridge on Son, Arrah	√	√	√	√	√	√	√	√	√	√	√	√
Bihar	Road Bridge on Gandak, Hajipur	√	√	√	√	√	√	√	√	√	√	√	√
West Bengal	Panchet Dam (D/s),Road Bridge	√	√	√	√	√	√	√	√	√	√	√	√
Jharkhand	Dhanbad, Sindri (D/s), Road Bridge	√	√	√	√	√	√	√	√	√	√	√	√
West Bengal	Durgapur barrage, Road Bridge	√	√	√	√	√	√	√	√	√	√	√	√
West Bengal	Ramgarh , Road Bridge	√	√	√	√	√	√	√	√	√	√	√	√
Jharkhand	Sahebganj	√	√	√	√	√	√	√	√	√	√	√	√
Jharkhand	Rajmahal at Malgodam	√	√	√	√	√	√	√	√	√	√	√	√

Minutes of Pre-bid meeting with prospective bidders on Procurement for Continuous Real Time Water Quality Monitoring Data for 40 stations on River Ganga and its Tributaries

A pre-bid meeting with the prospective bidders on World Bank funded project 'Procurement of Continuous Real Time Water Quality Monitoring Data from 40 stations on River Ganga and its tributaries' under 'Water Quality Programme' was held on 06.12.2018 at 11.00 hrs in Second Floor, Conference Hall, Central Pollution Control Board (CPCB). The Pre-bid meeting was held in reference to the advertisement through Standard Procurement Notice by the World Bank on UNDB website on 16.11.2018 and by CPCB on Central Procurement (CPP) Portal, website of Central Pollution Control Board (CPCB) on 20.11.2018. List of the participants which includes representatives from different firms and CPCB's officers, is annexed.

2.0 CPCB had requested to send queries through e-mail by 04.12.2018. In this regard, 5 firms submitted their queries through e-mail by 04.12.2018, 2 firms submitted queries till the time Pre bid meeting was held i.e. by 11.00 hrs on 06.12.2018. One firm submitted query after pre-bid meeting through email. Representatives from 9 firms were present in the meeting.

3.0 The meeting started with the welcome note by Shri A. Sudhakar, Divisional Head, WQM-I Division, CPCB, which was followed by a brief presentation about the briefing on International Competitive Bidding (ICB) document. Thereafter, queries raised by representatives of firms were taken up for providing the clarifications.

4.0 Queries raised by firms, and response from CPCB is provided below.

S. No	Section/ Clause/ Page	Query/Issue	Response from CPCB
Firm 1			
1	Page11/ Clause 4.3	Eligible Bidders-Clause 4.3-Government-Owned Enterprises in the Employers' Country may only participate. A firm that has been engaged by the Brower to provide consultant service for the preparation or Supervision of the services, and any of its affiliates, Shall not be eligible to bid.	The bid document has not been read properly by the bidder and also the quoted sentence is not complete (Reference: 4.3 section 1: Instructions to bidders). Bidder is required to go through the bid document in detail about the eligibility of the bidders. Query is also not clear.
Firm 2			

