MIZORAM STATE POLLUTION CONTROL BOARD

No. H.88088/Poltn./50 (XIX)/18-MPCB/ : Dated Aizawl, the 20th March 2020.

To,

The Secretary,
Ministry of Jal Shakti,
2nd Floor, Block-III, CGO Complex,
Lodhi Road, New Delhi – 110003

Subj.: Submission of monthly progress report of Mizoram for the month of February 2020 in compliance of Hon'ble NGT order on OA No. 673/2018

Sir,

With reference to the above cited subject, may I submit herewith monthly progress report of Mizoram for the month of **February 2020** on OA. 673/2018 as per your prescribed format for favour of your kind information and further necessary action.

Yours faithfully,

Enclo: Progress Report, Jan.,2020

(C.LALDUHAWMA)
Member Secretary,
River Rejuvenation Committee,
Govt. of Mizoram
&
Mizoram Pollution Control Board

Memo No. H.88088/Poltn./50 (XIX)/18-MPCB/ : Dated Aizawl, the 20th March 2020.

Copy to: The Member Secretary, Central Pollution Control Board for kind information.

(C.LALDUHAWMA)
Member Secretary,
River Rejuvenation Committee,
Govt. of Mizoram

Monthly Progress Report by Mizoram (February, 2020)

(In the matter of Hon'ble NGT matter of O.A No 673/2018 dated 12.06.2019)

Sl. No.	Activity to be monitored	Timeline	Submission of progress by Mizoram – Compliance Status
1.	Ensure 100% treatment of sewage at least in-situ remediation	31.03.2020	• Mizoram is industrially backward and there are no significant water polluting industries in the catchment areas of the identified polluted rivers. Sewage carried by the connecting drains or tributaries into the rivers are mostly of domestic effluents. Major portion of the courses of the rivers pass through rural settlements and as such the Action Plan focuses mainly on the management of Greywater which constitutes more than 90% of the total waste water generated in the area.
	commencement of of setting up of STPs and connecting all the drains and other sources of generation of sewage to the STPs must be ensured	31.03.2020	
2	Timeline for completing all steps of action plans including completion of setting up STPs and their commissioning	31.03.2021	• Necessary actions have been initiated by PHE Department, Govt. of Mizoram for setting up of Grey Water Management, collection and segregation of wastes and Rain Water Harvesting System in the villages located in the polluted locations. Target with achievable goals with data gaps are enclosed in **Annexure-I**
3	Chief Secretary may set up appropriate mechanism at State level • Specifying accountability of nodal authorities not below the Secretary level • Chief Secretaries may have an accountable person attached in their office for this purpose	22.01.2020 22.01.2020	• Meeting of Chief Secretary, Govt. of Mizoram with secretaries of all concerned departments on NGT cases, held on 25.02.2020, discussed setting of appropriate mechanism for monitoring compliance of OA.673/2018 at State level. • Minutes of the meeting is awaited for information.
	• Monitoring at State level must take place	Fortnightly Commencing 21.12.2019	As above.
4	Progress report may be furnished by the States/UTs to • Secretary, Ministry of Jal Shakti • Member Secretary, CPCB	Monthly (preferably before 20th of every month)	This report is for the month of February, 2020

4.1	Progress Report may be compiled of details along with completion timelines on: (i) Identification of polluting sources including drains contributing to river pollution and action as per NGT order in situ treatment		i) Contributing tributaries/drains in the villages in the polluted locations connected to all the rivers are newly identified and depicted in the River Maps incorporating in the revised action plan and attached herewith as ***Annexure II (II(a) to II (i))***.
	(ii) <u>Status of STPs, I&D and sewage networks</u> Details of existing infrastructure, Gap analysis, proposed along with completion of timeline		ii) Majority of the settlements in the catchment areas of the rivers comprise of rural villages. All the settlements are without sewage treatment systems. However, Considering the limited quantity of sewage generations in the catchment and the complications and high costs involved in STP, more economical and viable systems such as onsite liquid treatment system for greywaters at household levels is proposed for sewage management in the catchments. Actions have been initiated by PHE department, Govt. of Mizoram mentioned above.
	(iii) <u>Status of CETPs</u> Details of existing CETP and ETP infrastructure, Gap analysis, Proposed along with completion of timeline, No. of industries and complying status		iii) Mizoram is industrially backward and there are no significant water polluting industries in the catchment areas. Most of the industries are of cottage types and they are regulated by MPCB to comply with effluent standards with functional ETP. There is no single CETP in the state. However, as per advice of CPCB, inventory of industries including automobile works in the catchment areas was conducted and completed for Tiau River. Details at **Annexure-III**

	(iv) <u>Status of Solid Waste Management & Details of Processing Facilities</u> Details of existing infrastructure, Gap analysis, proposed along with completion of timeline		There is inadequate solid waste management system in Mizoram. There is only one Soil Waste Resource Centre with Sanitary landfilling in the state, recently commissioned at Tuirial, Aizawl. Whatever, solid wastes generated in the catchment are disposed in the dumping site with no proper scientific methods. Hence, it is proposed to develop proper waste management system for settlements in the catchment areas as per provisions of the Solid Waste Management Rule, 2016;by introducing waste segregation at source into biodegradable, non-biodegradable waste, plastic wastes, E-waste and Domestic Hazardous Waste; Door to door waste collection system and for the final disposal, composting for biodegradable wastes and for inerts solid wastes, landfilling is proposed. Details of waste generation and gap analysis and proposed actions for Tiau river is given at **Annexure-IV**
	(v) Latest water quality of polluted river, its tributaries, drains with flow details and ground water quality in the catchment of polluted river		• Latest water quality of polluted rivers and drains is given at **Annexure-V (a)** • Ground water quality of the catchment of polluted rivers is done wherever sampling locations/facilities for sampling is available. Data available at **Annexure-V (b)**
	(vi) Preventing dumping of waste and scientific waste management including bio-medical wastes, plastic wastes and decentralizing waste processing including waste generated from hotels, ashrams etc		• The biggest waste dumping site at Tuirial, Aizawl which has been receiving maximum wastes from Aizawl city for a number of years is being closed down now and is soon to be replaced by Waste Management Resource Centre and Sanitary Landfill, newly constructed and commissioned by the State Govt. • Inventory of various kinds of wastes generated in the catchment of the polluted rivers has been carried out to find out waste generation and treatment gaps. For Tiau river, the exercise is completed, details of findings is at **Annexure- VI**
	(vii) Ground water regulation		• In Mizoram, surface water serves as the main sources of water for drinking, domestic and industrial purposes. Ground water extraction is insignificant.
	(viii) Adopting good irrigation practices		Initiatives taken by concerned department Irrigation & Water Resources department.
	(ix)Protection and management of Flood Plain Zones (FPZ)		There is no Flood Plain Zones in Mizoram as it is a hilly region.

	(x) Rain water Harvesting		Rain water harvesting program has been initiated in the catchment areas: *Completed:* i) Bungtlang, Denlung Villages (Mat river) ii) S.Kanghmun (Tlawng river) iii) E.Lungdar village (Tuipui River) *On-going:* i) Serte village (Tlawng river)
	(xi) Maintaining minimum flow of river		• Irrigation and Water Resources Department, Govt. of Mizoram intends to initiate necessary action for maintaining minimum flow of polluted river stretches in Mizoram from the month of April 2020. Action Plan with budget and timeline is given in **Annexure-VII** • For river catchment/basin management several action plans have been formulated such as, Plantation, Siltation and Soil Erosion Control by various schemes such as, Runoff retardation, Gully Control, River bank erosion control, Silt Retention and Landslide Control and ground water charging through rainwater harvesting. ➢ Plantation and Rainwater harvesting have been started. ➢ DPR for Siltation and Soil Erosion Control under preparation. • Some of the rivers already have Riverine Reserved Forests of about 800 metres on either side of the river banks which are well protected. However, for enhancing tree and vegetation coverage, afforestation activities in suitable catchment areas have been proposed and plantation drives initiated.
	(xii)Plantation on both sides of the river		
	(xiii)Setting up of biodiversity parks on flood plains by removing encroachment		

(C.LALDUHAWMA)
Member Secretary,
River Rejuvenation Committee,
Govt. of Mizoram
&
Mizoram Pollution Control Board

