

**WORK SHOP  
ON  
'RESTORATION OF WATER BODIES'  
at Gulmohar Hall, India Habitat Centre on 30.01.2020**

**INDICATIVE GUIDELINES FOR REJUVENATION OR  
RESTORATION OF WATER BODIES**



**Central Pollution Control Board**  
(Ministry of Environment, Forest & Climate Change, Govt. of India)  
Parivesh Bhawan, East Arjun Nagar,  
**Delhi – 110032**  
[www.cpcb.nic.in](http://www.cpcb.nic.in)

# Hon'ble NGT Matters – RESTORATION OF WATER BODIES

Subject Matter	O.A. No. 673 of 2018	NGT Directions
<b>River Pollution</b>	OA No. 673 of 2018-news item published in 'The Hindu' authored by Shri. Jacob Koshy Titled "More river stretches are now critically polluted: CPCB"	<ul style="list-style-type: none"><li>➤ To prepare and execute action plans for bringing all the polluted river stretches to be fit at least for bathing purposes within two years- <b>By States/UTs.</b></li><li>➤ CPCB to carry random scrutiny and approve action plans submitted by the States/UTs</li></ul>

**O.A. No. 325/2015 - NGT ORDER: 10.05.2019**  
**“PREPARATION AND SUBMISSION OF ACTION PLANS**  
**FOR RESTORATION OF ALL WATER BODIES”**

➤ **All the States and UTs to :**

<b>Review the Existing Framework of Restoration of all the Water Bodies in the respective State/UT</b>	<b>Within 3 months</b>
<b>Preparation of Action Plans and a Report furnished to CPCB by the States/UTs</b>	

➤ **CPCB to:**

<b>Prepare and place on its website guidelines- for restoration of water bodies</b>	<b>Within a month</b>
<b>Examine all such action plans and furnish its comments to the Tribunal</b>	<b>Within 2 months</b>

## ACTION PLANS FOR REJUVRNATION OF POLLUTED RIVER STRETCHES

- Identification of Sources of Pollution –Salient Features
- Action Plans to be prepared based on Detailed Gap Analysis i.e., Generation, Existing Infrastructure and Required Infrastructure w.r.t
  - sewage and industrial effluent management,
  - waste management (MSW, BMW, HW, E-Waste, C & D waste)
- Action Plans should also include other aspects :
  - Adoption of Cleaner technologies including ZLD, upgradation of existing CETPs/ETPs, PETP Standards, Periodic assessment of industries
  - Protection of FPZ-Removing Encroachment
  - Setting up of biodiversity parks
  - Rain water harvesting, GW charging,
  - E-Flows, water shed management
  - Greenery Development on the banks of the river,
  - Interception and Diversion of Sewage from Drains
  - Utilization of treated sewage for beneficial usage to minimise ground water resources consumption
  - Good Irrigation practices
- Action plan-wise timelines, budget estimates & implementing agency

# Steps to be Followed for Preparing Action Plans

Salient Features - About River & its Tributaries, Towns, Industrial Estates, Drains contributing to Pollution, Existing Infrastructure etc.,

Achievable Goals-Target Outdoor Bathing Water Quality Criteria

Latest Water Quality Data of Polluted River, Tributaries and the Drains including its flow volumes

Identification of Sources of Pollution i.e., Sewage, Industrial Effluent, Waste

Gaps Observed- Sewage Management, Industrial Effluent Management, Waste Management

Action Plans – Based on the Gap Analysis- Other Aspects as per Hon'ble NGT Orders- Specific Time Lines- Identify the Responsible Department for Implementation of approved action plans- Monitoring Committee

# **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)**

# Potential Strategies for Long-Term Management of and Restoration of Stagnated Water Bodies

- I. Recognition Phase**
- II. Restoration Phase**
- III. Protection Phase**
- IV. Improvement Phase**
- V. Sustenance phase**