1	Page 80/Clause 3.3.1	Calibration**:** As per clause 3.3.1 in pg no 80 "All instruments shall be calibrated at frequencies no longer than once every 14 days" Such frequent calibrations are required for surrogate parameters like COD, BOD and TOC with reference methods by taking River Sample at same locations. For Ammonia, Nitrate by using ISE electrodes can be calibrated using reference standards. Other parameters like pH, DO, Turbidity, EC, Temperature and Level frequent calibration is not required as these parameters measured by sensors based on reference method which are same like laboratory meters and hence manufacturer recommended calibration frequency is sufficient. We request you to amend this clause.	Suggestions not accepted. These conditions cannot be changed for each make or model or for some of the parameters.
2	Page 82 Table 3.8: Parameters to be measured and Specifications	Please confirm whether the accuracy demanded for measuring TOC, BOD, COD in table 3.8 “Parameters to be measured and specifications” in pg no: 81 is to be compared and verified by analysing river samples with reference method or just verified with calibration solution.	The accuracy mentioned for the water quality parameters is to be verified by analysing river samples with reference method (BIS/APHA method). Contents under Para 3.8 (Page 82-83) have been modified. Footnote under Para 3.8 should also be referred to, by the bidders.
3	Page 80-81/Clause 3.3.2	In clause no 3.3.2 in page no 78, it is mentioned that the service provider will use portable meters for calibration of the sensors, but as per our knowledge for field verification the portable meters are available for pH, Turbidity, Conductivity, DO, Ammonia and Nitrate using direct sensors / colorimetric methods. However for BOD, COD, TOC samples should be taken to the lab and analyzed for BOD, COD, TOC using reference method as per CPCB guide manual for water and waste water analysis COD measurement takes 2-3 hours (Item No: 14 in pg no: 80 of in manual) BOD takes minimum 3 days (Item No: 10 in pg no: 65 in manual) and TOC takes 15 minutes (in pg no: 88 in manual).	Parameters (namely BOD and COD) which can not be measured on the field using portable field test kits are to be analysed in laboratory as per standard reference method, however, sample collection and preservation will require to be done in the field immediately after collection of the sample. The results will be used for calibration of sensor values as per the deviation (accuracy) mentioned in Para 3.8

4	Page 80-81/Clause 3.3.2	In clause no 3.3.2 in page no. 78 for BOD you have specified portable facility for immediate process, may we know what is this portable facility and what process you are expecting. Also provide the procedure for calibration as BOD sample analysis will take 3 days.	Laboratory Analysis as notified. BOD sample collection & initial process in field should be done.
5	Page 82/ Table 3.8: Parameters to be measured and Specifications	The ranges asked for surrogate parameters: BOD – 0.0 to 500 mg/L is very high for sensors based product as it cannot measure accurately for such high polluted samples and CPCB regulation is maximum limit is 20-30 mg/L. We request you to amend the range 0-300 mg/L COD –5.0 to 1500 mg/L is very high for sensors based product as it cannot measure accurately for such high polluted samples and CPCB regulation is maximum limit is 250 mg/L. We request you to amend the range 0-600 mg/L	The data from Real Time Water Quality Monitoring Stations should provide best possible wide range of the parameters to capture the episodal instances/ events. Maximum range of BOD and COD has been modified to 100 mg/l and 500 mg/l respectively .
6	General Query	There are new technologies on Sensor based real time monitors recently emerged for online measurement of COD, BOD using UV Fluorescence by TLF (Tryptophan-like fluorescence) and TOC using Flourometer by measuring CDOM/FDOM there are many published Scientific papers available on this technologies, successfully running for couple of years in the field. Hope we can also use such technologies.	CPCB has not specified the technology for Real Time Water Quality Monitoring systems and Sensors. The Contract is based on Data Purchase Model and it is up to the successful vendor to use the technology.
7	Page 82/ Clause 3.7 and 3.8	**Ammonia**: What exactly required to be measured is Ammonia as (NH3) or as Ammonium (NH4), as per our understanding probe based sensors are available only for Ammonium (NH4), please clarify the same.	In view of the complexities involved in measurement of ammonia (NH_3-N) by Real Time Water Quality Monitoring Sensors, and unavailability of sensors for direct measurement of ammonia (NH_3-N), requirement of Ammonia (NH_3) measurement has been removed.

8	Page 82/ Clause 3.7 and 3.8	**Sulphate:** Measurement of Sulphate is not possible by sensor-based technology. All reputed manufacturers are providing online Analysers for Sulphate measurement based on reference method. However we have found that analyser based systems are not practical to be used on floating based locations as analyser based systems required minimum utilities like power, Shelter, Air Condition facility and clean water for periodic auto cleaning. We are requesting you to verify whether this parameter is required or not. Please consider to delete the same.	Many firms raised feasibility issues for real time monitoring of sulphate through sensors. In view of complexities involved and possible change in design structure due to involvement of extraction procedure, technical feasibility, involvement of pumping apertures, requirement of Sulphate_ measurement has been removed. A new parameter chloride has been included for monitoring.
9	Page 79/ Clause 3.1.2: General Information Regarding Measurement Types	This Tender stipulated for majority of floating locations. It may not be feasible to keep the floating stations under stable condition during high flood situation. Under high flood condition for the safety of the full system we may have to bring it to the high bank of the river, In such situation the required data cannot be observed and department cannot levy any penalty on the Service provider.	The bidder is required to read the document carefully. Also, provision of force majeure is given in the bid document for events such as flood and low water level.
10	Page 79/ Clause 3.1.2: General Information Regarding Measurement Types	If we want to use reference based online analysers on floating locations can we shift the locations from floating to fixed locations, and in such situation can we use surrounding location on the River Bank, where sample can be drawn from the middle of the stream by using extended pipes into the River for continuous draw of the sample to the analyser.	No, successful bidder cannot change the type of station or location of the stations. Any change in the type of station or from floating to fixed stations or vice versa can be done only by the Employer.

