GOVERNMENT OF THE PUNJAB

IRRIGATION DEPARTMENT

FLOOD FIGHTING PLAN 2026

MARALA DIVISION UCC, MARALA
UPPER CHENAB CANAL CIRCLE LAHORE

LAHORE IRRIGATION ZONE LAHORE

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FLOOD FIGHTING PLAN2026

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Flood Fighting Plan 2026 of Marala Division has been prepared keeping in view of the recommendations /Report of the committee for finalization of Machinery & Human Recourses requirements for flood Fighting Plan (FFP) constituted by the Administrative Department vide No. SO(Floods)VII-22/2017 dated 26.12.2025 & the SOP,s was issued vide No.SO (Floods) VII-22/2017 dated 13.02.2026. Chapter wise detail is given below.

SCHEDULE OF FLOOD PREPAREDNESS ACTIVITIES FOR FLOOD SEASON 2026

Sr. No	Description	TARGET DATES
I	**Preparation of Flood Fighting Plans.**	
	a) Submission of Draft Divisional Plans by Zonal Chiefs to Chief Engineer, Drainage and Flood (after scrutiny by SEs/CEs)	15-02-2026
	b) Review by Chief Engineer D&F.	15.03.2026
	c)Final Submission of Flood Fighting Plans.	31-03-2026
	d) Clearance by Chief Engineer D&F.	10-04-2026
II	**Inspection of Flood infrastructure.**	
	a) By XENs	10-03-2026
	b) By SEs/Ces	20-03-2026
	c) By Departmental & Army Teams.	31-03-2026
III	a. Indication of Critical Encroachments on Bunds and spurs to the Civil Administration. b. Pre-flood breaching section operation committee meeting for briefing on operation of breaching section. c. Submission of clearance of critical encroachments on bunds/spurs by Chief Engineer	31-03-2026 30.04.2026 30.04.2026
IV	**Painting Gauges, RD Marks, Data Boards and Repairs to Flood Bunds etc**	31-05-2026
V	**Replenishment of Reserve Stock of Stone and Flood Fighting Material**	
	a) Identification of needs.	28-02-2026
	b) Funding/Procurement Arrangements.	15-03-2026
	c)Procurement,Stacking, Prescribed field Checks.	31-05-2026
VI	**Installation of wireless sets**	15-06-2026
VII	**Opening of Zonal Flood Cells.**	
	a) Duty Roster	01-06-2026
	b) Operative.	15-06-2026

Part A

CHAPTER-1

SALIENT FEATURES OF THE MARALA DIVISION

Part (A)

Chapter-I

1. SALIENT FEATURES OF THE DIVISION

1.1 LOCATION

The Barrage is located 23 km. towards North East from Sialkot city. This Barrage is 16 K.M. from the foothills of Pir Punjal Range where the River Chenab enters the plain lands near Ahknoor.

1.2 GENERAL DESCRIPTION

Marala Division UCC was established at the time of construction of old Marala Weir in 1905-1912. Presently Marala Division UCC is responsible for flood management of Marala Barrage and its allied structure which comprises of:-

- Upstream River Training works of Marala Barrage.
- Downstream Colony Protection Cum Left Flood Protection Bund.
- Main Line Upper UCC up to Bombanwala Head Regulator under which left side tributaries/ Nullahs (Palkhu, Aik, Dugri, Tunnel Wah etc.) and drains are siphoned.

The left bank of Chenab River from downstream Marala Barrage up to Alexandra Bridge also presumably falls in the jurisdiction of Marala Division.

The River training works and flood embankments falling in the area of responsibility of Marala Division UCC are in two Districts i.e. Sialkot and Gujrat. The District wise length of bunds is as follows.

Sialkot District

U / S Marala Barrage

Left Marginal Bund

- Main bund = 13.72 Miles.
- Spurs (14 Nos.) = 4.90 Miles

Left Guide Bund

- Upstream = 0.82 Miles

D/ S Marala Barrage

Colony Protection Cum
Left Flood Protection Bund

- Main bund = 10.84 Miles
- Spurs (10 Nos.) = 1.92 Miles

Left Guide Bund

- Downstream = 0.20 Miles

Chumbiyan Flood Bund

- Bund = 3.4 Miles

Total Length of Bunds in Sialkot District = 35.8 Miles

Gujrat District

U / S Marala Barrage

Right Marginal Bund

- Main bund = 1.25 Miles
- Spurs (4 Nos.) = 2.25 Miles

Right Guide Bund

- Upstream = 0.58 Miles

D/ S Marala Barrage

Right Guide Bund

- Downstream = 0.12 Miles

Total Length of Bunds in Gujrat District = 4.20 Miles

Total Length of Bunds in Marala Division = 36.60 **Miles**

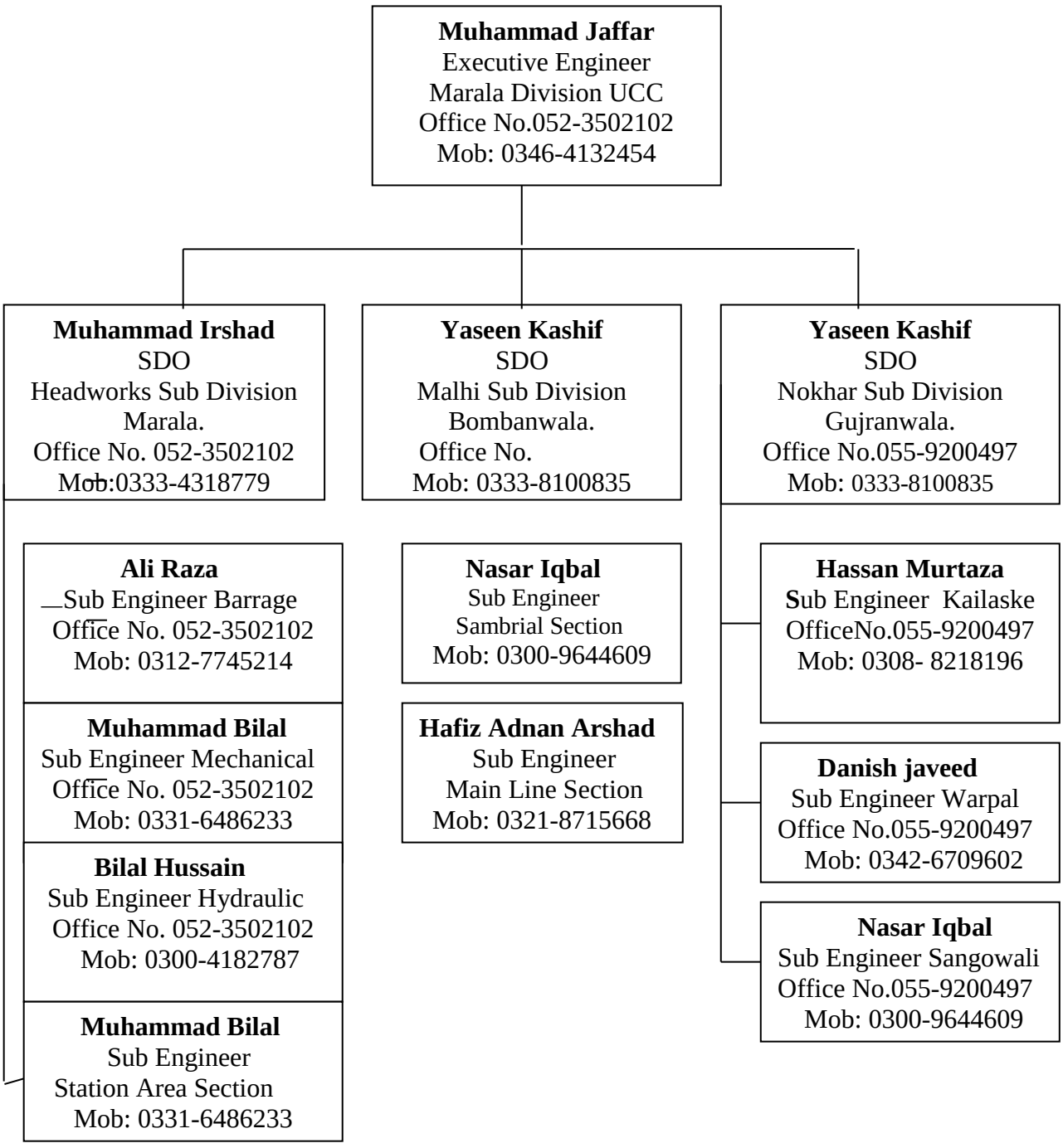
Apart from maintenance of flood embankments, Marala Division is responsible for complete flood management at Marala Barrage which is a diversion structure across Chenab River designed to pass 11,00,000 cusecs of flood discharge.

The Executive Engineer, Marala Division UCC is the administrative head of the Marala Division. The organization chart of the Division is annexed at next page.

1.3 ADMINISTRATIVE SETUP

The Executive Engineer Marala Division is the administrative head of the Marala Division. The organization chart of the Division is as under.

Organization Chart of Supervisory Staff of Marala Division UCC



SALIENT FEATURES OF THE MARALA BARRAGE

LOCATION

The Barrage is located 23 km. towards North East from Sialkot city. This Barrage is 16 K.M. from the foothills of Pir Punjal Range where Chenab River enters the plain lands near Ahknoor.

GENERAL DESCRIPTION

Marala Head works was constructed by the Punjab Irrigation Branch during the period 1905-12 for diversion of 11694 cusec discharge through Upper Chenab Canal. It was located just below the confluence of three Rivers (Munawar Tawi on Right, Chenab in center and Jammu Tawi on left). The old weir was remodeled during 1935-37, when a 20 ft. deep sheet pile was provided at the end of downstream impervious floor. In the year 1950, the capacity of Upper Chenab Canal was raised to 16500 cusec to supplement the extra requirements of Riaya Branch, which was converted to BRBD Link. During 1956, Marala Ravi link Canal was put in operation for diverting 22000 cusec of water from Chenab River to Ravi River during summer to supplement the water requirement of Sutlej Valley Canal System through Balloki Sulemanki Link Canal taking off from Ravi River at Balloki.

