Action Plan: No. 4

Action Plan
for Rejuvenation of
River Kichha

(River Stretch: Along Kichha)

Kichha, Distt. US Nagar
(Uttarakhand)

Priority - II

January, 2019

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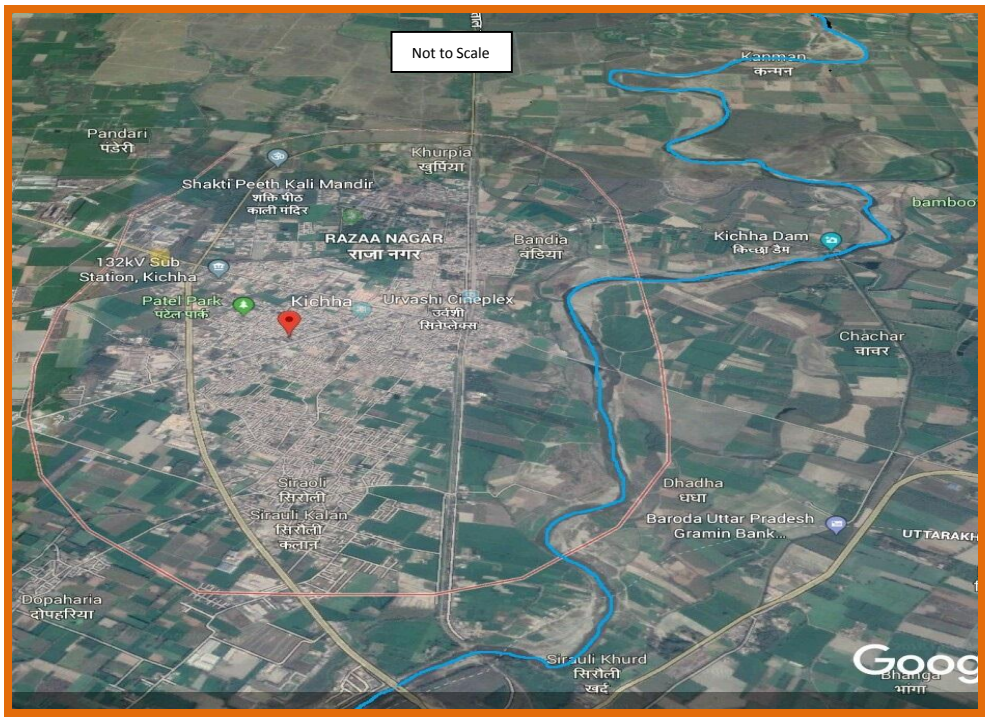
1. INTRODUCTION

The Gola River, is a river in India originating in the Lesser Himalayas of Kumaun. The river is also known by the name Kichha river, in its lower course. It originates in the Sattal lakes of Kumaun hills of Uttarakhand, and flows through Kathgodam, Haldwani, Kichha and Shahi, finally joining the Ramganga River about 15 km northwest of Bareilly in Uttar Pradesh. It is mainly a spring fed river and river Gola is major source of drinking and irrigation water for. Barrage has been constructed at Kathgodam to divert river water for drinking and irrigation purposes. Downstream of barrage, the river is almost dry except monsoon months while river flow appears near Lalkuan.

River Kichha receives significant volume of industrial wastewater from M/S Century Pulp and Paper, Lalkuan having paper production capacity of writing & Printing Paper-17600 Tonnes/Month and Tissue Paper-3000 Tonnes/Month.

River Kichha also get agricultural wash off, municipal wastewater drains from Kichha town and wastewater from sugar mill located in the catchment area.



Google image of Kichha town along with river Kichha. (Not to scale).

2. WATER QUALITYGOALS:

It is an important aspect for revival of river Kichha in context of meeting water quality criteria for bathing. River Kichha receives significant industrial wastewater from pulp and paper industries located at Lalkuan and agricultural wash off along with municipal drains. In order to meet the water quality criteria for bathing, it is imperative to maintain the wastewater quality characteristic within prescribed limit all the time by industrial Units along with treatment of municipal sewage up to the prescribed standards stipulated under the Environment (Protection) Rules, 1986**.** Maintaining river flow will be determined as river water may be diverted to irrigation purposes.