Annexure-I

MONTHLY PROGRESS REPORT

IMPLEMENTATION OF ACTION PLAN

Month(s) : **March 2020**

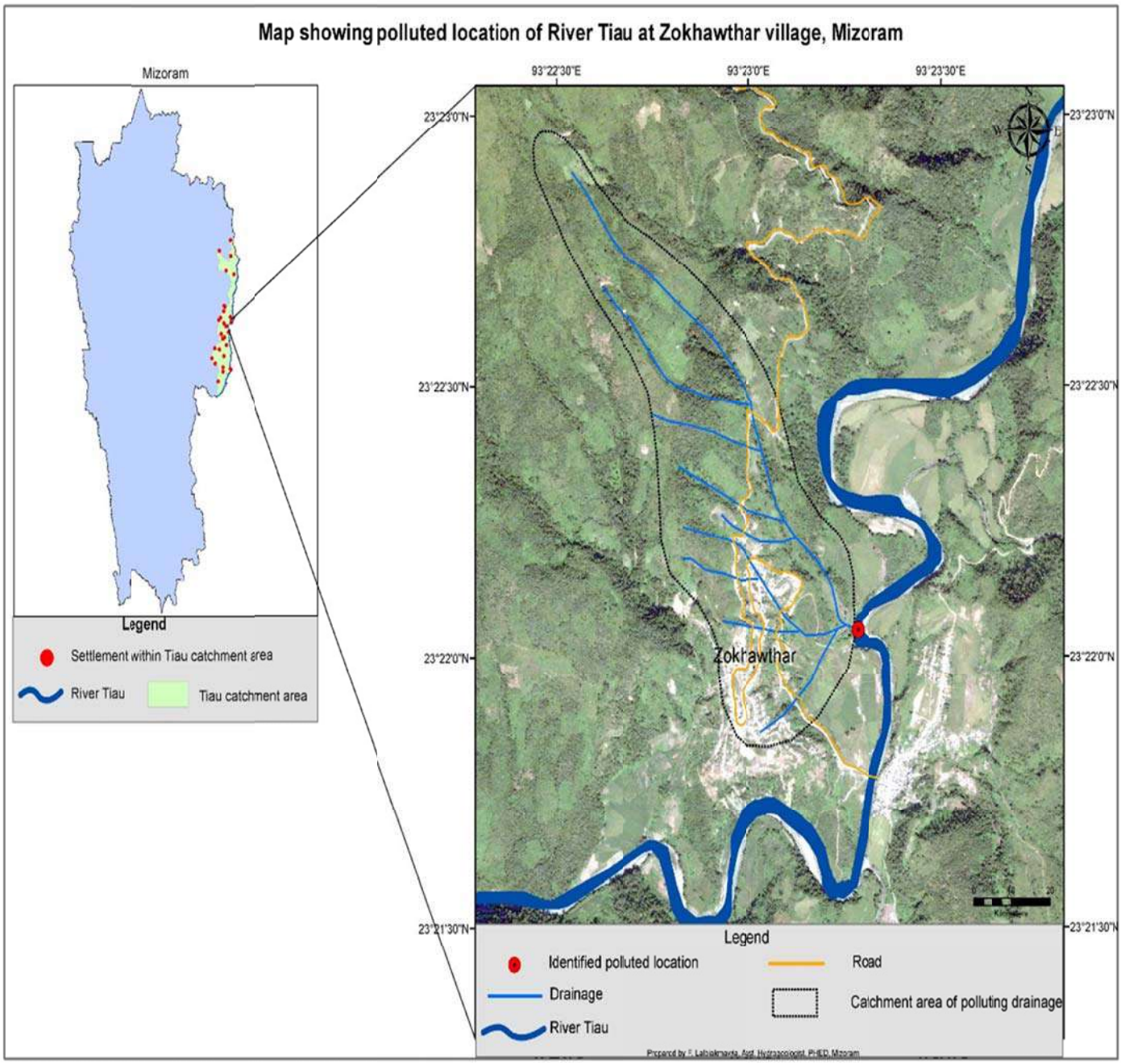
NGT's O.A No : 673/2018 (More river stretches are now critically polluted)
Department : Public Health Engineering Department (PHED)
No. of polluted rivers : 9 Rivers

Activity	Target	TIAU Priority : III No.of Village : 33 No.of Town : NIL		TUIPUI Priority : IV No.of Village : 34 No.of Town : 3		TUIRIAL Priority : V No.of Village : 82 No.of Town : 3		TUIKUAL Priority : V No.of Village: NIL No.of Town 1		MAT Priority : V No.of Village : 42 No.of Town : 2		SAIKAH Priority : V No.of Village : 3 No.of Town : NIL		TLAWNG Priority : IV No.of Village : 90 No.of Town : 7		CHITE Priority : V No.of Village : 1 No.of Town : 1		TUIVAWL Priority : IV No.of Village : 43 No.of Town : 2	
		Achieved	Gap	Achieved	Gap	Achieved	Gap	Achieved	Gap	Achieved	Gap	Achieved	Gap	Achieved	Gap	Achieved	Gap	Achieved	Gap
ODF Status	100%	100 %	NIL	100 %	NIL	100 %	NIL	-	-	100 %	NIL	100 %	NIL	100 %	NIL	100 %	NIL	100 %	NIL
Grey Water management • Leach Pit	100%	10%	90%	10%	90%	10%	90%	-		10%	90%	10%	90%	10%	90%	10%	90%	10%	90%
Biodegradable Waste • Compost pit/Bin	100%	25%	75%	25%	75%	25%	75%	-		25%	75%	25%	75%	25%	75%	25%	75%	25%	75%
Non-biodegradable Waste • Plastic Waste Collection • Segregation • Confined dumping ground	100%	11%	89%	20%	80%	20%	80%	-	-	20%	80%	20%	80%	18%	82%	20%	80%	20%	80%
Rain Water Harvesting • Protection of water source catchment area • Artificial recharge	100%	25%	75%	25%	75%	25%	75%	-	-	25%	75%	25%	75%	25%	75%	25%	75%	25%	75%
Behavioural Change communication	100%	20%	80%	20%	80%	20%	80%	-	-	20%	80%	20%	80%	20%	80%	20%	80%	20%	80%
STP • DPR • Sanction	100%	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Storm Drainage Network • DPR • Sanction	100%	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

- 328 nos Village & 19 nos Towns

Annexure-II (a)

1. **Tiau river: Map showing tributaries/drains connected to the Tiau river at the polluted location (Zokhawthar village near Tiau Bridge)**

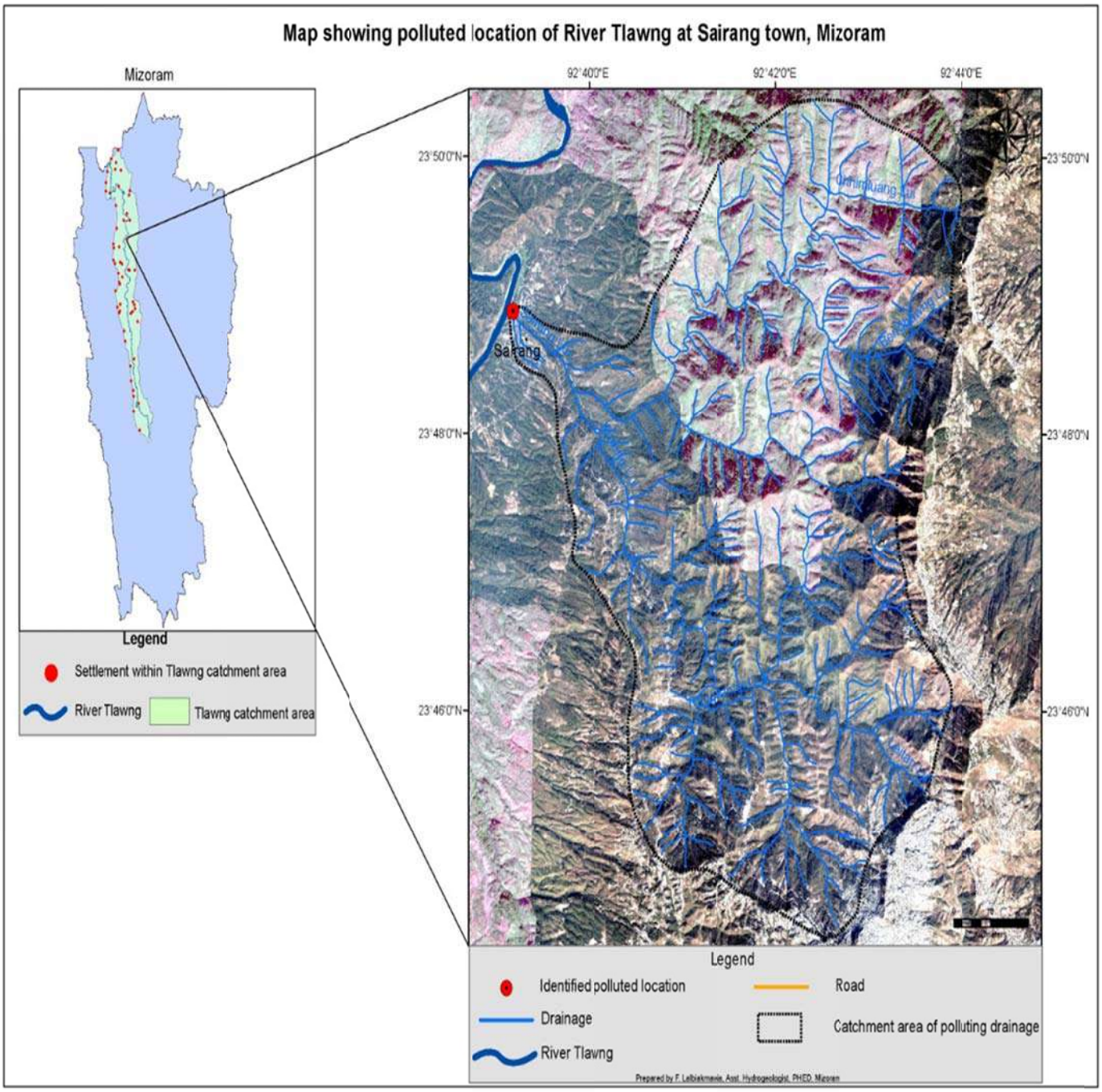


- **Polluted location: Zokhawthar village near Tiau Bridge (international boundary)**

Annexure-II (b)