The capacity of the old weir was 7, 12,000 CuseCs with upstream pond level at RL 808.00 feet. The weir was ponded by shutters and consequently there was insignificant control over the River. The weir experienced ever highest flood at Marala which was to the tune of 11,00,000 cuseCs on 26.07.1957. The left and right marginal bund was allowed to breach resulting in catastrophic inundation of lands and abadies. The maximum recorded flood heights at upstream of weir is as below.

Year	Left	Center	Right
1928	814.10		810.50
1954	816.00		816.00
1957	814.70		814.60

2025 810.00 817.00 813.00

The old Marala Weir was abandoned in 1968 when it was replaced by new Barrage under Indus Basin Replacement Works. The new Barrage was constructed at 1130 feet down stream of old weir. The capacity of left pocket was enhanced to accommodate the huge diversion of 38,850 Cs. The new Barrage experienced an exceptionally high flood of 8,45,090 Cs on 10-09-1992 at flood height of 812.00 ft at Barrage Crest, 825.0 at critical gauge on LMB RD 12000 and 820.00 at RMB RD 5000 i.e. Breaching Section. Another unprecedented exceptionally high flood of 8,61,464 Cs has been experienced on 06.09.2014. This flood was through Barrage at normal pond level of RL 812.00.

The pond level for new Barrage was also raised in order to improve the performance of off taking channel by 4.00 feet. The pond level was thus fixed as 812.00. This reduced the approach velocity and considerably reduced the erosion of belas. The old weir crest in normal bays was at RL of 800.00, the same crest level was kept for the new barrage. This scenario has reduced the operational capacity of the Barrage. In order to overcome this handicap, the old crest required to be immediately removed / knocked down.

FEATURE	**BARRAGE**	**UPPER CHENAB CANAL Head Regulator**	**MARALA RAVI LINK CANAL Head Regulator**
Capacity	1100000 Cs. +/- 20%	16850 Cs. +/- 15%	22000 Cs. +/- 15%
Length (Abbutm. Abbutm)	4472’-4”	265 feet	355 feet
No. of Spans.	66 No.s 13 L/U. Sluice. 46 Normal & 7 R/U. Sluice.	6	8
Span width	60 feet	40 feet	40 feet
Pier width	7 feet 3”	5.0 feet	5.0 feet
Crest level.	U. Sluice 795.00 Nml. Bays 800.00	802.00	803..50
Pond Level	Summer 812.00 Winter 808.00		
Crest Width	1.5 feet.	4.83 feet	4.83 feet

CHAPTER-2

DESIGN DATA OF FLOOD PROTECTION AND RIVER TRAINING WORKS

2.1 DESIGN PARAMETER OF TRAINNING WORKS

Marginal Bund = 02 No
Guide Bund = 04 No
Spurs along left Marginal Bund = 13 No
Spurs along right Marginal Bund = 04 No
Spurs along Colony Protection
Bund Cum Left Flood Protection Bund = 10 No
Location of river training works is evident on index plan

Data of Marginal & Guide Bunds And Spurs in Marala Division Are Tabulated Below.

A). MARGINAL AND GUIDE BUNDS ON LEFT SIDE

S. No.	Name	Length in feet	Top Width in feet	Side Slopes	Top RL At Head	Top RL at Tail
1	Left Marginal Bund	68639	25	3:1	826.30	849.4.
2	Left Guide Bund U/S	4124	40	2:1	823.0	826.5
3	Left Guide Bund D/S	992	40	2:1	818.5	818.5

SPURS ALONG LEFT MARGINAL BUND,

S. No.	R.D. of Spur	Type	Side Slope	Top Width In Feet	Length of Shank In Feet	Length of Head In Feet	Total Length In Feet	Year of Construction

1	4237	Guide wall spur (JT.1)	3:1	35	3200	600	3800	2003-04
2	6146	T-Head	3:1	15	3265	270	3535	1905-12
3	9165	T-Head	3:1	15	2652	290	2942	1905-12
4	11920	T-Head	3:1	15	2580	270	2850	1905-12
5	18281	T-Head	3:1	15	2970	335	3305	1905-12
6	21530	Mole	3:1	15	1740		1740	1905-12
7	24080	T-Head	3:1	20	1360	270	1630	1905-12
8	27584	Mole	3:1	15	750		750	1905-12
9	30188	T-Head	3:1	20	1525	297	1822	1905-12
10	34143	T-Head	3:1	15	1195	205	1400	1968
11	36132	Mole	3:1	15	505		505	1968
12	37832	T-Head	3:1	20	1320	320	1640	1968
13	40100	Mole	3:1	15	325		325	1971
14	JT-2	Guide wall	3:1	25	3300	923	4223	2003-04

The Left Marginal Bund is an afflux embankment on left of Rivers constructed to accommodate the afflux created by Marala Barrage. The bund margins the flood heights of Jammu Tawi River and Chenab River. It is subjected to parallel flow of Jammu Tawi and its tributaries. In order to save it from the river erosion, it has been provided with 13 No.

spurs from RD 4+237 to 40+100. The condition of bund is satisfactory but no major work has been executed over this bund. However, River training works along this bund require some repair work which will be completed on the availability of funds before coming flood season. **The Critical Gauge has been fixed at RD 12+000 which is indicative and decisive while operating the breaching section on right marginal bund. The critical level of the gauge is 829.00.**

There is a metaled road running on this bund from RD 0-40+000 constructed by District Council Sialkot. The main bund has a free board of 6.00 ft. The bund near villages and abides is damaged to some extent due to tress-passing. Heavy rainfall, weathering action & deferred maintenance has aggravated the situation; however, the bund is generally safe to combat even high floods. A work "Remodeling of Left Marginal Bund of Marala Barrage" with respect to flood levels of 2014, which was completed by PIU Bunds.

B). <u>MARGINAL AND GUIDE BUNDS ON RIGHT SIDE</u>

S. No	Name	Length in Feet	Top Width in Feet	Side Slopes	Top RL At Head	Top RL At Tail
1	Right Marginal Bund	6316.0	36	3:1	826.5	827.3

	U/S					
2	Right Guide Bund U/S	2907.5	40	2:1	823.0	826.25
3	Right Guide Bund D/S	592.0	40	2:1	818.5	818.5

SPURS ALONG RIGHT MARGINAL BUND,

S. No.	Name of Spur	Off taking RD	Type	Side Slope	Top width in Feet	Length of Shank in Feet	Length of Head in Feet	Total Length in Feet
1	T-1	3+660 RMB		3:1	25	6640	600	7240
2	M-1	5+700 T-1	Mole	3:1	25	400		400
3	M-2	5+700 T-1	Mole	3:1	25	534		534
4	T-2	5+500 T-1	T-Head	3:1	25	2453	600	3053

The Right Marginal Bund was constructed in alignment of the old weir from Right Guide Bund to right high bank. The Pacca Road from Marala Barrage to Gujrat runs on its top. The breaching section of Marala Barrage has also been provided at R.D: 5+000. The reach R.D.3+660 –6+316 (Tail) has been provided with a dowel on river side. General Condition of the Bund is safe to meet any even high flood.

C). COLONY PROTECTION CUM LEFT FLOOD PROTECTION BUND

S. No	Name	Length In Feet	Top Width In Feet	Side Slopes	Top R.L At Head	Top R.L At Tail
1	Colony Protection Cum Left Flood Protection Bund	54+200	25	R/ side =3:1 C/ side =2:1	818.50	800.49

Spurs Along Colony Protection Cum Left Flood Protection Bund

S. No	R.D. of Spur	Type	Side Slope	Top Width In Feet	Length of Shank In Feet	Length of Head In Feet	Total Length In Feet	Year of Construction
1	10+100	J-Head	2:1	25	2850	-	2850	2008-09
2	24000	T-Head	3:1	15	747	200	947	1973-75
3	25400	T-Head	3:1	15	70	200	900	1973-75
4	26700	T-Head	3:1	15	800	200	1000	1973-75
5	31200	T-Head	3:1	20	1055	200	1255	1973-75

6	35000	T-Head	3:1	20	800	200	1000	1973-75
7	39000	T-Head	3:1	20	845	200	1045	1973-75
8	43500	T-Head	3:1	20	830	200	1030	1973-75
9	47500	T-Head	3:1	20	1000	200	1200	1973-75
10	49750	T-Head	3:1	20	1000	200	1200	1973-75

COLONY PROTECTION CUM LEFT FLOOD PROTECTION BUND.

Colony Protection Bund was constructed for the protection and safety of Canal Colony Marala, Military Garrisons, Upper Chenab Canal, Abadie's and lands situated on left bank of Chenab River in immediate vicinity of downstream Marala Barrage. Left Flood Protection Bund was originally constructed after high flood of 1973 by the Local Govt. of Sialkot District in extension of colony protection bund to save the Abadie's and lands of Sialkot District falling on left bank of Chenab River.

During 2009, both the bunds were merged in Colony Protection Bund cum Left Flood Protection Bund. The existing top levels of the bund are 1-5 feet below the design level in reach RD: 6+500 to 51+746 (Junction of Khasa Bund). Raising of this bund has been proposed in aforementioned reach.