Basis of Proposed Action Plan for rejuvenation of river Kichha:

River Kichha originating Sattal lakes of Kumaun hills. After Kathgodam barrage there is no water into the river during non-monsoon months. Before passing to the Kichha town, river Kichha, receives significant volume of industrial wastewater from paper and sugar industries along with water from agriculture fields and municipal drain of Kichha town. Achieving water quality class “B” would be a challenging task as upper stretches of river is having no natural flow. However, effort should be made to achieve river water quality Class “B”. Therefore, the action plan for prevention and control of pollution of river Kichha has been prepared based on the following components:

Water quality characteristics of river Kichha during the year 2018 is as given below:

Month	pH	BOD (mg/L)	COD (mg/L)	DO (mg/L)
Jan-18	8.10	8	46	4.80
Feb-18	8	18	66	4.40
Mar-18	7.42	6	58	6.60
Apr-18	7.54	38	140	0.40
May-18	7.6	28	88	2
Jun-18	7.4	22	80	2.6
Jul-18	7.5	18	70	3.2
Aug-18	7.7	12	44	4.6
Sep-18	7.6	10.2	38	4.4
Oct-18	7.7	12	46	4
Nov-18	7.4	14.2	46	4.2

Dec-18	7.8	12	30	6.2
Average (Range)	**7.65** (7.4-8.10)	**16.53** (6-38)	**62.67** (30-140)	**3.95** (0.40-6.60)

3. COMPONENTS OF ACTION PLAN:

The proposed action plan for rejuvenation of river Kichha consisting following components:

3.1 Source Control:

Source control includes industrial pollution control and treatment and disposal of domestic sewage as detailed below:

(a) Industrial Pollution control:

i. Inventorisation of industries.
ii. Categories of industry and effluent quality.
iii. Treatment of effluents, compliance with standards and mode of disposal of effluents.
iv. Regulatory regime including "Charter for Prevention and Control of Pollution on Pulp and Paper Industries- 2015".

(b) Channelization, treatment, utilization and disposal of treated domestic sewage.

i. Identification of drains their discharge in the catchment of river Kichha.
ii. Estimation of quantity of sewage generated and requirement of treatment capacity.
iii. Storm water drains now carrying sewage and sullage joining river Kichha and interception and diversion of sewage to STP.
iv. Treatment and disposal of septage and controlling open defecation.

(c) Solid Waste Management:

i. Collection, segregation, transportation, disposal and treatment of municipal solid wastes generated from town in

accordance of provisions of the Solid Waste Management Rules, 2016.

ii. Restriction illegal disposal of solid waste along the river bank and flood plain zones.
iii. Burning of solid waste should be strictly prohibited.
iv. Construction and demolition wastes should be disposed in designated areas and no case it should be disposed in to river beds or flood plain zone.

3.2 River catchment/Basin management - Controlled ground water extraction and periodic quality assessment:

i. Periodic assessment of groundwater resources and regulation and regulation of ground water extraction by industries particularly in over exploited and critical zones/blocks.
ii. Ground water re-charging/rain water harvesting.
iii. Periodic ground water quality assessment and remedial actions in case of contaminated ground water tube wells/bore wells or hand pumps.
iv. Assessment of the need for regulating use of ground water for Irrigation purposes.

3.3 Flood Plain Zone.

i. Regulating activities in flood plain zone.
ii. Management of Municipal, Plastic, Hazardous, Bio-medical and Electrical and Electronic wastes.
iii. Greenery development - Plantation plan.

3.4 Ecological/Environmental Flow (E-Flow)

i. Issues relating to E-Flow.
ii. Irrigation practices.