11	Page 13, 35/ITB Clause 5.4./ Page No. 13 and Clause 1.3/ Page No. 35	As per ITB Clause 5.4.b pg no 13 and Qualification Information Clause no. 1.3 on pg no 35 prime contractor should have experience of providing at least two service contracts of similar nature and complexity equivalent to this. But as you know this type of contracts are new and only one party may qualify on this Point. Can you consider the experience of Supply, Installation and Maintenance and AMC/CAMC for similar type of online effluent monitoring stations with online Analysers / Sensors for monitoring of COD, BOD, pH, TSS and Flow with data uploading to CPCB/SPCB or Real Time Water Level Monitoring with data uploading to server or Automatic Weather Monitoring Station with online data transmission. These are all similar nature of work and request you to consider these natures of work as experience under qualification criteria.	Yes, The experience of Supply, Installation and Maintenance and AMC/CAMC for similar type of online effluent monitoring stations with online Analysers / Sensors for monitoring of COD, BOD, pH, TSS and Flow shall be considered.
12	Page 81/Clause 3.4.1.1	It has been mentioned in clause no 3.4.1.1 in page no. 81 that "In order to qualify for payment, the measurement must be representative of water conditions in the main channel of the river within two meters of the surface of the water. The main channel is defined as the portion of the river where the velocity of water is at a maximum. The measurement will be deemed non-representative if the velocity at the measurement point is less than 10% of that of the main channel." In absence of measuring the velocity at site on Real time it is not possible to fulfill this condition. It is requested that this clause may be withdrawn.	Measurement must be representative. Issues regarding velocity and measurement depth has been reviewed as many firms raised the issue. Modification regarding Minimum flow and Minimum Depth are as below : **3.4.1.1 Continuous Flow** Real time water quality monitoring sensors should provide real time water quality data that is representative in nature. The RTWQM systems are required to be installed in rivers where there is continuous flow of water. The measurement will be deemed non-representative if continuous flow of river water is not available to the real time water quality monitoring sensors. **3.4.1.2 Measurement Depth**

			Real Time Water Quality Monitoring sensors shall remain submerged in water at least 0.5 m from the surface water. Data Service Provider must install water level (depth) recorder in all 40 stations for recording of water depth from the surface and its verification during each calibration visit is mandatory.
13	Page72 /Clause 6.4.2	In clause no 6.4.2 in page no 72 the method for calculating price for data supply has been explained. It is seen that only payment for hourly data supplied from the fixed stations have been mentioned nothing has been spelt for floating stations. Please clarify whether same procedure will be followed for floating stations also.	Price calculation for fixed and floating stations is the same. Bid document states about supply of hourly data from both types of stations. Same will be mentioned in the document.
14	Page 92/Annexure-1 of Appendix 'A'	Annexure-1 of Appendix 'A' in page no. 92 indicates the locations of stations with their classification i.e. Base line, Impact and Trend. It is not understood how the Service Provider will use these information while quoting for supplying different WQ parameters from 40 stations.	Service Provider is not required to use this information for quoting. Classification of stations - Base line, Impact and Trend, is for internal purpose of CPCB.
15	Page 92/Annexure-1 of Appendix 'A'	We would like to visit all the locations to verify the site conditions for preparing bid. Some of the Sites are under CSIR control and the authorities have informed that prior permission is required to visit the sites. In this regard please inform us to whom we have to contact to get the permission and also we need time to visit all the sites to assess the site condition before bidding. Hence we request you to extend the tender submission date up to 15-02-2019.	CPCB has no objection in visiting any firms for site visit but information regarding the site and schedule may be provided to CPCB. Extension in bid submission deadline will not be considered on the basis of requirement for site visit.
16	Page 92/Annexure-1 of Appendix 'A'	If we choose to install analysers in a shelter on the bank of river, do we require any Permission from the local concern site authority?	Firms are not required to take permission from the concerned authority. Wherever, permission is required to be taken, it will be the responsibility of CPCB.