# Recognition Phase

- **Collection and Maintenance of Historical Information relating to the Stagnated water bodies such as Ponds/Lakes**
  - **Identification of stagnated water bodies Maps, with the help of – NRSA/ State Space Application Centres, Validation by physical verification**
  - **Assigning PIN/Geo-Tagging,**
  - **Geographical details of the water body.**
  - **Hydrological description of the water body.**
  - **Catchment description.**
- **Digital Mapping of all the Collected Information**



# Restoration Phase

- **Designation of water body for its use by the State/UT**
- **Restoration Goals (Ponds, Lakes and Tanks)**
- **Steps to be followed for restoration of stagnated polluted ponds or lakes**
  - ✓ **Assessment of water quality of water body**
  - ✓ **Identification of sources of pollution and its quantification**
    - ❖ **Desk Review and Reconnaissance Survey**
    - ❖ **Detailed Gap Analysis ( Sewage Management Industrial Effluent Management and Waste Management)**

## Restoration Phase Contd...

- ❖ **Identification of other associated issues which requires attention as a part of restoration of pond or lake**
  - **Buffer Zone development, maintenance and existing activities.**
  - **Feasibility for Bio-diversity park in case of adequate land.**
  - **Greenery development.**
  - **Introduction of recreation facilities such as paddle boats, building jetty.**
  - **Machinery and the man power requirement for maintenance of the restored water body.**
  - **Provision for disposal of waste arising from de-siltation and de-weeding activity of a pond or lake.**
  - **Awareness and training requirements**
  - **Any other related measures required (E.g., aesthetic point of view, bins for rubbish management which may be generated due to visitors)**
- ✓ **Need for restoration of water body-Prioritisation**

# Protection Phase

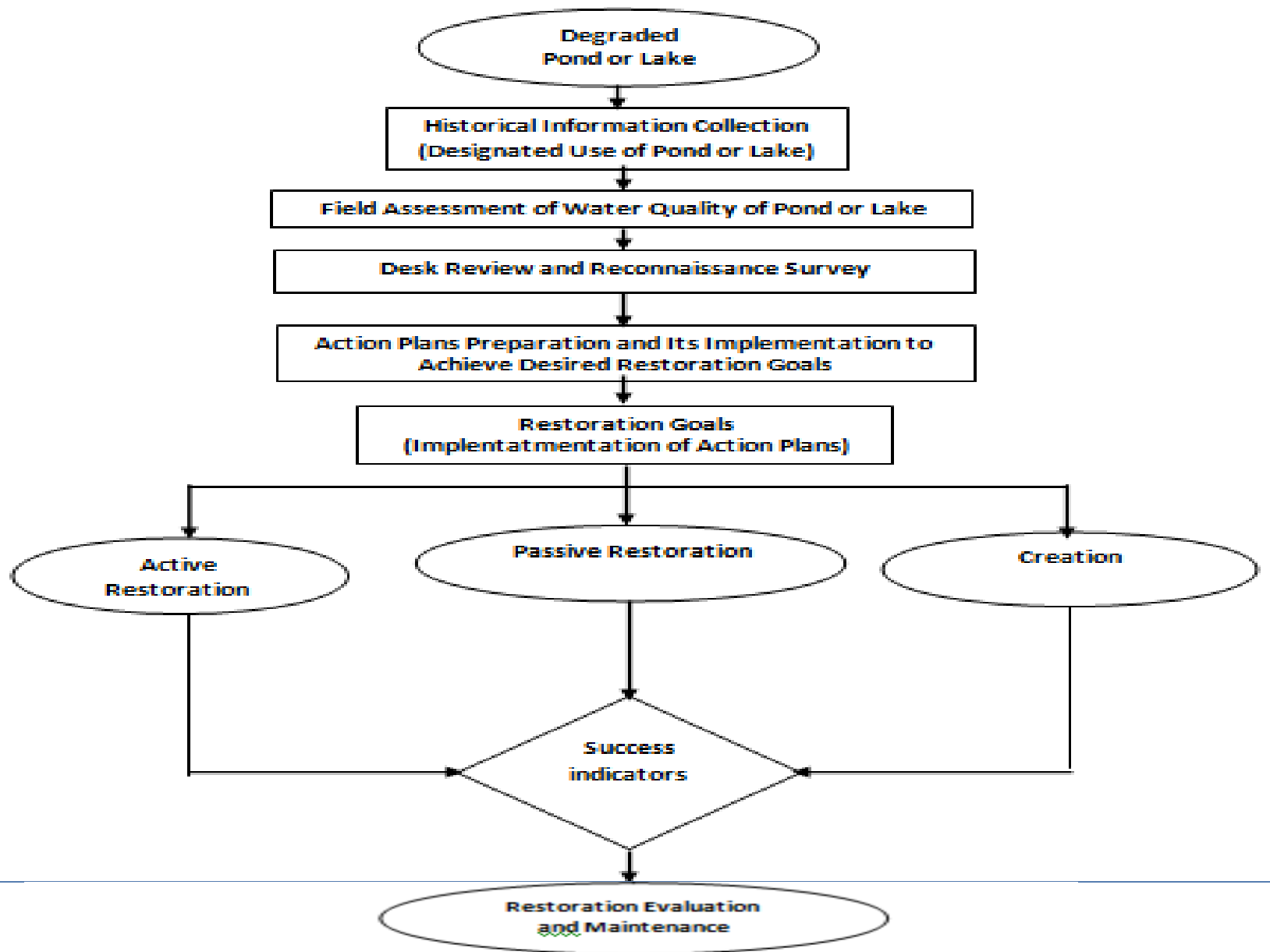
- **Preparation of Action Plans to achieve Desired Goals**
  - **Sewage Management**
  - **Industrial effluent management**
  - **Management of waste**
  - **De-siltation**
  - **De-weeding**
    - ❖ **Periodic dredging**
    - ❖ **Manual or physical control measures-non chemical and non-motorised measures for removal of weeds**
    - ❖ **Mechanical control measures for tilling up sediments and to loosen plant roots (motor-driven under water weed cutters or floating weeds, rotovators or draglines in case of under water lake or pond dredging)**