SYPHONS OF UPPER CHENAB CANAL AND M. R. LINK

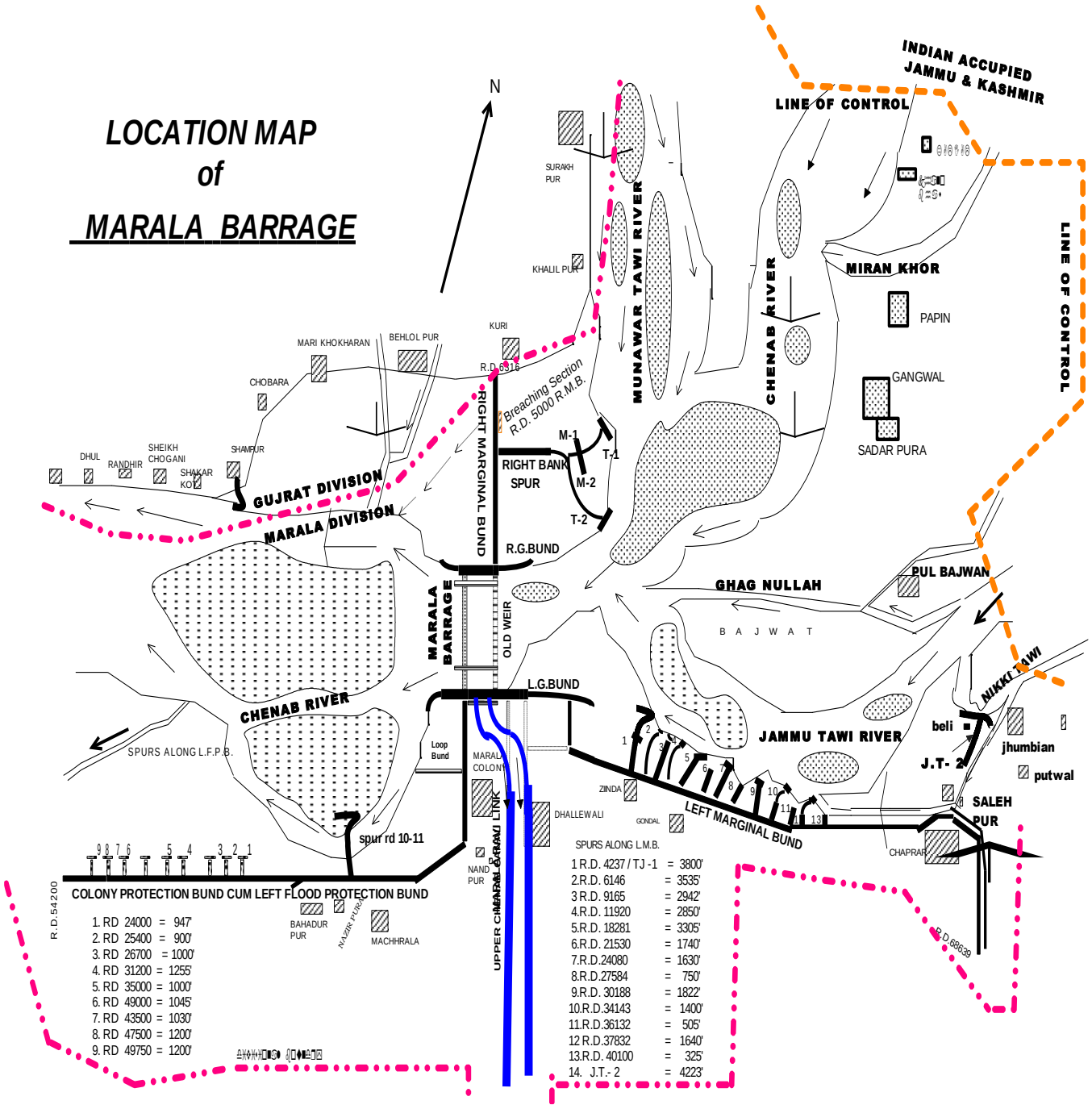
S. No	M.R Link Canal				Upper Chenab Canal				Drain or Nullah passing through
	R.D.	Capacity	No's of Barrells	Size	R.D.	Capacity	No's of Barrel	Size	
1	18145	3599	5	8x8	17050	3500	7	8 ft	Tunnel Drain
2	34100	2560	8	6x6	35800	2660	8	6.5 ft	Dugri No.1
3	42162	745	3	6x6	41600	360	1	6.5 ft	Dugri No.2
4	47075	2560	9	6x6	52200	1670	6	5.67 ft	Palkhu Nullha
5	60500	1725	6	6x6	63450	600	6	4 ft	Jurian Drain
6	79700	1150	4	6x6	75800	220	1	5.67 ft	Roras Drain
7	-	-	-	-	83720	300	2	5.67 ft	Sahuwala Drain
8	-	-	-	-	90275	3000	11	8 ft	Begowala Drain
9	-	-	-	-	94500	50	1	4 ft	
10	-	-	-	-	100650	634	3	5.67ft	Passia Drain
11	90190	5000	-	-	106000	1900	5	8 ft	Aik Nullah
12	106000	940	3	6x6	115900	490	2	6.5x4.5 ft	

Syphons constructed on MR Link Canal comparatively have more capacity than Syphon structures on U.C.C. During rain / flood, the flood water at syphons on UCC, does not dispose off with same magnitude / quantity as received from syphon of MR Link. Due to reason, the heading up of floodwater along Left Bank of UCC, took place at all the syphons of UCC, endangering the safety of canal and adjoining local abadies and crops. The people of the area have been making hue and cry and critical situation has been faced by the Irrigation Department.

During the course of receiving flood water at syphon, floating material often blocks the barrels thus endangering the safety of structure and adding up accumulation of flood water in adjoining areas also take place.

Increase in Up-lift pressures on top of syphon barrels establishes the threat on old constructed structures. To face the all situation, regular monitoring system is adopted and concerned departmental staff remains vigilant during the passing of flood water.

2.2 LOCATION MAP



Executive Engineer,
Marala Division UCC,
Marala.

CHAPTER-3

BRIEF HISTORY OF PAST FLOOD EVENT

Brief History of Past Flood Events:

Since the construction of Marala Barrage, the notable floods (exceptionally high flood) were experienced 5 times i.e. 1973, 1988, 1992, 1996, 1997,2014 and 2025. The flood in 2025 was the ever highest in the history of Marala Barrage with magnitude 917525 cusec observed on 26.08.2025.

Flood 1973

An exceptionally high flood passed from newly constructed Barrage during this year. The magnitude of flood was 769690 cusecs. Major damages occurred on downstream bund namely “colony protection cum left flood protection Bund” at reach RD 47350 to 51600 and Spur R.D 47500, RD 51500 were washed away.

Flood 1988

During this year, an exceptionally high flood was experienced at Marala Barrage on 25.09.1988 and was recorded 776896 cusecs. At that time, the discharge was the ever highest since the construction of new Barrage. The duration of flood was 77 hours. The flood water damaged the stone aprons of Right Bank spurs T.2, spur R.D 6146, 9165, 30188 along LMB and spur R.D 43500, 47500, 49750 along colony protection Bund cum left flood protection Bund.

Flood 1992

This year, the magnitude of flood was 845090 cusec (Exceptionally high) and was the highest flood in the history of Marala Barrage (since 1968-to date). This flood damaged the aprons of Right Bank spur T-2, Goynes 1&7, D/S Left Guide Bund, Spur R.D 6146, 30188 along LMB.

Flood 1997, 1998

In these two years, the flood magnitude reached to exceptionally high flood continuously and was 766860 & 775525 cusec respectively. Both the floods passed safely and no notable damage occurred through flood water.

Flood 2010

Flood coming during this year was of high flood magnitude and 314378 cusec discharge was observed at Marala Barrage. Flow of flood water touched with upstream and downstream bund and spurs. No damage occurred at any structure.

Flood 2011

During this year, the maximum discharge that passed from Marala Barrage was 169055 cusecs, falling in the category of medium flood and passed very safely from Barrage.

Flood 2012

During this year, the maximum discharge that passed from Marala Barrage that was 205914 cusecs, which falls in the category of high flood and passed very safely from Barrage. No alarming situation was occurred.

Flood 2013

During this year, the maximum discharge passed from Marala Barrage was 3,77,290 cusecs, which falls in the category of high flood and passed very safely from Barrage. No alarming situation was occurred.

Flood 2014

During this year, the maximum discharge passed from Marala Barrage was 8,61,464 cusecs, which falls in the category of exceptionally high flood and passed very safely from Barrage. No alarming situation occurred.

Flood 2015

During this year, the maximum discharge passed from Marala Barrage was 1,83,431 cusec which falls in the category of medium flood and passed very safely from Barrage.

Flood 2016

During this year, the maximum discharge passed from Marala Barrage was 412065 cusec which falls in the category of very high flood and passed very safely from Barrage.

Flood 2017

During this year, the maximum discharge passed from Marala Barrage was 216020 cusec which falls in the category of high flood and passed very safely from Barrage.

Flood 2018

During this year, the maximum discharge passed from Marala Barrage was 201878 cusec which falls in the category of high flood and passed very safely from Barrage.

Flood 2019

During this year, the maximum discharge passed from Marala Barrage was 237496 cusec which falls in the category of high flood and passed very safely from Barrage.

Flood 2020

During this year, the maximum discharge passed from Marala Barrage was 303884 cusec which falls in the category of high flood and passed very safely from Barrage.

Flood 2021

During this year, the maximum discharge passed from Marala Barrage was 193750 cusec which falls in the category of medium flood and passed very safely from Barrage.

Flood 2022

During this year, the maximum discharge passed from Marala Barrage was 225836 cusec which falls in the category of high flood and passed very safely from Barrage.

Flood 2023

During this year, the maximum discharge passed from Marala Barrage was 210983 cusec which falls in the category of high flood and passed very safely from Barrage.

Flood 2024

During this year, the maximum discharge passed from Marala Barrage was 178750 cusec which falls in the category of high flood and passed very safely from Barrage.

