

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH NEW DELHI**

EA NO. 11 OF 2024 IN OA NO 94 OF 2022

WITH

EA NO. 12 OF 2024 IN OA NO 41 OF 2020

IN THE MATTER OF:

PUSHPENDRA KUMAR

.....APPLICANT

VERSUS

**NAGARPANCHAYAT, KADAURA &
ORS**

.....RESPONDENTS

INDEX

S.NO.	PARTICULARS	PAGES
1.	Objections by the applicant to the compliance report of UPPCB dated 30.08.2024 (ALONG WITH AFFIDAVIT).	1-18
2.	<p><u>ANNEXURE A-1</u></p> <p>i. The true copy of RTI-response letter of ISRO-NRSC declaring water spread area of Sadar pond (586) in month of September 2022 as only 0.93 ha while in Khatauni the area of Sadar pond is 2.67 ha.</p> <p>ii. The true copy of RTI reply of ISRO-NRSC dated 09/10/2023 providing the common link to calculate the water spread area of any water body.</p> <p>iii. The water spread area of <i>Sadar pond (586)</i> and <i>Jagnaha pond (266)</i> as</p>	19-24

	measured by Water body Information system of ISRO by the link provided by ISRO-NRSC.	
3.	<u>ANNEXURE A-2</u> The true colored photographs of the encroachment on the east and North side of the pond at Sr no 2-Sadar Talab (gata no 586).	25-26
4.	<u>ANNEXURE A-3</u> The true colored photographs of the encroachment on the east and North side of the pond at Sr no 3-Jagnaha Talab (gata no 266).	27
5.	<u>ANNEXURE A-4</u> The true colored photographs of merging of pond at Sr no 4-Kabristaan Talab (gata no 311) with the premises of Kabristaan.	28
6.	<u>ANNEXURE A-5</u> The true colored photographs of completely dry and encroached pond at Sr no 5 (gata no 657) near Vaishnav Mata Mandir.	29
7.	<u>ANNEXURE A-6</u> The true colored photographs of completely dry and encroached pond at Sr no 6 (gata no 659) near Vaishnav Mata Mandir.	30
8.	<u>ANNEXURE A-7</u>	

	The true colored photographs of encroachment and discharge of fecal and sewage into the pond at Sr no 7- Bahri/Bhairav Talab (gata no 946).	31-32
9.	<u>ANNEXURE A-8</u> The true colored photographs of completely paved and encroached pond at Sr no 8- Nagin Shakti Talab (gata no 443/994).	33
10.	<u>ANNEXURE A-9</u> The true colored photographs of completely paved and encroached pond at Sr no 9- Seer Ka Talab (gata no 585/2).	34
11.	<u>ANNEXURE A-10</u> The true colored photographs of heavy encroachment and discharge/disposal of sewage, fecal and disposal of domestic waste of pond at Sr no 10-Dhobipura ka Talab (gata no 292/2).	35
12.	<u>ANNEXURE A-11</u> The true copy of letter ref no H64304/C-2/MSW-23/2021 dated 10.09.2021 confirming imposes of environmental compensation of ₹ 1,82,88,200/- on Nagar Panchayat, Kadaura by UPPCB but not recovered yet.	36
13.	<u>ANNEXURE A-12</u> The copy of Indicative Guidelines for Restoration of Water Bodies released by CPCB in compliances compliance to order dated 10.05.2019 in M.A.No.	37-85

	26/2019 in OA.No. 325 of 2015 by this hon'ble tribunal.	
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Pesmpeneba
APPLICANT

THROUGH

Ranjan K. Rai

RANJAN KUMAR RAI

ADVOCATE

CH NO.351 PATIALA HOUSE COURTS

COMPLEX NEW BUILDING

NEW DELHI-110001

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New Delhi

Dated: 05.10.2024

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PRINCIPAL BENCH NEW DELHI

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**OBJECTIONS BY THE APPLICANT TO THE COMPLIANCE REPORT
OF UPPCB DATED 30.08.2024 (ALONG WITH AFFIDAVIT).**

MOST RESPECTFULLY SHOWETH :

1. That pursuant to the direction given by this Hon'ble tribunal in its order dated May 20,2024, UPPCB submitted a compliance report dated August 30,2024 regarding the status of the 13 ponds located within the limits of the Nagar Panchayat Kadaura before this tribunal.
2. That the applicant, at this stage, is filing objection to the compliance report of UPPCB dated August 30,2024 regarding the status of the 13 ponds located within the limits of the Nagar Panchayat Kadaura.
3. The objections are in tabular format with the same serial no, gata no as in the compliance report of UPPCB dated August 30,2024.

Sr No	Gata no	Area(in hectare)	Name of Pond	Ward/ Muhalla	Objections/Comments by Applicant
1.	112	0.785	Udai Tal /Manshadevi Mandir ke pass	Islamabaad	UPPCB intentionally hid the actual pitiable condition of this pond that the water spread area and command/ catchment area of this pond is under encroachment. The water of pond is very polluted due to direct discharge of fecal and sewage of illegal occupants residing on catchment area of pond at east side.
2.	586	2.679	Sadar Talab	Bazar	RTI response received from ISRO dated 11/10/2022 clearly declared the water spread area of Sadar pond as 1.26 ha in August 2022 and 0.93 ha in September 2022 while in Khatauni the area of the pond is recorded as 2.67 ha. Due to the

				<p>non-compliance of the order of this tribunal dated 11/10/2022 the water spread area of Sadar pond further reduced to 0.3 ha in July 2024 (as per the WBIS -ISRO). The true copy of RTI-response letters of ISRO-NRSC dated 11/10/2022 and dated 09/10/2023 and water spread area of Sadar pond in July 2024 is annexed hereto and marked as Annexure A-1.</p> <p>UPPCB hid the actual ground reality of heavy encroachment on Sadar Pond(586) in its report.</p> <p>Th water of Sadar pond is very polluted due to direct discharge of fecal ,sullage and sewage of illegal occupants residing on water spread</p>
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					<p>area/catchment area of pond at North and east side. The true colored photographs of the pond, RTI response from ISRO-NRSC regarding water spread area of the pond is Annexed hereto and marked as Annexure A-2.</p>
3.	266	1.315	Jagnaha Talab	Islamabad	<p>The pond is heavily encroached on North and East side. As per WBIS-ISRO the water spread area of Jaganaha pond was 0.6 ha in July 2024.The same is annexed above in Annexure A-1. applicant submitted the pen-drive of videos which was played during the hearing on May 20,2024 and the hon'ble tribunal saw the permanent structures and encroachment on command/catchment area of the Jagnaha</p>

				<p>pond. Moreover the tribunal also observed the boundary wall blocking the channels of catchment area flowing towards the Jagnaha pond. The UPPCB hid the above facts in the report.</p> <p>The water of the pond is very polluted due to direct discharge of fecal ,sullage and sewage of illegal occupants residing on water spread area/catchment area of pond at North and east side of Jagnaha Pond. The true colored photographs of the same is annexed hereto and marked as Annexure A-3 and true video of the same is stored in the pen drive annexed in IA no 426/2024.</p>
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4.	311	0.316	Near Kabristaan	Eidgah	<p>The UPPCB submitted the ambiguous and misleading report about this pond. The pond 311 has been merged in the premises of Kabristan by constructing a boundary wall around Kabristaan covering pond too inside the boundary wall of kabristaan. This restricted the accessibility of pond to common people. Boundary wall blocked all channels of catchment area flowing towards the ponds. The UPPCB cleverly hid this fact in the report. The true colored photographs of the same is annexed hereto and marked as Annexure A-4.</p>
5.	657	0.101	Vaishnav Mata Mandir ke pass	Purva	<p>UPPCB admitted that there is no water in the pond 657 and no boundary wall around it. No Water in a</p>

					<p>pond during heavy rainy month of August proves that pond is completely paved and command / catchment area is completely encroached. In place of the pond permanent structures and buildings have been constructed. The true photographs of encroachment on the ponds are annexed hereto and marked ad Annexure A-5 and video of the same is stored in the pen drive annexed in IA no 426/2024.</p>
6.	659	0.101	Vaishnav Mata Mandir ke pass	Purva	<p>UPPCB admitted that there is no water in the pond 657 and no boundary wall around it. No Water in a pond during heavy rainy month of August proves that pond is completely paved and command / catchment area is</p>

					<p>completely encroached. In place of the pond permanent structures and buildings have been constructed. The true colored photographs of encroachment on the ponds are annexed hereto and marked as Annexure A-6. true video of the same is stored in the pen drive annexed in IA no 426/2024.</p>
7.	946	1.226	Bhairav Talab	Chilpura	<p>UPPCB hid the facts that portion of buildings are standing inside the pond and sullage, sewage and fecal of the town is being discharged into this pond. The true colored photographs of pond 946 is annexed hereto and marked as The true colored photographs of encroachment on the ponds are annexed hereto and marked as Annexure A-7. The</p>

					<p>true video of the same is true video of the same is stored in the pen drive annexed in IA no 426/2024.</p>
8.	443/994	0.130	Nagin Shakti	Islamabaaad	<p>UPPCB admitted that there is no water in the pond The photographs of this pond at page no 147 of UPPCB report shows that the pond is completely paved up and encroached and lost its existence. That's why UPPCB didn't collect the water sample of this pond. Completely false status has been provided by UPPCB about this pond. The photographs of this pond as taken and annexed by UPPCB in its report dated 30/08/2024 at page no marked as 147 as a proof, the pond is completely paved and encroached annexed hereto and marked as Annexure A-8.</p>
9.	585/2(2)	0.235	Seer ka Talab	Havely	<p>UPPCB itself admitted that there was no water in the pond but they hid the fact that the</p>

					pond has been completely paved and encroached up by Nagar Panchayat itself by building shops over it. this also shows UPPCB is colluded with the Nagar Panchayat,Kadaura. The true colored photographs of encroachment on the ponds are annexed hereto and marked as Annexure A-9.
10.	292/2	0.353	Dhobipura ka Talab	Dhobipura	Again only half truth was presented by UPPCB before this hon'ble tribunal about this pond. Domestic waste as well as Sewage,Fecal,Sullage and garbage are being disposed into this pond by the illegal occupants residing on water spread area and command/catchment are of this pond in form of permanent structure. The true

					colored photographs of encroachment on the ponds are annexed hereto and marked as Annexure A-10.
11.	60	0.474	Bamhauri ka Talab	Bamhauri	UPPCB admitted that there was no water in the pond but hid the reason of no water. the pond have been paved up and encroached up completely.
12.	61	0.069	”	Bamhauri	UPPCB admitted that the pond is Completely Encroached up.
13.	566	0.611	Kherapati	Purva	UPPCB admitted that the pond is Completely Encroached upon.

Note: In the Compliance reports of UPPCB dated August 30,2024 Out of 13 ponds , there is no water in 6 ponds in rainy month of August hence the report itself reflects that 6 ponds has been completely paved up and encroached. Remaining 7 ponds are under heavy encroachment may loose their existence in near future if immediate remedial action is not taken.

Water Quality Test Report (objections)

1. In compliance of UPPCB dated 30.80.2024 the water quality test reports of 7 ponds were produced in Page no marked as 110 to 144 but UPPCB didn't analyzed or interpreted water quality test report of ponds to categories as **Category I (Critically Polluted) to Category -VI (Fit for bathing)**.
2. The applicants categorized the **water quality of the ponds as per the procedure laid down in the "Indicative guidelines for restoration of water bodies" by CPCB.**
 - 2.1 **BOD value and FC(Faecal Coliform)** are taken from the water test quality report of the UPPCB report dated August 30,2024.
 - 2.2 **X(BOD Score) and Y(FC Score)** are assigned from CPCB reference Table 1 & Table 2 of "Indicative Guidelines for Restoration of Water Bodies".
 - 2.3 **Z(Total Score)** is Calculated as $(Z=0.7*x+0.3*Y)$. [as per CPCB's "Indicative Guidelines for Restoration of Water Bodies".]

Water quality is categorized based on the Z (Total Score) as per the Table 3 provided in "Indicative Guidelines for Restoration of Water Bodies". Table 1, Table 2 and Table 3 of "Indicative Guidelines for Restoration of Water er Bodies" are given below. In compliance to Hon'ble NGT Order dated 10.05.2019 in M.A.No. 26/2019 in OA.No. 325 of 2015 **CPCB released "Indicative Guidelines for Restoration of Water Bodies"** which is annexed hereto and marked as **Annexure A-12**.

Table 1. Observed Mean or Average BOD Value in mg/l and corresponding BOD Score

S. No	Mean or Average BOD (Weightage-70 %)	
	Mean or Average BOD (in mg/l)	BOD Score (X)
1	> 48	100
2	24-48	80
3	12-24	60
4	6-12	40
5	≤ 6	20

Table 2. Observed Mean or Average Faecal Coliform (in MPN/100 ml) and corresponding FC Score

S. No	Mean or Average Faecal Coliform (Weightage -30 %)	
	Mean or Average Faecal Coliform (in MPN/100 ml)	FC Score (Y)
(1)	> 5,00,000	100
(2)	5000 to 5,00,000	80
(3)	500 to 50,000	60
(4)	500 to 5000	40
(5)	≤ 500	20

Table 3. Total Score and corresponding Category of River Monitoring Location

S. No	Total Score* (Z')	Category Priority Class of the Monitoring location	Category of Monitoring location
(1)	81-100	Category -I	Critically Polluted
(2)	61-80	Category -II	Severely Polluted
(3)	41-60	Category -III	Moderately Polluted
(4)	21-40	Category -IV	Less Polluted
(5)	≤ 20	Category -V	Good or Fit For Bathing

Sr No	Gata no of Pond	BOD(as in UPPCB Test Report dated 30/08/2024)	FC(Fecal Coliform) (as in UPPCB Test Report dated 30/08/2024)	X(BOD Score) (As per CPCB reference table 1)	Y(FC Score)(as per CPCB reference table 2)	Z(Total Score) ($Z=0.7*x+0.3*Y$)	Water Quality (As per CPCB reference table 3)
1.	112	26.0	2700	80	40	62	Severely Polluted
2.	586	10.5	2000	40	40	40	Less Polluted
3.	266	22	2700	60	40	54	Moderately Polluted
4.	311	11.5	2200	40	40	40	Less Polluted
5.	657	Water Sample not collected by UPPCB as the pond is completely encroached up.					
6.	659	Water Sample not collected by UPPCB as the pond is completely encroached up.					
7.	946	9.5	1700	40	40	40	Less Polluted
8.	443/994	Water Sample not collected by UPPCB as the pond is completely encroached up.					
9.	585/2	Water Sample not collected by UPPCB as the pond is completely encroached up.					
10	292/2	24	2700	80	40	68	Severely Polluted
11	60	28	3500	80	40	68	Severely Polluted
12	61	Water Sample not collected by UPPCB as the pond is completely encroached up.					
13	566	Water Sample not collected by UPPCB as the pond is completely encroached up.					

Out of 13 ponds , 6 ponds have no water while 3 ponds are severely polluted.

The objections made above and the following acts in present and past by UPPCB attests negligence and inclinations of UPPCB towards Nagar Panchayat, Kadaura to give them free hand to exploit the water bodies of the town.

1. In the Compliance reports of UPPCB dated August 30,2024 UPPCB admitted that Out of 13 ponds , 2 ponds are completely encroached and there is no water in 4 other ponds in rainy month of August. **No water in a pond in rainy month of August signals itself that pond has lost it depth completely and encroached up so report itself reflects that 6 ponds(Sr no 5 , 6 , 8 , 9, 12 & 13) has been completely paved up and encroached.** but in place of “completely encroached” UPPCB intentionally chooses to write “No Water” to save the Nagar Panchayat, Kadaura and UPPCB itself.
2. **The water spread area and command/catchment area of Ponds at Sr no 1,2,3,4,7,10 &11 are heavily encroached but UPPCB hid this important fact in the report.**
3. UPPCB admitted in the report that ponds at Sr no 10 domestic waste is disposed off but in reality domestic waste as well as faecal and sewage is being disposed and discharged into the ponds at Sr no 1,2,3,4,7,10 &11 without any treatment.
4. The compliance report of UPPCB dated August 30,2024 , make it clear **that UPPCB has not taken any action against the Nagar Panchayat, Kadaura/violators for non-compliance of the order dated 11.10.2022 till date .**
5. The collusion of UPPCB with Nagar Panchayat,Kadaura could easily be understood that with letter no H64304/C-2/MSW-23/2021 dated **10.09.2021 wherein UPPCB imposed an Environmental Compensation of ₹ 1,82,88,200/- to Executive Officer, Nagar Panchayat Kadaura for the exploitation of water bodies of the town, during the pursuance of OA no 41/2020).** But UPPCB never took any action to recover it

from Nagar Panchayat, Kadaura till date. (EA no 12/2024 is filed against OA no 41/2020). The true copy of the letter is annexed hereto and marked as **Annexure A-11**.