Firm 3			
1	Page 78/Clause 2.0: Scope of Service	PTZ camera: Streamed footage and visualisation of real time value and immersed sensors is required – please elaborate as camera will be mounted probably around cabinet but sensors are further away in the river? Immersed sensors will not be captured by the camera. GPRS might not be appropriate and satellite connection required for live stream and high data throughput. This would be a major investment – is this desired? Please elaborate on DVR/NVR.	The matter has been discussed in detail in pre-bid meeting and it is proposed that streaming footage is not required. Every hour, only one view (photograph in form of an image) of surrounding will be sent along with hourly data. Time lag, if any, in submission of photographs, will not be considered, for payment as same (15 minutes) .
2	Page 78/Clause 2.1: Validation of data	How will / should this be done for BOD?	BOD shall be measured at 27° C for 3 days. Refer IS 3025, Part 44:1993. Accordingly, modifications in Para 3.3.2 (Traceable Standards), have been done for better clarity on BOD.
3	Page79 / 3.1.2.1: Fixed / floating stations	What is the maximum flow expected? Is there data / evidence for changing flow regime per site?	The purpose is to get representative data from a dynamic river water systems. Stations are required to be installed where there is continuous water flow at a depth of 0.5 m from the surface of water bodies.
4	Page80 / 3.3.1: Calibration frequency	If the values from online instruments match well with mobile reference method / laboratory? Is calibration still required?	Calibration does not mean changing the value of sensor's reading if the values are same in same reference medium. Requirement of calibration is a continuous process and the purpose is to assess the suitability of sensor for field measurement.
5	Page80 / 3.3.2: Calibration standards	Why APHA standards? Can you share the BOD procedure please?	BOD is to be measured as per IS-3025, Part 44: 1993 Bio-Chemical Oxygen Demand followed in India for 3 days at 27 degree.
6	Page81 /3.4.1: Representativeness of Data	How will the minimum flow be determined? Minimal depth should be specified, what if no water at site?	The matter was discussed in detail in view of many firms raising the matter of minimum flow in the meeting and it was clarified that sensors should remain submerged in water at

			least 0.5 m from the surface. The term 'Minimum Flow' has been changed to 'Continuous flow'
7	Page 82/Table 3.8: Parameters to be measured and Specification	Why -5C range for temperature? Why Sulphate? Our suggestion is to use Chloride instead, for the following reasons: (i) As most of the industrial polluters are discharging chloride, it is in combination with the electrical conductivity a perfect indicator for industrial salt emissions. Especially tanneries are discharging a huge amount of chloride if there is no desalination within the process water treatment, leading to an deep impact in rivers and lakes natural ion composition. (ii) As there is no submersed online measurement for sulphate available on the market, but only cabinet analysers - which are critical regarding high maintenance, power supply and clogging due to the need of water pumping - it is not recommended to use such analysers in a river monitoring project.	The range for temperature has been reviewed and the minimum value to be measured has been modified to 0^0 C. Many firms raised feasibility issues for real time monitoring of sulphate through sensors. In view of complexities involved and possible change in design structure due to involvement of extraction procedure, technical feasibility, involvement of pumping apertures, requirement of Sulphate_ measurement has been removed. A new parameter chloride has been included for monitoring.
8	Page 91/Appendix A: Des. of the Services	Please elaborate on Baseline, Trend and Impact – what is the difference? Why does the service provider have to execute these agreements? This could generate unforeseen cost and time constraints for the bidder. No software will be required on server?	The classification of stations for 40 Locations-Baseline, Trend and Impact, is meant for employer (CPCB) and not for the bidders. Tripartite agreements are necessary in some locations which authorises the service provider to use the infrastructure or facilities in the field. CPCB will facilitate such agreements for smooth work flow. Basic software is definitely needed for server for meeting the requirements as mentioned in the bid document. It will be the responsibility of bidders to identify the required software to install, operate and maintain the server for entire duration of the project.