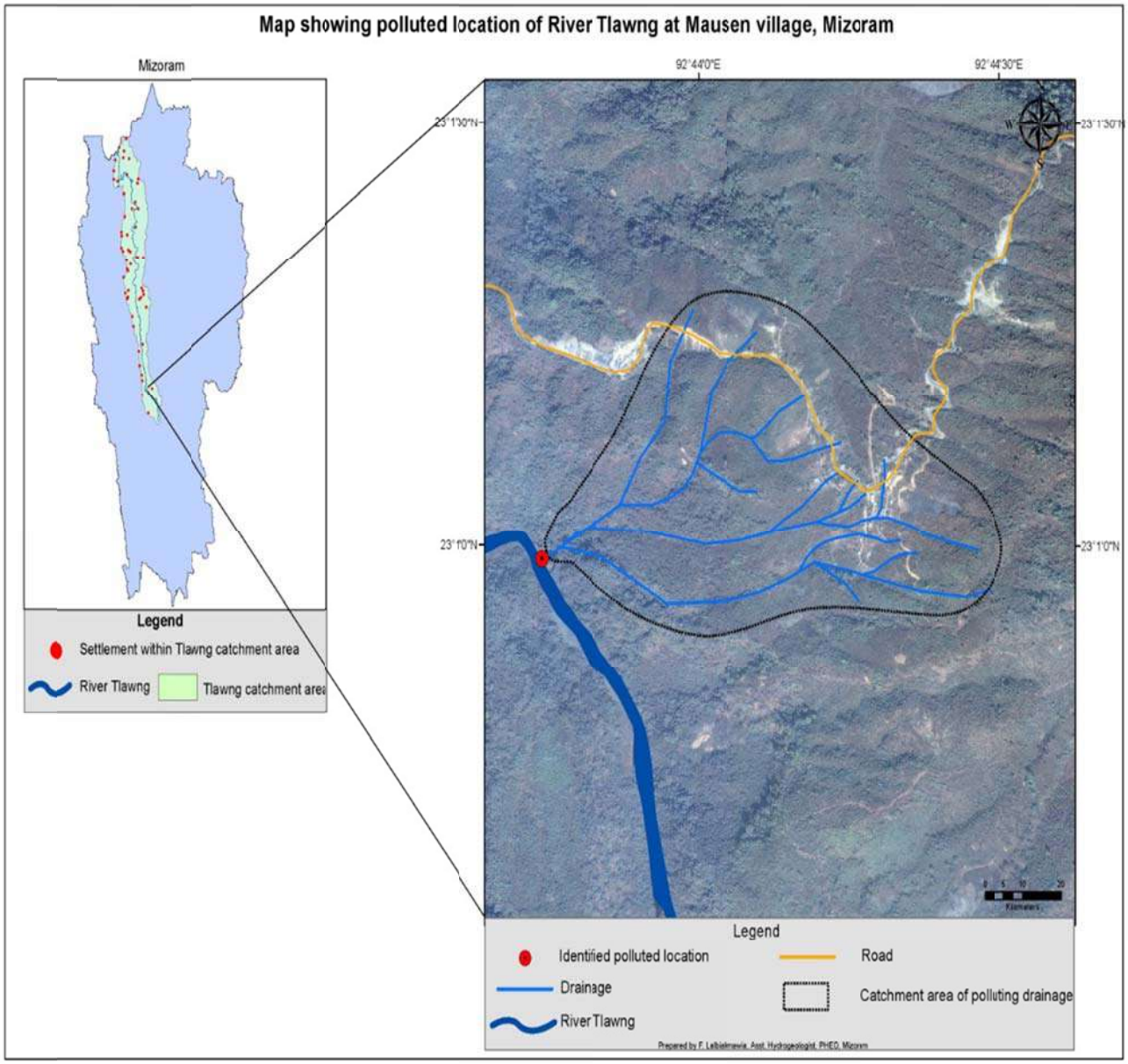
Tlawng river: Map showing tributaries/drains connected to the Tlawng river at the polluted locations:

i) Sairang Town



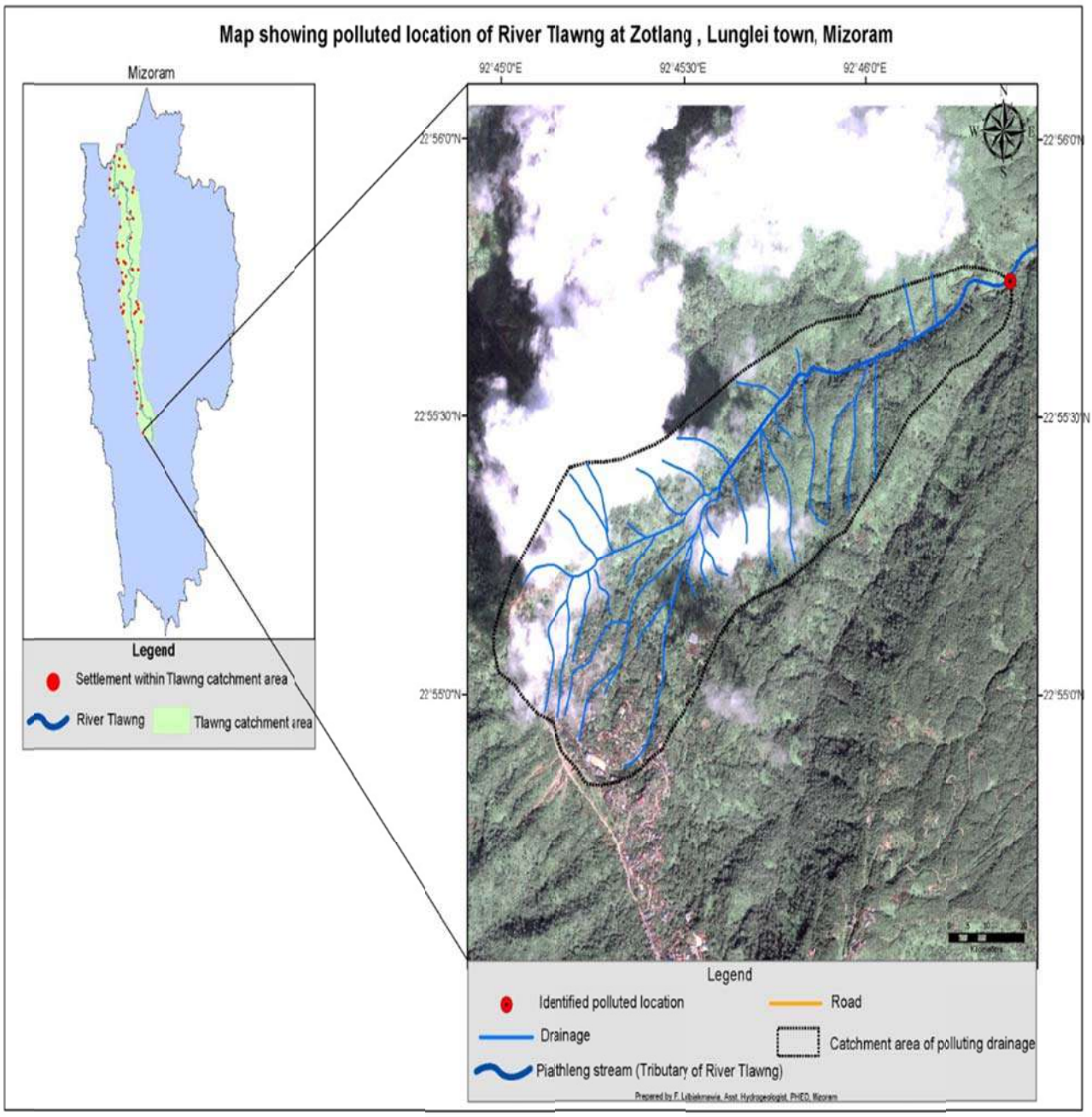
- **Polluted location: Near Sairang Town**

ii) Mausen Village, Lunglei District



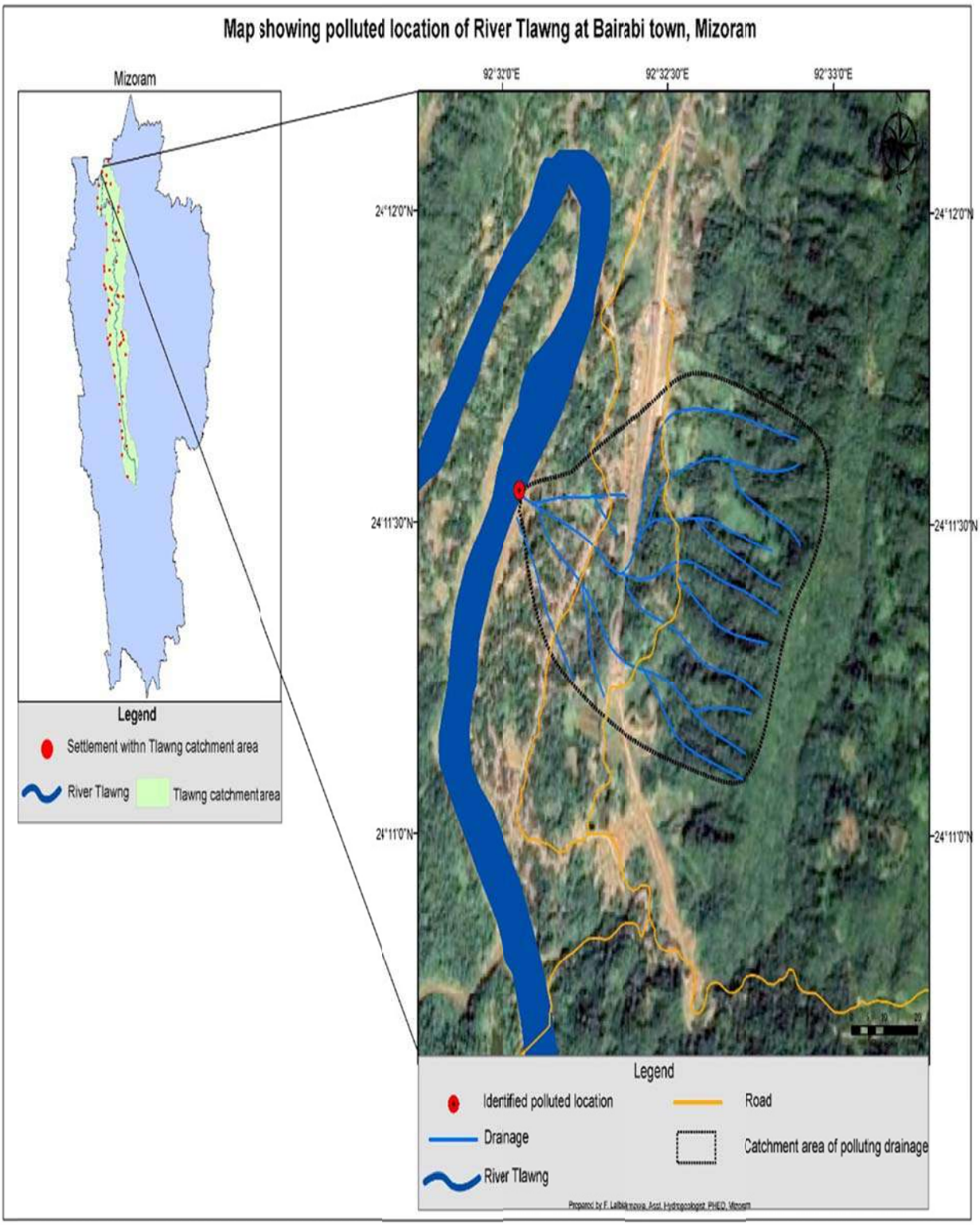
- **Polluted location: Near Mausen Village, Lunglei District**

