ཆུ་ལོངས་ཚུད་ཡུན་དང་ཞུན་ཞིན་སྐྱེད་ཞབས་ཏོག་སྡེ་ཚན།

HYDROLOGY & WATER RESOURCES SERVICES DIVISION
NATIONAL CENTER FOR HYDROLOGY & METEOROLOGY
THIMPHU: BHUTAN

Status and River Level Trends:
Glacier Lake Outbrust Flood (GLOF) Early Warning System

Tuesday, November 26, 2019 **Issued at: 10:00 AM**

1. Punatshang Chhu Sub Basin

Sl No.	River Basin Number	Basin Name	Name of River	Station Name	Highest Water Level Recorded	Alert Water Level	Alerm Water Level	Water Level (m) recorded at 9:00 AM Yesterday	Water Level (m) recorded at 9:00 AM Today	Water Level Rise (+)/Fall (-) in meters during last 24 Hrs ending at 9 AM	Downstream Settlement
1	Basin ll	Punatshang Chhu	Pho Chhu	Luggay Tsho		7.80	10.00	6.33	6.33	0.00	Thanza,Tenchey,Lhedi and Lunana area and Downstream of Pho Chhu and Puna-Wangdue Valley
2				Thorthormi Tsho		7.50	5.00	5.58	5.58	0.00	
3				Rapstreng Tsho		7.40	5.00	6.09	6.09	0.00	
4				Bay Tsho		7.40	5.00	6.31	6.29	0.02	
5				Thanza		7.70	8.70	6.33	6.33	0.00	
6				Tarina Wachey		8.50	10.50	6.48	6.48	0.00	Pho Chhu Valley (Tamidamchu, Wolathang, Samidingkha, Khawajara, Shengana, Khuruthang) Puna-Wangdue Valley and Downstream
7				Dangsa		5.50	7.00	3.66	3.63	0.03	
8			Mo Chhu	Taksemakhang		7.50	8.50	5.28	5.26	0.02	Gasa,Mo Chhu Valley,Puna-Wangdue Valley and Downstream
9				Tashithang		9.00	10.50	5.03	5.03	0.00	
10				Yebesa		5.00	7.00	1.29	1.28	0.01	

Approximate Lead Time for Evacuation after the detection of flood at Four lake Sensor							Approximate Lead Time for Evacuation after the detection of flood at Dangsa Sensor				
Sl No	Name of Place Downstream	Approx. Distance from Sensor (Bay Tsho)	Approx. Distance from Sensor (Rapstreng Tsho)	Approx. Distance from Sensor (Thorthormi Tsho)	Approx. Distance from Sensor (Luggey Tsho)	Approx. Tme available for Evacuation	Sl Nos	Name of Place Downstream	Approx. Distance from Sensor (Bay Tsho)	Approx. Time for Flood to reach at the Place	Approx. Tme available for Evacuation
1	Thanza	1.5 km	2.8 km	3.3 km	6.7 km	20-60 minutes	1	Wolathang	5.8 km	30 minutes	30 minutes
2	Tenchey	2.9 km	4.1 km	4.6 km	8.2 km		2	Samdingkha	12.0 km	55 minutes	55 minutes
3	Tshojo	8.1 km	10.0 km	10.5 km	13.8 km		3	Punakha	20 km	90 minutes	1 hours 30 minutes
4	Lhedi	16.7 km	17.6 km	18.5 km	21.8 km		4	Khuruthang	24 km	120 minutes	2 hours
5	Puna-	100 km	100 km	100 km	100 km	5-7 hours	5	Bajo Town	30.5 km	145 minutes	2 hours 25 minutes
							6	Wangdue Bridge	33 km	150 minutes	2 hours 30 minutes

NOTE: The above distance were Calculated from basic tools in the Google Earth Map, thus diastance were approximate only

Glacier Lake Outbrust Flood (GLOF) & Rainstorm Flood Early Warning System.
2. Chamkhar Chhu and Mangdue Chhu Sub Basin