Firm 4			
1	Page 29/Section II. Bidding Data Sheet [Qualification Criteria]: 5.5 (a) and 5.5 (b)	Being a data purchase agreement driven tender based on DBOFT (design, build, operate, finance and transfer) there is no need to have prequalification of number of jobs done and annual revenue of the organization. Having put a clause that minimum net assets of the organization is to be 1 million USD is it clear that those details are asked for thus. We shall suggest and request to have the prequalification as mentioned on page number, to be taken off. Only correct and timely data shall fetch the vendor any money, thus prequalification shall only limit competition to limited bidders.	The qualification criteria as mentioned in Section II. (Bidding Data Sheet), in the Bid document has been modified in reference to following clauses : : **5.5(a)** The minimum average annual turnover in Supply, Installation, commissioning, operation and maintenance of environmental monitoring equipment in the last three years (2015-16, 2016-17 and 2017-18) shall be USD $2 million or INR 136 million (1 $ = 68 INR) **5.5(b)** The experience required to be demonstrated by the Bidder should include as a minimum that he has successfully executed at least one contract of value US$ 0.74 million or INR 50 million or two contracts aggregating to US$ 0.74 million or INR 50 million for supply of Real Time Water Quality Monitoring Data during the last 5 years. (1 $ = 68 INR). **5.5(e)** The minimum amount of liquid assets and/or credit facilities net of other contractual commitments of the successful Bidder shall be US$ 0.5 million or INR 34 million (1 US $= INR 68). The bidders should refer to all the qualification criteria as mentioned in Section II (Bidding Data Sheet) Part A. General..
2	Page 64-65/Clause 6: (6.4) Payments to the	Please suggest the payment terms and frequency of the payment in the tender document. Please also suggest in case upfront payment shall be made in the tender. Please clarify.	Payment will be made to the data service provider within 30 days after raising the invoice by the Data Service Provider. There is a provision of 10 % advance payment subject to submission of Bank Guarantee by the successful bidder. Payment terms have

	Service Provider (Payment terms)		already been clearly mentioned in the Bid document.
3	Page 82-83/ Table 3.8: Parameters to be measured and Specifications	Sulphate parameter to be measured Online. We think that there is no such experience exists of measuring Sulphate online in Indian conditions. Therefore, we request you to kindly dilute this parameter.	Many firms raised feasibility issues for real time monitoring of sulphate through sensors. In view of complexities involved and possible change in design structure due to involvement of extraction procedure, technical feasibility, involvement of pumping apertures, requirement of Sulphate_ measurement has been removed. A new parameter chloride has been included for monitoring.
Firm 5			
1	Page 82-83/Table 3.8: Parameters to be measured and Specifications	Parameter ranges seems some product specific as most of them do not start from zero "0" value for many parameters. Can these be corrected as generic specifications?	The ranges have been modified as 'generic specification based on analysis of water quality parameters in laboratory' in view of the discussions in pre bid meeting. The bidders should refer to the revised contents under para 3.8 in the bid document.
2	Page 82-83/Table 3.8: Parameters to be measured and Specifications	Resolution of COD parameter has been considered with 5mg/L, which confirms that in case of river monitoring the COD would be recorded as 5, 10, 15, 20…. Onwards, is this acceptable for the project?	5 mg/L is the Minimum Detection range for COD in laboratory. The resolution has been modified to 1 mg/L from 5 mg/L in view of the discussions in pre bid meeting.
3	Page 82-83/Table 3.8: Parameters to	The parameters will be analysed as per APHA should be written as The laboratory parameters will be analysed as per APHA.	The content has been modified as per BIS/ APHA for laboratory parameters. The bidders should refer to the revised contents under para 3.8 .