iii) Zotlang, Lunglei Town



- **Polluted location: Near Zotlang, Lunglei Town**

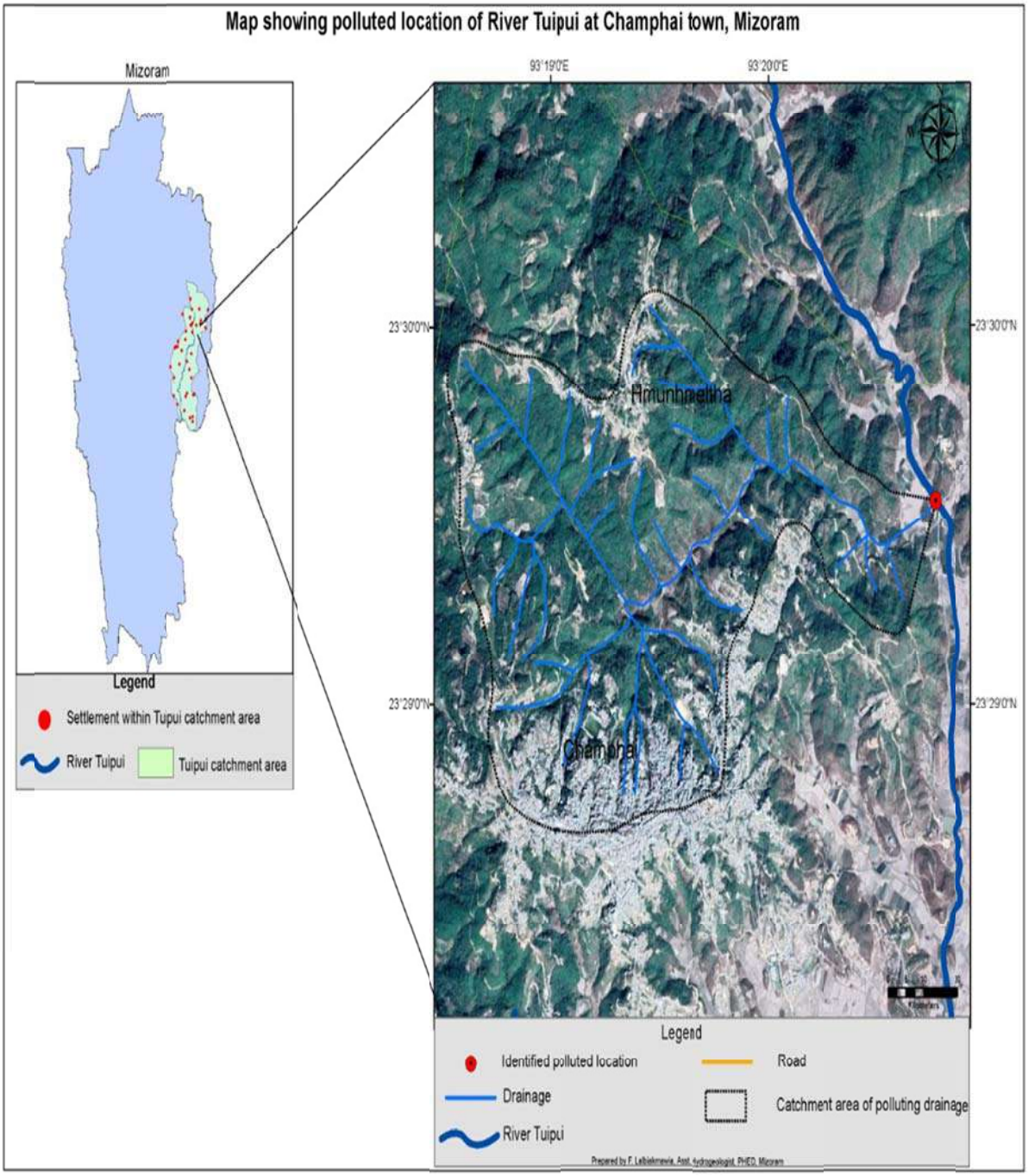
iv) Bairabi Town



- **Polluted location: Near Bairabi Town**

Annexure-II (c)

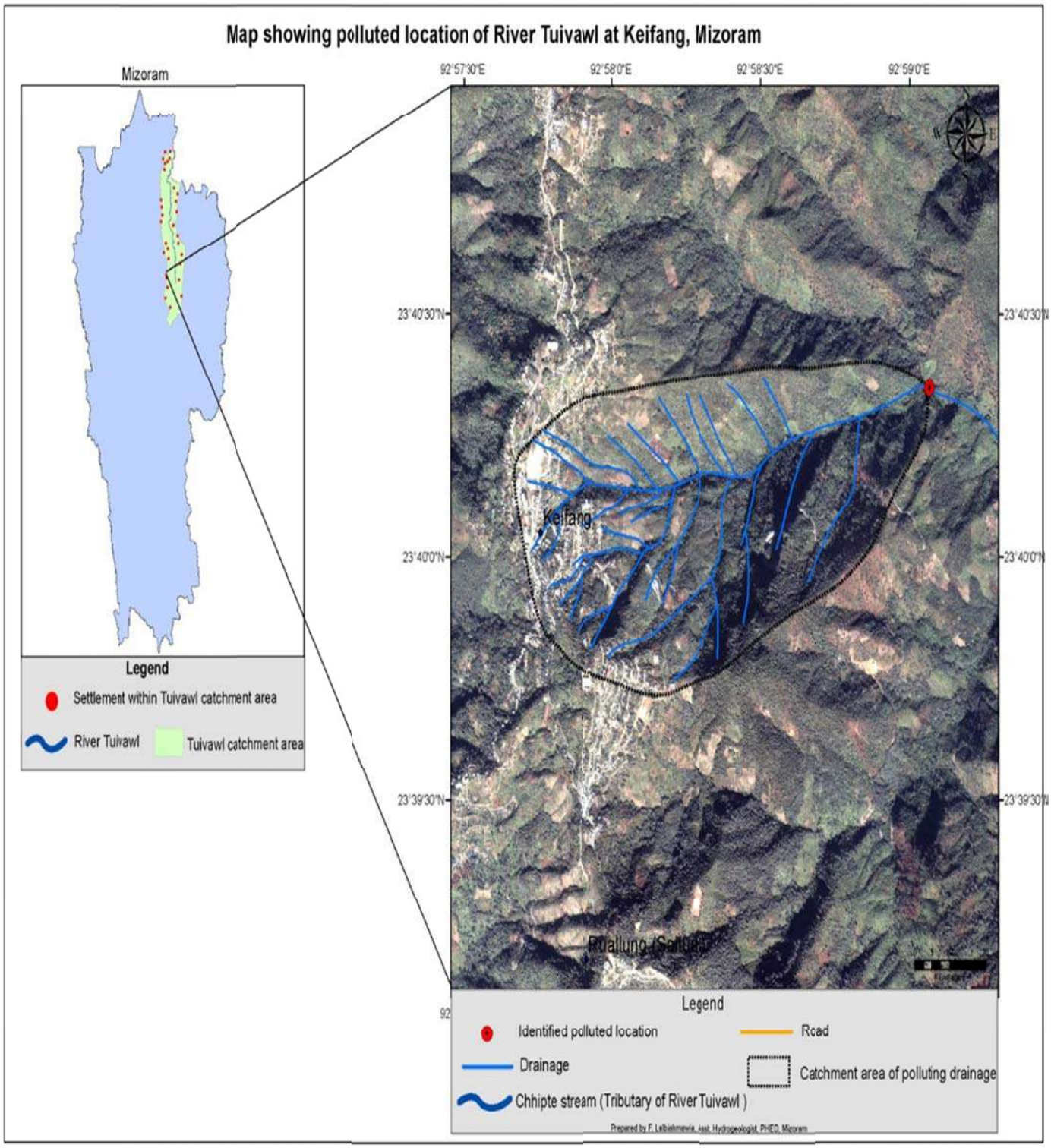
Tuipui river: Map showing tributaries/drains connected to the Tuipui river at the polluted location (Near PHE Water Treatment Plan, Tuipui River, Champhai)



- **Polluted location near Tuipui River, Champhai (Near PHE Water Treatment Plan)**

Annexure- II (d)