6. During the **period of 11.10.2022 to 22.08.2024,UPPCB never monitored /visited any pond of town** while applicant continuously informed them by mail/hard copy of complaints regarding non compliances of order of this tribunal dated 11.10.2022 and pitiable conditions of water bodies of the town.
7. The compliance report of UPPCB dated August 30,2024 **doesn't reflect any action taken by MS, UPPCB and RO,Jhansi,UPPCB in last two years to comply with the order of this hon'ble tribunal dated 11.10.2022 hence liable for punishment and penalty under section 26 &28 of NGT Act 2010.**

PRAYER

In light of the facts stated hereinabove it is most respectfully prayed that this Hon'ble Tribunal may kindly be pleased to:

1. issue the directions to **IIT, Kanpur** (only 70km away from town)/**Survey of India to prepare report of actual encroachment and water quality of all 13 ponds of the Nagar Panchayat, Kadaura** and or;
2. impose **penalty/punishment on MS,UPPCB & RO,UPPCB ,Jhansi under section 26 &28 of NGT act 2010 for non-compliance of order** of this tribunal dated 11.10.2022 and filing ambiguous report on pitiable conditions of ponds and or;
3. **direct the MS, UPPCB to recover the Environmental Compensation of ₹ 1,82,88,200/-from Nagar Panchayat, Kadaura which was imposed by UPPCB on 10.09.2021 but not recovered yet to stop the exploitations of water bodies of town by Nagar panchayat, Kadaura in form of encroachment and discharge of fecal and sewage without any treatment and/or;**

4. Pass any other / further order as this Hon'ble Court may deem fit and proper in the interest of justice.

Pushpeneha
APPLICANT

THROUGH

Ranjan Kr. Rai
RANJAN KUMAR RAI
ADVOCATE
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New Delhi

Dated: 05.10.2024



INDIA NON JUDICIAL ¹⁸⁶



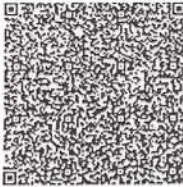
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Government of Uttar Pradesh

17

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 Purchased by : Pushpendra Kumar So Sh R B Dwivedi
 Description of Document : Article 4 Affidavit
 Property Description : Not Applicable
 Consideration Price (Rs.) :
 First Party : Pushpendra Kumar So Sh R B Dwivedi
 Second Party : Not Applicable
 Stamp Duty Paid By : Pushpendra Kumar So Sh R B Dwivedi
 Stamp Duty Amount(Rs.) : 10
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...APPLICANT

VERSUS

**NAGARPANCHAYAT, KADAURA &
ORS**

...RESPONDENT

Pushpendra



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AFFIDAVIT

I, Pushpendra Kumar, S/o Sh. R. B. Dwivedi, Ages-34, R/o Kadaura, District-Jalaun, UP 285203, presently at Hamirpur the applicant above named do hereby solemnly affirm and state as under: -

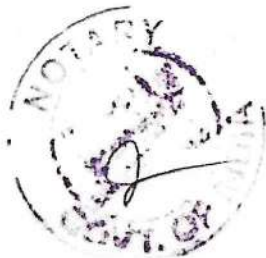
1. That I am the applicant in the abovementioned matter, as such, am conversant with the facts and circumstances of the case and competent to swear this affidavit.
2. That I have gone through the contents of the accompanying objections and say that the same are true and correct and has been drafted under my instructions. The contents thereof may kindly be read as a part hereof and are not being repeated herein for the sake of brevity.

DEPONENT

VERIFICATION:

Verified At Hamirpur on this 5th day of October 2024 that the contents of paras 1 and 2 of my above affidavit are true and correct to my knowledge, no part of it is false and nothing material has been concealed there from.

DEPONENT



Execution of this And Signed Before Me By Shri In The Court From My Office At /M Dated

hkr

Admitted By Shri Pushpendra Kumar
5/10/2024

INDRA PAL YADAV
NOTARY
DISTT -HAMIRPUR (U.P.)

अंतरिक्ष विभाग / DEPARTMENT OF SPACE
भारतीय अंतरिक्ष अनुसंधान संगठन / INDIAN SPACE RESEARCH ORGANISATION
राष्ट्रीय सुदूर संवेदन केन्द्र / NATIONAL REMOTE SENSING CENTRE
हैदराबाद / Hyderabad
सूचना अधिकार कक्ष / RTI Cell

सं. / No. CPIO:NRSC:RTI:2022:356

अक्टूबर / Oct 11, 2022

**Shri Pavan Dwivedi,
Shree Ram Bhavan,
Ramlila Maidan,
Kadavra (Baoni State),
Jalaun District,
Uttarpradesh - 285203.**

Sir/महोदय,

Subject: सूचना का अधिकार अधिनियम, 2005 के तहत
Information under RTI Act, 2005 - reg.

अधोहस्ताक्षरी द्वारा 18.09.2022 को प्राप्त अपने आरटीआई आवेदन दिनांक 19.09.2022 का संदर्भ ले, जिसमें आरटीआई अधिनियम, 2005 के तहत जानकारी मांगी गई है। एनआरएससी, हैदराबाद में अभिलेखों के संरक्षक से प्राप्त जानकारी को इसके साथ 03 (तीन) पृष्ठों में प्रसारित किया गया है। यह पन्ना।

Refer to your RTI Application dated 18.09.2022 received by the undersigned on 19.09.2022, seeking information under the RTI Act, 2005. The information obtained from the custodian of records at NRSC, Hyderabad is disseminated herewith in 03 (three) pages including this page.

राष्ट्रीय रिमोट सेंसिंग सेंटर का पहला अपील्य प्राधिकारी Wg.Cdr (Rtd) विभास सिंह गुप्ता, नियंत्रक, नेशनल रिमोट सेंसिंग सेंटर, बालानगर, हैदराबाद है - 500 037, फोन नंबर 040-23883878, फैक्स नंबर 040-23878648। ई-मेल: faa@nrsc.gov.in अपील, यदि आरटीआई अधिनियम की धारा 19 (1) के तहत इस पत्र की प्राप्ति की तारीख से 30 दिनों के भीतर किसी को पसंद किया जा सकता है।

The First Appellate Authority of the National Remote Sensing Centre is Wg.Cdr.(Rtd.) Vibhas Singh Gupta, Controller, National Remote Sensing Centre, Balanagar, Hyderabad - 500 037, Phone No. 040-23884005, Fax No.040-23878648. E-mail: faa@nrsc.gov.in. Appeal, if any may be preferred within 30 days from the date of receipt of this letter under Section 19(1) of the RTI Act.

भवदीय / Yours faithfully,

एस. नरसिम्हा राव

11/10/2022

एस नरसिम्हा राव / S. Narasimha Rao
केन्द्रीय लोक सूचना अधिकारी / CPIO,
एनआरएससी / NRSC,
Tel.No.040-23884022
FAX No.040-23878648
Email: cpio@nrsc.gov.in

संलग्न : यथोपरी / Encl: as above.

आरटीआई मामले / परमावश्यक
RTI MATTER/MOST URGENT

भारत सरकार / GOVERNMENT OF INDIA
अंतरिक्ष विभाग / DEPARTMENT OF SPACE
भारतीय अंतरिक्ष अनुसंधान संगठन/ INDIAN SPACE RESEARCH ORGANISATION
राष्ट्रीय सुदूर संवेदन केन्द्र v/ NATIONAL REMOTE SENSING CENTRE
हैदराबाद /Hyderabad
सूचना अधिकार कक्ष/RTI Cell

संएनआरएससी .एपीआईओ./आरटीआई /No.APIO.NRSC/RTI/41/2022

दिनांक/Date: 11.10.2022

सेवा में /To

केंद्रीय जन सूचना अधिकारी (सीपीआईओ)/
Central Public Information Officer(CPIO),
राष्ट्रीय सुदूर संवेदन केन्द्र/National Remote Sensing Centre,
बालानगर/Balanagar,
हैदराबाद/Hyderabad-500 037,फैक्स सं. /Fax No.040 2387 8648

महोदय/Sir,

विषय : सूचना अधिकार अधिनियम 2005-के अन्तर्गत सूचना के बारे में...

Sub: Information under the Right to Information Act, 2005 - Reg.

संदर्भ/Ref: एनआर संसीपीआईओ .:एनआरएससी:आरटीआई/ Lr.No.CPIO:NRSC:RTI:2022:356

दिनांक /dated 19.09.2022

कृपया उपरोक्त विषय के अन्तर्गत संदर्भित, त अपने पत्र का संदर्भ लें। श्री पवन द्विवेदी के द्वारा मांगी गई सूचना अभिरक्षक द्वारा प्रदान की जाती है तथा इसे आगे की कार्रवाई हेतु भेजने की व्यवस्था करें।

Kindly refer to your letter cited under reference on the above subject. The information sought by **Shri. Pavan Dwivedi** is furnished by the custodian and the same is sent herewith for arranging further action please.

पृष्ठों की सं/No. of Pages : 01 (One only)

सादर /With kind regards,

भवदीय/Yours faithfully,

पका

(एम.वी. पवन कुमार /M.V. Pavana Kumar)

एपीआईओ एनआरएससी , /APIO, NRSC

संलग्नक/ Encl: उपरोक्तानुसार / a.a.

Water Spread Area of Sadar Pond (586) was 0.93 ha in Sep, 2022.

National Remote Sensing Centre
RS Applications Area
Water Resources Group

30 Sep, 2022

From :

P. V. Raju
Group Director, Water Resources
RSAA

To :

Sri S Narasimha Rao
CPIO, NRSC

Sub: Information under RT Act 2005
Ref: No. CPIO:NRSC:RTI:2022:356 Dt. 19 Sep, 2022

Please find below the response to the information requested through online RTI application dt. 18.9.2022 filed by Shri. Pavan Dwvedi.

Information Sought	Information Provided by NRSC/ISRO
<ul style="list-style-type: none"> Please provide details of Water Spread Area of water body of ID 799241762679504014 of district Jalaun, UP as calculated/measured in month of August 2022 & September 2022 by water body Information System (WBIS) developed by NRSC/ISRO 	<ul style="list-style-type: none"> Water Spread Area of water body of ID <u>799241762679504014</u> of district Jalaun, UP as calculated/measured in month of <u>August 2022</u> is 1.26 ha under WBIS Water Spread Area of water body of ID <u>799241762679504014</u> of district Jalaun, UP as calculated/measured in month of <u>September 2022</u> is 0.93 ha under WBIS

[Handwritten signature]

[Handwritten signature]
30/09/2022
(P. V. Raju)

Received on 07/10/2022
at 1725 hrs.
[Handwritten signature]
07/10/2022

RTI-Response from ISRO-NRSC dated 09/10/23

अंतरिक्ष विभाग / DEPARTMENT OF SPACE
 भारतीय अंतरिक्ष अनुसंधान संगठन/ INDIAN SPACE RESEARCH ORGANISATION
 राष्ट्रीय सुदूर संवेदन केन्द्र / NATIONAL REMOTE SENSING CENTRE
 हैदराबाद /Hyderabad
 सूचना अधिकार कक्ष/ RTI Cell

सं. सीपीआईओ: एनआरएससी: आरटीआई: 2023:425
 No.CPIO:NRSC:RTI:2023:425

October 09, 2023

Shri Pawan Dwivedi,
Shri Ram Bhavan,
Ramlila Maidan,
Kadura (Baoni State),

Jalaun.

Uttar Pradesh - 285203

Sir/महोदय,

Sub: सूचना का अधिकार अधिनियम, 2005 के तहत
 Information under RTI Act, 2005 - reg.

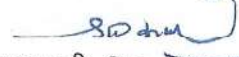
Ref: No.NRESC/R/E/23/00030 dated 22.09.2023.

With reference to the above application, the information provided by the custodian is as under:-

The information sought is already available in public domain at [https://bhuvan-wbis.nrsc.gov.in/?id=\(.....\)](https://bhuvan-wbis.nrsc.gov.in/?id=(.....)). You may enter the water body id at the space indicated (.....).

Appeal if any, on this reply may be submitted within 30 days of receipt thereof, to the First Appellate Authority, Shri Ankur Srivastava, Controller, National Remote Sensing Centre, Balanagar, Hyderabad - 500 037, Tel:- 040-23884005, E-mail: faa@nrsc.gov.in.

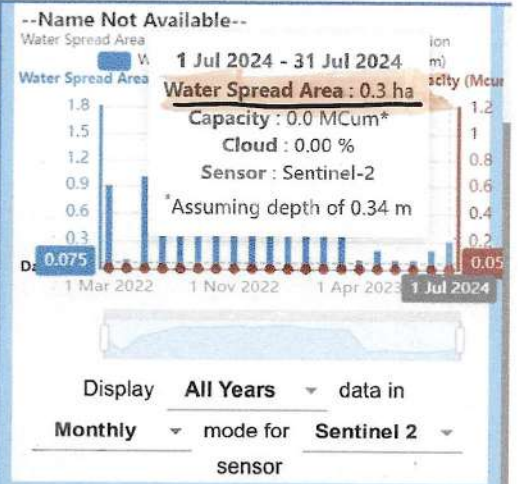
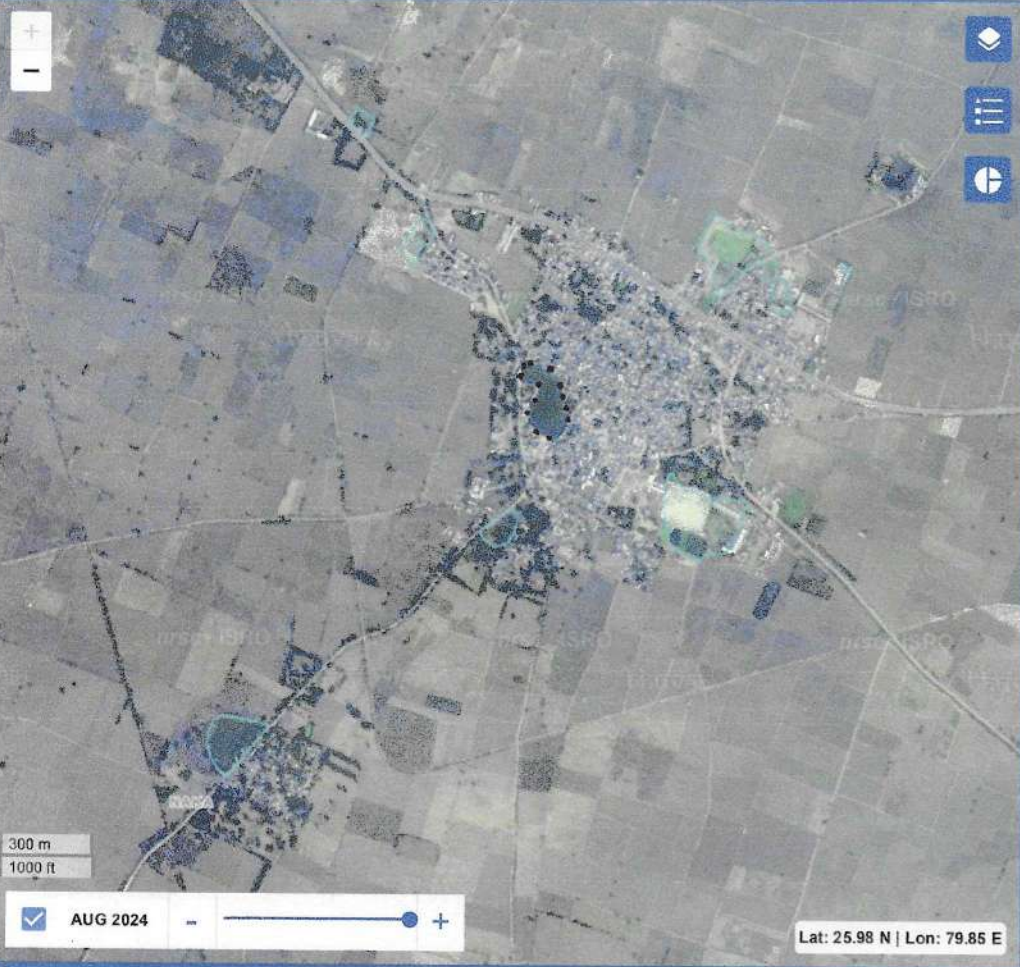
भवदीय / Yours faithfully,


 (श्री कुमार वी Sree Kumar. V)
 केन्द्रीय लोक सूचना अधिकारी/CPIO
 एनआरएससी/NRSC
 Tel.No.040-23884022
 Email: cpio@nrsc.gov.in

संलग्न : यथोपरी / Encl: as above.