Flood 2025

In August 2025 as per weather forecast on 26th August from 2 am moderate rainfall will start on upper catchment of Narowal. As per forecast, rainfall will intensify from 9:00 am onwards and highly intense precipitation is expected in Samba Indian catchment of Aik Nullah and on upstream side of Jammu Tawi. The highly intense rainfall will continue till 9:00 pm. The intense rainfall will be moved to upper catchment of Chenab which and intense rain on 27th from 1 am to 6 am is expected. As per FFD bulletin issued at 12:00 26th August 2025(Noon) 200,000 to 450,000 Cs is expected in next 24 hours. However, rainfall started as per weather forecast but the intensity and the coverage were more than forecast. As per Indian media reports five hundred millimeter plus rainfall was observed in Udhampur and Jammu City on 26th of August which caused super high flood in Jammu Tawi. This high velocity runoff damaged many local as well as defense bunds inside India which intensity the discharge the of Jammu taw inside Pakistan. Similar extremely intense rainfall was observed in Sialkot as well as upperclassmen of Chenab and Munawer Twai. Hence because of this extremely intense

rainfall on all three rivers i.e Jammu,Chenab and Munawer Tawi Discharge at Marala Barrage has observed Exceptionally High flood at 2:30AM 917525 Cs on 27th August 2025. It also pertinent to mention that the factor of release of salal Dam and Bagliar dam cannot be neglected. India issued High flood Alert on 2rd September at Jammu at 18:00 and Akhnoor 3rd September at 4:00. However, a peak of 549373 Cs was observed at Marala at 11:00 am on 3rd September 2025.

CHAPTER-4

FLOOD LIMTS/TIME LAGS HISTORY

PEAK FLOOD DATA

OF

HEAD WORKS/BARRAGE

AND OTHER CONTROL PONITS

4.1 FLOOD LIMITS.

Following are the classification of Flood Limits at Marala Barrage

LOW FLOOD	= 100000 to 150000 Cs U/S Marala Barrage.
MEDIUM FLOOD	= 150000 to 200000 Cs U/S Marala Barrage.
HIGH FLOOD	= 200000 to 400000 Cs U/S Marala Barrage
VERY HIGH FLOOD	= 400000 to 600000 Cs U/S Marala Barrage
EXCEPTIONALLY HIGH FLOOD	= 600000 Cs and above U/S Marala Barrage

4.2. TIME LAGS OF FLOODS

There is no gauge/ discharge measuring station on upstream of Marala Barrage to working boundary of Indian held state of Jammu & Kashmir like other 13 Barrages/Headworks, therefore no pre-flood warning system at Marala, is virtually available only to depend upon the Hydro-meteorological forecast and Jammu Radio; both can be misleading. The Barrage exists at D/S of Line of Control and foot hills of the Himalayas. U/S water shed of Chenab River and its tributaries involve steep valleys and time-lag to reach the floods is short, consequently any heavy rain in upper catchment area causes sudden flood of high magnitude.

So, it is very difficult for operating staff to assess accurate magnitude of flood before reaching the Barrage. However, time lag from Marala Barrage to Khanki Head Works is as under.

Reach	Distance	Limit	Range in Lac Cs	Time
SALAL DAM TO MARALA BARRAGE	53 Km	Low	1.0-1.5	9-10 Hours.
		Medium	1.5-2.0	8-9 Hours.
		High	2.0-4.0	7-8 Hours.
		Very High	4.0-6.0	5-6 Hours.
MARALA BARRAGE TO KHANKI HEAD WORKS	56 Km	Low	1.0-1.5	12 Hours.
		Medium	1.5-2.0	10 Hours.
		High	2.0-4.0	09 Hours.
		Very High	4.0-6.0	08 Hours.
		Exceptionally High	Above 6.0	07 Hours**.**

4.3 HIGHEST FLOODS.

(i) Before Construction of Barrage (weir)

Date	Maximum Discharge Passed	Duration Hour	Time
26.8.1957	**11,00,000 Cs**	**12:00**	**Start 25.8.1957 At 14:00 End 28.8.1957 At 2:00**

(ii) After Construction of Barrage

Date	Maximum Discharge Passed	Duration Hour	Time
06.09.2014	**8,61,464 Cs**	**02:00**	**Start 6.9.2014 At 20:00 End 6.9.2014 At**

			21:00

Date	Maximum Discharge Passed	Duration Hour	Time
27.08.2025	**917525 Cs**	**02:30 AM**	**Start 27.8.2025 At 02:00 End 27.8.2025 At 03:00**

4.4 PEAK DISCHARGES

(i) Before Construction of Barrage (weir)

YEAR	PEAK DISCHARGE PASSED ON	DISCHARGE	CLASSIFICATION
1928	01.09.1928	718000	Exceptionally High Flood
1929	29.08.1929	660000	Exceptionally High Flood
1954	25.09.1954	820094	Exceptionally High Flood
1957	26.08.1957	880722	Exceptionally High Flood
1957	1957	1100000	Exceptionally High Flood
1959	05.07.1959	870795	Exceptionally High Flood
1966	07.09.1966	618336	Exceptionally High Flood

(ii) After Construction of Barrage

YEAR	PEAK DISCHARGE PASSED ON	DISCHARGE	CLASSIFICATIONS
1973	09.08.1973	769659	Exceptionally High Flood
1988	25.09.1988	776896	Exceptionally High Flood
1992	10.09.1992	845090	Exceptionally High Flood
1996	23.08.1996	766860	Exceptionally High Flood

1997	26.08.1997	775525	Exceptionally High Flood
2014	06.09.2014	861464	Exceptionally High Flood
2025	27.08.2025	917525	Exceptionally High Flood

The details of floods before construction of Barrage (weir) with classification are tabulated below.

DATE	DISCHARGE	CLASSIFICATIONS	DATE	DISCHARGE	CLASSIFICATIONS
28.07.1909	150000	Medium	05.08.1944	258970	High
24.09.1917	542000	V. High	27.07.1945	207650	High
13.07.1921	427000	V. High	02.08.1946	263539	High
19.07.1922	152000	Medium	27.07.1947	281000	High
			27.1948	432000	Very-High
10.07.1923	201000	High	27.07.1949	251965	High
25.07.1924	202000	High	20.09.1950	540761	Very-High
03.08.1925	290000	High	17.08.1951	193847	High
05.08.1926	270000	High	04.08.1952	209570	High
03.08.1927	256000	High	19.09.1953	316198	High
01.09.1928	**718000**	**Excep/High**	01.09.1953	316196	High
29.08.1929	**660000**	**Excep/High**	25.09.1954	**820094**	**Excep /High**
11.07.1930	254000	High	06.10.1955	344090	High

06.07.1931	267650	High	27.7.1956	276220	High
31.07.1932	328000	High	26.08.1957	**880722**	**Excep /High**
09.07.1933	366000	High	-do-	**1100000**	**Excep /High**
31.07.1934	218000	High	06.08.1958	478457	Very.High
10.08.1935	253000	High	05.07.1959	**870795**	**Excep /High**
04.07.1936	177500	Medium	11.07.1960	599303	Very.High
26.07.1937	145800	Medium	31-7-1961	272000	High
23.07.1936	261700	High	23.09.1962	331362	High
24.07.1939	203000	High	06.08.1963	173763	High
08.08.1940	167100	Medium	19.09.1964	250700	High
05.08.1941	297000	High	03.05.1965	167016	High
24.07.1942	301000	High	07.09.1966	**618336**	**Excep/ High**
06.08.1943	256900	High	23.09.1967	190336	High

After Construction of Barrage

DATE	DISCHARGE	CLASSIFICATIONS	DATE	DISCHARGE	CLASSIFICATIONS
28.7.1968	208770	High	27.07.1995	439970	V-High
6.8.1969	298936	High	23.08.1996	**766860**	**Excep/High**
2.71970	242000	High	26.08.1997	**775525**	**Excep/High**
8.8.1971	287103	High	05.03.1998	213705	High

7.7.1972	254035	High	19.07.1999	214765	High
9.8.1973	**769659**	**Excep/High**	22.07.2000	247610	High
24.7.1974	209880	High	07.08.2001	193750	Medium
16.7.1975	582600	Very-High	14.08.2002	240190	High
1.8.1976	549400	Very-High	19.02.2003	316924	High
15.7.1977	437125	Very-High	17.08.2004	93150	Normal
9.8.1978	460394	Very-High	07.07.2005	345479	High
2.8.1979	248111	High	04.08.2006	247123	High
24.6.1980	216193	High	13.03.2007	257409	High
25.7.1981	529343	Very-High	08.08.2008	174977	Medium
24.7.1982	244669	High	28.07.2009	129963	Low
2.9.1983	295083	High	06.08.2010	314378	High
9.8.1984	184531	Medium	16.09.2011	169055	Medium
6.8.1985	174130	Medium	04.08.2012	205,914	High
27.7.1986	308520	High	04.08.2012	205,914	High
26.7.1987	117490	Low	15.08.2013	377,290	High
25.9.1988	**776896**	**Excep/ High**	06.09.2014	**861,464**	**Excep High**
30.7.1989	407805	Very-High	12.07.2015	183431	Medium
20.03.1990	301995	High	07.08.2016	412065	Very-High
29.12.1991	286930	High	19.07.2017	216020	High
10.09.1992	**845090**	**Excep/High**	14.08.2018	201878	High
08.07.1993	409490	Very-High	31.07.2019	237496	High
20.07.1994	472570	Very-High	28.08.2020	303884	High
29.07.2021	193750	Medium	28.07.2022	225836	High
19.07.2023	210983	High	15.08.2024	178750	-
27.08.2025	**917525**	**Excep/High**			

CHAPTER-5

➢ FLOOD FIGHTING STRATEGY

5.00 FLOOD FIGHTING STRATEGY

Executive Engineer Marala Barrage is the over all in-charge to control all the flood fighting operation on Bunds and Channels in Marala Division During floods, watching of all bunds and spurs is strictly exercised and the required flood fighting material is stored on the requisite sites. Minimum required labor will be employed at the start of Flood Season in addition to the existing establishment to repair rain cuts, maintain bunds, as well as for night watching. This establishment is kept available round the clock for any emergency. The following strategy would be applicable overall flood season 2025

PRE-FLOOD ARRANGEMENT

Following arrangements have been made

1. Oiling & Greasing to all the machinery of Barrage will be carried out prior to flood season.
2. Investigation of porcupine holes and its treatment.
3. Purchase of Flood Fighting Material is under process.
4. Procurement of 100% reserve stock is in process.
5. Pre-Flood inspections of Barrage Machinery and Flood Bunds will be carried out by the joined committee of Department Army and Civil Administration as per schedule.
6. Pre-flood meeting will be conducted with concerned District and Army Authorities as per schedule.