4. RIVER KICHHA REJUVENATION PLAN:

Following are the action plan for rejuvenation of river Kichha as detailed below:

1.1 Industrial Pollution Control:

Following are the action points for sector-wise pollution control:
(List of GPIs in catchment of river Kichha is enclosed as **Annexure-1**)

(i) Pulp and Paper Industries:

Three pulp and paper based industries are operating in the catchment. All the units have functional ETPs and treated effluent is discharged in to the Kichha River through single drain.

(a) Pulp and Paper manufacturing shall not be permitted to dispose polluted or coloured effluents in any drains leading to river Kichha.
(b) Agro-based pulping should be allowed only with Chemical Recovery Plant (CRP) with Zero Black Liquid Discharge in the catchment area of river Kichha or drains leading to Kichha river.
(c) Pulp and paper units shall meet Charter criteria as prescribed by Central Pollution Control Board (CPCB) and Uttarakhand Environment Protection and Pollution Control Board (UEPPCB) all the time.
(d) Sludge being used for making boards and proper records should be maintained end use of generated sludge and the concerned industry shall ensure that no over-flow from sludge dyring bed occurs.

(ii) Sugar Industry:

Sugar Industry should not be permitted to discharge polluted/untreated effluents in any drain. Effluent discharge standards as prescribed under the Environment (Protection) Rules, 1986 as amended shall be strictly complied with. Industry shall be encouraged to use treated effluent for cooling and irrigation purpose. Consent condition shall accordingly be modified by UEPPCB.

(iii) Textile Industry:

Textile unit is also located in the catchment of Kichha River. Though unit is maintaining Zero Liquid Discharge (ZLD) by

adopting RO and MEE, close surveillance would be carried out in order to ensure compliance all the time.

(iv) Distillery:

(a) All the distilleries should operate only with 'Zero Liquid Discharge' (ZLD) system.

(b) In no case, spent wash be either disposed in drains or on land.

(c) The composted spent wash after Reverse Osmosis (RO)/Multiple Effect Evaporator (MEE), the compost should meet the standards and after ensuring that the composted material does not leach color only such composted material may be used for land application.

(v) Electroplating Industries:

(a) Electroplating industries which are the main source of metallic contamination of surface and ground water should be insisted for 'ZLD' system. Cyanide based electroplating process shall not be permitted.

(b) All the electroplating units or having electroplating process or industrial processes which are likely to discharge effluents containing heavy metal or pollutants that may damage environment, in such cases, UEPPCB shall make necessary amendments to the CCA (Consolidated Consent & Authorization) granted under the Water (Prevention and Control of Pollution) Act, 1974; the Air (Prevention and Control of Pollution) Act, 1981 and the Hazardous and Other Wastes (Management & Transboundary Movement) Rules, 2016, for incorporation of the effluent discharge standards for all the parameters as prescribed under Environment (Protection) Act, 1986.

(c) All the industrial units should have consents under Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981 as well as Authorisation under the Hazardous & Other Waste (Management & Transboundary Movement) Rules, 2016 as amended and Consents or Authorization as applicable should

be granted or renewed only after verification or ensuring adequate systems for disposal of treated effluents or verification of compliances to the granted Consents/Authorization strictly.

(vi) Specific Action Points:

(a) UEPPCB with the support of District Industry Centre (DIC) shall carryout inventory of industries within two months time and all the industries which are presently in operation without Consent under Water (Prevention and Control of Pollution) Act, 1974 and Air (Prevention and Control of Pollution) Act, 1981 as the case may be should be directed by UEPPCB to obtain consent within three months and failing which action should be taken by UEPPCB for closure of all such industrial units.

(b) All the hazardous waste generating industries or the industries covered under Schedule-I of the Hazardous and Other Waste (Management & Transboundary Movement) Rules, 2016 as amended, should be directed to obtain authorization within a month from UEPPCB and failing which action should be taken by UEPPCB for closure of all such industrial units.