192
Gate No 586

Water spread Area of Sadar Pond as on July 2024.
0.3 ha while in Khatauni area of the Pond
is 2.67 ha. [measured as per the RTI response
of JSRO-NRSC dated 09/10/23]



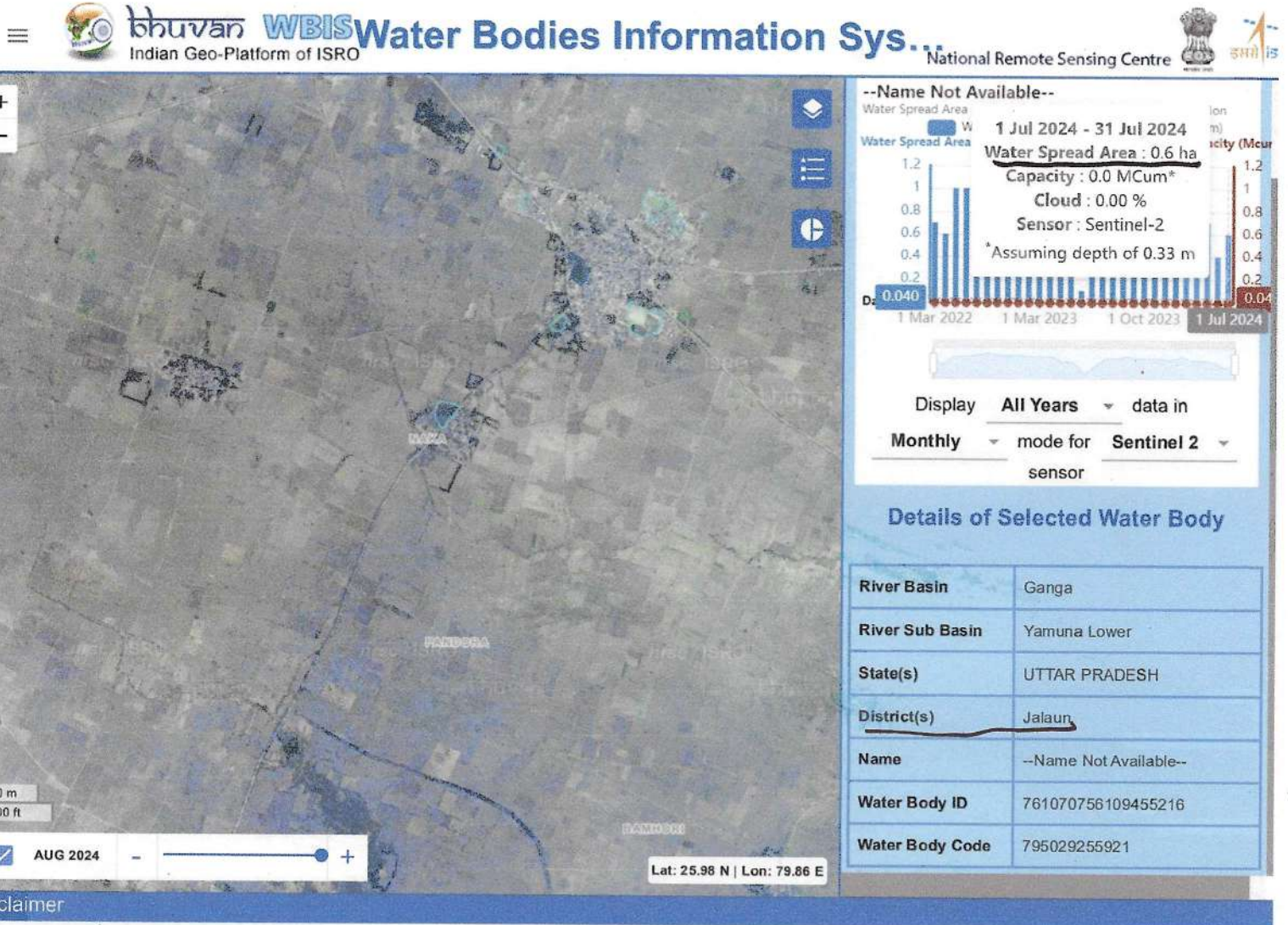
Details of Selected Water Body

River Basin	Ganga
River Sub Basin	Yamuna Lower
State(s)	UTTAR PRADESH
District(s)	Jalaun
Name	--Name Not Available--
Water Body ID	799241762679504014
Water Body Code	795006255906

193
Water spread Area of Jagnaha Talab as on July 2024,
[Crata No. 266]

is 0.6 ha while in Khatauni area of Pond 1.315 ha.

[Measured as per RTI response from
SSRO-NASC dated 09/10/23]



Heavy Encroachment on **194** Pond (586) as on **Annexure-25**
06/10/2024 **(A-2)**

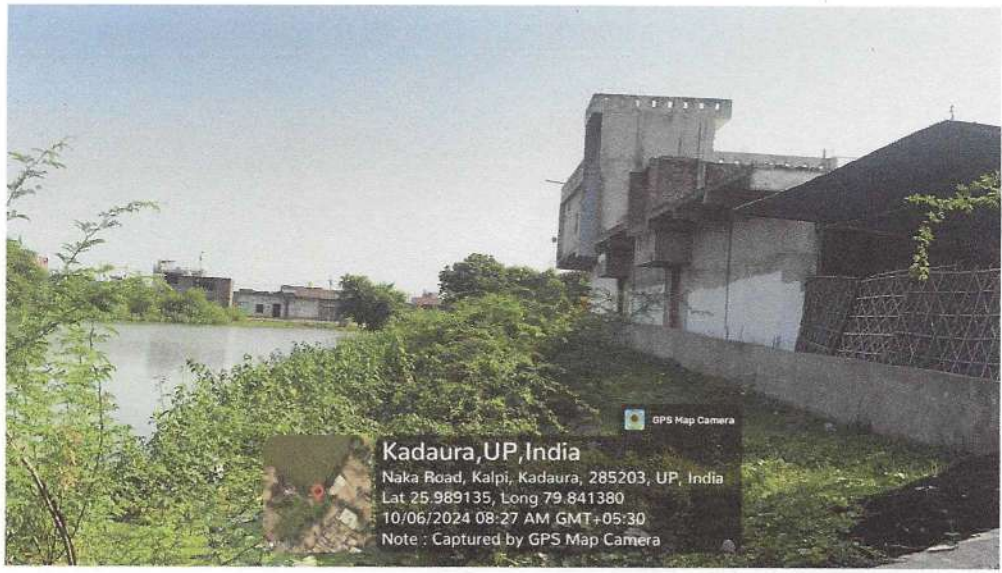


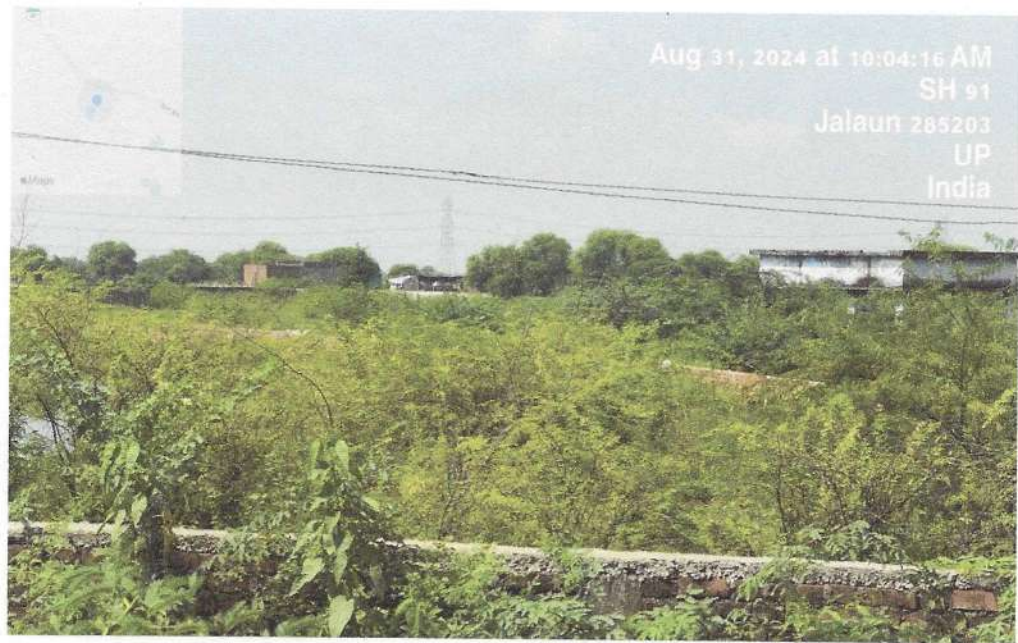
195
GARBAGE & ENCROACHMENT ON SADAR POND
(586).



Encroachment on Jagnaha Talab (196/266) as on 06/06/2024

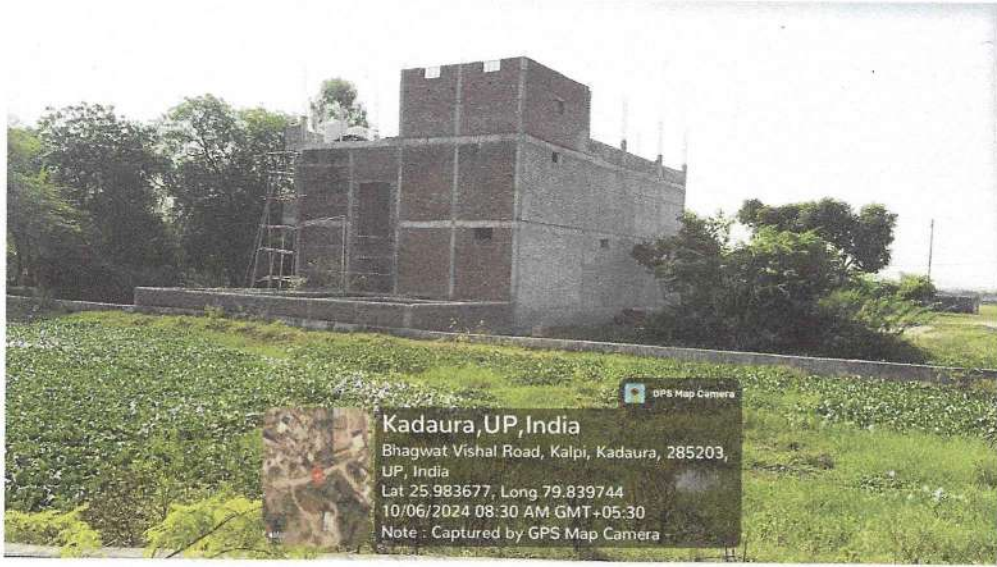
Annexure-A-3
(27)



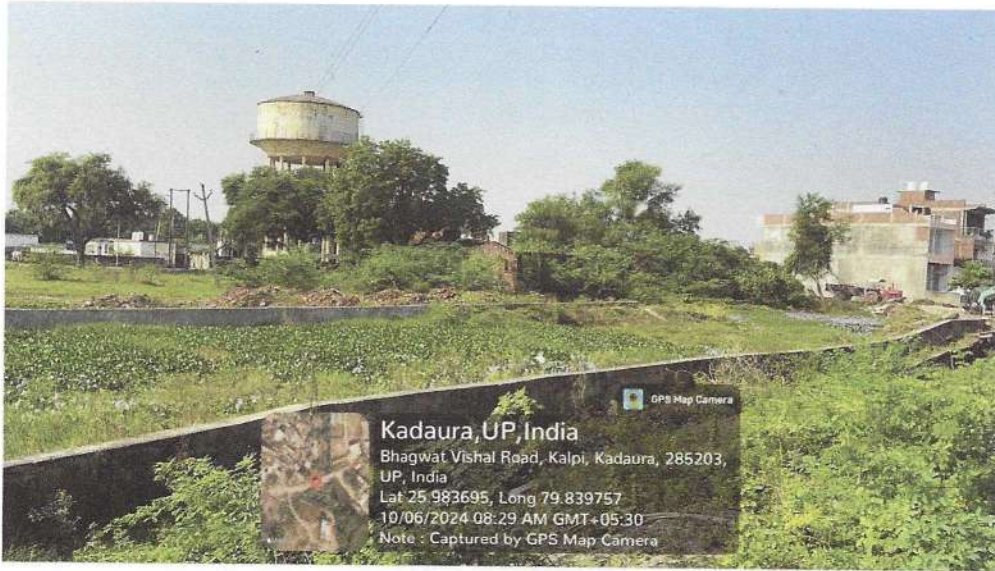


198
Permanent structures on completely palled
& dry pond (657).

Annexure-A-5
29



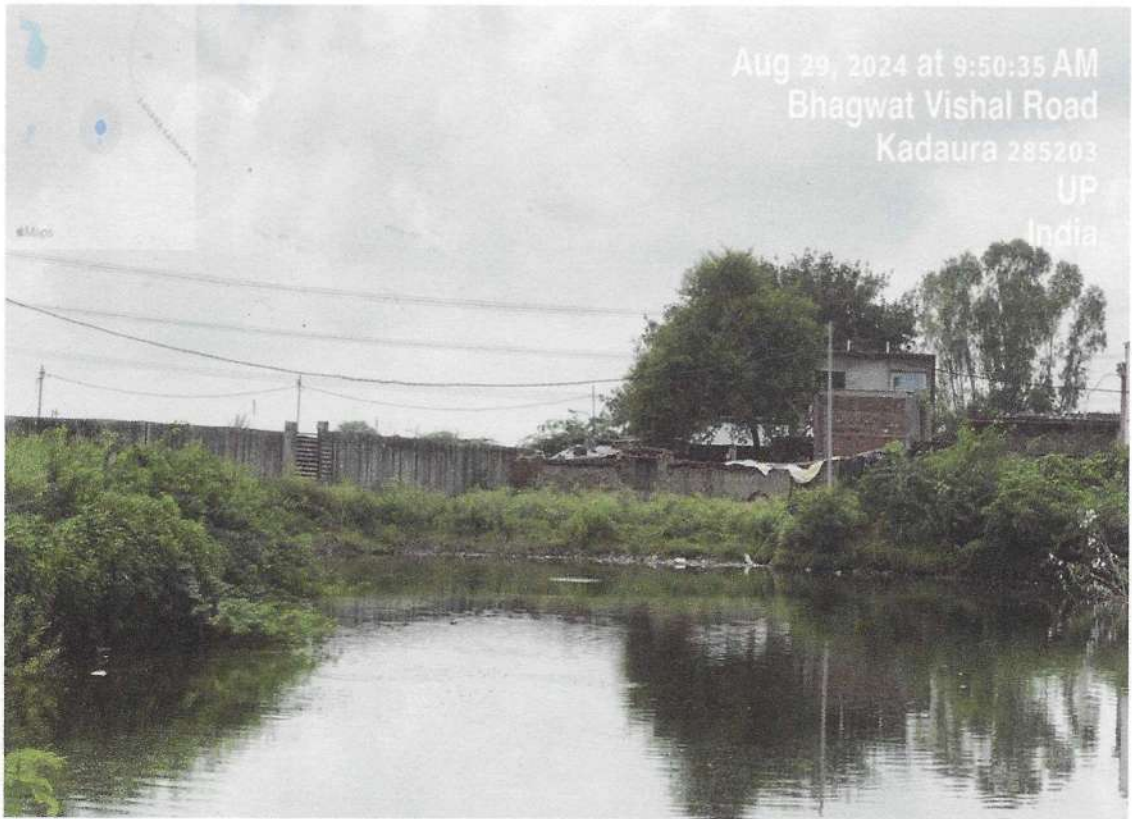
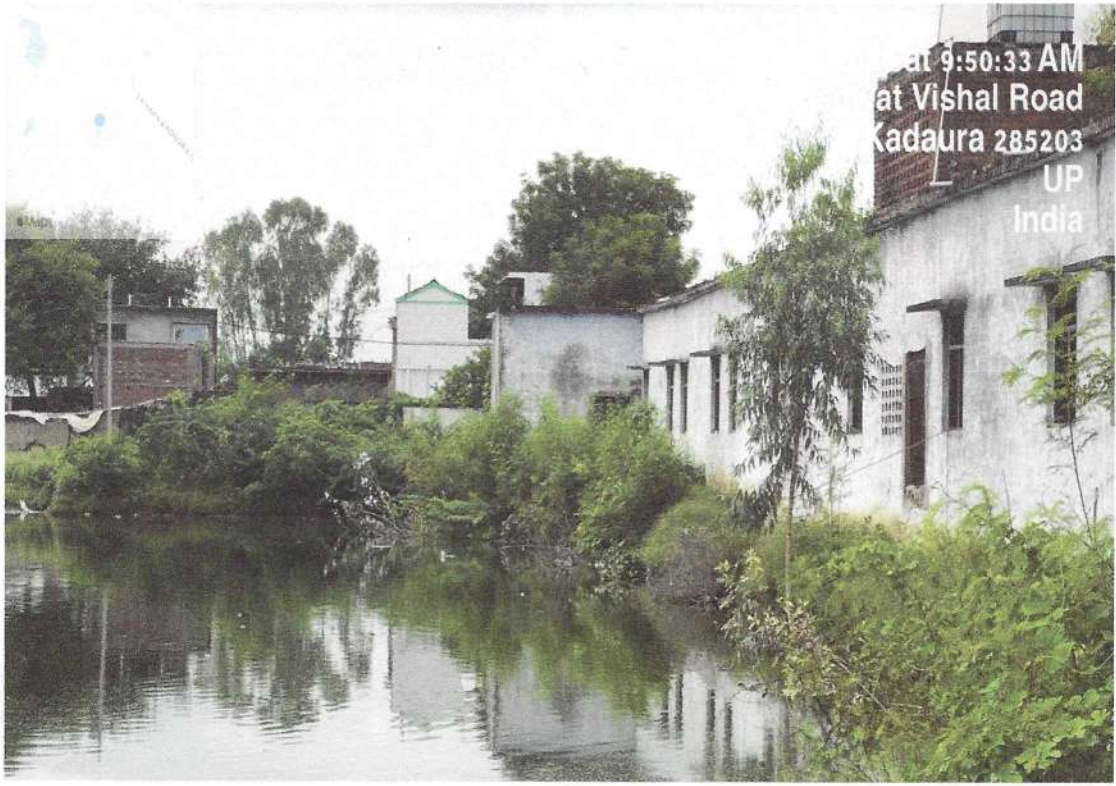
Completely dry & failed pond (65g).