FLOOD FORECASTING

Flood forecasting is crucial at the Marala Barrage because it acts as the primary regulating point for the Chenab River in Pakistan, protecting a densely populated, agricultural area from flash floods caused by rapid mountain runoff in the monsoon season. As the first major gauge station after the river enters the plains, timely, accurate forecasting at Marala enables the management of significant transboundary water surges, preventing breaches and mitigating massive agricultural and residential damage. Flood forecasting at Marala barrage will be made through following sources.

- Weather outline will be monitored from open sources weather outlook platforms (PMD,etc)
- Indian side weather outlook will be monitored vide media and IMD
- Flood Forecasting Division 24 Hrs. Flood Bulletin for next 24hrs forecast.
- Input from FRAU for any significant rain fall event.

The information from all these sources will be analyzed by Executive Engineer Marala division and informed to Superintending engineer Upper Chenab Canal Circle for making preparation as per forecasted discharge anticipated based on above mentioned forecasting tools. The preparation is divided into four stages based on anticipated discharge.

STAGE-1

River Discharge Limit	**1-2 Lac Cusecs**. The river water is entirely contained within its natural course.
Operational In-charge	**Sub Divisional Officer, Head works Marala**

SUPERVISORY STAFF

S. No	NAME OF OFFICIAL	LOCATION
1	Sub Engineer Station area.	At RD 12 LMB
2	Sub Engineer Barrage	At Barrage
3	Sub Engineer Hydraulic	At RD 10-11 CPB CUM LFPB
4	Sub Engineer Mechanical.	At RD 5 RMB

STAGE 2

River Discharge Limit	**2-4 Lac Cusecs**
Operational In-charge.	**Sub Divisional Officer, Head works Marala**.

SUPERVISORY STAFF

S. No	NAME OF OFFICIAL	LOCATION
1	Sub Engineer Station area.	At RD 55 LMB
2	Sub Engineer Barrage	At Barrage
3	Sub Engineer Hydraulic	At RD 10-11 CPB
4	Sub Engineer Mechanical.	At Barrage
5	Sub Divisional Officer Malhi	At RD 5 RMB
6	Sub Engineer Sambrial	At RD 12 LMB
7	Sub Engineer Main Line	At RMB
8	Sub Divisional Officer Nokhar	At Bambanwala
9	Sub Engineer Sangowali	At Aik Crossing of UCC
10	Sub Engineer Kailaske	At Pallkhu Crossing of UCC

STAGE – 3

NOTE: - When the discharge at Marala Barrage will reach to 4 Lac arrangements will be made as per stage 4 based on experience of 2025 floods and above, the Executive Engineer Gujranwala U.C.C. will shift his camp at Marala Barrage with all staff/establishment.

River Discharge Limit.	4.00 Lac cusecs & above
Operational In-charge.	**1. Executive Engineer, Marala Division UCC** **2. Executive Engineer, Gujranwala Division UCC** **3. Executive Engineer, Sheikhupura Division** **(In case there is no flood emergency in his jurisdiction)**
Controlling Officers.	1. Sub Divisional Officer, Headworks Marala will In-charge of Headworks and protection works on LMB. 2. Sub Divisional Officer Malhi Sub Division with his SEN will be the overall in charge of LMB

SUPERVISORY STAFF

S. No	NAME OF OFFICIAL	LOCATION
i)	Sub Engineer, Head works.	Marala Barrage.
ii)	Sub Engineer, Station Area.	At RD 55+000 LMB
iii)	Sub Engineer, Hydraulic	At RD 10-11 CPB
iv)	Sub Engineer, Mechanical	At Right end of Barrage
v)	Sub Divisional Officer Malhi Sub Division	At RD 5000 RMB
vi)	Sub Engineer Main Line	At RD 5000 RMB
vii)	Sub Engineer Sambrial	At RD:12+000 LMB
viii)	Sub Divisional Officer Nokhar Sub Division	At Bambanwala Head Regulator
ix)	Sub Engineer Sangowali	Aik Crossing of UCC
x)	Sub Engineer Kailaske	At Pallkhu Crossing of UCC

NOTE: - When the discharge at Marala Barrage will reach to 6 Lac and above, the Executive Engineer Gujranwala U.C.C. will shift his camp at Marala Barrage with all staff/establishment.

STAGE – 4

River Discharge Limit.	6.00 Lac cuseCs & above
Operational In-charge.	**1. Executive Engineer, Marala Division UCC** **2. Executive Engineer, Gujranwala Division UCC** **3. Executive Engineer, Sheikhupura Division** **(In case these is no flood emergency in his jurisdiction)**
Controlling Officers.	3. Sub Divisional Officer, Headwoks Marala will In-charge of Headorks and protection works on LMB. 4. Sub Divisional Officer Malhi Sub

	Division with his SEN will be the overall in charge of LMB

CHAPTER-6

➢ FLOOD DAMAGES RESTORATION WORKS

In 2025 flood following damages were occurred in Marala division UCC.

6.1 MINOR DAMAGES

6.1.1 RELIEF CUTS IN UCC

Due urban flooding in Sialkot city, 03 relief at RD 35+000 49+000 and 64+000 left bank of in UCC main Line Upper were made by locals to drain out excess water of Sialkot city reach along upper Chenab canal into Upper Chenab canal. After draining the water, these cuts are being filled to restore the supply of UCC.

6.2 MINOR BANK EROSION ALONG RMB

The end portion of RMB was eroded by spilling of flood water from the connected Pacca road which was repaired immediately.

6.3 MAJOR DAMAGES

6..3.1 DAMAGE TO T HEAD SPUR TIED WITH LMB AT RD 18+281

The nose portion of the said structure was over topped during August 2025 flood, damaging the shank and apron in this part. The restoration was made immediately by repairing the shank to its existing design and launched apron was hold by available reserve stock of the structure.

6.3.2 BREACHING OF CHUMBIYAN FLOOD BUND

As in the past, the Jammu Tawi River showed an aggressive leftward drift. To counter this aggression, the Chumbian Flood Protection Bund (0 to 16+974) along with allied cross spurs (Earthen / Armed) were constructed in 2016–17 to control severe erosion near the Left Marginal Bund (LMB) and to safeguard dozens of houses and agricultural lands in the

Chaprar Sector. The alignment of the bund was proposed without conducting any model study and the bund was not been tied with any high edge.

Exceptionally High Flood of 27th August 2025, had caused significant stress and damage to the bund. Due to steeper upstream terrain coupled with local in Indian breaches has intensified the exceptionally high Jammu Tawi flood consequently increasing the trust of earth bund had hit perpendicularly to the earthen bund sweeping almost 1700 ft portion of the bund. The restoration was referred to departmental expert committee. Based of Model study and post flood 2D hydraulic modelling, four inverted hockey's along with restoration of the bund at set back position was proposed. The wok was made part of ADP and procurement is in process.

6.3.3 OVER TOPPING OF COLONY PROTECTION BUND

During the recent exceptionally high flood on dated 27-08-2025 at Marala Barrage i.e. 917525 Cs. The free board at Bund was almost eliminated and 9 No. breaches occurred at the bund between RD 29+000-52+200 during this event due to overtopping of flood water. All the breaches were closed immediately, furthermore the rising and protection of colony protection bund was proposed in its weak reaches as per 2025 flood levels. The procurement for ADP work is in process.

CHAPTER-7

FLOOD FIGHTING

WATHCHING ARRANGMENTS

7.1 PRE-FLOOD ARRANGEMENT

Following arrangements have been made

1. Oiling & Greasing to all the machinery of Barrage will be carried out prior to flood season.
2. Investigation of porcupine holes and its treatment.
3. Purchase of Flood Fighting Material is under process.
4. Procurement of 100% reserve stock is in process.
5. Pre-Flood inspections of Barrage Machinery and Flood Bunds will be carried out by the joined committee of Department Army and Civil Administration as per schedule.
6. Pre-flood meeting will be conducted with concerned District and Army Authorities as per schedule.

Status of reserve stock of stone (structure wise)

Name of section	Structure/Site	Sanctioned (Lac Cft)	Available (Lac Cft)	Required (Lac Cft)
1	**2**	**3**	**4**	**5**
Barrage Section				
a	**Right Bank Spur**			
	Mole Head-1	0.050	0.034	0.016
	T- Head-1	1. 90	1.51	0.039
	Mole Head-2	0.050	0. 038	0.012
	T- Head-2	2.55	1.00	1.550
b	**Right Marginal Bund**			
	Breaching Section	1.50	0.68	0.820
c	**Right Guide Bund**			
	Upstream	0.82	0. 52	0.200
	Downstream	1.25	0. 11	1.140
d	**Left Guide Bund**			
	Upstream	1.25	1.81	+ 0.56
	Down Stream	0.55	0.85	
			0.46	+0.76
	Spur Rd 4237	0.00	1.43	+1.43
	Opposite Park	0.00	0.50	+0.5
	Total	**9.92**	**8.92**	1.00

Name of section	Structure/Site	Sanctioned (Lac Cft)	Available (Lac Cft)	Required (Lac Cft)
1	**2**	**3**	**4**	**5**
Station Area Section				
a	Left Marginal Bund			

	Spur Rd 4237			
	Spur Rd 6146	0.25	0.189	0.061
	Spur Rd 9165	0.25	0.170	0.08
	Spur Rd 11920	0.25	0.284	+ 0.034
	Spur Rd 18280	0.25	0	0.25
	Spur Rd 21539	0.25	0.150	0.1
	Spur Rd 24080	0.25	0.199	0.05
	Spur Rd 27584	0.25	0.15	0.25
	Spur Rd 30188	0.25	0.180	0.07
	Spur Rd 37832	0.25	0.069	0.181
	Spur Rd 40100	0.20	0.031	0.219
	Spur Rd 52+000 to 55+000(opposite Chaprar Village)	0.50	0.0	0.50
	Total	**2.950**	**1.422**	**1.528**
Note	**(165850 Cft stone is in stacked position)**			