(c) All the GPIs category industries have provided OCEMS at the outlet of ETPs. Industries will be directed to take measures to transfer real time data with auto validation facilities to the UEPPCB and CPCB with immediate effect.

(d) No industry should operate or continue manufacturing process unless they possess valid permission for ground water extraction from Central Ground Water Authority (CGWA). All such industries shall obtain groundwater extraction permission from the Central Groundwater Board (CGWA) within three month time period.

(e) Small scale/tiny and service providing units located in urban or semi-urban limits like Dairies, Auto Service Stations etc., should not be allowed to dispose waste water effluents or sledges into drains, thereby ensuring not causing damages to drains or sewers. Such units should have minimum provision of Oil & Grease traps.

(f) Drains carrying industrial wastewater shall be monitored regularly by the UEPPCB.

(g) Burning of any kind of waste including industrial solid waste and agriculture residue should be completely prohibited.

List of GPIs located in catchment of river Kichha is enclosed as **Annexure-1**.

1.2 Treatment of Sewage:

(a) About 7.25 MLD sewage is generated from the town. Further assessment and preparation of feasibility report shall be carried out in the light of various order of the Hon'ble NGT.
(b) All municipal drains leading to river Kichha should be identified and their interception and diversion to STPs should be prepared.
(c) Drains carrying industrial wastewater shall not be diverted to STPs.
(d) Septage management protocol shall be strictly followed.

Sewage Treatment Plan:

(a) Uttarakhand Jal Nigam would undertake measurement of flow of the drain(s) and formulate detailed project report (DPR) for each drain and STP within 2 months.
(b) The flow in each drain should exclude monsoon flow. Further, any drain if receiving fresh water from any escape channel etc, should be examined for its diversion rather than mixing with sewage.
(c) Sewage treatment plants for Kichha town and drains should be properly designed with the interception and diversion plan.
(d) Sewage treatment plant (STP) and its design should be based on its full utilization capacity and ensuring simultaneous house connections to sewers as applicable to each drain and town.
(e) The design aspect of STP should include sewage utilization plan, instead of disposal into the drain/river. As directed by the Hon'ble NGT in Ganga matter (Segment 'A'') at least 75% sewage should be utilized. For the remaining 25% to be discharged into river, strict standards of BOD and FC should be followed and complied.

(f) DPRs should be submitted to the River Rejuvenation Committee (RRC) for consideration as a part of Ganga/Yamuna basin management plan.
(g) Sewage treatment plan should also consider treatment and disposal of sewage from villages/gram panchayats/isolated settlements including discharge form toilets constructed under Swachh Bharat Abhiyan.
(h) Hotels/Restaurants particularly located on road-side should not dispose untreated sewage and solid waste into nearby pubic drain or rivers, such establishments should be properly regulated and levied with fines as directed by Hon'ble NGT in Ganga matter in case of any violation.

4.3 Solid Waste Treatment and Disposal:

(a) About 12.54 MTPD solid waste is generated from the town. Action plan for solid waste management has been prepared by the Directorate of Urban Development.
(b) Door to Door collection of solid waste from all 13 wards shall be encouraged and only segregated waste shall be accepted.
(c) Biodegradable wastes shall be used for composting while recyclable waste shall be sent to registered recyclers.
(d) Action Plan for Solid waste Management for Kichha town as prepared by the Urban Development Directorate, Uttarakhand shall be implemented.
(e) No case Construction and Demolition waste shall be disposed in river bed or flood plain zone. Nagar Palika Parisad, Kichha shall identify the site for such wastes.

1.3 Ground Water Quality:

(a) So far contamination of groundwater is not reported in the area, however groundwater quality monitoring shall be carried out at least twice in the year (winter: December-January and summer: May-June) at two locations to ascertain level of pollutants in groundwater.

(b) CGWA would be requested to identify over exploited and critical blocks in the area with respect to the ground water

extraction and industries be directed to comply with CGWA conditions.

(c) UPPCB should be vigilant and conduct surprise inspection of the industry to rule out any forceful injection of industrial effluents into groundwater resources or disposal of effluent in rain water recharge pits.