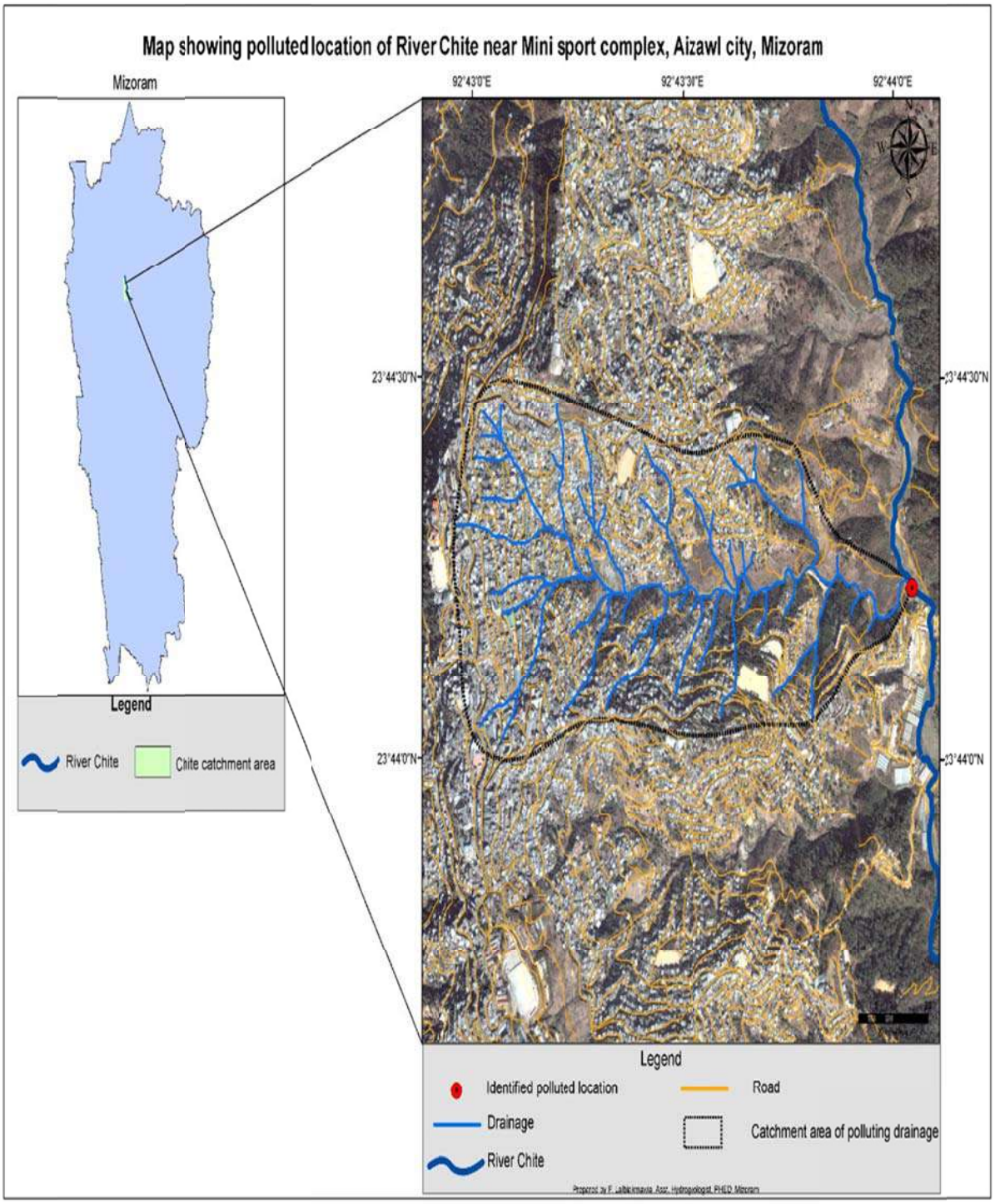
Tuivawl river: Map showing tributaries/drains connected to the Tuivawl river at the polluted location (Eastern part of Keifang village)



- **Polluted location near Tuivawl River, Keifang (Near Bridge)**

Annexure- II (e)

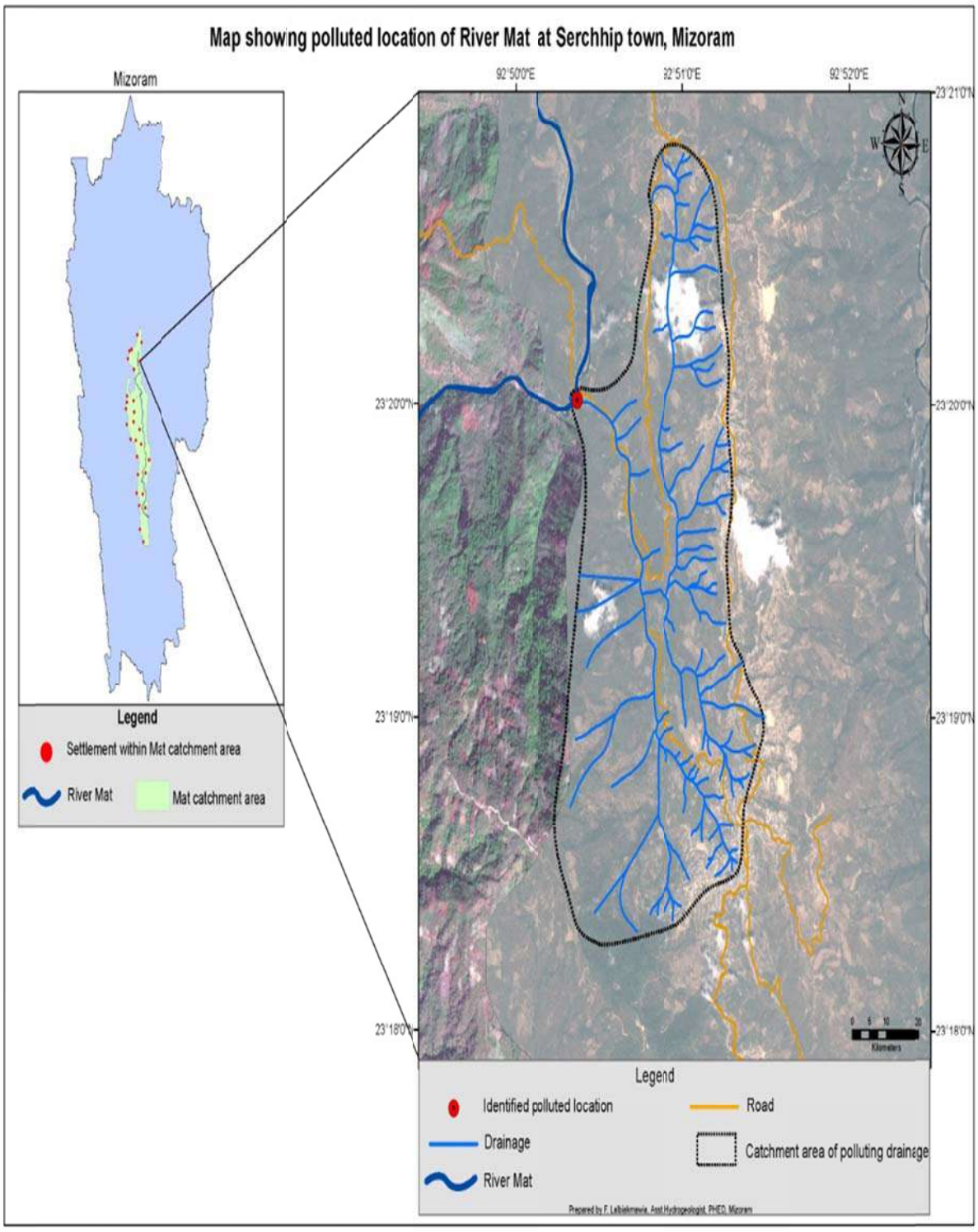
Chite river: Map showing tributaries/drains connected to the Chite river at the polluted location (Eastern part of Aizawl city)



- **Polluted location near Mini Sport Complex, Armed Veng, Aizawl**

Annexure- II (f)

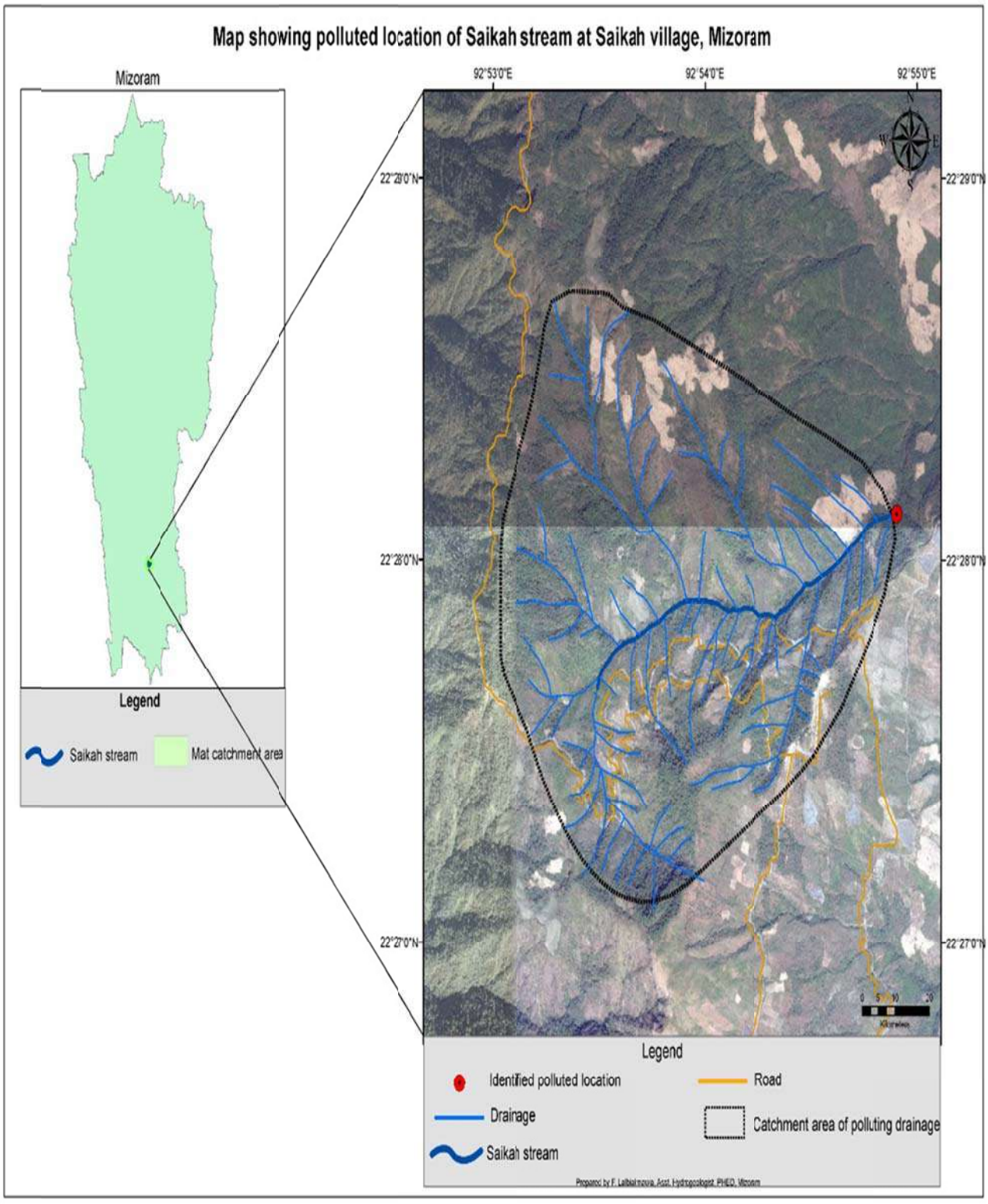
Mat river: Map showing tributaries/drains connected to the Mat river at the polluted location (Western part of Serchhip Town)