Kadavra, UP, India
Bhagwat Vishal Road, Kalpi, Kadavra, 285203,
UP, India
Lat: 25.983695, Long 79.839757
10/06/2024 08:29 AM GMT+05:30
Note : Captured by GPS Map Camera

Remnant structures standing **200** inside the Bhairav Pond (946)

Annexure (A-7)
(31)



201

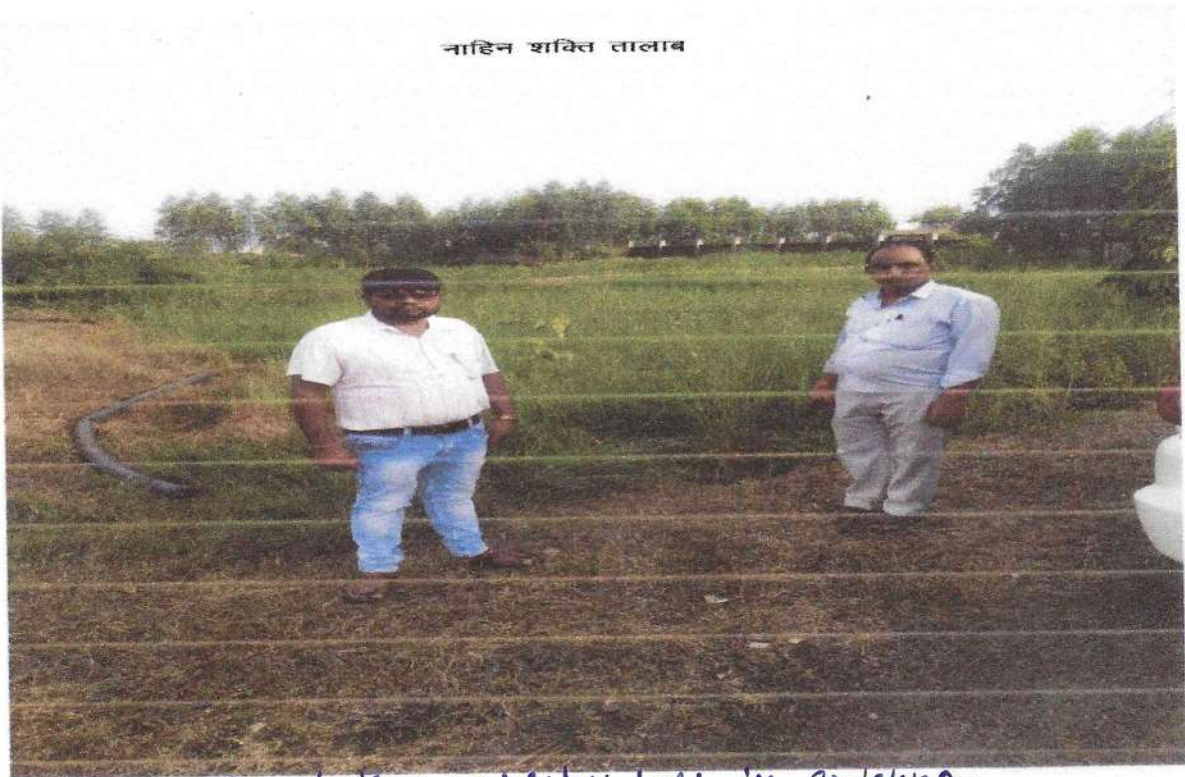
32

Discharge of Sewage, Faecal of the town into the Bhaisav
Rond (946)



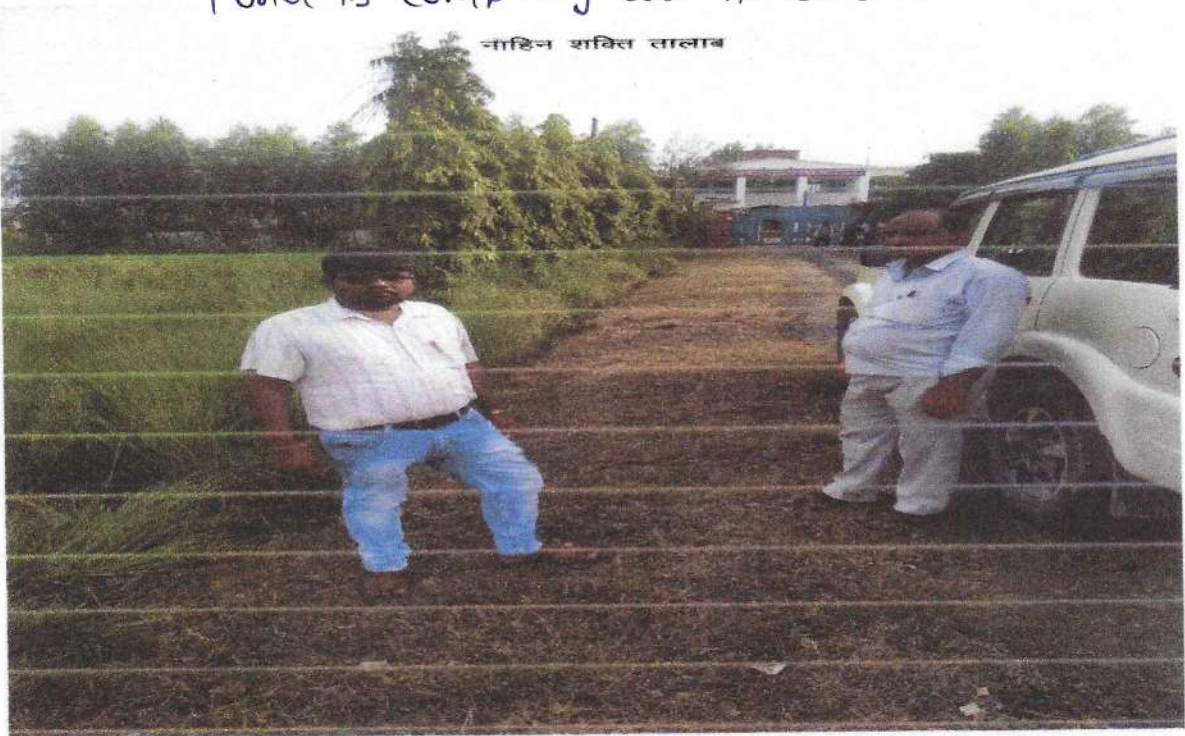
UPPCB itself proves Nagen Shakti Pond (443/994) is completely paved & Encroached.

नाहिन शक्ति तालाब



Pond is completely lost its existence.

नाहिन शक्ति तालाब



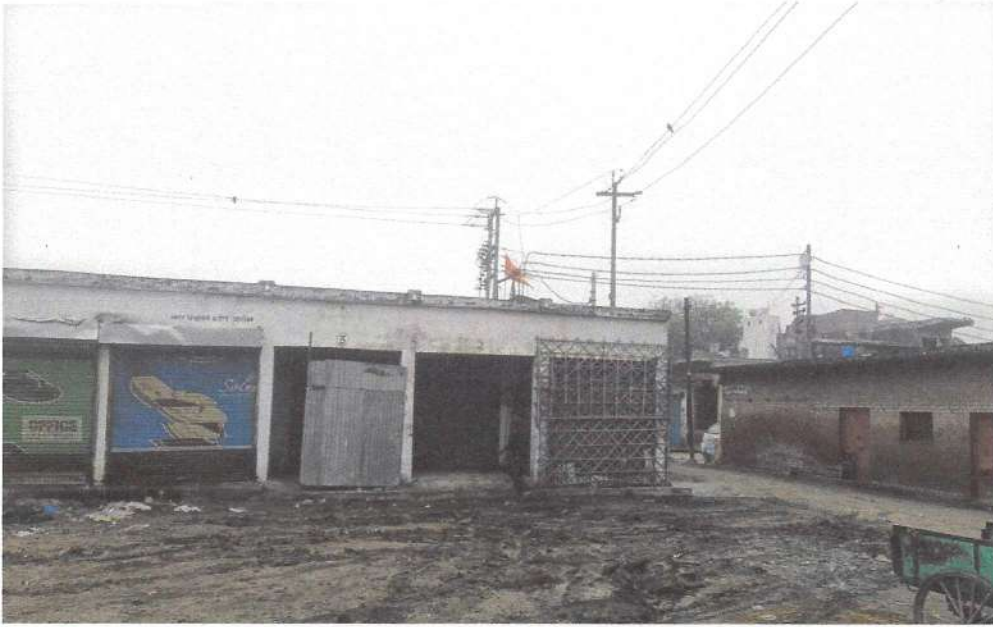
203

Annexure-A-9

Completely pulled & encroached pond 585/2.

34

shops has been built on the pond by Nagar Panchayat
Kadaura.





Discharge of domestic waste & sewage on dhobihara Pond.



संदर्भ सं० H64304/C-2/MSW-23/2021
Ref. No

दिनांक 10-8-2021
Date

सेवा में,

अधिकांसी अधिकारी,
नगर पंचायत कदौरा,
जनपद-जालौन।

पंजीकृत

विषय- मेसर्स नगर पंचायत कदौरा, जनपद-जालौन के विरुद्ध पर्यावरणीय क्षतिपूर्ति अधिरोपित किये जाने के सम्बन्ध में।

महोदय,

मेसर्स नगर पंचायत कदौरा, जनपद-जालौन का संयुक्त निरीक्षण उपजिलाधिकारी, कालपी एवं अधिकांसी अधिकारी, नगर पंचायत कदौरा के साथ दिनांक 27.02.2020 को किया गया था। निरीक्षण के दौरान एकत्रित किये गये जल नमूने में प्रचालकों के मान निर्धारित मानकों के अनुरूप नहीं पाये जाने एवं नगरीय क्षेत्र के घरेलू जल मल को बिना शुद्धिकरण किये ही सदर तालाब कदौरा पर भण्डारित किये जाने के कारण संदर्भित संस्था पर राज्य बोर्ड के पत्र संदर्भ सं० 99/O.A.-41/20 दिनांक 18.06.2020 द्वारा रुपये 1,82,88,200/- (रु० एक करोड़ बयासी लाख आठठासी हजार दो सौ मात्र) की पर्यावरणीय क्षतिपूर्ति अधिरोपित किये जाने हेतु कारण बताओ नोटिस प्रेषित किया गया था।

माननीय अध्यक्ष महोदय, ओवर साइट कमेटी को निरन्तर प्राप्त शिकायतों के परिप्रेक्ष्य में नगर पंचायत कदौरा, स्थित सदर तालाब का निरीक्षण क्षेत्रीय कार्यलय के अधिकारियों द्वारा दिनांक 20.07.2021 को किया गया। निरीक्षण आख्यानानुसार नगर पंचायत कदौरा, स्थित सदर तालाब के निरीक्षण के समय पाया गया कि तालाब में अभी भी नगरीय सीवेंज दो नालियों के माध्यम से निस्तारित हो रहा है जिसके कारण तालाब कैचमेन्ट ऐरिया में गंदगी एवं दुर्गन्ध व्याप्त है। अधिकांसी अधिकारी, नगर पंचायत, कदौरा द्वारा सदर तालाब कदौरा की साफ-सफाई करायी गयी तथा तालाब कैचमेन्ट ऐरिया की स्लज एवं गाद आदि को तालाब के आन्तरिक क्षेत्र में सूखने के लिये भण्डारित कराया गया है जिसमें विभिन्न प्लास्टिक उत्पाद, पॉलीथीन व अन्य आपत्तिजनक नगरीय टोस अपशिष्ट सामग्री आदि मिश्रित होने के कारण अप्रिय स्थिति का बोध हुआ है। तालाब सीमा क्षेत्र में पूर्व से निर्मित स्थाई निर्माण अभी डिमोलिस नहीं हुये हैं।

राज्य बोर्ड के पत्र संदर्भ सं० 99/O.A.-41/20 दिनांक 18.06.2020 द्वारा पर्यावरणीय क्षतिपूर्ति अधिरोपित किये जाने हेतु जारी कारण बताओ नोटिस के सम्बन्ध में अपर जिलाधिकारी (वि०/रा०) जालौन के माध्यम से प्राप्त अधिकांसी अधिकारी, नगर पंचायत, कदौरा-जालौन के पत्रांक 8444/न०प०कदौरा/2020-21 दिनांक 14.09.2020 द्वारा प्राप्त प्रतिउत्तर विधिक दृष्टिकोण से ग्राह्य नहीं है।

क्षेत्रीय अधिकारी की आख्या दिनांक 23.07.2021 द्वारा मेसर्स नगर पंचायत कदौरा, जनपद-जालौन को पूर्व में जारी कारण बताओ नोटिस दिनांक 18.06.2020 की पुष्टि करते हुए रु० 1,82,88,200/- (रु० एक करोड़ बयासी लाख आठठासी हजार दो सौ मात्र) की पर्यावरणीय क्षतिपूर्ति अधिरोपित किये जाने की संस्तुति की गयी है।

क्षेत्रीय अधिकारी, झांसी की संस्तुति एवं सक्षम स्तर से अनुमोदनोपरान्त उद्योग मेसर्स नगर पंचायत कदौरा, जनपद-जालौन पर रु० 1,82,88,200/- (रु० एक करोड़ बयासी लाख आठठासी हजार दो सौ मात्र) पर्यावरणीय क्षतिपूर्ति के रूप में अधिरोपित किया जाता है तथा निर्देशित किया जाता है कि पर्यावरणीय क्षतिपूर्ति की धनराशि को उ०प्र० प्रदूषण नियंत्रण बोर्ड के यूनिटन बैंक ऑफ इण्डिया, विभूति खण्ड, गोमती नगर, लखनऊ स्थित बैंक के खाता संख्या-701502010002104 आई०एफ०एस० कोड-UBIN0570150 में एक सप्ताह के अन्दर जमा कर, जमा की गयी धनराशि का साक्ष्य क्षेत्रीय कार्यलय एवं बोर्ड मुख्यालय में प्रस्तुत करना सुनिश्चित करें। अन्यथा की स्थिति में पर्यावरणीय क्षतिपूर्ति की वसूली हेतु भू-राजस्व की भांति वसूली की कार्यवाही की जायेगी, जिसका सम्पूर्ण उत्तरदायित्व उद्योग स्वामी का स्वयं का होगा।

सक्षम अधिकारी के अनुमति से निर्गत।

भवदीय

मुख्य पर्यावरण अधिकारी (वृत्त-2)

प्रतिलिपि-

1. जिलाधिकारी, जालौन को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित।
2. क्षेत्रीय अधिकारी उ०प्र० प्रदूषण नियंत्रण बोर्ड, झांसी को इस निर्देश के साथ कि उद्योग से पर्यावरणीय क्षतिपूर्ति धनराशि निर्धारित समय सीमा में प्राप्त न होने की स्थिति में भू-राजस्व की भांति वसूली हेतु कार्यवाही की जाये।

मुख्य पर्यावरण अधिकारी (वृत्त-2)

टी.सी. - 12 वी, विभूति खण्ड, गोमती नगर,
लखनऊ - 226 010
दूरभाष : 0522-2720828, 2720831
फैक्स : 0522-2720764, 2720676
ई-मेल : info@uppcb.com
वेबसाइट : www.uppcb.com

T.C.-12 V, Vibhuti Khand, Gomti Nagar,
Lucknow - 226 010
Phone : 0522-2720828, 2720831
Fax : 0522-2720764, 2720676
E-mail : info@uppcb.com
Website : www.uppcb.com

“Indicative Guidelines for Restoration of Water Bodies”

(in compliance to Hon'ble NGT Order dated 10.05.2019 in M.A.No. 26/2019 in OA.No. 325 of 2015)



Central Pollution Control Board

(Ministry of Environment, Forest and Climate Change, Govt. of India)

Parivesh Bhawan, East Arjun Nagar

DELHI-10 032

(www.cpcb.nic.in)

June 2019

CONTENTS

S.No	Description	Page No.
1	Introduction	1
2	Recognition Phase	5
3	Restoration Phase	8
4	Protection Phase	16
5	Improvement Phase	23
6	Sustenance Phase	38
7	References	39
8	List of Figures	
	Figure 1. A Model Lake or Pond Restoration Technique	28
	Figure 2. Model Flow Chart for Restoration of Pond or Lake	29
	Figure 3. Model Flow Chart for Rejuvenation of Polluted Rivers	37
	Figure 4. Flow Chart Showing Criteria for Categorization of River Monitoring Location	48
	List of Annexures	
	Annexure-I: Water Quality Criteria-Designated Best Use	41
	Annexures-II: Criteria for categorization of river monitoring location	42

Indicative Guidelines for Restoration of Water Bodies (Polluted Lakes, Ponds and Rivers)

1 Introduction

Adequate availability of water of required quality is pre-requisite for survival and quality of human life. Surface water bodies like lakes, ponds, reservoirs, tanks and rivers were treated as community resource or asset over the centuries. In urban areas also such water bodies played an important role as a source of drinking water, absorption of flood water and a conduit for ground water recharge. They were being nurtured, protected, conserved and managed by the active participation of the local community without any code of conduct or rule. In turn, these water bodies have been catering the local human and livestock populations. The introduction of public water supply and ground water development through tube wells and hand pumps in the modern times, coupled with urbanization and industrialization induced pollution, a tectonic shift in the attitude of the people towards these water bodies has been witnessed. Both locals as well as the government have started neglecting this asset and have stopped caring, nurturing and conserving these community resources. Mushrooming urban, industrial and infrastructure development has further changed the status of these water bodies from community resources to a mere dumping ground or sink for solid wastes, construction debris, domestic sewage, industrial effluents, religious offering etc. resulting in severe degradation in the quality of such resources.

India has had abundant supply of water resources. However, from being a water abundant country India is gradually progressing towards water scarcity due to increasing population pressure, urbanization and uncontrolled growth. At present it is sustaining 18 per cent of world population with 4 per cent of global water

resources. Therefore, management of water resources has assumed great importance. Today availability of water resources is a major issue and is a big challenge facing our country.