Sl No.	River Basin Number	Basin Name	Name of River	Station Name	Highest Water Level Recorded (m)	Alert Water Level (m)	Alerm Water Level (m)	Water Level (m) recorded at 9:00 AM Yesterday	Water Level (m) recorded at 9:00 AM Today	Water Level Rise (+)/Fall (-) in meters during last 24 Hrs ending at 9 AM	Downstream Settlement
1	Basin lll	Manas	Chamkhar Chhu	Tshampa		5.00	6.50	NR	3.71	#VALUE!	Chokortoe Pry School,Kurjey Village,Wangdicholing,Chamkhar Town,Gangrithng Pry School,Gyelkhar Village and Downstream settlement under Zhemgang.
2				Khagthang		5.50	6.00	NR	4.40	#VALUE!	
3				Kurjey	5.72	3.30	5.00	NR	1.58	#VALUE!	
4			Mangdue Chhu	Jongthang		5.90	7.00	3.89	NR	#VALUE!	Bjizam Community,MHPA Dam, Power House and Downstream settlement of Trongsa and Zhemgang
5				Bjizam	5.52	4.20	5.50	1.75	1.74	-0.01	

Approximate Lead Time for Evacuation of Chamkhar Chhu Sub Basin
Approximate Lead Time for Evacuation after the detection of Flood at the Tshampa AWLS

Sl Nos	Name of Place Downstream	Approx.Distance from the Tshampa AWLS	Approx. Cumlative Distance from Tshampa AWLS	Elevation	Approx. Lead Time
1	Khagthang	20.3 km	20.3 km	3704 m	27 minutes
2	Chorkhor Toe	4.5 km	24.8 km	2904 m	34 minutes
3	Kurjey	12.4 km	37.2 km	2771 m	60 minutes
4	Wangdichollin	5.7 km	42.9 km	2600 m	79 minutes
5	Bumthang	1 km	43.9 km	2562 m	83 minutes
6	Gangrithang	0.3km	44.2 km	2552 m	84 minutes
7	Gyelkhar	1.7 km	45.9 km	2538 m	91 minutes

Approximate Lead Time for Evacuation of Mangdue Chhu Sub Basin
Approximate Lead Time for Evacuation after the detection of Flood at the Jongthang AWLS

Sl Nos	Name of Place Downstream	Approx.Distance from the Tshampa AWLS	Approx. Cumlative Distance from Tshampa AWLS	Elevation	Approx. Lead Time
1	Bjizam	18.5 km	18.5 km	2223 m	34 minutes
2	Dam Site	7.8 km	26.3 km	1848 m	50 minutes
3	Power Plant	20.4 km	46.7 km	1024 m	88 minutes