Name of section	Structure/Site	Sanctioned (Lac Cft)	Available (Lac Cft)	Required (Lac Cft)
1	**2**	**3**	**4**	**5**
Hydraulic Section				
	Left Flood Protection D//S Marala			
	Spur Rd 10-11	0.25	0	0.25
	Spur Rd 24000	0.25	0	0.25
	Spur Rd 25400	0.25	0	0.25
	Spur Rd 26700	0.25	0	0.25
	Spur Rd 31200	0.25	0	0.25
	Spur Rd 35000	0.25	0.00564	0.243
	Spur Rd 39000	0.25	0.0914	0.173
	Spur Rd 43500	0.25	0.0088	0.243
	Spur Rd 47500	0.25	0.0038	0.246
	Spur Rd 49750	0.25	0.0826	0.181
	Mallianwala Guide wall		0.0406	
	Total	**2.50**	**0.2329**	**2.2671**

Consolidate Status of Reserve Stock of Stone

Sr No.	Division	Sanctioned Quantity (in Lac Cft.)	Minimum Required Quantity (in Lac Cft.)	Available Quantity (in Lac Cft.)	Deficit Quantity (in Lac Cft.)
1	Marala	**15.37**	**10.759**	**10.575**	**4.795**

Overall availability of stone is around 70% (minimum required quantity)

7.2 WATCHING ESTABLISHMENT

WATCHING ESTABLISHMENT DETAIL												
Site	Length in mile	FLOOD LIMITS										
		Normal Flood Season		Low Flood			Medium/ High Flood			Very High/ Exp: High Flood		
		Men	Shift	Men	Shift	Mate	Men	Shift	Mate	Men	Shift	Mate
		1 Person/ 2 mile (1-Shift)		1 Person/ mile (1-Shift)		1 Mate/ 12-Beldar	2 Person/ mile (2-Shift)		1 Mate/ 12-Beldar	5 Person/ mile (3-Shift)		1 Mate/ 12-Beldar
LEFT MARGINAL BUND	13.73	7	1	14	1	1	28	2	2	70	3	18
RIGHT MARGINAL BUND	1.26	1	1	2	1	0	4	2	0	10	3	3
COLONY PROTECTION CUM FLOOD PROTECTION BUND	10.84	6	1	11	1	1	22	2	2	55	3	15
BARRAGE	-	1	1	1	1	0	1	2	0	2	3	0
Chumbiyan Flood Bund	3.3	2	1	3	1	0	7	2	1	16	3	3
Total		**17**		**31**		**2**	**124**		**5**	**459**		**39**

Kind of Establishment	Scale	Establishment Required
a) Beldars		
b) i LMB	70 (w.r.t exp high)	
c) ii RMB		05 (w.r.t exp high)
d) iii CPB cum LFPB		50 (w.r.t exp high)
e) iv Barrage		06 in three shifts

b) Gauge Reader

Critical Gauges

1. LMB RD: 12+000	01 No. Per Shift	=	03
2. RMB RD: 5+500	01 No. Per Shift	=	03

Spur along LMB

1.	RD: 4237, RD: 6146, RD: 9165, RD: 11920	01 No. Per Shift	=	03
2.	RD: 18280, RD: 2 1539 RD: 924080, RD:27584	01 No. Per Shift	=	03
3.	RD: 30188, RD:40100 RD:52-55	01 No. Per Shift	=	03
4.	Said pur Bridge	01 No. Per Shift	=	03

Spur along Colony Protection Bund Cum LFPB

1.	RD:24000, RD:25400 RD:26700	01 No. Per Shift	=	03
2.	RD:31200, RD:35200 RD:37700	01 No. Per Shift	=	03
3.	RD:43500, RD:47500 RD:49750	01 No. Per Shift	=	03
4.	On heads of M-1,M-2,T-1,T-2 spurs	01 No. Per Shift	=	03
5.	On LGM & RGB U/S & D/S	01 No. Per Shift	=	03

TOTAL GUAGE READER: - = 33 Nos.

(c) **Chowkidars**

@ 3 Nos per store for day and night. = 3 x 5 = 15 Nos.

(d) **Dak Runners**

For conveying gauges to officers
@ 1 No per shift per section. = 3 x 3 = 9 Nos.

(e) Telephone Operators.

2 Nos for night duty at Telephone Exchange & Telegraph office = 2 Nos.

(f) For Watching Of Main Line Upper (UCC).

There are two sections on Main line Upper therefore one extra gang of 10 No. Beldar per section is proposed for day and night watching of channel in addition to 1 No. gauge reader per section per shift for recording gauges at siphons during floods or Monsoon.

(g) Site Location For Emergency Stores.

(i)	Main Store at Marala Barrage in Observatory Building	=	1 No
(ii)	At RD 12000 LMB	=	1 No
iii)	At RD 12000 LMB	=	1 No
(iv)	Left Flood Protection Bund D/S Marala RD 10-11	=	1 No
	Total	**=**	**4**

In addition to permanent shelter huts temporary arrangements for stores will be made by providing tents during emergency.

7.3 ARRANGEMENTS AT SENSITIVE SITES

Established Camp Details							
Sr. No.	Structure Name	Length (Miles)	Vulnerable sites		No. of Camps Established Except Vulnerable Points		
					Normal Flood season/ Low Flood	Medium/ High Flood	Very High/Exp. High Flood
			Reach	No. of camps	15 Miles	7 Miles	5 Miles
1	LEFT MARGINAL BUND	13.73	-	-	1	2	3
2	RIGHT MARGINAL BUND	1.26	-	-	1	1	1
3	COLONY PROTECTION CUM FLOOD PROTECTION BUND	10.84	-	-	1	2	2
4	Chumbiyan Flood Bund	3.3	-	-	0	0	1
Total			-	-	3	5	7

Necessary Flood Fighting Camps would be shifted at Sensitive sites on 16th June that is at start of Flood Season

7.4 WATCHING MATERIAL

FLOOD FIGHTING MATERIAL

The emergency stores, required for flood fighting, are worked out on the basis of establishment provided for watching and anticipated damages during the flood season. This material will be made available at sites mentioned above before the flood season sets in. These stores will include gunny bags, ballies, manila rope, lanterns and toot baskets etc, as detailed on next page. The balance requirements above the existing stock will be met with before flood season.

Total requirement is shown in tabular form given below.

Minimum requirement of Flood Fighting Materials for Permanent Camp (15 miles)

Note: The below quantity of FFM is minimum required quantity for 2 No. Permanent Flood Fighting Camp

SR. #	ITEM	UNIT	Total Required Qty	Available Qty	Balance Qty	Remarks
1.	Shouldari / Tent	No	02	12	Nil	quantity of Flood Fighting Material will be procured before Coming Flood Season
2.	Chairs	No	12	60	Nil	
3.	Table	No	02	12	Nil	
4.	Generator (2-3 KVA)	No	02	0	02	
5.	Pedestal Fans	No	02	0	02	
6.	Charpois	No	4	9	Nil	

SR. #	ITEM	UNIT	Total Required Qty	Available Qty	Balance Qty	Remarks
7.	Symbolic Jackets	No	100	0	100	
8.	Polyethene Sheet	Kg	200	0	200	
9.	Bamboos (4” dia and 10 ft long)	No	200	0	200	
10.	Water Coller	No	02	0	02	
11.	Portable umbrella	No	04	0	04	
12.	Life Jackets	No	10	9	01	
13.	Utensils (10 person serving)	No	02	0	02	
14.	Jute/Plastic bags	No	2000	0	2000	
15.	Walke Talkie Set	Sets	04	0	04	
16.	Raincoats	No	20	0	20	
17.	LED flood light	No	20	15	05	
18.	Extension Cable (10 ft)	No	4	0	04	
19.	Rechargeable torches	No	40	12	28	
20.	Kassi	No	40	0	40	
21.	Axes	No	40	0	40	
22.	G.I Buckets	No	10	0	10	
23.	7/44 cable	Feet	1000	0	1000	
24.	Sutli	Kg	04	0	04	
25.	Sewing Needles	No	20	30	Nil	
26.	Emergency Medical Kit	No	02	0	02	
27.	Wire crates (3x3x3) (at only those camp near river action and reserve stock exists)	No	200	0	200	

Minimum requirement of Flood Fighting Materials for Temporary Camp: (7 or 5 miles during medium to exceptionally high flood **to be outsourced**

SR. #	ITEM	UNIT	Total Required Qty	SR. #	ITEM	UNIT	Total Required Qty
1	Shouldari / Tent	No	01	12	Walke Talkie Set	Sets	01
2	Chairs	No	06	13	Raincoats	No	10
3	Table	No	01	14	LED flood light	No	10
4	Generator (2-3KVA)	No	01	15	Extension Cable (10 ft)	No	02
5	Pedestal Fans	No	01	16	Rechargeable torches	No	20
6	Charpois	No	02	17	Kassi	No	20
7	Symbolic Jackets	No	50	18	Axes	No	20
8	Water Coller	No	01	19	G.I Buckets	No	05
9	Portable umbrella	No	02	20	7/44 cable	Feet	500
10	Utensils (10 person serving)	No	01	21	Sutli	Kg	02
11	Jute/Plastic bags	No	500	22	Sewing Needles	No	10

7.5 ARRANGEMENT FOR SOUNDING AND PROBING.

Sounding & Probing of floors & aprons of Barrage have been observed and no damage is depicted.

7.6 LIGHTING ARRANGEMENT

Executive Engineer Electricity Sialkot Cantt Division Sialkot and S.D.O Electricity Marala will ensure smooth and sustained flow of electricity during flood emergency. However, 125 KVA standby generator will also be available in working condition to operate Barrage. A standby portable generator of 25 KVA will also be available in working condition to meet with any emergency at spot.