In order to revive, restore and rehabilitate the traditional water bodies, the Government of India launched a Scheme for Repair, Renovation and Restoration (RRR) of water bodies which has multiple objectives like comprehensive improvement and restoration of water bodies thereby increasing tank storage capacity, ground water recharge, increased availability of drinking water, improvement in agriculture/horticulture productivity, improvement of catchment areas of tank commands, environmental benefits through improved water use efficiency by promotion of conjunctive use of surface and ground water, community participation and self-supporting system for sustainable management for each water body, capacity Building of communities in better water management and development of tourism, cultural activities, etc. by providing Central Grant to State Governments under a Pilot Scheme directly linked to agriculture during the remaining period of Xth Five Year Plan in January 2005. Keeping in view the benefits arising out of the implementation of the scheme, it was extended to XII Plan as well. Further, the Ministry of Environment, Forest and Climate Change is implementing a Centrally Sponsored Scheme of National Plan for Conservation of Aquatic Eco-systems (NPCA) since February, 2013 for conservation and management of identified lakes and wetlands in the 11 country in a holistic and integrated manner. Under the scheme financial assistance is provided to the concerned State Governments for undertaking various activities for conservation of wetlands and lakes, which also include a small component of lake front development and beautification, especially in urban lakes.

The National Water Policy (2012) formulated by MoWR, RD&GR advocates conservation, promotion and protection of water and highlights the need for augmenting the availability of water through rain water harvesting, direct use of

rainfall and other management measures. Further, the Standing Committee on Water Resources (2012-13) in their 16th Report on "Repair, Renovation and Restoration (RRR) of Water Bodies" also substantiated that *encroachment on water bodies is threatening the existence of a large number of water bodies and throwing consequent challenges of depleting ground water resources, occurrence of devastating floods in urban areas as well as water scarcity. Afore-said Committee suggested steps required to remove encroachment and to restore the water bodies.*

In recent years several metro cities such as Mumbai and Chennai have witnessed unprecedented flood. Encroachment of river bed is one of the reasons of flooding since it reduces the desired waterway of the river. Inadequacies of flood protection works, reduction in the water holding capacity of natural reservoirs in the basin due to progressive siltation, breaching of river banks, raising of river bed caused by deposition of silt are also the reasons. Encroachments happen due to number of local factors, thus issue is to be looked into by concerned State Government as per the prevailing rules and regulations of the respective State/UT.

As per MoWR, RD & GR, total number of water bodies have declined in the States which may be attributed to (i) increase in population and density of population per square kilometer; (ii) change in land use pattern; (iii) shift from paddy based agriculture to cash crop cultivation; (iv) depletion of ground water; (v) rapid Urbanization; (vi) unplanned urbanization and development activities; (vii) boom in construction activity; (viii) new water bodies have been developed to meet the additional requirement of water for drinking water and irrigation arising due to increase in population; (ix) some of the water bodies mainly, wells in southern group of islands were lost due to submergence of coastal area during tsunami in 2004.

NITI Aayog based on a study warning that India is facing its 'worst' water crisis in history and that demand for potable water will outstrip supply by 2030 if remedial steps are not taken. Nearly 600 million people faced high to extreme water stress. Also, made predictions that twenty-one cities, including Delhi, Bengaluru, Chennai and Hyderabad will run out of groundwater by 2020, affecting 100 million people. If matters are to continue, there will be a 6% loss in the country's Gross Domestic Product (GDP) by 2050. Moreover, critical groundwater resources, which accounted for 40% of India's water supply, are being depleted at "unsustainable" rates and up to 70% of India's water supply is "contaminated" *'Therefore, water resource available to the country should be brought within the category of utilizable resources to the maximum possible extent.*

Therefore, existing scenario necessitates formulation of guidelines for restoration of water bodies keeping in view (i) to make pollution free water bodies and to meet the desired water quality criteria; (ii) to preserve excess water during monsoon, (iii) to restore and augment storage capacities of water bodies (iv) to serve and enhance ground water recharge; (v) increased availability of water for different intended purposes etc., These guidelines are only indicative guidelines and limited to restoration of ponds, lakes, polluted rivers or streams and divided into two parts i.e., stagnated surface water bodies such as ponds, lakes and rolling surface water bodies such as rivers or streams. However, concerned stakeholders are advised to conduct detailed gap analysis to enable to include related action plans for restoration of water bodies for ensuring compliance to Hon'ble NGT order dated 10.05.2019. For understanding aspects relating to restoration of water bodies, the documents already published or issued by Ministry of Water Resources, River Development and Ganga Rejuvenation (MoWR, RD & GR), Ministry of Housing and Urban Development also be referred as given at Sl. No. 7 References of these indicative guidelines.

This requires an understanding on the status of the water bodies, their suitable use, need for management and conservation so that they serve as a good

resource for future, potential strategies for long-term management especially in the urban areas, which are facing severe water shortage. It should include (i) Recognition Phase, (ii) Restoration Phase; (iii) Protection Phase; (iv) Improvement Phase and (v) Sustenance phase

2. Recognition Phase

Identification and recognition of the problem (inventory of existing and lost water bodies (due to encroachment, pollution, diversion etc.), analysis of cause of the problem and its effect and development of alternative solutions of problem as detailed below: -

2.1 Collection and maintenance of historical information relating to the water bodies

Based on the records available or remote sensing data or GIS maps, interaction with the public living in the vicinity of the water body, following information relating to the water bodies should be collected and records maintained by the concerned department in the State/UT: -

2.1.1 Stagnated water bodies such as ponds/lakes

- A. **Geographical details of the water body:** - GPS Location and address of the water body, size or dimensions, area, elevation above mean sea level, ownership of the water body, boundaries with earmarking, map of water body (Digital map or remote sensing or satellite map over the years/National Wetland Atlas) with salient features
- B. **Hydrological description of the water body:** - area, category of lake or pond (natural or man-made), average and maximum depth of stored water (during monsoon and non-monsoon period), total storage capacity, main source of water (rainfall/groundwater seepage/catchment

runoff/direct or indirect flow from any river or stream or creek), water permanence (permanent or intermittent), destination of excess water from pond or lake, purpose used to serve (like drinking water source, fisheries and agriculture or cultivation of aquatic food plants, recreational and aquatic sports, ground water recharge, act as a sink for sediments, habitat for noteworthy animal species, migratory birds or any other purpose), status of lakes or ponds in terms of % open water and aquatic vegetation.

C. Catchment Description

- Details on natural drains or flood channels and their flows contributing to water accumulation.
- Major Towns, total population living around the water body, any sewage contribution from the towns, total sewage generation, total no. of existing STPs and their treatment capacities, if any.
- Major industrial clusters or estates contributing to pollution in water body, total no. of industries (sector-wise), sector-wise total industrial effluent generation, existing industrial effluent treatment capacity [(both captive and Common Effluent Treatment Plants (CETPs)], if any.
- Total waste generation (waste like municipal solid waste, plastic waste, industrial hazardous waste, construction and demolition waste), existing provision for collection, transportation, treatment and disposal practices in the vicinity;
- Any other relevant information such as: - (i) Declared Wetland Ramsar sites, (ii) Bio-diversity details such as flora and fauna biodiversity (list of plant species, list of animal species, species of conservation significance (rare, endangered, threatened, endemic species), major plant invasive alien species and extent of invasion, major animal invasive alien species and extent of invasion.

2.1.2 River or streams

A. Digital map of river under consideration with its tributaries showing salient features.

B. Geographical and Hydrological description of polluted river

Origin of the river and confluence with any other water body, length of travel of the river before confluence with any other water body, velocity of flow (in m/sec), average cross-sectional area (in m²), average depth of flow (in m) during monsoon and non-mon-soon period, volume of flow or discharge (in m³/sec), tributaries of the river under consideration for restoration, GPS location details of all the tributaries and drains confluence with the river or stream; drains or channels contributing to river pollution;

C. Catchment description

- Purpose used to serve by the river or streams
- Major towns along the banks of the river, town-wise total population (with projection for the next 20 years), total water consumption (both supply by local or urban bodies and the ground water consumption), total sewage generation pattern, no. of STPs and the treatment capacity.
- Major industrial estates or clusters along the banks of the river, Industry-sector –wise no. of industries, total water consumption, total industrial effluent generation and existing mechanism for treatment of industrial effluent.
- GPS location details of STPs, CETPs and their capacities, if any
- Ground water status, its utilization and the quality.

- Agricultural practices and the control measures with respect to agricultural runoff.
- Flora and fauna including biodiversity etc.

Also, water being state subject, the State Government or Union Territory Administration should assign the task of maintaining historical records pertaining to each water body to concerned Department in the State/UT and also to designate one responsible Department to enable to take necessary remedial actions as and when situation demands.

2.2 Digital Mapping of all the collected information

All the collected information to be located on the map and such details to be periodically updated and maintained by the concerned department in the State/UT.

3. **Restoration Phase** includes declaring the 'designated best use' in order to formulate strategies and to decide degree of treatment required for restoration of such water body, if required, selection of best solution to problems identified and application of the solution to the problems of the land which vary from case-to-case, to achieve the designated best use water goals as detailed below: -.

3.1 Designation of water body for its use by the State/UT

The landscape of India is dotted with large number of lakes, reservoirs and wetlands. Historically, the water bodies such as ponds or lakes have met water demands of the population for centuries and a community management system had sustained them for a long period of time.

In a water body or its part, water is subjected to several types of uses. Depending on the types of uses and activities, water quality criteria have been specified to determine its suitability for a particular purpose. Among the various

types of users there is one use that demands highest level of water quality or purity and that is termed as "Designated Best Use" in that stretch of water body. Based on this, water quality requirements have been specified for different uses in terms of primary water quality criteria. The Primary Water Quality Criteria for bathing water already prescribed under Environment (Protection) Rules, 1986.

Every pond, lake, river or stream falling under the jurisdiction of the concerned Department of the State Government or UT Administration is required to declare for its 'designated best use' in order to formulate strategies and to decide degree of treatment required for restoration of such water body, if required. In the absence of such information, it would be difficult for the regulatory authorities to formulate the strategies to be prepared in case restoration of such water bodies is required.

Water being the State subject, such list of water bodies with designated best use with all the relevant information collected by the concerned Department of the State/UT Administration is required to be submitted to the concerned State Pollution Control Board (SPCB)/Pollution Control Committee (PCC), Central Pollution Control Board (CPCB) as well as MoEF & CC, MoWR, RD & GR.

3.2 National Restoration Goals (Ponds, Lakes and Rivers)

'Water quality criteria-designated best use' water quality parameters as given at **Annexure-I** is required to be followed as 'National Restoration Goals (for Ponds, Lakes or Rivers)'. However, this national restoration goals or criteria given at Annexure-I is only indicative and national restoration goals issued from time to time need to be followed for restoration of water bodies.

Monitored water quality of the water body (lakes and ponds) for relevant parameters (monitored at least 8 times in a year) (average mean value) is compared with the 'National Restoration Goals'. In case of ponds or lakes, if the monitored water quality of the selected water body is complying at least i.e.,

6 out of 8 times to the designated best use water quality parameters, then such pond or lake is fit for the 'designated best use' and if not then requires remedial measures for its restoration. *This criterion is applicable only in case of ponds and lakes.*

*In case of rivers or streams, the criteria issued from time to time by CPCB for categorization of monitoring location need to be followed and accordingly, the strategies to be formulated for its restoration to achieve at least bathing water quality criteria. Criteria for categorization of river monitoring location is are given in Annexure-II. **This criterion is to screen the potential locations having pollution (w.r.t bathing water quality parameters i.e., BOD and Faecal Coliform only) and requires more comprehensive examination to identify all the possible sources of pollution.***

3.3 Steps to be followed for restoration of stagnated polluted ponds or lakes

Conservation and restoration requires a systematic and comprehensive plan to study selective and representative freshwater ecosystems. Details of the study should include the status of ponds or lakes or rivers, their suitable use, management and conservation so that they serve as a good resource for future use and formulation of strategies for long-term management especially in the urban areas.

3.3.1 World Lake Vision

The World Lake Vision has been developed by International Lake Environment Committee (ILEC), Japan (<https://www.ilec.or.jp/en/pubs/>), in collaboration with UNEP , aiming at illuminating the growing crisis in management of lake ecosystem, articulating principles to guide the transition towards managing lakes for their sustainable use and to provide a practical blueprint for ensuring long-term health of lakes and integrity of their survival and economic development. The Seven Principles of Sustainable Lake Management are:

- A harmonious relationship between humans and nature is essential for the sustainable use of lakes.
- A lake drainage basin is the logical starting point for planning and management actions for sustainable lake use.
- A long-term, preventive approach directed to preventing the causes of lake degradation is essential.
- Policy development and decision making for lake management should be based on sound science and best available information.
- The management of lakes for their sustainable use requires the resolution of conflicts among competing users of lake resources taking into account the needs of present and future generations and of nature.
- Citizens and other stakeholders should be encouraged to participate meaningfully in identifying and resolving critical lake problems.
- Good governance, based on fairness, transparency and empowerment of all stakeholders, is essential for sustainable lake use.

The restoration of any water body should be considered only based on the needs and its utilities. *General steps to be followed for restoration of water bodies includes following: -*

3.3.2 Assessment of water quality of the selected water body

Water quality of all the designated best use water bodies are required to be monitored for relevant parameters and as per frequency prescribed under 'guidelines for water quality monitoring 2017' by Ministry of Environment, Forest and Climate Change (MoEF & CC). *Wherever, frequency is not suggested, water bodies are required to be monitored following the standard protocols for collection of samples by the concerned department at least once in a month or but not less than 08 months in a year (covering pre and post-monsoon period)*

3.3.3 Need for restoration of water body

The monitored values of the water body is analyzed based on the criteria suggested under these guidelines or criteria issued from time to time by CPCB for identification of polluted lakes or ponds or rivers or streams and decision be taken for restoration of water body. The criteria suggested for river monitoring location is to use for initial screening and identification of potential hotspots on the river. A comprehensive examination of water quality is required for identifying sources.

3.3.4 Identification of sources of pollution, quantification and assessing detailed gap analysis

Following steps to be followed for identification of sources of pollution, its quantification and for carrying out detailed gap analysis

A. Desk Review and Reconnaissance Survey

Identification of various sources contributing to pollution in ponds or lakes—need to be carried out based on desk survey (available information or data/ google map/ historical records) and physical reconnaissance survey (based on physical visual observations, interactions with the local public etc.,) for identification and ascertaining the sources of pollution of ponds or lakes. All the possible sources of pollution should be identified which may be

- open channels or drainage channels contributing untreated sewage or untreated or partially treated effluent discharge from existing sewage treatment plant in the vicinity (or)
- any untreated industrial effluent discharges either from the individual industry or any common effluent treatment plant (CETP) located in the vicinity (or)

- improper disposal of solid waste (plastic waste/ municipal solid waste/industrial hazardous waste/sludges from septic tanks or sewage treatment plants (STPs) or hazardous waste disposal from common effluent treatment plants (CETPs) (or)
- Run off from nearby agricultural fields, if any.
- Social and cultural misuse of ponds or lakes by local communities especially for immersion of idols during festival seasons.
- Any open-defecation around the ponds or lakes by the people living in the vicinity due to lack of sanitary facilities in their dwellings or colonies and fencing all around such water body.
- Physical condition of weed growth and necessity for dredging- Aquatic plants growing in ponds and lakes are beneficial for fish and wildlife as they provide food, dissolved oxygen, and spawning and nesting habitat for fish and waterfowl. Aquatic plants can trap excessive nutrients and detoxify chemicals. However, dense growths (over 25% of the surface area) of algae and other water plants can cause (i) Fish kills; (ii) Fish flavor problems; (iii) Pond water odor problems; (iv) Drinking water taste problem and (v) Stunted fish growth.
- Silting or sediments in the ponds or lakes due to improper disposal of waste including construction and demolition waste or silt contribution from drainage channels which reduces storage capacity and accumulation of contaminated sludges.
- Status of aesthetic conditions around the water body
- Condition of the banks or bunds, spill over (provision to ensure smooth flow of excess floods on downstream especially during monsoon period) or flood channels including obstructions if any.

- Encroachment of waterbodies due to urbanization
- Condition of Eutrophication of lakes or ponds due to inadequate measures (due to indiscriminate discharge of Industrial effluents, run-off from agricultural fields, refuse and discharge of sewage, domestic wastes like food remnants, soaps, detergents cause depleted levels of dissolved oxygen in water lead to a situation where other aquatic life-forms cannot survive).
- Available In-situ available technological options for restoration of ponds or lakes (such as aeration, bio-remediation) in lakes or plants)

B. Detailed gap analysis

Detailed gap analysis to be made w.r.t municipal sewage, industrial effluent and waste management with a projection of at least 15 to 20 years, existing infrastructure for management of municipal sewage, industrial effluents and waste management in the catchment area of the water body under consideration for its restoration including volumetric flow details of all the channels or drains contributing to pollution in water body, as detailed below: -

- **Sewage management:** - Total population (with projected population at least for the next 20 years) living around the water body, total water consumption (taking into account both water supply by local/urban bodies as well as ground water consumption), total sewage generation (with projected generation quantities), total no. of existing STPs and their treatment capacities and the observed gap with regard to the sewage management (gap may be estimated in the catchment of waterbody).

