

**Action Plan
for Rejuvenation of
River Bhela**

(River Stretch: Kashipur to Rajpura Tanda)

**Kashipur, Distt. US Nagar
(Uttarakhand)**

Priority - I

January, 2019

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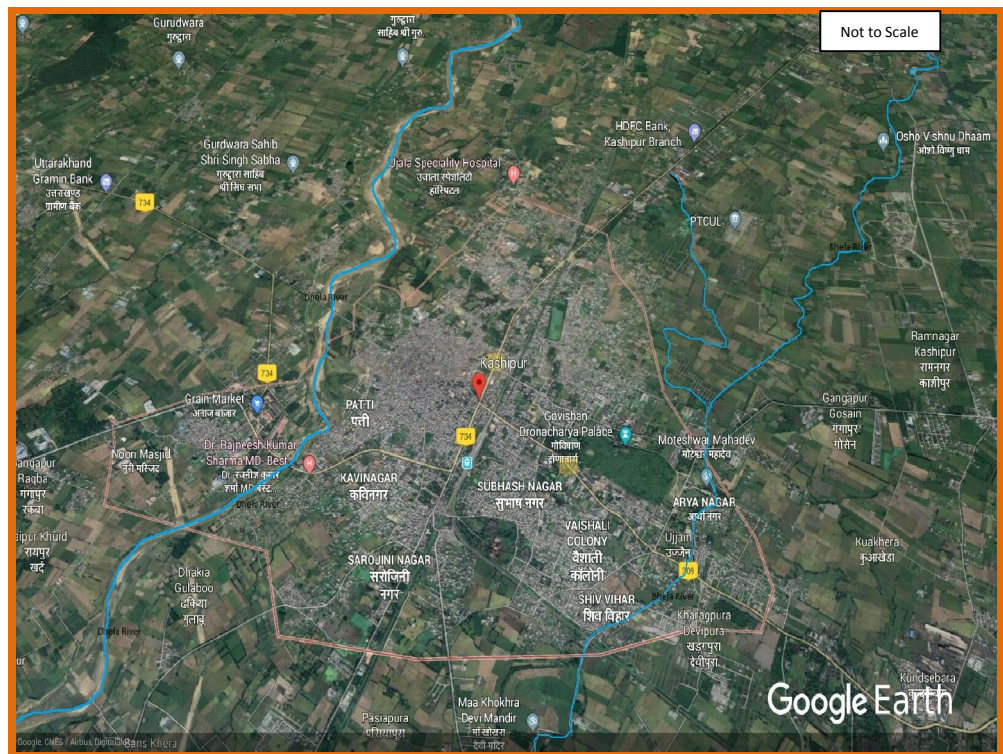
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1. INTRODUCTION

River Bahella is small perennial River originating from the agricultural fields and receives agriculture wash off and industrial wastewater form industries situated in Ramanagar Road and Bazpur road, Kashipur. River Bahella joins river Kosi at Tanda (Bazpur-Rampur road). Kashipur town having population of about 1.21 lacs, is a major human settlement in the catchment of Bhela river. It receives northern and eastern drainage of the city. 16 MLD capacity Sewage Treatment Plant (STP) proposed for Bhela river catchment. River Bhela also receives wastewater for nearby industrial units manily pulp and paper industries, distillery, textile, chemicals etc.. River Bhela joins river Ramganga at upstream of Moradabad (Uttar Pradesh).



Google image of Kashipur town with river Dhela and river Bhela.

2. WATER QUALITY GOALS:

It is an important aspect for revival of river Bhela in context of meeting water quality criteria for bathing. River Bhela receives

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agricultural wash off along with industrial wastewater. 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 Schedule – VI of the Environment (Protection) Rules, 1986. Maintaining river flow will be determined as river water may be diverted to irrigation purposes.

A. Water quality characteristics of river Bhella at upstream of Kashipur, US Nagar in the year 2018.

Month	pH	BOD (mg/L)	COD (mg/L)	DO (mg/L)
Jan-18	7.2	6	20	6.2
Feb-18	7.2	4	14	5.8
Mar-18	7.2	4.2	16	6.2
Apr-18	7.3	6	20	7
May-18	River Dry			
Jun-18	River Dry			
Jul-18	7.2	3.4	10	6
Aug-18	7.2	4	16	7.2
Sep-18	7.1	6	18	7.2
Oct-18	7.3	4	8.2	6.6
Nov-18	7.3	6.2	16	5.8
Dec-18	7.1	3.2	8	6.8
Average (Range)	7.21 (7.1-7.3)	4.7 (4-6.2)	14.62 (8-20)	6.48 (5.8-7.2)