- **Polluted location near Dawn Village, Lunglei District**

Annexure- II (g)

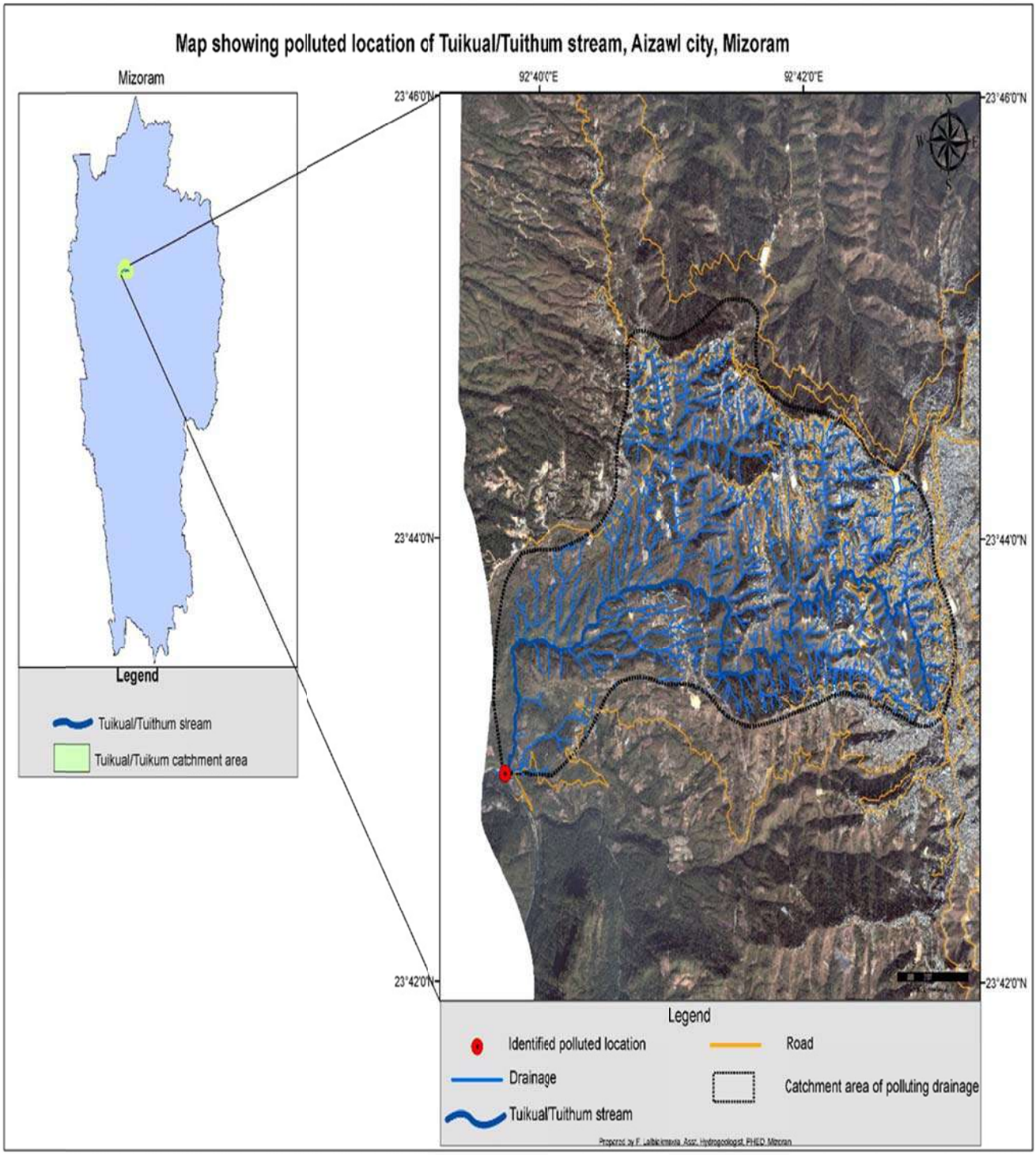
Saikah Stream : Map showing tributaries/drains connected to the Saikah Stream at the polluted location (Saikah village)



- **Polluted location near Saikah village**

Annexure- II (h)

Tuikual Stream : Map showing tributaries/drains connected to the Tuikual Stream at the polluted location (South-Western part of Aizawl City)

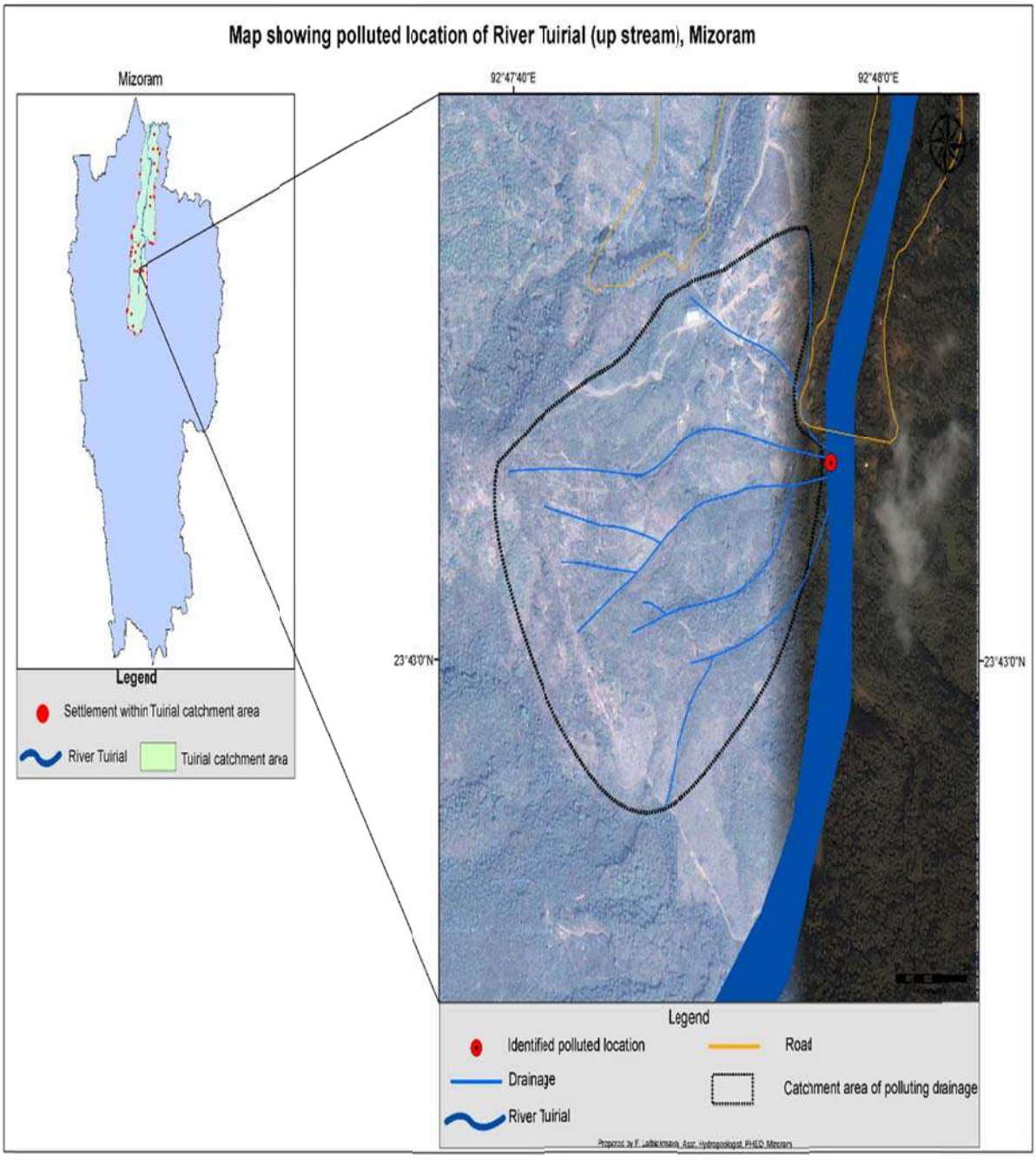


- **Polluted location near Water Treatment Plant, Reiek Kai near Western part of Aizawl city**

Annexure- II (i)