- **Industrial effluent management:** - Industrial clusters or estates contributing to pollution in water bodies, total no. of industries, estimation of total water consumption by the industries, total industrial effluent generation, existing treatment capacity (both captive and common effluent treatment plants (CETPs), gap in industrial effluent management and the requirement for captive or common effluent treatment plants
- **Waste Management:** - waste-wise total waste generation, existing provisions for collection, transportation, treatment and disposal (in compliance to the concerned rules) with their capacities and waste-wise gap analysis and the requirements for their management

C. Identification of other associated issues which requires attention as a part of restoration of pond or lake

Apart from identification of all possible pollution sources, detailed gap analysis, additional measures required on case-to-case basis to be identified especially in case of ponds or lakes w.r.t the following aspects: -

- Buffer Zone development maintenance and the existing activities within the buffer zone.
- Feasibility for Bio-diversity park in case adequate land is available in the vicinity of ponds or lakes.
- Greenery development in the vicinity of the ponds or lakes.
- Introduction of recreation facilities such as paddle boats, building jetty.
- Machinery and the man power requirement for maintenance of

the restored water body.

- Existing provision for disposal of waste arising from the de-siltation and de-weeding activity of a pond or lake.
- Awareness and training requirements.
- Any other related measures required also be analyzed for inclusion of such actions while making action plans for restoration of water body (E.g., aesthetic point of view, bins for rubbish management which may be generated due to visitors).

4. **Protection Phase** that takes care of the general health of the water body and ensures normal functioning. A long-term, preventive approach directed to preventing the causes of waterbody degradation is essential.

4.1 Preparation of action plans

Action plans to be prepared based on the historical information collected, desk review, reconnaissance survey conducted, detailed gap analysis for ensuring additional measures required for restoration of water body (vary from case-to-case) covering both direct and indirect measures with specific time targets and the organization responsible for implementation of action plans with budget estimates. Action plans should include covering following aspects: -

- A. Sewage Management:** - for management of sewage inflow if any (which is causing eutrophication of lake or pond) by having adequate infrastructure for treatment of sewage through adequate capacity of sewage treatment plants (STPs) or combination of other low cost treatment technologies for ensuring discharge norms notified under Environment (Protection) Act, 1986 and same should be ensured by an individual generator of sewage as well as by the concerned local or urban body.

B. Industrial effluent management: - for management of industrial effluent inflow by having adequate infrastructure for treatment of industrial effluent in the form of captive industrial effluent treatment plants or through common effluent treatment plants by the respective industry contributing to the pollution of water bodies and same also should be ensured by the respective State Industrial Development Corporations or State Pollution Control Board (SPCB) or Pollution Control Committee (PCC). Adoption of state-of-the technologies for production processes and for ensuring treatment of generated industrial effluent (feasibility adoption of zero liquid discharge).

C. Management of waste

- Adequate infrastructure should be ensured for management of wastes (such as municipal solid waste, industrial hazardous waste, construction and demolition waste, plastic waste, e-waste) in accordance with the respective provisions notified under the Environment (Protection) Act, 1986, by all the concerned.
- Periodic physical removal of improperly disposed wastes (such as municipal solid waste, construction and demolition waste, plastic waste, industrial hazardous waste, human and animal night soils) by the concerned local or urban body.

D. De-siltation

- Periodic removal of nutrient enriched accumulated sludges in ponds and lakes helps in ground water recharge potential, removal of contaminated sediments as well as increases storage capacity of lakes or ponds.

- Sediments removed from the ponds or lakes should be stored in a designated area (till moisture is completed drained out) at a suitable distance away from ponds or lakes and such dried sediments should be removed immediately so that sediments will not become a part of ponds or lakes once again especially in the event of any rain fall. Depending on the characteristics, such sediments after draining may be used as manure (complying to the manure quality prescribed under Solid Waste Management Rules, 2016 as amended from time to time or disposed of in accordance with the relevant provisions notified under Environment (Protection) Act, 1986.

E. De-weeding

- **Periodic dredging** (once in three months) of 80 % of dense and thickly covered aquatic plants viz., floating plants such as algae, duckweed, watermeal, water hyacinth; submerged plants such as milfoil, hydrilla, water lettuce, curly-leaf pondweed, clasping-leaf pondweed, coontail, sago pondweed, water lilly, water shield etc., bottom sediment, and associated nutrients should be carried out. De-weeding methods include: -
- **Preventive measures**
 - such as proper design and construction of ponds or lakes including levelling and smoothing of banks
- **Manual or physical control measures**
 - Manual or physical control measures such as non-chemical and non-motorized measures be taken for removal of weeds (manual harvesting) using hand pulling, rakes, cutters, benthic barriers, drawdown, aeration, shading and weed rollers as these measures are typically very low, however, such measures

are labor intensive and are therefore better suited to small, less established weed populations. Hand pulling and raking may result in turbid or murky water and may create plant fragments that can subsequently spread to new sites.

➤ **Mechanical control measures**

- Using motor-driven under water weed cutters or floating weeds, rotovators essentially large-scale underwater rototillers for tilling up lake or pond sediments as well as to chop and loosen plant roots, or draglines (in case of underwater pond or lake dredging) (or) dry-land excavation machinery such as bulldozers (in case of drained ponds or lakes) shall be used (or)
- Limiting the amount of sunlight available to aquatic plants by floating black plastic sheeting on the water surface (or) use of dark-colored and nontoxic water dyes (such as nigrosine, aniline and aqua-shade)

- **Biological controls** i.e., introducing aquatic animals and plants that eat or compete with waterweeds. Herbivorous animals (those that eat plants) include a wide variety of insects, snails, crayfish, tadpoles, turtles, fish (sterile, triploid grass carp), ducks, geese, and swans which can be stocked in ponds or lakes to consume aquatic plant.

➤ **Application of common aquatic herbicides for control of lake or pond weeds**

Use of herbicides is not recommended as it may kill fish in ponds or lakes. Herbicides should be used in a controlled and systematic way under the supervision of the expert and general herbicides that may be used for weed control are as given below-

- *For Algae (microscopic, filamentous, Chara) control- Herbicides such as copper sulfate, copper chelates, endothall,, simazine)*
- *Submerged Plants (coontail, watermilfoil, pondweeds such as sago, curlyleaf, leafy) control- Herbicides such as Endothall, Diquat, simazine, fluridone may be used*
- *Free-floating plants (duckweed, watermeal) control:- Herbicides such as Diquat, simazine may be used*
- *Rooted-floating plants such as (waterlilies, spanerdock) control- Herbicides such as Glyphosate and 2,4,-D may be used*
- *Emergent plants (cattails, perennial grasses, and broadleaves) control: - Herbicides such as Glyphosate may be used*

F. Prohibition of discharges or disposal of waste or washing activity and action against violators

- Ban on discharge of industrial effluent or sewage or waste (such as municipal solid waste or industrial hazardous waste or plastic waste or construction and demolition waste or sludges from septic tanks/ STPs/CETPs) into lakes or ponds or drainage channels connected with ponds or lakes or open defecation in the vicinity as well as washing of clothes or wading of cattle
- Stringent actions be taken against violating industry by the SPCB/PCC as per provisions under Water (Prevention and Control of Pollution) Act, 1974 as well as Environment (Protection) Act, 1986

- Levying of fine or Environmental Compensation on the violators for improper disposal of sewage or industrial effluent or wastes into lakes or ponds.

G. Stabilization of earthen bunds and the drainage channels as well as silt and soil erosion control measures

- Stabilization of earthen embankments, shore line protection with vegetative or rock riprap to avoid soil erosion and the inflow drainage channels with the stone revetment or pitching so as to avoid rapid seepage or leakages
- All the inflow drainage channels should be provided with suitable silt barriers or sediment traps or sediment detention basins at suitable intervals for control of silt especially during monsoon.
- Also, at all the outfalls of drainage channels, suitable strains or traps should be provided to control inflow of all the floating materials and periodic removal of floating materials should be ensured.

H. Protection drainage basin including preservation of drainage channels

A lake or pond drainage basin is the logical starting point for planning and management actions for sustainable lake or pond use. A long-term, preventive approach for preventing the causes of degradation is essential.

- Historically the drainage channels which used to carry natural runoff from the drainage basin and presently carrying either untreated municipal sewage or industrial effluent or both and contributing to pollution of water-bodies eventually due to encroachment in view of urbanization. All such drainage channels need to be restored by interventions such as (i) stoppage of inflow of untreated municipal

sewage or industrial effluent. If required, interaction and diversion of untreated sewage or industrial effluent from such drainage channels by routing through properly designed dedicated sewerage network to ensure conveyance and for ensuring treatment and disposal through STPs/CETPs. Feasibility of in-situ treatment of treated sewage and industrial effluent within drainage channels and prior to the inflow into the water bodies also be explored by the concerned authorities.

- Major channels running from the larger watersheds should be identified based on the historical data and such drainage channels should be preserved and protected with suitable buffer land without any impervious cover. This aspect should be ensured by the State Local/ Urban Development/Town Planning authorities while planning or expansion of a locality.

I. Removal of encroachments and blockades

- The Stat Government or UT Administration should maintain records pertaining to the boundaries of each pond or lake in the respective State/UT and necessary steps should be taken and ensured removal of all encroachments in the water body spread area/water body boundary as and when required.
- Removal of encroachments in the drainage channels should be carried out periodically to facilitates enhancement in aeration naturally in the water body
- Refrain from granting any consent for establishment for large scale projects in the catchment areas.

- Pond or lake boundary should be provided with fence (permanent / temporary fencing) to avoid unauthorized entry.

J. Flood Control Measures

- Excess floods from drainage basin be controlled with a provision of properly designed 'spill way' with a provision of controlled gates for smooth flow of excess water or run off during monsoon.
- Remove all encroachments (lake bed, storm water drains) to prevent calamities related to floods and to facilitate inter connectivity of water bodies.
- Removal all blockades at inlet or outlets should be ensured to avoid stagnation or blockage of storm water.

- 5. Improvement phase** that deals with overall improvement in the water body and its uses including resolution of conflicts among competing users of lake resources taking into account the needs of present and future generations and of nature.

5.1 Adoption of In-situ techniques for in-situ remediation of ponds or lakes

A. Physical treatment approaches

Aeration (using surface aerators or , submerged aerators or a combination of both may be used to increase the dissolved oxygen in the water body, which is used by microorganisms to degrade the pollutants. Aeration also aids in mixing the different thermal layers of the water body, resulting in de-stratification, exposing the lower-most layers to atmospheric air. The need and extent of aeration is calculated based on the water quality parameters, depth of water body, ambient temperatures, wind conditions

etc.). Apart from aeration, methods such as wastewater diversion, periodic de-weeding and sediment dredging, proper maintenance of drainage channels or feeder channels also helps in increase in dissolved oxygen)

B. Chemical treatment approaches

Flocculation using chemicals like alum and neutralizing chemicals especially during acidification (increase in pH level of the stagnated water body)

C. In-situ techniques

- *Using aquatic plants* (Macrophytes such as water hyacinth (*Eichhornia crassipes*) and water lettuce (*Pistia stratiotes*), Whorl-leaf watermilfoil (*Myriophyllum verticillatum*), pondweed (*Potamogeton* spp.), common reed (*Phragmites communis*), cattail (*Typha latifolia*), duckweed (*Lemna gibba*) and canna (*Canna indica*)
- *Using aquatic animals* such as clams, snails and other filter-feeding shellfish
- *Using biological techniques* may be used to decompose, transform and absorb water pollutants. However, concentration and frequency of dosing of the microbial cultures is decided based on the volume of the water body, water quality parameters, ambient temperatures and extent of algal growth [as per literature (i) an enzyme namely Phycoplus and the nutrients are mixed thoroughly and sprayed into the pond within 2-3 weeks' time significance difference may be seen; (ii) treatment method based on hydroponics technique that cleans the lake by absorbing nutrients dissolved in the water and thereby supporting living species inside the lake; (iii) floating

treatment wetlands (FTW) which are artificial islands made of chemically inert materials, gravel having floating characteristics with plants that stay afloat on the lake or ponds such as wetland plants, water hyacinth, mosquito repellents and ornamental plants like cattails, bulrush, citronella, canna, hibiscus, fountain grass, flowering herbs, tulsi and ashwagandha) which helps in cleaning the lake or pond through hydroponics system, (iv) Introduction of mixture of nutrients to grow algae formed by diatoms (the most basic, single-cell life form found in water bodies) which helps in release of oxygen into water and in turn aerobic bacteria present in water body helps to break down the organic matter and convert the pollutants to base constituents and also reduces odors from the lakes or ponds. The diatoms are eaten by zooplanktons that are, in turn, consumed by fish].

5.2 Drainage basin management

- Drainage basin management includes control of non-point sources, structural and land treatment measures (regular monitoring of structures and systems and carrying out necessary rehabilitation and modernization programmes), interception and diversion of nutrients, sediments control (terracing, contour farming, grassed water ways, prior to reaching stagnated water body.
- Crop management, crop residue management and creation of shelter belts, good Irrigation practices, run off control provisions from agriculture runoff laden with excess fertilizers and pesticides

5.3 Green or Buffer Zone

- Buffer Zone around a lake or pond (at least 50 to 100 m periphery) should be maintained as green belt zone or no activity zone and no activity is allowed within the buffer zone by the concerned Departments in the State/UT. In case, any activity presently existing within the buffer zone (50 to 100 m), such as residential or commercial or industrial activity should take necessary measures to prevent discharge of any wastes into the water body.
- Within the buffer zone, no impervious cover is allowed and mainly plantation with a dense population of deeply rooted plants, trees, shrubs and grasses should be created so as to absorb nutrients (which promotes aquatic plant growth and a shift in the water quality) that comes directly from the anthropogenic activities.

5.4 Creation of biodiversity environment

In case the water body happens to be a site for the visit by migratory birds the number and type of trees by the side of the water body and water channels have also to be monitored to ensure adequate shelter as well as suitable environment for egg laying and propagation of bird species.

5.5 Monitoring of Implementation of action plans for restoration of ponds or lakes

The action plans are to be prepared and submitted to CPCB for seeking approval. The action-plan should include activity-wise action points, specific time lines, organization responsible for implementation, budget estimates as well as Program Evaluation and Review Technique (**PERT**) chart for implementation of action plans within the specified timelines, Upon approval of action plans for restoration

of ponds or lakes, thereafter, execution of action plans to begin and to be mentioned on monthly basis by the Monitoring Committee to be constituted under the Chairmanship of Principal Secretary (Environment) of the respective State Government or Union Territory Administration. The monitoring committee should review the progress on implementation of the action plans at least once in three months and apprise the Chief Secretary of the State/UT periodically.

A model lake restoration technique is given at **Figure 1** and a model flow chart for restoration of Ponds or Lakes is given in **Figure 2**.