## Protection Phase Contd...

- ❖ **Biological controls- Introducing of –**
  - aquatic animals (such as insects, snails, triploid grass carp and crayfish, tadpoles, turtles, ducks, geese and swans that eat weeds
  - plants which compete with water weeds
- ❖ **Application of common aquatic herbicides for control of weeds ( such as Algae, submerged plants, free floating plants, rooted floating plants and emergent plants)**
  - **Herbicides such as copper sulfate**
- ❖ **Prohibition of discharges or disposal of waste or washing activity and action against violators**
- ❖ **Stabilization of earthen bunds and the drainage channels as well as silt and soil erosion control measures**
- ❖ **Protection of drainage basin including preservation of drainage channels**
- ❖ **Removal of encroachments and blockades**
- ❖ **Flood Control Measures**

# Improvement Phase

- **Adoption of In-situ techniques for remediation of ponds or lakes**
  - **Physical treatment approaches-Aeration (Surface or Diffused)**
  - **Chemical treatment approaches-Flocculants**
  - **Other In-situ techniques-**
    - **Aquatic plants- water hyacinth, water lettuce, pondweed, duckweed.**
    - **Aquatic animals-introduction of snails and shellfish etc.,**
    - **Biological techniques-use of enzymes, hydroponic technique, floating treatment wetlands (FTW) using water hyacinth, mosquito repellents and ornamental plants like hibiscus, fountain grass, flowering herbs, tulsi and ashwagandha)**
- **Drainage basin management**
- **Green or Buffer Zone – 50 to 500 m radius**
- **Creation of biodiversity parks- habitation for migratory birds**
- **Monitoring of Implementation of action plans**



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

## Sustenance Phase

- **Awareness**
- **Training**
- **Promoting Public Participation**
- **Dissemination of Information**
- **Recreational Centre**







**New attractions at Kaikondrahalli Lake, Bengaluru**



**Birds at Mansagar Lake, Jaipur, Rajasthan**

**THANK YOU**

**For Further details, Contact:**



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