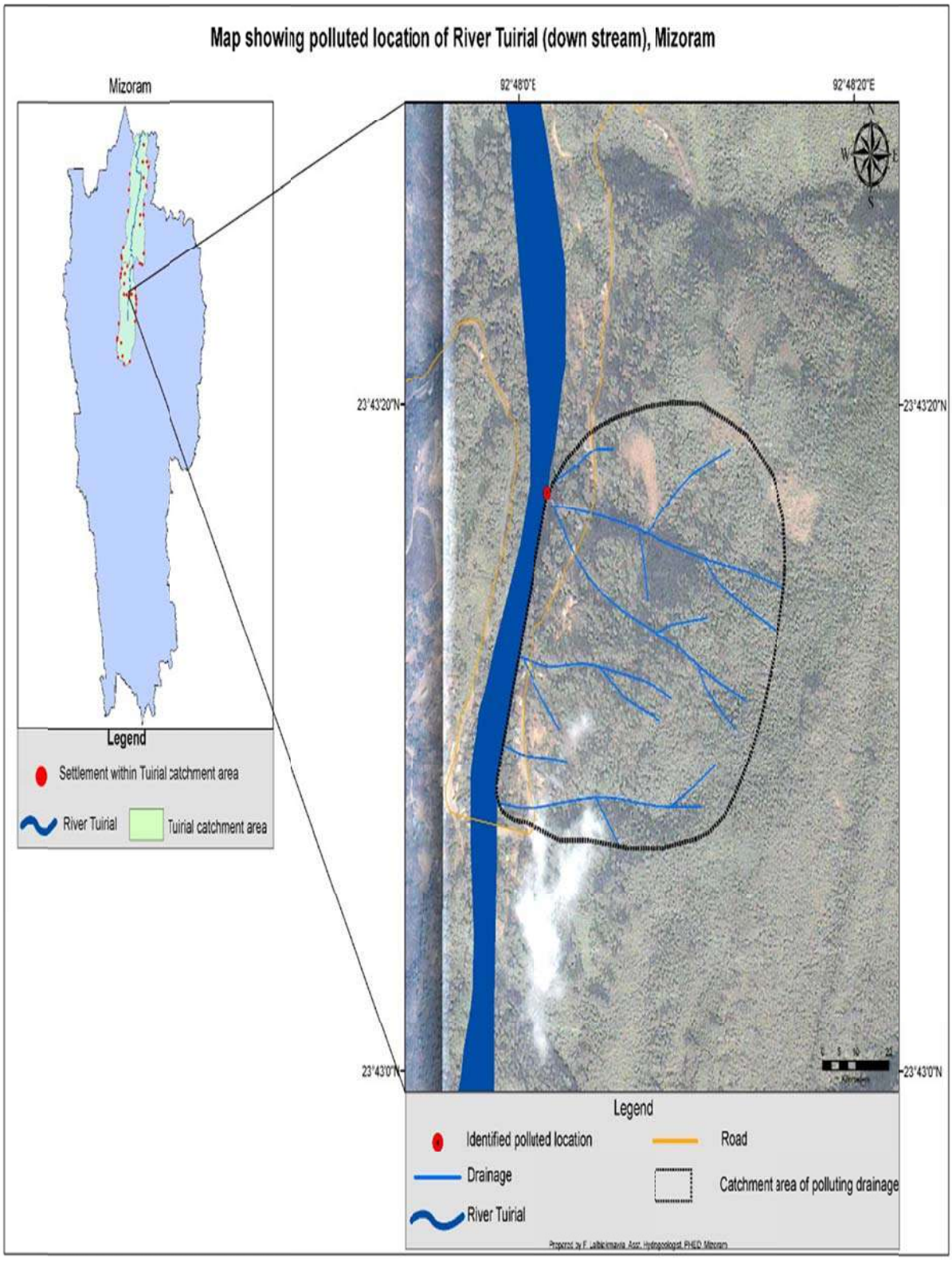
Tuirial river: Map showing tributaries/drains connected to the Tuirial river at the polluted location:

(a) Tuirial upper Stream



- **Polluted location near Tuirial bridge, Turial village**

b) Tuirial downstream



- **Polluted location near Tuirial bridge, Turial village**

Annexure-III

Inventorised water polluting industries in the catchment area of Tiau river

Sl. No	*Name of industry*	*Location*	*Category*	*Quantity of Effluent/waste Generation (Litres/annu)*	*Types of waste*	*Consent Status*	*Authorization status*	*ETP Status*	*Disposal method*	*Action against violators*	*Proposed action*
1	Puia Automobile Workshop	Farkawn	Orange	40	Hazardous Waste	Not applied	Not applied	Not Available	All the used oil generated are collected by owner of the furniture workshops for use as lubricant in their machines/collected by builder of wooden house for protection of pillar from termites and other insects.	Informed to apply for consent -	Regulating the existing industries, upcoming industries and developmental projects in the catchment area.
2	Vena Two wheeler Workshop	Farkawn	Orange	25	-do						
3.	Two Wheeler Workshop	Vaphai	Orange	20	-do-						
4.	Two wheeler workshop	Khankawn	Orange	31	-do-						
5.	R. S Two Wheeler	Khawbung	Orange	27	-do-						
6.	Vala Two Wheeler	Khawbung	Orange	25	-do-						
7.	Two Wheeler Workshop	Khuangleng	Orange	15	-do-						
8.	Paua Two Wheeler Workshop	Zokhawthar	Orange	32	-do-						
9.	Diliana Two Wheeler Workshop	Zokhawthar	Orange	28	-do-						
10.	Two wheeler Workshop	Hnahlan	Orange	34	-do						
11.	Two wheeler Workshop	Khuangleng	Orange	28	-do-						
Sl. No	*Name of industry*	*Location*	*Category*	*Quantity of Effluent/wast*	*Types of waste*	*Consent status*	*Status of Authorizatio*	*ETP Status*	*Disposal method*	*Action against*	*Proposed action*

				e Generation (Kg/day)			*n*			*violators*	
12.	Sub Centre	Bulfek zawl	Red	0.45	BMW	N/A	Being applied	Not Available	Captive Treatment (Deep burial/ sharp pit) -do-	-Nil-	Autoclave, sterilization of solid wastes and shredder for plactic wastes are proposed for these SC/PHC
13	Sub Centre	Dungtlang	Red	0.5	-do-	N/A					
14.	Sub Centre	Farkawn	Red	0.5	-do-	N/A					
15.	Primary Health center (10 Bedded)	Farkawn	Red	1.35	-do-	Valid Consent					
16.	Primary Health center (10 Bedded)	Hnahlan	Red	1.3	-do-	Valid Consent					
17.	Sub Centre	Hnahlan	Red	0.9	-do-	N/A					
18.	Sub Centre	Kelkang	Red	0.5	-do-	N/A					
19.	Sub Centre	Khankawn	Red	0.5	-do-	N/A					
20.	Primary Health center	Khawbung	Red	0.53	-do-	Valid Consent					
21.	Sub Centre	Khawbung	Red	0.5	-do-	N/A					
22.	Sub Centre	Khauangleng	Red	0.15	-do-	N/A					
23.	Sub Centre	Khuangphan	Red	0.2	-do-	N/A					
24.	Sub Centre	Lianpui	Red	0.8	-do-	N/A					
25.	Sub Centre	Sazep	Red	0.8	-do-	N/A					
26.	Sub Centre	Tualcheng	Red	0.9	-do-	N/A					
27.	Sub Center	Vapai	Red	0.7	-do-	N/A					
28.	Sub Center	Zokhawthar	Red	0.9	-do-	N/A					

ANNEXURE-IV

Details of Solid waste generation and gap analysis for Tiau river

Sl No	*Selltlements in the catchment*	*Quantity of wastes*	*Existing infrastructure /disposal mode*	*Gap analysis*	*Target/Achievable goals with Proposed Action*
1.	33 villages with 5771 number of households	5970 Kg/day	Nil. No proper solid waste management system. Wastes are disposed by open dumping in identified dumping site.	5970 Kg/day	*Target/Achievable goals:* 526 kgs per day (Zokhawthar village) for the 1st Phase. *Proposed Action:* To develop proper system for solid waste management as per provisions of the Solid Waste Management Rule, 2016; by introducing waste segregation at source into biodegradable, non-biodegradable waste, plastic wastes, E-waste and Domestic Hazardous Waste; Door to door waste collection system is proposed for collecting segregated wastes from households under the supervision of Village Council. However, for treatment and disposal of solid wastes, biodegradable wastes are proposed to be treated at household level through the system of home composting. Remaining wastes shall be collected by Village Council and transport to the nearest Waste Collection Centre set up by Public Health Engineering Department. The Plastic wastes from the Waste Collection Centre shall be transported by Village WATSAN Committee to Block Headquarters wherein cleaning and compression will be done by Baling Machine, which will be chanelized to the nearest reliable plastic recycling factory outside the state.

ANNEXURE – V(a)

WATER QUALITY DATA OF 9(NINE) POLLUTED RIVER STRETCHES

FOR THE MONTH OF JANUARY, 2020

Sl. No	Station Code	B. CORE PARAMETERS								C. GENERAL PARAMETERS										
		Water Temp (˚C)	*D.O (mg/L)*	*pH*	*Conductivity µs/cm*	*B.O.D (mg/L)*	*Nitrogen Nitrite (N-No□) (mg/L)*	*Faecal Coliform MPN*	*Total Coliform MPN*	*Turbidity NTU*	*Total Alkalinity (mg/L)*	*Chlorides (mg/L)*	*Ammonia-N (mg/L)*	*Total Hardness (mg/L)*	*Calcium (mg/L)*	*Magnesium (mg/L)*	*Sodium (mg/L)*	*K (mg/L)*	*TSS (mg/L)*	*Total Phosphate (mg/L)*
		14	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**
1	3756	15	6	7.38	147	1.2	0.014			22.6	32.1	10.4	0.369	42	10.4	3.8	3	0.5		0.051
2	3709	17	7.5	8.09	132	1.6	0.014	0	2400	7.9	50.9	7.8	0.296	62	16	5.3	1	0.5		0.038
	3734	24	7	5.9	85	1.4	0.008			1.1	26.4	7.8	0.285	34	8	3.4	4.5	1		0.035
	3736	25	7.1	7.01	81	1.2	0.004			0.3	28.3	10.4	0.16	26	6.4	2.4	0.5	0		0.079
	3754	19	5.9	7.05	125	1.2	0.007			0.9	79.2	33	0.251	70	17.6	6.2	1.5	0.5		0.039
3	3757	14	6.5	7.1	63	1.4	0.002			0.2	37.7	7	0.023	46	10.4	4.8	1	0		0.011
4	3720	12	8.1	7.2	105	1.5	0.004			0	22.6	12.7	0.16	34	8.8	2.9	4	0		0.014
5	3718	17	5	8	744	1.1	0.392	16	2400	45	109.4	61.7	3.578	128	40	6.7	27.5	1.5		0.228
6	3735	24	7.3	6.89	75	1.4	0.007			0.5	32.1	12.2	0.194	30	8	2.4	3	0		0.021
7	3740	18	4.1	5.12	62	1.2	0.004			0.4	22.6	7	0.274	30	8	2.4	1	0		0.035
8	3712	17	5.4	7.59	205	1.1	0.006	0	2400	1.2	88.7	37.4	0.148	102	29.6	6.7	4	0.5		0.024
9	2052	15	6.6	6.47	167	1.4	0.011	43	2400	0.2	81.1	11.7	0.277	72	18.4	6.2	1.5	0		0.075
	2053	16	6.7	6.58	161	1.5	0.013	39	2400	1.4	79.2	12.7	0.262	70	18.4	5.8	2	0.5		0.065