3. River Level Status of Gauging Station

Sl No.	Station Type	River Basin Number	Basin Name	Name of River	Station Name	Highest Water Level Recorded (m)	Water Level (m) recorded at 9:00 AM Yesterday	Water Level (m) recorded at 9:00 AM Today	Water Level Rise (+)/Fall (-) in meters during last 24 Hours ending at 9:00 AM Today	Weather Condition	Downstream Settlement
1	AWLS	Basin I	Wang Chhu	Thim Chhu	Dodena		1.49	1.49	0.00	Partly cloudy	Thimphu Valley and Downstream
2	Principal				Lungtenphu	2.82	0.45	0.47	0.02	Partly Sunny	
3	Principal				Damchu	6.00	2.11	2.10	-0.01	Sunny	Chukha and Downstream
4	Secondary			Haa Chhu	Haa	2.60	0.58	0.58	0.00	Sunny	Haa and Wang Chhu Downstream
5	Secondary			Pa Chhu	Bonday		0.86	0.85	-0.01	Cloudy	Downstream of Paro Valley and Wang Chhu Basin
6	Principal			Amo Chhu	Dorokha		2.45	2.45	0.00	Sunny	Samtse, Phuntsholing and Downstream
7	Principal				Doyagang	7.07	2.28	2.28	0.00	Cloudy	Phunsholing and Downstream
8	Secondary	Basin II	Punatshang Chhu	Pho Chhu	Samdingkha	6.10	2.75	2.74	-0.01	Cloudy	Puna-Wangdue Valley and Downstream
9	Principal			Mo Chhu	Yebesa	3.94	1.28	1.28	0.00	Cloudy	Mo Chhu Valley and Downstream
10	Secondary			Punatshang Chhu	Wangdue Bridge		0.80	0.80	0.00	Clear Weather	PHPA I,PHPA II and Downstream
11	Principal				Wangdue Rapid	7.82	1.31	1.29	-0.02	Sunny	
12	Principal				Turitar Sunkosh	6.68	1.90	1.90	0.00	Sunny	Downstream of Dagana and Lhamoizingkha
13	Secondary				Sunkosh Bridge		1.15	1.15	0.00	Sunny	
14	Principal				Kerabari	11.90	3.70	3.69	-0.01	Partly cloudy	Lhamoizingkha and Downstream
15	Secondary			Mao Chhu	Sherzhong		3.60	3.60	0.00	Cloudy	Gelelephu Valley and Downstream
16	Principal	Basin III	Manas	Mangdue Chhu	Bjizam	5.35	1.75	1.75	0.00	Partly cloudy	MHPA Dam,Power House and Downstream of Trongsa & Zhemgang
17	Secondary				Dakpai Chhu	2.26	1.21	1.20	-0.01	Partly Sunny	Downstream of Zhmgang and Panbang
18	Principal				Tingtibi	7.45	2.82	2.83	0.01		
19	Principal			Chamkhar Chhu	Kurjey	4.00	1.59	1.59	0.00	Sunny	Chamkhar Valley, Zhemgang and Downstream
20	Principal				Shingkhar		1.38	1.37	-0.01	Sunny	Zhemgang and Downstream
21	Principal			Kuri Chhu	Sumpa	7.65	3.08	3.07	-0.01	Cloudy	Lhuntse Downstream,Kurizampa,KHPA and Downstream along the Kuri Chhu
22	Secondary				Khoma	5.30	1.34	1.32	-0.02		
23	Secondary				Autsho	8.48	2.95	2.95	0.00	Cloudy	Kurizampa,KHPA and Downstream along the Kuri Chhu
24	Principal				Kurizampa	18.45	6.89	6.88	-0.01	Cloudy	KHPA and Downstream along the Kuri Chhu
25	Principal			Kholong Chhu	Muktirap	6.00	1.57	1.57	0.00	Cloudy	Doksum,Kholong Chhu Hydro Power Project and Downstream of Gongri Chhu
26	Principal			Drangme Chhu	Doksum		3.08	3.08	0.00	Cloudy	Kholong Chhu Hydro Power Project and Downstream of Gongri Chhu
27	Secondary				Chazam		7.25	7.25	0.00	Cloudy	Downstream Settlement of Kuri-Gongri and Panbang
28	Principal				Ozorong	6.75	1.15	1.15	0.00	Cloudy	Downstream of Kuri-Gongri and Panbang
29	Secondary				Sheri Chhu	2.58	1.34	1.34	0.00		
30	Principal				Panbang	12.48	4.10	4.08	-0.02	Clear Weather	Manas and Downstream
31	Principal			Ngara Ama Chhu	Pangzam		5.50	5.50	0.00	Cloudy	Bangtar Settlement and Downstream
32	Principal				Bangtar		1.85	1.85	0.00	Sunny	Downstream of Bangtar Settlement

NOTE **The Water Level are relative Gauge Hight of the Observation site reference to the Site Specific and does not represent the actual water depth.**

ALERT

ALARM

NR Represent that the Data has not been reported or Not Updated

ISSUED BY: FMCR,HWRSD,NCHM