7.7 RATION ARRANGEMENT.

District Administration will be responsible for making ration arrangements for evacuated peoples

7.8 P-O-L ARRANGEMENT FOR VEHICLE

The requirements of H.S Diesel oil at Marala Head Works will be 10000 liters during flood season. District Coordination Officer, Sialkot will be requested to issue the orders to the following petrol pumps to keep the P.O.L reserve from 1st. of June to 16th of October: -

1) Gondal Filling Station Dhalewali Sialkot.
2) Rangers Filling Station Dhallewali (Head Marala).
3) Al-Ghazi Petroleum Kuri Sharif (Gujrat)

7.9 TRANSPORTATION.

One No. Govt. Tractor Trolley and departmental labour is available for the transportation of Flood Fighting Material. Tractor Trolleys are also available with the local contractors who will arrange these on call in emergency for transportation of labour and materials

7.10 LAW AND ORDER.

Maintenance of Law and order is the responsibility of District Police Sialkot.

7.11 MEDICAL ARRANGEMENT FOR LABOUR

A Basic Health Unit is already working in Canal Colony Marala under District Health Officer, Sialkot District. Necessary medicines will be arranged by the District Health Department for controlling epidemics.

7.12 LIAISON WITH OTHER DEPARTMENT

A flood control room bearing telephone # 052-3502102 will be established in Marala Division for 24 hours during flood season to update the latest position of flood however Executive Engineer, Marala Division and Sub Division Officer, Head Works Sub Division will keep liaison with their counterparts of other Department. Higher Authorities of the Department will be constantly kept informed about the flood situation through wireless and telephonic set up.

7.13 ROLE OF THE ARMY

1. Pakistan Army (1-Engineers Battalion of 15 Div Sialkot) is responsible for blow up the Breaching Section as and when the operating Committee takes decision for its operation.
2. At least strength of about 300 Army men are required to deal with any emergency when the discharge exceeds 500000 Cs. On request of the Executive Engineer, Marala

Division, the Commander Engineers Headquarter 30 Corp will be obliged to arrange this assistance.

7.14 DUTY OF TELEPHONE ATTENDANT.

Telephone attendants will perform their duty for 24 hours during flood season at Canal Telephone Exchange Cell No. 052-3502102

7.15 WIRELESS ARRANGEMENTS.

Wireless Station established at Marala Barrage during flood season by Punjab Police will communicate the flood situation to all concerned.

CHAPTER-8

DETAIL OF ENCROACHMENT

DETAIL OF ENCROACHMENT

It is certified that there is no critical encroachment in the jurisdiction of Marala Division UCC Marala.

Sub Divisional Officer
Headworks Sub Division
Marala

Executive Engineer,
Marala Division UCC,
Marala.

CHAPTER-9

➢ DUTY ROSTER/FLOOD FIGHTING PROGRAM

DUTY ROSTER/FLOOD FIGHTING PROGRAM
Name of Division: Marala Division UCC, Marala
NORMAL/ MEDIUM FLOOD

Sr. No	Name of Structure	Length in Mile	Vulnerable Reach	Camp Location	Site Incharge by name & Cell No.	Machinery Deployed				Labour Deployed	Availability of Stone Lac Cft
						Excavator	Dozer	Tractor Trolley / Dumpers	Tractor with front	Beldar + Mate	
1	2	3	4	5	6	7	8	9	10	11	12
1	LEFT MARGINAL BUND	13.73	-	RD 12+000	Muhammad Bilal 0331-6486233	01		04 trolly	01	14	1.422
2	RIGHT MARGINAL BUND	1.26	-	RD 5+000	Ali Raza 0312-7746214	01		04 trolly	01	2	0.680
3	COLONY PROTECTION CUM FLOOD PROTECTION BUND	10.84	-	RD 10-11	Bilal Hussain 0300-4182787	01		04 trolly	01	11	0.240
4	BARRAGE	-	-	BARRAGE	Ali Raza 0312-7746214	01		04 trolly	01		3.290
5	Chumbiyan Flood Bund	3.3		RD 1+000	Muhammad Bilal 0331-6486233	01		04 trolly	01	4	0.00

Note: - Payment for machinery and work charge employees subject to verification by TPM..

DUTY ROSTER/FLOOD FIGHTING PROGRAM
Name of Division: Marala Division UCC, Marala
MEDIUM AND HIGH FLOOD

Sr. No	Name of Structure	Length in Mile	Vulnerable Reach	Camp Location	Site Incharge by name & Cell No.	Machinery Deployed				Labour Deployed	Availability of Stone Lac Cft
						Excavator	Dozer	Trolleys / Dumpers	Tractor with blade	Beldar + Mate	
1	2	3	4	5	6	7	8	9	10	11	12
1	LEFT MARGINAL BUND	13.73	-	1) RD 12+000 2) RD 47+000	Muhammad Bilal 0331-6486233	1 + 1		04 trolly &2 dumper for each camp	1+1	28	1.422
2	RIGHT MARGINAL BUND	1.26	-	RD 5+000	Ali Raza 0312-7746214	1		04 trolly &2 dumpers	1	4	0.680
3	COLONY PROTECTION CUM FLOOD PROTECTION BUND	10.84	-	1) RD 10-11 2) RD 30+000	Bilal Hussain 0300-4182787	1 + 1		04 trolly &2 dumper for each camp	1+1	20	0.240
4	BARRAGE	-	-	BARRAGE	Ali Raza 0312-7746214	1		04 trolly &2 dumpers	1		3.290
5	Chumbiyan Flood Bund	3.3		RD 1+000	Muhammad Bilal 0331-6486233	1		04 trolly &2 dumpers	1	6	0.00

Note: - Payment for machinery and work charge employees subject to verification by TPM.

DUTY ROSTER/FLOOD FIGHTING PROGRAM
Name of Division: Marala Division UCC, Marala
VERY-HIGH AND EXCEPTIONALLY HIGH FLOOD

Sr. No	Name of Structure	Length in Mile	Vulnerable Reach	Camp Location	Site Incharge by name & Cell No.	Machinery Deployed				Labour Deployed	Availability of Stone Lac Cft
						Excavator	Dozer	Trolleys / Dumpers	Tractor with front blade	Beldar + Mate	
1	2	3	4	5	6	7	8	9	10	11	12
1	LEFT MARGINAL BUND	13.73	-	1) RD 12+000 2) RD 47+000 3) RD 55+000	Muhammad Bilal 0331-6486233			04 trolly &2 dumper for each camp		65	1.422
2	RIGHT MARGINAL BUND	1.26	-	RD 5+000	Ali Raza 0312-7746214			04 trolly &2 dumper for each camp		6	0.680
3	COLONY PROTECTION CUM FLOOD PROTECTION BUND	10.84	-	1) RD 10-11 2) RD 30+000	Bilal Hussain 0300-4182787			04 trolly &2 dumper for each camp		55	0.240
4	BARRAGE	-	-	BARRAGE	Ali Raza 0312-7746214			04 trolly &2 dumper for each camp			3.290
5	Chumbiyan Flood Bund	3.3		RD 1+000	Muhammad Bilal 0331-6486233			04 trolly &2 dumper for each camp		15	0.00

Note: - Payment for machinery and work charge employees subject to verification by TPM.

CHAPTER-10

➢ EMERGENCY TELEPHONE NOs.

S. NO.	NAME OF OFFICER	OFFICE	RESIDENCE	FAX
1	Secretary to the Govt. of the Punjab, Irrigation Department	042-99212117 042-99212118	042-99200287 042-99200860 0335-1110233	042-99212116
2	Chief Engineer, Irrigation, Lahore Zone Lahore.	042-99212085 042-99212086	0300-8446024 042-7013794	042-992030731
3	Chief Engineer, D&F Lahore,	042-99230602	0300-8654409	042-3586081
4	Chief Engineer Irrigation, Faisalabad	041-99200268	041-9200196	041-9200133
5	Chief Engineer, Irrigation, Multan.	061-9200143	061-9200917 0345-4422649	041-99200133
6	Superintending Engineer, LCC (East) Faisalabad	041-99200273	0300-8650260	041-99200079
7	Superintending Engineer UCC Lahore.	042-99250333	----------	042-99200332
8	Director Flood Lahore/Secretary Punjab Flood Commission.	042-99231614	0300-3209045	…….
9	Deputy Director Flood, Lahore.	042-5880700	0300-48343011	042-35862081
10	Joint Commissioner Indus Water Treaty Lahore.	042-99212787-89	----------	042-99212084
11	Flood Control Cell (Director National Flood Fore Costing Bauru Lahore.)	042-99200139 042-99200144	----------	042-37314756
12	Commanding Officer 30 Crops Gujranwala.	055-29632360-62 055-862460	----------	055-2693310
13	Commanding Officer, 20 Engineer Sialkot Cant:	052-4266518	----------	052-57135186
14	Head Quarter 15-Division Sialkot Cantt:	052-57133216 052-57133218	052-57133217	052-57133231
15	D.C.O. Sialkot.	052-9250451-52	052-9250454 052-9250455	052-9250453
16	D.C.O. Gujranwala	055-9200052	055-920052	055-920024 055-920025
17	D.C.O. Hafizabad	0547-521784	0547-521084 052-1521075	0547-521075
18	D.C.O. Gujrat.	053-9260010	053-9260010	053-9260063