(d) No industrial unit should be establishment or allowed to continue its operation unless they obtain permission from CGWA for ground water extraction within three month.

(e) Rain water harvesting of industrial, commercial and other institutions may be insisted upon by CGWA and groundwater recharging with only clean water be encouraged by CGWA.

4.5 Flood Plan Zone (FPZ):

The Uttarakhand Irrigation Department shall identity/demarcates Flood Plain Zone and regulate the activities. Such regulations would also cover:

(a) Plantation in Flood Plain Zone (FPZ) – By State Forest Department.

(b) Checking encroachments – By District/Local Administration.

(c) Prohibition of disposal of municipal and bio-medical waste particularly in drains – By Local administration.

(d) State Government may notify Flood Plain Zone.

4.6 Environmental Flow (E-Flow):

(a) River Kicha carrying very less natural water during non-monsoon period. Wastewater from industries increase the flow of river.

(b) Fresh water flowing through escape channels/small barrages should be checked. Good quality of water should

not be used for dilution of pollution unless; required degree of treatment is achieved for municipal sewage and industrial effluents.

(c) To conserve water and good irrigation practices to be adopted by the farmers for which mass awareness programmes through media be provided in vernacular languages to the farmers by the Uttarakhand State Irrigation and Agriculture Departments.

4.7 Monitoring of Action Plan:

The proposed Action Plan will be monitored by the River Rejuvenation Committee (RRC) constituted by Government of Uttarakhand vide Office order dated 05.12.2018, under the overall supervision and co-ordination of Principal Secretary, Environment, Govt. of Uttarakhand.

5. ACTION PLAN:

Short Term and Long Term Action and the Identified Authorities for initiating actions and the time limits for ensuring compliance:

S.N.	Action plan for rejuvenation of river Kichha	Organisation/ Agency Responsible for Execution of the Action Plan	Time Target
1.	**Industrial Pollution Control**		
	a) Action plans suggested under section - of the draft Action Plan.	UEPPCB	Within Three months.
	b) Inventorisation of the industries in the catchment area of River Kichha covering assessment on aspects relating to Status of Consents under Water	DIC, US Nagar & UEPPCB	Within two months.

	& Air Acts and Authorisation, Effluent Generation, ETP capacities and final mode of effluent discharges.		
	c) Actions against the Identified industries in operation without Consents under Water & Air Acts/Authorisation under the H & OW (M & TM) Rules, 2016 as amended.	UEPPCB	Within three months.
	d) Action against the industries not installed ETPs or ETPs exist but not operating or ETP outlet or treated effluent is not complying with effluent discharge norms.	UEPPCB	Within three months.
	e) Action against the GPIs which have not providing continuous real-time effluent quality data to UEPPCB and CPCB.	UEPPCB	Within a month.
	f) Routine /surprise inspection GPIs and Red category of industries for ensuring compliance of effluent discharge standards as prescribed under E(P) Rules, 1986, as amended.	Special Environmental Surveillance Task Force / UEPPCB	Regularly.
	g) Small scale/tiny and service providing units located in urban or semi-urban limits like Dairies, Auto Service Stations etc., have minimum provision of Oil & Grease traps.	UEPPCB	Within three month.
	h) Monitoring of drains	UEPPCB	Within a

	carrying industrial wastewater.		month.
	i) Prohibition of Burning of any kind of waste including agro-residue.	Nagar Palika Parisad, Kichha / District Administration	Within a month.
2.	**Sewage Treatment & Disposal Plan**		
	a) Estimation of total sewage generation, existing treatment facilities, quantum of disposal of sewage presently through drains and the gaps in sewage treatment capacity.	Jal Nigam / Nagar Palika Parisad, Kichha	Within two months.
	b) To undertake measurement of flow of all the drains presently contributing pollution load in river Kichha and formulate Detailed Project Report (DPR) for each drain and submit DPR to RRC. Plan for utilization of treated water (at least 75%) should be a part of DPR.	Jal Nigam / Nagar Palika Parisad, Kichha	Within two months.
	c) Channelization including diversion of sewage generated from household / township / villages to sewer lines and interception of all drains (excluding drains carrying industrial wastewater) for ensuring proper treatment through upcoming STPs.	Jal Nigam / Nagar Palika Parisad, Kichha	Within six months after commissioning of STPs.
	d) Ensuring dairy / automobile service stations and Hotels/	UEPPCB / Nagar Palika Parisad, Kichha	Within three months.