	be measured and Specifications		
4	Page 82-83/Table 3.8: Parameters to be measured and Specifications	It has been written that maximum value of range has been indicated is only indicative. They can be extended by dilution as per requirement must be treated as follows The ranges specified are just indicative so product selection should be based on applicable ranges as per specified & selected locations. The ranges may be pre-surveyed by vendor at their cost before bid submission.	The term 'Indicative' was mentioned to provide flexibility to the firms but it was noticed that the ranges, resolution and accuracy mentioned in the bid document are inconvenient for the firms. Hence, the contents have been modified as generic specifications based on analysis of water quality parameters in laboratory.
5	Page 78/Clause 2.0: Scope of Service	We would like to inform you that the water quality system transmits the data in near real time over GPRS network. The central station will display the water quality parameter in near real time. The PTZ camera requires higher power which may not be suitable for un-attended operation. Please clarify, whether the PTZ camera is mandatory to be supplied with the real time streaming of data.	It was clarified that every hour, one view (photograph in form of an image) of surrounding will require to be sent along with hourly data. Time lag, if any, in submission of photographs, will not be considered, for payment as same (15 minutes) . Modification has been done in the Bid document accordingly (Reference : Section VIII, Performance Specifications, Clause 2.0 Scope of Service).
Firm 6			
1	Page 29/ Section II. Bidding Data Sheet [Qualification Criteria]: 5.5 (a)	The minimum average annual turnover in Supply, Installation, commissioning, operation and maintenance of environmental monitoring equipment/ Real time data monitoring software & equipment in utility in the last five years (2013-14, 2014-15, 2015-16, 2016-17 and 2017-18) shall be USD $2 million or INR 136 million.	The qualification criteria as mentioned in Section II. (Bidding Data Sheet), in the Bid document has been modified in reference to following clauses : **5.5(a)** The minimum average annual turnover in Supply, Installation, commissioning, operation and maintenance of environmental monitoring equipment in the last three years

2	Page 29/ Section II. Bidding Data Sheet [Qualification Criteria]: 5.5 (b)	The experience required to be demonstrated by the Bidder should include as a minimum that he has successfully executed at least one contract of value US $ 1.5 million on INR 102 million or two contracts aggregating to US $1.5 million or INR 102 million for supply of Real Time Water Quality Monitoring Data/ Real time data monitoring software & equipment in utility during the last 7 years.	(2015-16, 2016-17 and 2017-18) shall be USD $2 million or INR 136 million (1 $ = 68 INR) **5.5(b)** The experience required to be demonstrated by the Bidder should include as a minimum that he has successfully executed at least one contract of value US$ 0.74 million or INR 50 million or two contracts aggregating to US$ 0.74 million or INR 50 million for supply of Real Time Water Quality Monitoring Data during the last 5 years. (1 $ = 68 INR). **5.5(e)** The minimum amount of liquid assets and/or credit facilities net of other contractual commitments of the successful Bidder shall be US$ 0.5 million or INR 34 million (1 US $= INR 68).The bidders should refer to all the qualification criteria as mentioned in Section II (Bidding Data Sheet) Part A. General.
Firm 7 (Representative not present in Pre-bid meeting, communication received through email)			
1	Page 78/Clause 2.0: Scope of Service	We would like to inform you that the water quality system transmits the data in near real time over GPRS network. The central station will display the water quality parameter in near real time. The PTZ camera requires higher power which may not be suitable for un-attended operation. Please clarify, whether the PTZ camera is mandatory to be supplied with the real time streaming of data.	The matter was discussed and it was proposed to amend the content regarding PTZ camera. It was clarified that every hour, one view (photograph in form of an image) of surrounding will require to be sent along with hourly data. Time lag, if any, in submission of photographs, will not be considered, for payment as same (15 minutes).
2	Page 78/ Clause 3.1: Data	We would like to inform you that the data can be downloaded from the central recording station through the supplied software. We believe that the manual data collection is not required, please confirm.	Manual data collection will not be accepted. Please read the bid document properly. This is a Real Time Water Monitoring project and data should be provided by the Data Service Provider in real