B. Water quality characteristics of river Bhella at downstream of Kashipur in the year 2018.

Month	pH	BOD (mg/L)	COD (mg/L)	DO (mg/L)
Jan-18	7.4	18	48	1.2
Feb-18	7.4	44	108	2.2
Mar-18	7.5	38	128	1.2
Apr-18	7.68	40	156	1.2
May-18	7.9	52	168	0.8
Jun-18	7.8	48	150	1.2
Jul-18	6.8	32	88	0.8
Aug-18	6.9	34	98	1.8
Sep-18	6.8	40	140	1.6
Oct-18	7.5	48	110	0
Nov-18	7.6	26	88	2.6
Dec-18	6.8	44	110	0.4
Average (Range)	7.32 (6.8-7.9)	39.5 (18-52)	117.66 (48-168)	1.1 (0-2.6)

Basis of Proposed Action Plan for rejuvenation of river Bhela:

River Bhela originating from agricultural fields also receives significant volumes of industrial wastewater and municipal drainage, therefore maintaining water quality for Class “B” would be difficult. However, effort shall be made to achieve river water quality Class “B”. Therefore, the action plan for prevention and control of pollution of river Bhela has been prepared based on the following components:

3. COMPONENTS OF ACTION PLAN:

The proposed action plan for rejuvenation of river Bhela 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”.

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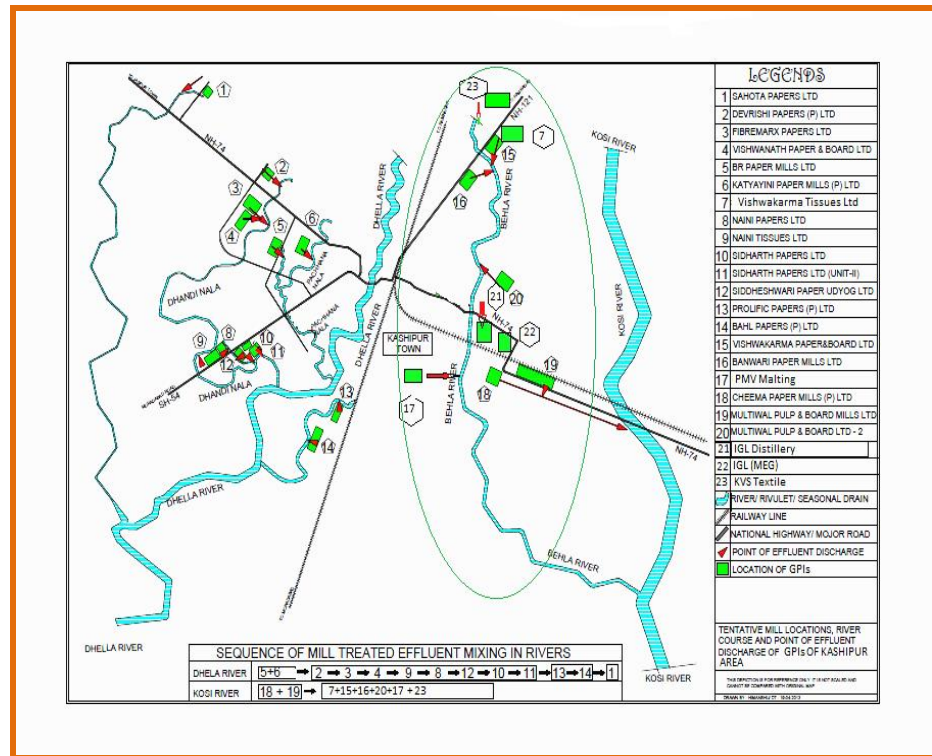


Figure: Rivers Bhela in the Kashipur area along with locations of GIIs contributing pollution load in to river.

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

- i. Identification of drains their discharge in the catchment of river Bhela.
- ii. Estimation of quantity of sewage generated and requirement of treatment capacity.
- iii. Storm water drains now carrying sewage and sullage joining river Bhela 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 BHELA REJUVENATION PLAN:

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

1.1 Industrial Pollution Control:

Following are the action points for sector-wise pollution control. List of GPIs operating in the catchment is enclosed as **Annexure-1**.

(i) Pulp and Paper Industries:

- (a) Pulp and Paper manufacturing should not be permitted to dispose polluted or coloured effluents in any drains leading to river Bhela.
- (b) Agro-based pulping should be allowed only with Chemical Recovery Plant (CRP) with Zero Black Liquid Discharge in the catchment area of river Bhela or drains leading to Bhela 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 drying 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 Bhela 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.