LAKE OR POND RESTORATION TECHNIQUES

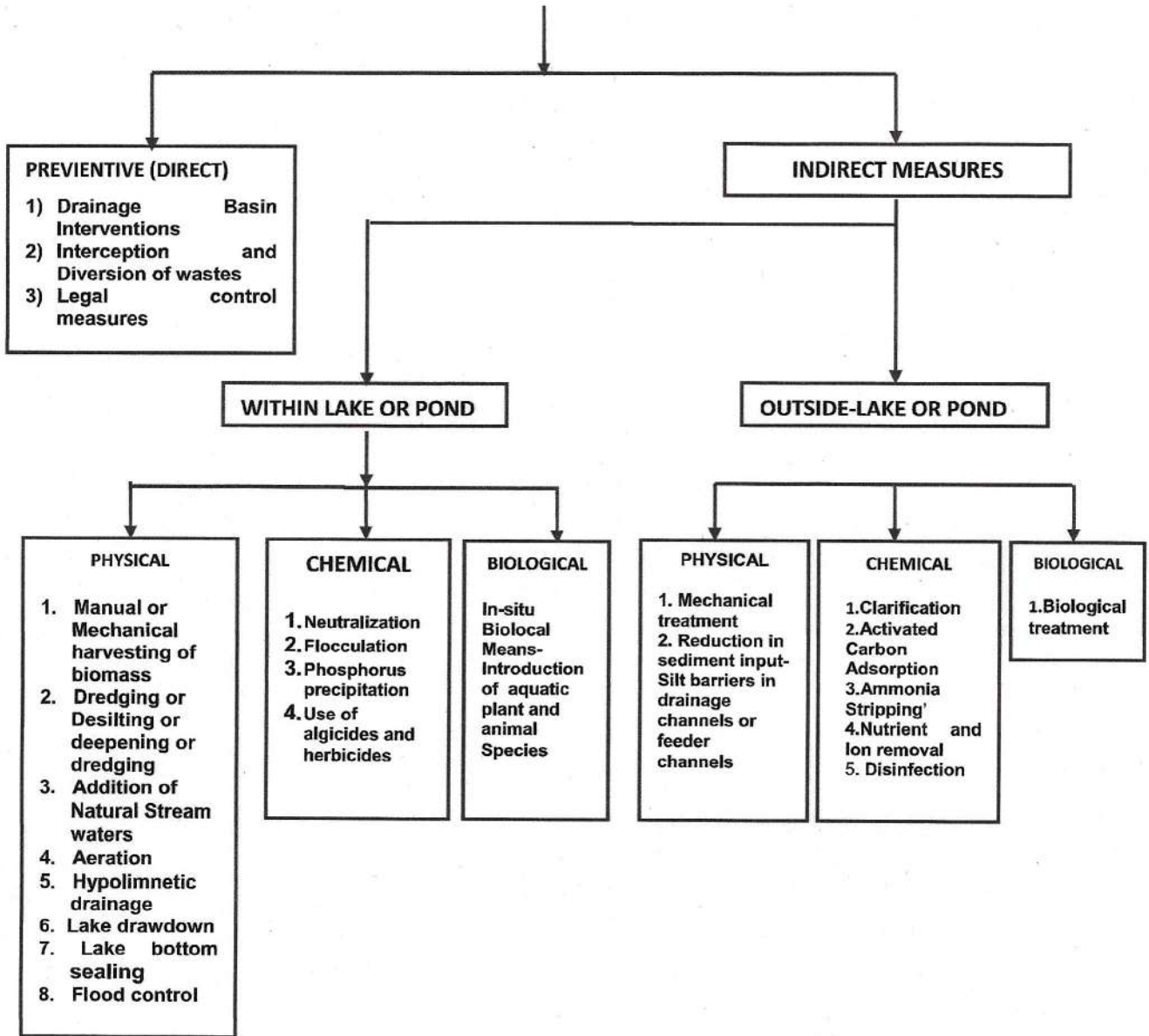


Figure 1. A Model Lake or Pond Restoration Technique

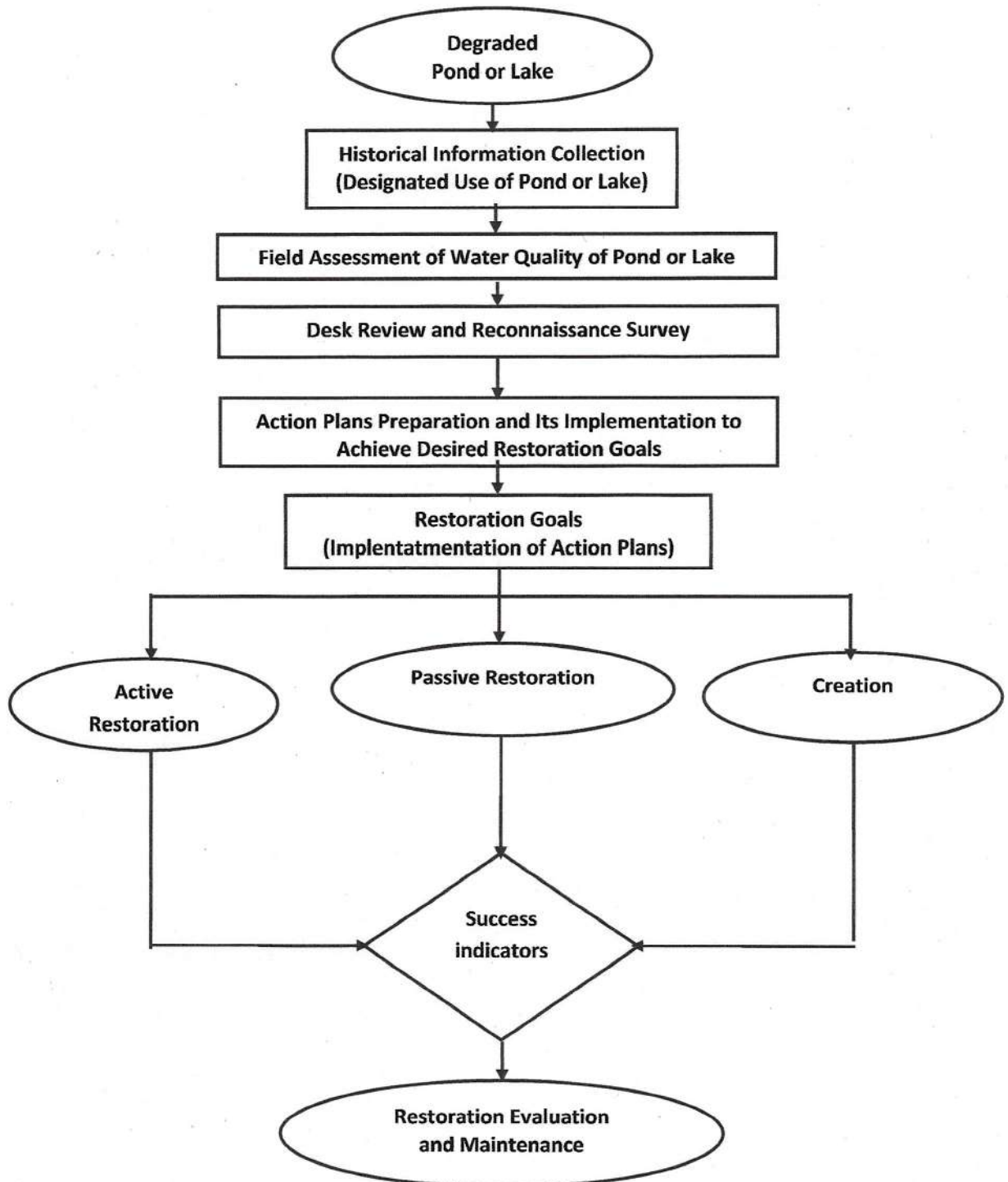


Figure 2. Model Flow Chart for Restoration of Pond or Lake

5.6 Steps involved in preparation of Action Plan for rejuvenation of polluted river stretches

A. Background Information (Refer to Sl. No. 2.1.2)

- (i) Digital map of identified polluted river with its tributaries
- (ii) Geographical and hydrological description of polluted river
- (iii) Catchment description- uses of river, towns, cities and villages, industries (sector-wise no. of industries), ground water status and its utilisation, agricultural practices, flora and fauna etc.

B. Water Quality of River and Its Tributaries

- (i) Water quality of river and its tributaries (at least for five years)
- (ii) Quality assigned as per modified Water Quality Criteria (**Annexure-I**)

C. Identification of Causes of Pollution in Catchment Area of the River

➤ Industrial Pollution

- (i) List of water polluting industries, industry sector-wise: water consumption, effluent generation and quantity of industrial effluent discharged into river
- (ii) Status on granting of Consent under Water (Prevention and Control of Pollution) Act, 1974
- (iii) Status on granting of authorization under the Hazardous & Other Waste (Management & Transboundary Movement) Rules, 2016 as amended (as applicable)
- (iv) Compliance status and action taken (Placing in public domain)
- (v) Final disposal mode of treated industrial effluents (i.e., disposal on land or drain or ZLD or drain connected to CETP etc.,)
- (vi) Performance status of captive Effluent Treatment Plants (if applicable)
- (vii) Existing Common Effluent Treatment Plants (CETPs) and their performance status.
- (viii) Regulation of small scale industries/tiny units'/service units discharging effluents/sludge disposal into drains/landfill or any other mode of disposal

➤ Ground water management

- (i) Status of ground water level-reserves in the catchment area of river under consideration
- (ii) Blocks identified as over exploited, critical, semi-critical and safe (as per Central Ground Water Board (CGWB) if any)

- (iii) Status of permissions granted by Central Ground Water Board (CGWB) to the industries and other Development projects in the catchment area of river.
- (i) Compliance of conditions stipulated by CGWB and subsequently by SPCB.
- (ii) Ground water sources (Hand –pumps, Wells, Tube Wells) identified in the catchment area of the river and the characteristics (at least for the period of two years);
- (iii) Ground water sources (Hand –pumps, Wells, Tube Wells) identified as non-potable for human consumption in river stretch with Geo-genic/or polluted due to industries.
- (iv) Compliance on ground water charging imposed by Rain Water Harvesting Mechanism.
- (v) Existing mechanism for supply of potable water to the human population in the affected areas.
- (vi) Health deformities /clinical reports in polluted river stretch areas in view of ground water contamination.

➤ **Sewage treatment and disposal: -**

- (i) Cities, towns and villages located on the bank of river stretches discharging sewage effluents through drains into the river.
- (ii) Quantification and pollution load of sewage generated by a city/town/village.
- (iv) Status of septage management.
- (v) Listing of drains carrying sewage and trade effluents joining river and determining flow and characteristics with details of catchment contributing sources (drainage maps from major /minor irrigation development of State/or local body).
- (vi) Existing sewage treatment capacities and performance of Sewage Treatment Plants and their compliance Status
- (vii) Final mode of disposal of treated sewage as well as sludge management

➤ **Waste management in the catchment area of river: -**

- (i) Area-wise Hazardous waste generation, treatment and final mode of disposal and the existing infrastructure.
- (ii) Area-wise Status on municipal solid waste generation, treatment and final mode of disposal and the existing infrastructure
- (iii) Area-wise Status on bio-medical waste generation, treatment and final mode of disposal and the existing infrastructure
- (iv) Any other waste generation, treatment and final mode of disposal and the existing infrastructure

➤ **River catchment information**

- (i) Regulation of Flood Plain Zone
- (ii) Encroachment in Flood Plain Zone
- (iii) Plantation status
- (iv) Flow data of river/tributary

➤ **Gap Analysis and Identification of the problems in the identified polluted river catchment: -**

- (i) Sewage generation, existing infrastructure with treatment capacities and the observed gaps w.r.to infrastructure for sewage management
- (ii) Industrial effluent generation, existing infrastructure with treatment capacities and the observed gaps w.r.to infrastructure for industrial effluent management
- (iii) Waste generation, existing infrastructure with treatment capacities, designed life of the treatment and disposal facilities as applicable and the observed gaps w.r.to infrastructure for waste management
- (iv) Any other relevant issues

(Note: - All the details such as river and its tributaries, area-wise population, sources and water consumption quantities, sewage generation, existing infrastructure for sewage management and the gaps observed, area-wise industries (industry sector-wise no. of industries), sources of water and water consumption quantities (industry-sector-wise), industrial effluent generation, existing infrastructure for treatment (like Captive ETPs, CETPs), final mode of disposal of industrial effluents, waste generation and its management with existing infrastructure, characteristics of river and its tributaries, identified contaminated ground water resource areas has to be detailed in the map preferably a digital map)

D. The River Rejuvenation Action Plan:-

After having complete based information as detailed under earlier paras A to D above, Action Plans on each Activity with time-lines can be framed. The key components of action plan may follow the suggested points as given the Table below:

S. No	Key Activity and Components	Agency to perform the task	Proposed Specific Time Frame for implementation of action plan
1	Industrial Pollution Control		
(a)	Inventorisation of water polluting industries	SPCB	
(b)	Grant of consents	SPCB	
(c)	Compliance verification	SPCB/ District Magistrate (DM)	
(d)	Planning for CETP (as applicable)	SPCB+ State Industries Department or of Industries	
(e)	Insisting on ZLD measures, recycling/reuse of treated industrial effluents	SPCB	
(f)	Prohibition of disposal of effluents into drains except during rainy season subject to complying to effluent discharge norms for disposal in surface water.	SPCB + DM	
(g)	Covering small and tiny units and not allowing discharge of effluents either individually or combined	SPCB+ Local Body/ Urban Body	
(h)	Publishing list of defaulting industries in local newspapers and involving public in reporting deliberate discharges (without entering in the premises-backyard water and reporting running of industry against the closure orders.	SPCB + DM	
(i)	Hazardous or Non Hazardous Waste Management Plan and no dumps anywhere except at identified locations	SPCB + DM	
(j)	Reporting Non-Compliance of CGWB	SPCB +	

		conditions and closure of Non complying units.	CGWB	
	(k)	Levying compensation or fines for non-compliances as empowered to UPPCB under the Hon'ble NGT Order Dtd. 13/07/2017 in Ganga Matter in case of Tanneries.	SPCB	
	(l)	Other Action as relevant	SPCB + Concerned Agency of State	
2	Ground Water Protection			
	(a)	Declaration of Polluted Blocks	CGWB	
	(b)	Embargo on Water pollution /over-abstraction of industries as per block status	CGWB	
	(c)	Rain water harvesting	Local Body + DM	
	(d)	Identification of Geo-genic contamination (as applicable)	CGWB	
	(e)	Identification of industries discharging industrial effluent illegally and levying fine on such industries including closure of such industries	SPCB + CGWB	
	(f)	Remediation of contaminated ground water (due to discharge of industrial /sewage) with the recovered funds from the default industry	SPCB + CGWB	
	(g)	Capping of contaminated tube wells and Potable water supply through alternate measures in the affected areas of groundwater	Water Supply Department	
3	Sewage Management			
	(a)	Identification of cities, towns and villages discharging sewage into river/tributary	State Local and Urban	
	(b)	Identifying drains joining river and their quantification and characterizations of pollution load	Development and Executing Agencies	
	(c)	Preparation of Detailed Project Report (DPR) for interception and diversion (I & D) of drains to sewage treatment plant (STP) for which suitable site to be identified and plan for utilization of treated sewage.		

	(d)	Execution of STP works and necessary infrastructure and ensuring household sewer connection for full utilization of STP		
	(e)	Regular cleaning of drains and prohibiting disposal of garbage/plastic and filthy material into drains including dairy waste		
	(f)	Restoration of natural drains for carrying only storm water (but not sewage)	Local and Urban Bodies + State Water Resources + State Irrigation Department + SPCB	
	(g)	Ensuring utilization of treated sewage for beneficial use such as agriculture, construction activity, washing/flushing/cleaning, industrial cooling etc.,	Local and Urban Bodies + State Irrigation Department + SPCB	
	(h)	Interception and Diversion of sewage from Drains and connectivity to STPs	Local and Urban Bodies	
4	Flood Plain Zone (FPZ) Protection			
	(a)	Demarcation of FPZ and not permitting encroachments	State Irrigation Department	
	(b)	Adopting good irrigation practices to conserve water	State Irrigation Department /DFO	
	(c)	Plantation and bio-diversity parks in FPZ	State Forest Department	
5	E-Flow			
	(a)	E-Flow determination/gauging	State Irrigation Department	
	(b)	Regulation of flow from barrages	State Irrigation Department	
6	Health Impact Assessment Reports-Treatment Services			

	(a)	Epidemiological survey in the catchment to find out water-born diseases/ health issues	State Health Department	
	(b)	Providing treatment services to the diseased persons in the catchment area		
7	Education and Awareness			
	(a)	Regular involvement of educational institutions for creating awareness and conservation programmes	State Education Department with concerned Departments	
8	Funding for execution of Action Plans			
	(a)	Pooling of financial resources of state and central assistance	State Finance Commission/ MoUD and MoWR, RD & GR	

E. Monitoring of Implementation of Action Plans for Rejuvenation of Polluted River Stretches:-

- (i) In compliance with Hon'ble NGT Order dated 20/09/2018 (OA No. 673 of 2018), State/UT Level 'River Rejuvenation Committee (RRC)' constituted firstly has to ensure timely preparation of action plans (before 20/11/2018).
- (ii) Prepared actions plans need to be submitted to CPCB for random scrutiny as well as for approvals.
- (iii) Thereafter, execution of action plans to begin and to be mentioned on monthly basis by the 'RRC' under overall supervision of the Principal Secretary (Environment) of the respective State Government or Union Territory Administration.

A model flow chart for rejuvenation of polluted river is given in **Figure 3**

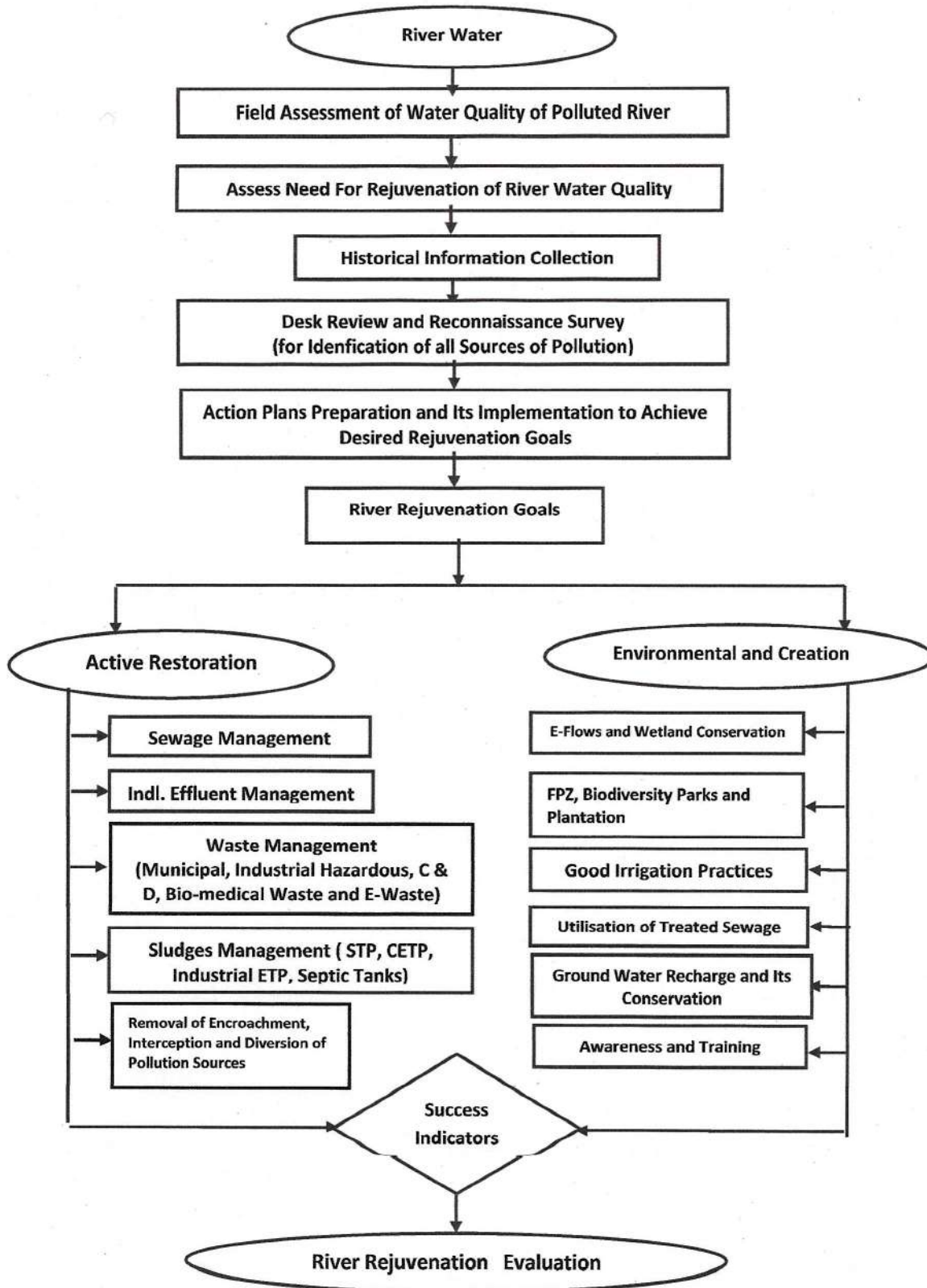


Figure 3. Model Flow Chart for Rejuvenation of Polluted Rivers

6. Sustenance Phase

Good governance, based on fairness, transparency and empowerment of all stakeholders, is essential to sustain the restoration efforts. Also, ownership of each waterbody should be decided, as most of them face indefinite sustenance due to multiplicity of administrative control and/or lack of specific action by singular authority. The in charge authority should treat the water body as 'natural resources', to act as the potential catalysts to better civic health, provide recreation, improve tourism, possibly meet water-needs of local people, etc. Such gains shall be attained only after the water bodies are treated on eco system based approach.