	Collection		time as mentioned in bid document.
3	Page 79/ Clause 3.1.2.2: Both type of RTWQM stations	Please clarify, whether the data to be recorded for 5 min every hour and it should be transmitted upon completion of recording.	Hourly data should be transmitted to the server within 5 minutes of measurement. Please read the bid document properly.
4	Page 80/ Clause 3.3.1: Calibration Frequency	The periodic calibration suggested by our principal is 30 - 45 days, depends on the site condition. Please clarify, is that acceptable?	No, calibration must be done at every 14 days.
5	Page 80/ Clause 3.3.2: Traceable Standards	Please clarify, whether the periodic lab test to be conducted to all parameters including BOD for verifying the results; If so, please mention the schedule.	Parameters which can not be analysed in-situ, such as BOD, are required to be analysed in laboratory as per IS / APHA method.
6	Page 79/ Clause 3.1.2.1: Fixed Stations	We understood that all the fixed stations to be installed on bridge piers- kindly suggest us the height of the pier to the water which are required to be calculated the cable length and other installation accessories.	Bidder may visit the sites for feasibility. Height of the pier is location specific.
7	Page 79/ Clause 3.1.2.2: Floating Stations	We believe that the boat for floating stations will be provided by Central Pollution Control Board, please confirm.	No, This is a data purchase contract. CPCB will not provide any infrastructure or accessories.

8	Communication Network	We believe that the selected station (Fixed & Mobile) has GPRS (4G) signal strength for data transmission, please confirm. The required SIM card with Static IP to be supplied by Client.	Bidder may visit the sites for strength of network availability.
9	Page 80/ Clause 3.2.2: Data storage	Please confirm, whether we can use cloud or any other online storage in place of physical storage device.	No physical storage apart from the data in server is needed. Please read the bid document carefully.
10	International Competitive Bidding	Please clarify, whether the foreign company can participate in the tender directly with the foreign currency.	Yes

Firm 8 (Representative not present in Pre-bid meeting, communication received through email)			
1	Section II. Bidding Data Sheet. Instruction to Bidders	What will be the project period for this project i.e. how long we are supposed to provide the services (min. tenure)?	Project period : 5 years 8 months (including 8 months time of installation of 40 stations).
2	Page 91/Appendix A: Description of the Services	Is there any civil construction involved?	Bidder is required to read the bid document.
3	Page 82/ Clause 3.6.2	Who will pay for the units vandalized?	Bidder is required to read the bid document (There is a clause of Force Majeure).
4	Page 91/ Appendix A: Description of the Services	Who will provide the power supply on sites?	Bidder is required to read the bid document.

5	Appendix A, Description of the Services	Lat/Long are given of all sites but still we are unclear about the network availability, is network available on all sites?	Please read the bid document completely. Bidder may visit the sites for checking the strength of network availability.

5.0 While going through the Bid document placed on CPP Portal, it was noticed by CPCB that there is a minor error in formula mentioned for calculation of hourly price for data supplied from Fixed and Floating Stations in the Bid document (Reference : Section VI, Method for calculating price for data supply). The symbol has been erroneously mentioned as 'Qa * Wb' while it should be 'Qb * Wb' for price calculation for both category parameters. Accordingly, it is proposed to correct the formula:

Incorrect Formula :

Contract Price = ……(Assumed P-Total Contract Price)

Category of parameter	Weight of Parameter	Quantity of Parameters	Annual Price for hourly data under each category of parameter
A	Wa	Qa	P*Wa / [No. of Years *365*24*(Qa *Wa + Qa *Wb)]
B	Wb	Qb	P*Wb / [No. of Years *365*24*(Qa *Wa + Qa *Wb)]

Correct Formula

Contract Price = ……(Assumed P-Total Contract Price)

Category of parameter	Weight of Parameter	Quantity of Parameters	Annual Price for hourly data under each category of parameter
A	Wa	Qa	P*Wa / [No. of Years *365*24*(Qa *Wa + Qb *Wb)]
B	Wb	Qb	P*Wb / [No. of Years *365*24*(Qa *Wa + Qb *Wb)]

6.0 **Price calculation in case of change in number of RTWQM Stations:**

The number of RTWQM stations are not likely to be changed, however, in case such eventuality arises, the price shall be calculated on pro rata basis. Bidders may refer to the modified clause 6.4.2 (Reference : Section VI, Method for calculating price for data supply) of the Bid document.

The meeting ended with thanks to and from the Chair.

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