Tributaries of Tuirial Stream

Sl. No	Name and location of Stations	B. CORE PARAMETERS								C. GENERAL PARAMETERS									
		Water Temp (˚C)	*D.O (mg/ L)*	*pH*	*Conductivity µs/cm*	*B.O.D (mg/L)*	*Nitrogen Nitrite ($N\text{-}NO_2$) (mg/L)*	*Faecal Coli form MPN*	*Total Coli form MPN*	*Turbidity NTU*	*Total Alkalinity (mg/L)*	*Chloride (mg/L)*	*Ammonia-N (mg/L)*	*Total Hardness (mg/L)*	*Calcium (mg/L)*	*Magnesium (mg/L)*	*Sodium (mg/L)*	*K (mg/L)*	*Total Phosphate (mg/L)*
1	Chite Stream	17	5	8	744	1.1	0.392	16	2400	45	109.4	61.7	3.578	128	40	6.7	27.5	1.5	0.228
2	Lawibual Stream	18	4.1	7.2	464	0.9	0.453			37.5	164.2	73.9	3.108	182	59.2	8.2	21	1	1.001
3	Damdiai	17	5.9	8.24	245	1.3	0.188			0.9	103.8	56.6	0.855	122	36.8	7.2	2.5	0.5	0.027

Tributaries of Tlawng

Sl. No	Name and location of Stations	B. CORE PARAMETERS								C. GENERAL PARAMETERS									
		Water Temp (˚C)	*D.O (mg/ L)*	*pH*	*Conductivity µs/cm*	*B.O.D (mg/L)*	*Nitrogen Nitrite ($N\text{-}NO_2$) (mg/L)*	*Faecal Coli form MPN*	*Total Coli form MPN*	*Turbidity NTU*	*Total Alkalinity (mg/L)*	*Chloride (mg/L)*	*Ammonia-N (mg/L)*	*Total Hardness (mg/L)*	*Calcium (mg/L)*	*Magnesium (mg/L)*	*Sodium (mg/L)*	*K (mg/L)*	*Total Phosphate (mg/L)*
1	Challui	16	6.4	8.11	249	1.5	0.016			1.1	47.2	7	0.315	60	16	4.8	0.5	0.5	0.052
2	VaipuanphoStream	17	6.4	6.12	136	1.3	0.009			0.8	22.6	9.6	0.118	34	8	3.4	2.5	0.5	0.021
3	Serlui Stream	16	5.9	6.52	198	1.2	0.004			2	22.6	11.9	0.198	32	8	2.9	1.5	0	0.035
4	Tuikual Stream	17	5.4	7.59	205	1.1	0.006	0	2400	1.2	88.7	37.4	0.148	102	29.6	6.7	4	0.5	0..024
5	Sakhisih stream	16	5.4	6.2	395	1.2	0.019			1.2	71.7	27.8	0.338	82	21.6	6.7	14.5	0.5	0..089
6.	Tut River	12	6.6	4.94	162		0.008			1.4	50.9	27.8	0.243	56	12.8	5.8	0.5	0	0.013
7.	Teirei River	14	6.7	7.68	142		0.009			2.5	39.6	13	0.304	48	12	4.3	2.5	0.5	0.02

Tributary of Chite

Sl. No	Name and location of Stations	B. CORE PARAMETERS								C. GENERAL PARAMETERS									
		Water Temp (˚C)	*D.O (mg/ L)*	*pH*	*Conductivity µs/cm*	*B.O.D (mg/L)*	*Nitrogen Nitrite ($N\text{-}NO_2$) (mg/L)*	*Faecal Coli form MPN*	*Total Coli form MPN*	*Turbidity NTU*	*Total Alkalinity (mg/L)*	*Chloride (mg/L)*	*Ammonia-N (mg/L)*	*Total Hardness (mg/L)*	*Calcium (mg/L)*	*Magnesium (mg/L)*	*Sodium (mg/L)*	*K (mg/L)*	*Total Phosphate (mg/L)*
1	Lawibual Stream	18	4.1	7.2	464	0.9	0.453			37.5	164.2	73.9	3.108	182	59.2	8.2	21	1	1.001

Annexure- V (b)

Groundwater Quality in the catchment of polluted Rivers

Sl. No	*Name and location of Catchment Area*		B. CORE PARAMETERS				C. GENERAL PARAMETERS							
			Water Temp (°C)	*D.O (mg/L)*	*pH*	*Nitrogen Nitrite (N-No□) (mg/L)*	*Turbidity NTU*	*Total Alkalinity (mg/L)*	*Chlorides (mg/L)*	*Ammonia-N (mg/L)*	*Total Hardness (mg/L)*	*Calcium (mg/L)*	*Magnesium (mg/L)*	*Total Phosphate (mg/L)*
1	**Tuirial Catchment Area**	Bawngkawn Hand Pump, Near HB Petrol Pump, Aizawl	21	2.8	5.97	0.15	3	73.5	43.5	0.106	96	27.2	6.7	0
		Selesih Hand Pump, Aizawl	20	2.9	6.32	0.094	2	73.5	43.5	0.391	90	27.2	5.3	0
		Chaltlang hand pump Near Remi tyre works, Aizawl	21	0.8	5.97	0.15	3	80.9	44.3	0.106	94	28	5.8	0
		S.Hlimen Hand Pump, Aizawl	21	2.2	6.2	0.066	10.7	55.1	34.8	0.555	80	18.4	8.2	0.134
2	**Tlawng Cachement Area**	Zobawk Veng Handpump, Lunglei	25	4.1	6.36	0.091	20	73.5	26.1	0.973	50	12.8	4.3	0.279
		Tuikual Hand Pump, Aizawl	22	2.5	6.32	0.094	2	82.7	43.5	0.391	102	30.4	6.2	0
3	**Tuipui Catchment Area**	Bethel veng Hand-pump, Champhai	18	0	7.69	0	0.5	55.1	21.7	0.167	100	27.2	7.7	0.066

ANNEXURE VI

Details of waste generation and treatment gaps and proposed action for Tiau river

Sl No	*Name of wastes*	*Quantity of wastes*	*Existing infrastructure/disposal mode*	*Gap analysis*	*Proposed Action*
1.	Hazardous (Used oil from automobile repairing workshop)	305 litres/ annum	There is no left over of used oil as all the used oil generated are immediately collected by owners of the furniture workshops for use as lubricant in their machines and also by builders of wooden houses for protection of pillars from termites and other insects.	Nil. There is no left over of used oil.	Regulate the units to obtain Consent/Authorization from MPCB and to develop disposal mechanism for the used oil for proper and safe disposal as per the rule
2.	Bio-Medical wastes (from PHC & Sub-Centres)	11.48 Kg/day	Deep burial/ sharp pit/ Primary treatment (for PHC)	Nil. All the Bio-Medical Wastes are disposed as per the Rules and primary treatment done for effluents of PHC	For improvement, auclaving sterilization for yellow categorized wastes is suggested
3.	Sewage (33 villages in the catchment)	0.8 MLD	Nil	0.8 MLD	Onsite Liquid Waste Treatment for greywaters at individual households for Zokhawthar village with a target of 0.08 MLD for the first phase.
4.	Solid Wastes	5970 Kg/day Kg/day	Nil	5970 Kg/day Kg/day	To develop proper system for solid waste management as per provisions of the Solid Waste Management Rule, 2016; by introducing waste segregation at source into biodegradable, non-biodegradable waste, plastic wastes, E-waste and Domestic Hazardous Waste; Door to door waste collection system is proposed for collecting segregated wastes from households under the supervision of Village Council. Treatment and disposal of the collected wastes will be as per provisions of the Rules by Village Councils, Village WATSAN Committee (PHED) in consultation with MPCB

ANNEXURE-VII

Action Plan & Budget prepared by Irrigation & Water Resources Department, Govt. of Mizoram

Name of Plan/Task	No.	Implementation Stages/Activity (Timeline of Activity)/Indicator	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Budget (Rs in Lakh)
			1	1 4	1	1 3 4	1	1	1 4	1	1	1	1	1	
Environmental Flow Assessment	1)	Collection of available hydrological data (Station data) from Department of Agriculture and from Directorate of Science & Technology and available hydro-meteorological dataset online{for analysis (checking, filling of missing data, etc.) of data with available hydro-meteorological dataset online}.													1.00
	2)	Collection of discharge data of streams/rivers draining to the polluted rivers													25.00
	3)	Purchase of IMD rainfall data and other meteorological data set													1.00
	4)	Purchase of High-resolution satellite imagery (from NRSC etc) and Soil map from NBSS & LUP and a comparison with satellite datasets such as Sentinel, Landsat, ALOS-AVNIR-2, PALSAR, PALSAR-2 mosaic etc													2.00
	5)	Preparation of Basins, Sub-Basin, Catchment and Sub-Catchment level maps from Digital Elevation Model (ASTER, SRTM, ALOS, etc.) using ArcGIS.													-
	6)	Identifying all the gauged catchments within the state.													-
	7)	Modelling of the ungauged catchments from the gauged catchments using forward stepwise-regression analysis and also using HEC-HMS.													-
	8)	Obtaining of different flows quantiles i.e, Q5, Q50, Q75, Q90, Q95 (Qmax, Qmin etc.) and flow duration curves.													-
	9)	Testing water quality of rivers, irrigation water and drainage water from irrigated area using water quality lab of													5.00
	10)	Modeling of non-point source contaminant using SWAT.													-
	11)	Linking the groundwater data from NHP and GW projects to intermittent rivers.													-
	12)	Defining the natural flow regime from the observations obtained from the analysis to assess overall implications for water													-
	13)	Implementation, monitor and feedback.													2.00
													Total :		**36.00**