6.1 Awareness

Awareness for citizen's groups, resident welfare associations, local organizations, activist groups, green organizations, political organizations, educational institutions and government agencies in protection of the water bodies should be organized periodically by the concerned authorities through campaigns, electronic media in vernacular languages also be ensured by the concerned authorities

6.2 Training

Organizing periodic trainings through identified and reputed institutions for all the concerned on aspects relating to maintenance during post- restoration phase of the water body.

6.3 Promoting Public Participation

Promoting active public participation (with the help of schools, colleges and universities, NGOs) for identifying and resolving critical lake or pond problems as

well as periodic maintenance and restoration of water body from aesthetic and restoration point of view should be organized.

6.4 Dissemination of Information

Water quality of the pond or lake should be displayed at the main entrance of the pond or lake boundary and such water quality data also connected to the servers of concerned custodian State Department (s) as well as State Environment Department, respective State Pollution Control Board (SPCB)/Pollution Control Committee (PCC). Display boards also should be provided at all the salient points on '**Do's and Don'ts**' for the public.

6.5 Recreational Centre

Creation of pond or lakes can be converted into recreational centers with boating activities, walkways and benches for visitors on charge basis so as to generate revenue for operation and maintenance of the lake or pond areas

7. References

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- GUIDELINES FOR REPAIR, RENOVATION AND RESTORATION OF WATER BODIES WITH DOMESTIC SUPPORT (2009)

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Annexure-I

Water Quality Criteria-Designated Best Use

Designated-Best-Use	Class of Water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	Total Coliforms Organism in MPN/100ml shall be 50 or less pH between 6.5 and 8.5 Dissolved Oxygen 6mg/l or more Biochemical Oxygen Demand 5 days 20C 2mg/l or less
Outdoor bathing (Organised)	B*	Faecal Coliform in MPN/100ml: 500 (desirable) and 2500 (Maximum Permissible) Faecal streptococci in MPN/100 ml: 100 (desirable) and 500 (maximum Permissible) pH between 6.5 to 8.5 Dissolved Oxygen: 5mg/l or more Biochemical Oxygen Demand 3 Day BOD, 27 ° C: 3mg/l or less
Drinking water source after conventional treatment and disinfection	C	Total Coliforms Organism MPN/100ml shall be 5000 or less pH between 6 to 9 Dissolved Oxygen 4mg/l or more Biochemical Oxygen Demand 5 days 20C 3mg/l or less
Propagation of Wild life and Fisheries	D	pH between 6.5 to 8.5 Dissolved Oxygen 4mg/l or more Free Ammonia (as N) 1.2 mg/l or less
Irrigation, Industrial Cooling	E	pH between 6.0 to 8.5 Electrical Conductivity at 25 °C micro mhos/cm Max.2250 Sodium Absorption Ratio Max. 26 Boron Max. 2mg/l

* Class B as per Primary Water Quality Criteria for Bathing Water (Water Used for Organised Outdoor Bathing) as per Environment (Protection) Rules, 1986

Annexure-II

**CRITERIA FOR CATEGORISATION OF
RIVER MONITORING LOCATION****1. Introduction**

Water Quality monitoring is an essential component to maintain and restore the wholesomeness of resources by way of prevention and control of pollution as prescribed under the Water (Prevention and Control of Pollution) Act, 1974. However, the Water (Prevention and Control of Pollution), Act, 1976 does not define the level of wholesomeness to be maintained or restored in different water bodies of the country. In view of the said reason, the Central Pollution Control Board (CPCB) has tried to define the wholesomeness of water in terms of safe human uses, and thus, taken human uses of water as base for identification of water quality objectives for different water bodies in the Country. It is considered ambitious to maintain or restore all natural water body at pristine level which is possible only by taking proper control measures. The level and degree of treatment required can be decided depending on the categorization of the polluted river locations/stretch, as per the criteria detailed below:-

2. Categorization of River Monitoring Location

The water quality data is required to be analyzed and primarily mean or average values of Biochemical Oxygen Demand (BOD) and Faecal Coliform (FC) need to be estimated. Then, based on the total score estimated for the parameters BOD (weightage- 70 %) and FC (Weightage- 30 %), based on the criteria, the monitoring location is categorized as 'polluted' location. The polluted monitoring locations in a continuous sequence are defined as 'polluted river stretch'. However, actual self-purification distance need to be estimated based on the requisite input parameters which depend on the case-to-case and the local conditions.

The monitoring locations may be categorized in five classes from Category I to Category -VI. i.e., critically polluted to Good or Fit for Bathing i.e., Category -I indicates 'critically polluted'; Category-II indicates 'severely polluted'; Category-III indicates 'moderately polluted', Category -IV indicates 'less polluted', Category -V indicates 'Good' or Fit for Bathing'

Above suggested criteria is intended only for categorization of the river monitoring locations. However, if any State/UT desires to identify any other water body such as lakes, tanks may also apply these criteria depending on the need and the requisite achievable goals for rejuvenation of such water bodies.

Table 1 to Table 3 gives the mean or average BOD/Faecal Coliform values or range and the corresponding scores as well as categorization of the monitoring location

Table 1. Observed Mean or Average BOD Value in mg/l and corresponding BOD Score

S. No	Mean or Average BOD (Weightage-70 %)	
	Mean or Average BOD (in mg/l)	BOD Score (X)
1	> 48	100
2	24-48	80
3	12-24	60
4	6-12	40
5	≤ 6	20

Table 2. Observed Mean or Average Faecal Coliform (in MPN/100 ml) and corresponding FC Score

S. No	Mean or Average Faecal Coliform (Weightage -30 %)	
	Mean or Average Faecal Coliform (in MPN/100 ml)	FC Score (Y)
(1)	> 5,00,000	100
(2)	5000 to 5,00,000	80
(3)	5000 to 50,000	60
(4)	500 to 5000	40
(5)	≤500	20

Table 3. Total Score and corresponding Category of River Monitoring Location

S. No	Total Score* (Z')	Category Priority Class of the Monitoring location	Category of Monitoring location
(1)	81-100	Category -I	Critically Polluted
(2)	61-80	Category--II	Severely Polluted
(3)	41-60	Category -III	Moderately Polluted
(4)	21-40	Category -IV	Less Polluted
(5)	≤ 20	Category -V	Good or Fit For Bathing

Note:

- (i) Above criteria must be considered only for the river locations having monitored at least for 2 years and 8 observations in each year covering at least pre-monsoon and post-monsoon period;

- (ii) Above criteria is a preliminary screening criteria for categorizing monitoring locations. However, comprehensive assessment needs to be done by States/UTs to arrive at the extent of contamination;
- (iii) Please refer to the procedure for estimation of Total Score given in S.No 3.;

- 2.1 **Criteria for Category- I – Critically Polluted:** - If the Total score is 81-100, then the monitoring location is categorized as '**Critically Polluted**'.
- 2.2 **Criteria for Category- II – Severely Polluted:** - If the Total score is 61-80, then the monitoring location is categorized as '**Severely Polluted**'
- 2.3 **Criteria for Category- III-Moderately Polluted:** - If the Total score is 41-60, then the monitoring location is categorized as '**Moderately Polluted**'
- 2.4 **Criteria for Category-IV –Less Polluted:** - If the Total score is 21-40, then the monitoring location is categorized as '**Less Polluted**'.
- 2.5 **Criteria for Category -V-Good or Fit for Bathing:**-If the Total score is ≤ 20 , then the monitoring location is categorized as '**Good or Fit for Bathing**'.

For easy understanding, flow chart given in **Figure 4** and steps for calculating the total score may also be referred in the subsequent paras:-

- 3. **Steps for calculating total score and categorizing of monitoring location : -**
 - (i) Depending on the average BOD measured value, assign the BOD score (X) as given in **Table 1**.
 - (ii) Similarly depending on the average FC measured value, assign the FC Score (Y) as given in **Table 2**.
 - (iii) Total score (Z) is estimated as: BOD Score (X) X (Weightage of BOD i.e., 70 %) + FC Score (Y) X (Weightage for FC i.e., 30 %). and
 - (iv) Now compare calculated Total Score (Z) with the 'Z' Value given in the **Table 3** and the monitoring location is categorized suitably.

For easy understanding following examples may be referred in the subsequent paras.

E.g. (1): At a particular monitoring location, the average values of BOD and the FC values are observed as 6 mg/l and 9000 MPN/100 ml respectively. Then, the total score is calculated as

- X is the BOD Score corresponding to the mean BOD value of 6 mg/l as per **Table 1** = 20
- Y is the FC Score corresponding to the average FC value of 9000 MPN/100 ml as per **Table 2** = 60
- Calculated Total Score (**Z**) = **X X Weightage of BOD + Y X Weightage of FC** i.e., $20 \times 0.7 + 60 \times 0.3 = 14 + 18 = 32$.
- Compare 39 value with the **Z'** values given in **Table 3** to decide on the **Priority Category** of the Monitoring Location. In this case, monitoring location is **Category-IV** i.e., 'Less Polluted',

E.g.(2): At a particular monitoring location, the average value of BOD and the FC values are observed as 2 mg/l and 45 MPN/100 ml respectively. Then, the total score is calculated as

- X is the BOD Score corresponding to the average BOD value of 2 mg/l as per **Table 1** = 20
- Y is the FC Score corresponding to the average FC value of 45 MPN/100 ml as per **Table 2** = 20
- Calculated Total Score (**Z**) is calculated as = **X X Weightage of BOD + Y X Weightage of FC** i.e., $20 \times 0.7 + 20 \times 0.3 = 20$
- Compare 20 value with the **Z'** values given in **Table 3** to decide on the **Category** of the Monitoring Location. In this case, monitoring location is **Category-V** i.e., 'Good' or Fit for Bathing

E.g. (3): At a particular monitoring location, the average value of BOD and the FC values are observed as 2 mg/l and 550000 MPN/100 ml respectively. Then, the total score is calculated as

- X is the BOD Score corresponding to the average BOD value of 2 mg/l as per **Table 1** = 20

- *Y* is the FC Score corresponding to the average FC value of 550000 MPN/100 ml as per **Table 2** = 100
- Calculated Total Score (**Z**) = **X** X **Weightage of BOD** + **Y** X **Weightage of FC** i.e., $20 \times 0.7 + 100 \times 0.3 = 44$.
- Compare 100 value with the **Z'** values given in **Table 3** to decide on the Category of the Monitoring Location. In this case, monitoring location is Category-III i.e., 'Moderately Polluted'

E.g.(4): At a particular monitoring location, the average value of BOD and the FC values are observed as 45 mg/l and 400 MPN/100 ml respectively. Then, the total score is calculated as

- *X* is the BOD Score corresponding to the average BOD value of 45 mg/l as per **Table 1** = 80
- *Y* is the FC Score corresponding to the average FC value of 400 MPN/100 ml as per **Table 2** = 20
- Calculated Total Score (**Z**) = **X** X **Weightage of BOD** + **Y** X **Weightage of FC** i.e., $80 \times 0.7 + 20 \times 0.3 = 62$.
- Compare 100 value with the **Z'** values given in **Table 3** to decide on the Category of the Monitoring Location. In this case, monitoring location is 'Category-II i.e., Severely Polluted'

E.g (5): At a particular monitoring location, the average values of BOD and the FC values are observed as 24 mg/l and 200000 MPN/100 ml respectively. Then, the total score is calculated as

- *X* is the BOD Score corresponding to the mean BOD value of 24 mg/l as per **Table 1** = 60
- *Y* is the FC Score corresponding to the average FC value of 200000 MPN/100 ml as per **Table 2** = 80
- Calculated Total Score (**Z**) = **X** X **Weightage of BOD (70 %)** + **Y** X **Weightage of FC (30 %)** i.e., $60 \times 0.7 + 80 \times 0.3 = 42 + 24 = 66$.
- Compare 90 value with the **Z'** values given in **Table 3** to decide on the Category of the Monitoring Location. In this case, monitoring location is Category-II i.e., 'Severely Polluted',

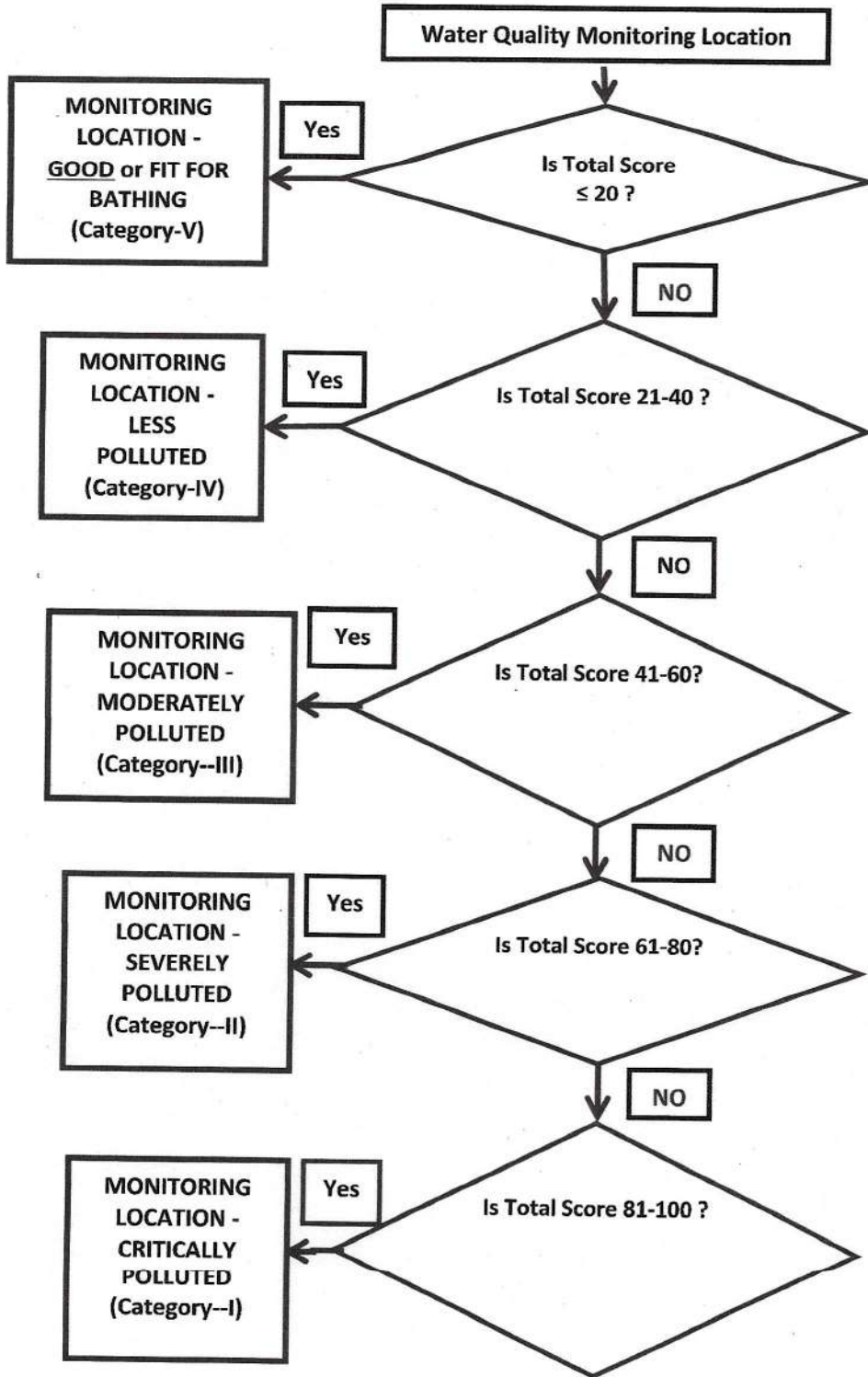


Figure 4. Flow Chart Showing Criteria for Categorization of River Monitoring Location