1.2 Treatment of Sewage:

- (a) 18 MLD capacity Sewage Treatment Plant (STP) is under construction for the Kashipur town along the Bhela catchment, under AMRUT yojna. 1.5 Km. long sewerage network is also proposed. It is proposed to intercept and divert Railway Nala to 18 MLD capacity STP.
- (b) All municipal drains leading to river Bhela 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 Kashipur 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 from toilets constructed under Swachh Bharat Abhiyan.
- (h) Hotels/Restaurants particularly located on road-side should not dispose untreated sewage and solid waste into nearby public 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) Door to Door collection of solid waste shall be encouraged and only segregated waste shall be accepted.
- (b) Biodegradable wastes shall be used for composting while recyclable waste shall be sent to registered recyclers.
- (c) Action Plan for Solid waste Management for Kashipur town as prepared by the Urban Development Directorate, Uttarakhand shall be implemented.
- (d) No case Construction and Demolition waste shall be disposed in river bed or flood plain zone. Nagar Nigam Kashipur shall identify the site for such wastes.

4.4 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 three 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 Zones.

4.6 Environmental Flow (E-Flow):

- (a) River Bhela 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 Bhela	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 Bhela covering assessment on aspects relating to Status of Consents under Water & Air Acts and Authorisation, Effluent Generation, ETP capacities and final mode of effluent discharges.	DIC, US Nagar & UEPPCB	Within two months.
	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	UEPPCB	Within three months.

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	outlet or treated effluent is not complying with effluent discharge norms.		
	e) Action against the GPs which have not providing continuous real-time effluent quality data to UEPPCB and CPCB.	UEPPCB	Within a month.
	f) Routine /surprise inspection GPs 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 carrying industrial wastewater.	UEPPCB	Within a month.
	i) Prohibition of Burning of any kind of waste including agro-residue.	Nagar Nigam, Kashipur / 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	Jal Nigam / Nagar Nigam, Kashipur	Within two months.

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	and the gaps in sewage treatment capacity.		
	b) To undertake measurement of flow of all the drains presently contributing pollution load in river Bhela 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 Nigam, Kashipur	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 Nigam, Kashipur	Within six months after commissioning of STPs.
	d) Ensuring dairy / automobile service stations and Hotels/ Restaurants should be connected with sewer line / should have their own treatment system and levy of fine in case found violation.	UEPPCB / Nagar Nigam, Kashipur.	Within three months.
	e) Monitoring of STP outlet effluent quality w.r.t. STPs effluent discharge norms prescribed under E(P) Rules, 1986 as	UEPPCB.	After commissioning of STP.

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	amended.		
4.	Solid Waste Treatment and Disposal		
	a) Action plan for Solid Waste Management for Kashipur 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 Nigam, Kashipur.	Within a year.
	b) Door to door collection of solid waste shall be encouraged.	Nagar Nigam, Kashipur.	Within a month.
	c) Composting will be made out of bio-degradable waste and recyclable waste shall be disposed thorough registered recyclers.	Nagar Nigam, Kashipur.	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 Nigam, Kashipur.	Within a month.
5.	Ground Water Quality		
	a) Groundwater quality monitoring at three locations during summer (May-June) and winter (December-January).	UEPPCB	Within a month.
	b) Identification of over exploited and critical area w.r.t. groundwater extraction.	CGWA	Within six months.
	c) To conduct periodic	UEPPCB /	Within two

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	surprise inspection of industries to rule out any forceful injection of industrial wastewater in to groundwater or disposal of wastewater through rainwater recharging pit.	CGWA	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 Bhela River.	District Administration, US Nagar / Nagar Nigam, Kashipur	Within three months.
	d) Prohibition of disposal of municipal plastic waste and biomedical wastes particularly in drains and FPZ.	Local Administration / Nagar Nigam	Within a month.
7.	Environmental Flow (E-Flow) and Irrigation Practices		
	a) Measurements of Bhela	Uttarakhand	Regularly

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	River flow of at upstream of Kashipur town and maintain record.	Irrigation Department.	
	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 catchment of river Bahela, Kashipur.

SN	ID	Industry Name	Address	Waste Water Generation (KLD)
1	10542	Vishvakarama Paper & Board Ltd.	45 Km ,Ramnagar Road, Kashipur	1050
2	10545	Banwari Paper Mills Ltd.	,Ramnagar Road, Kashipur	915
3	12578	PMV Maltings Pvt. Ltd.(former The Malt company)	Plot No.- 152, Phase-II, Nand Nagar Industrial Estate, Mahuakheraganj, Kashipur	1475
4	13024	Kashi Vishwanath Textile Mill Pvt. Ltd	47,48,52,54,64,65,70,72,74,75,82,84,85,86,342,343,344 ,Vill-Kharmasi 5th Km Stone,, Ramnagar Road, Kashipur	595
5	14885	Multiwal Duplex Pvt Ltd	Vill- Gangapur Gosain, Kundeshwari Road, Kashipur	810
6	10052	India Glycol Ltd., MEG Plant	Bazpur Road Kashipur, US Nagar	2631