	Restaurants should be connected with sewer line / should have their own treatment system and levy of fine in case found violation.		
	e) Monitoring of STP outlet effluent quality w.r.t. STPs effluent discharge norms prescribed under E(P) Rules, 1986 as amended.	UEPPCB.	After commissioning of STP.
4.	**Solid Waste Treatment and Disposal**		
	a) Action plan for Solid Waste Management for Kichha town prepared by Urban Development Directorate, Uttarakhand shall be implemented. No case collected solid waste shall be disposed illegally into river bed /flood plain zone.	Urban Development Directorate / Nagar Palika Parisad, Kichha.	Within a year.
	b) Door to door collection of solid waste shall be encouraged.	Nagar Palika Parisad, Kichha	Within a month.
	c) Composting will be made out of bio-degradable waste and recyclable waste shall be disposed thorough registered recyclers.	Nagar Palika Parisad, Kichha.	Within two months.
	d) Construction and demolition waste shall be disposed in designated area/place only. Designated place shall be earmarked by the Local authority.	Nagar Palika Parisad, Kichha.	Within a month.
5.	**Ground Water Quality**		
	a) Groundwater quality monitoring at three	UEPPCB	Within a month.

	locations during summer (May-June) and winter (December-January).		
	b) Identification of over exploited and critical area w.r.t. groundwater extraction.	CGWA	Within six months.
	c) To conduct periodic surprise inspection of industries to rule out any forceful injection of industrial wastewater in to groundwater or disposal of wastewater through rainwater recharging pit.	UEPPCB / CGWA	Within two months.
	d) All the industry should be directed to obtain necessary permission for groundwater extraction from CGWA.	UEPPCB /CGWA	Within three month.
	e) Ensure rainwater harvesting by industries, commercial complexes / institutions and groundwater recharging with clean water.	CGWA	Within six months.
6.	**Flood Plain Zone (FPZ)**		
	a) Demarcation of flood plain zone and notification of Flood Plain Zone	Uttarakhand Irrigation Department.	Within six months.
	b) Plantation in Flood Plain Zone	Uttarakhand Forest Department	By next monsoon .
	c) Checking encroachment in the FPZ of Kichha River.	District Administration, US Nagar / Nagar Palika Parisad, Kichha	Within three months.
	d) Prohibition of disposal of municipal plastic waste and biomedical wastes	Local Administration / Nagar Palika	Within a month.

	particularly in drains and FPZ.	Parisad, Kichha	
7.	**Environmental Flow (E-Flow) and Irrigation Practices**		
	a) Measurements of Kichha River flow of at upstream of Kichha town and maintain record.	Uttarakhand Irrigation Department.	Regularly
	b) To conserve water and good irrigation practices to be adopted by the farmers by organising mass awareness programmes through media in vernacular language.	Uttarakhand Irrigation Department / Department of Agriculture.	Regularly .

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Annexure-1

List of GPIs located in the catchment of River Kichha, US Nagar.

SN	ID	Industry Name	Address	Waste Water Generation (KLD)
1	15528	Century Pulp & Paper	Ghanshyamdham, Lalkuan.	20024
2	10544	Century Pulp & Paper	Ghanshyamdham, Lalkuan	24
3	13272	Century Pulp And Paper	Ghanshyamdham, Lalkuan	17218
4	12815	Kichha Sugar Company Limited	Kichha- Nainital Road, Kichha	770.4

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