Emergency Telephone No's

19	Assistant Commissioner (AC) Sialkot	052-9250468		
20	Assistant Commissioner (AC) Wazirabad	055-6608566	……	055-6606365
21	Assistant Commissioner (AC) Gujrat	053-9260411	0321-4027517	……
22	District Health Officer, Sialkot.	052-9250064	0300-4785325	052-9250076
23	Executive Engineer, Marala Division (UCC)	052-3502102 052-3502121	052-3502102 052-3502121	052-3502102
24	Executive Engineer, Gujrat division (UJC)	053-9260398	0300-6367958	053-9260396
25	Executive Engineer, Khanki Head Works	055-6266239	055-605255 0300-6824789	055-6266239
26	Executive Engineer Pasrur Link Division Sialkot	052-9250088	052-9250089 0321-4907914	052-9250089
27	Executive Engineer High way Division Sialkot	052-9250309	0300-4894955 0300-5346365	…….
28	Executive Engineer Electricity (Wapda) Sialkot	052-4290136	0300-8620063	052-4290136
29	Sub Divisional Officer, Head Works Sub Division, MRL	052-3502102	052-3502102 0307-4081390	052-3502102
30	Sub Divisional Officer Malhi Sub Division	0345-4433248	0334-4871548	----------
31	Sub Divisional Officer, Nokhar Sub Division, GRW.	055.9200497	055-9200497 0333-4274050	055-9200497
32	Sub Divisional Officer Wapda (Elec:) Marala	052-3502731	0300-8712437	…….
33	Sub Divisional Officer Wapda (Elec:) Kotli Loharan.	052-3530329	0300-6184299	…….
34	Divisional Engineer Telephones Sialkot	052-4603666	0332-8145393	052-3554321
35	Wing Commander Marala wing No.21	052-3502104	052-3502103	052-3502104

CHAPTER-11

➢ STANDARD OPERATING PROCEDURE(SOP) FOR BREACHING

11.1 HISTORY OF BREACHING SECTION.

Breaching section was constructed after exceptionally high flood on 09.08.1973, on Right Marginal Bund at RD: 5+000. Since its construction, the stage of operating breaching section has never been achieved, as the designed capacity of 110000 Cs is sufficiently higher than historic peak flood 845090 Cs. on 10-09-1992 & 861,464 Cs on 06.09.2014 and 917525 on 27.08.2025

11.2 LOCATION, DESIGN, QUANTITY AND VARIETY OF THE EXPLOSION REQUIRED FOR DETONATIONS.

i. The site of breaching section is located at RD 5+000 of Right Marginal Bund.

ii. It has been designed having 6 inches diameter lined holes with 26 SWG pipes in seven rows. The depth of the liners is 4 feet on slope and 8 feet at middle of the embankment.

The section consists of 30 No of 4 ft liners and 75 No of 8 ft liners.

During flood of 2014, the explosive was transported to breaching section and lowered in liners but breaching was not carried out, due to which some of the explosive has become unserviceable. Similarly During flood of 2025, the explosive was transported to breaching section and lowered in liners on two occasions i.e 27 August and 03rd September 2025 but breaching was not carried out

UPDATED STATUS OF EXPLOSIVE/ACCESSORIES

Name of Explosive/Accessories	Quantity Required	Quantity Available	Deficient Quantity	When to be procured	Is any pending previous Liability
Wabox	800 KG	800 KG	-	-	-
Wabonite	1200Kg	1200 Kg	-	-	-
Safety Fuse	177 Mtr	353 Mtr		-	-
Det Instant	4 No	8 No	-	-	-
Cable Elec	990 Mtr	2480Mtr	-	-	-
Webocard	250 Mtr	1700 Mtr	-	-	-
Primer CE Oz	455 No	455 No			
Det No 8 Plain Elec	15 No	15 No			
Det No 33 Elec	292 No	292 No			
Det Delay -55 MS Non Elec	17 No	17 No			
Elec Delay Det 3.5M(1-20)	200 No	200 No			

11.3 ARRANGEMENT OF EXPLOSIVES AND SECURITY OF EXPLOSIVE STORE.

Considering the Law & Order situation, Explosive material store for storage of explosive has been constructed at RD 9000 Main Line Upper (UCC) in the vicinity of Army Explosive store. The entire required explosive material is stored there. Pre-flood and post flood survey board inspects the explosives every year. The unserviceable explosive is destroyed and fresh explosive is recouped as the shelf life of Wabox and Wabonite is one year.

As per decision at GHQ and FFC level, 2 No. retired sappers have been employed for security of the explosive material.

11.4 LIST OF THE SECURITY STAFF WITH DETAIL OF THEIR TRAINING

2 No. Retired army personals selected by army are performing the security duty at the explosive store that has necessary professional training.

11.5 DETAIL OF MECHANICAL MEANS AS STANDBY ARRANGEMENTS IN CASE OF DETONATION FAILURE.

The following machinery will be engaged at the breaching section as a stand by arrangements in case of detonation failure.

S. No.	Description of Machinery	No. Quantity	Source of Supply
1	Dozer	02 No.	Irrigation Development Zone
2	Excavator	02 No.	Through Contractor
3	Earth Augers	09 No	

11.6 DUTY ROSTER IN CASE OF CRITICAL SITUATION.

Executive Engineer Marala, Sub Divisional Officer (S.D.O Malhi Sub Division) and Sub Engineer (Sambrial) have been deputed at the breaching section.

11.7 BREACHING COMMITTEE WITH THEIR ACTION PLAN

Alert Level: 300,000 Cs at Marala Barrage

Preparation Level: 500,000 Cs at Marala Barrage

Responsible Unit Formation: Engineer Battalion ex 15 Div

Operating Committee

Govt. of the Punjab Irrigation Department vides Notification No. SO (FLOODS) VI-337/97. Subsequent to the approval of Competent Authority and Federal Flood Commission letter dated: 28.02.2015 and in supersession of all previous instructions on

the subject, following procedure is hereby prescribed for the operation of breaching sections in the Punjab.

(a) Responsibility for the maintenance and operation of each breaching section shall rest upon the department owing the structure at which the breaching section is located.

(b) Breaching section shall be operated on the orders of following committee:-

  (i) District Coordination Officer of the district in which the breaching section is located, who shall be the convener of the committee;
  (ii) District Coordination Officer, of the district likely to be effected by the operation of breaching section or his representative (in case the area affected falls outside the district in which the breaching section is located).
  (iii) Representative of the department owning the structure at which the breaching section is located (not less than the rank of an Executive Engineer, or equivalent).
  (iv) Representative from C&W Department not below the rank of an Executive Engineer.
  (v) Executive Engineer concerned of the Irrigation Department.
  (vi) Representative from Pakistan Army not below the rank of a Lt. Colonel.

(c) The decision to operate a breaching section shall be taken by the committee keeping in view the technical advice of the Executive Engineer, concerned of the Irrigation Department. In case of any difference of opinion among the members, the final decision shall rest with the District Coordination Officer.

(d) In case of unavailability of the District Coordination Officer or his inability to take decision, or in case of a difference of opinion between the District Coordination Officer, of the District in which the breaching section is located and the district which is likely to be affected by the operation of the breaching section, the decision to operate a breaching section shall be taken by the respective Commissioner.

(e) Breaching Section shall be operated when one or more of the following condition are met:-

  (i) The discharging capacity of the structure for which breaching section is located is exceeded and the safety of structure is threatened.
  (ii) The critical gauge as indicated in the relevant Flood Fighting Plan is achieved or exceeded and is rising.
  (iii) The safety of major population center-(s) is threatened due to high flood levels and in view of the Executive Engineer, concerned of the Irrigation Department, operation of breaching section can help in reduction of flood level.

(f) Where, in view of the Executive Engineer, concerned of the Irrigation Department or the representative of the department owning the structure at which the breaching section is located, the aforesaid criteria is expected to be met after due consideration of all available technical and hydrological conditions, the aforesaid committee may operate the breaching section before the critical gauge is achieved or exceeded. In every such case, the view of the Executive Engineer, concerned of Irrigation Department or the representative of the department owning the structure shall be expressed in writing and shall be based on flood forecast by Pakistan Meteorological Department or other reliable sources, the lag times, estimate attenuation and expected inflows from tributaries, Nullahs and streams en-route. Where advance breaching is planned, the committee may also consult professional experts and seek advice from the Superintending Engineer, or the Chief Engineer, concerned of the Irrigation Department.

(g) Breaching section shall be operated by the contingent deputed by the Engineering-in-Chief, Pakistan Army as indicted in the Flood Fighting Plan. Explosive method shall be the preferred method for operation of breaching section. However, the department owning the structure on which the breaching section is located, and in case of their failure to do so, Irrigation Department shall make available, in advance, necessary earth moving machinery and other equipment for affecting the breach through mechanical means in the shortest possible time.

(h) The District Coordination Officer concerned and all other relevant agencies shall ensure all necessary arrangements for the safety and if required evacuation of population likely to be effected by the operation of breaching section.

Operating Criteria

The committee will take the decision on ground on following criteria

a. Water Level.

i. RL of critical gauge at RD 12+000 ULMB = 829.0

ii. RL of indicative gauge at breeching section at RD 5+000 = 825.0

iii. Maximum pond level = 818.0

b. Head across limit

If one the following condition occurs

i. Divide wall = above 4 ft

ii.	Under Sluice	=	above 26 ft
iii.	Normal Bays	=	above 24.5 ft
iv.	Total Discharge through Barrage	=	11.00 Lac cusec

c. Discharge per foot run

If one the following condition occurs over crest.

i.	Under Sluice	=	345 Cs per ft run
ii.	Normal Bays	=	252 Cs per ft run

Action Plan

The Executive Engineer will inform Army Engineer and District Administration in writing with reasonable action time. The Army Engineers will take over the breaching section when discharge increases over the 500000 Cs. At this stage, the Army will fill the cartridges accordingly. On discharge reaching at 750000 Cs, the filled cartridges will be lowered in liners. The Executive Engineer will communicate the decision of the operating committee to the Army Engineers in writing to blow up the breeching section.(As shown in attached site plan)

The Executive Engineer Highways will take-up the responsibilities to bridge up the gap.

11.8 LIST OF THE VILLAGES LIKELY TO BE INUNDATED IN CASE OF BREACH

No village will be affected, only some houses and deras of village Kuri and Sham pur will be affected which can also be affected without operating the breaching section with the spill of flood water in downstream river.

11.9 ANNOUNCEMENT AND DETAIL OF EVACUATION ARRANGEMENTS.

The District Administration will be responsible for all such arrangements.

11.10 DETAIL OF COORDINATION WITH CIVIL/ARMY AUTHORITIES

In case of high flood, hourly flood gauges will be supplied to civil as well as Army. These three departments remain in touch through telephone and wireless system.

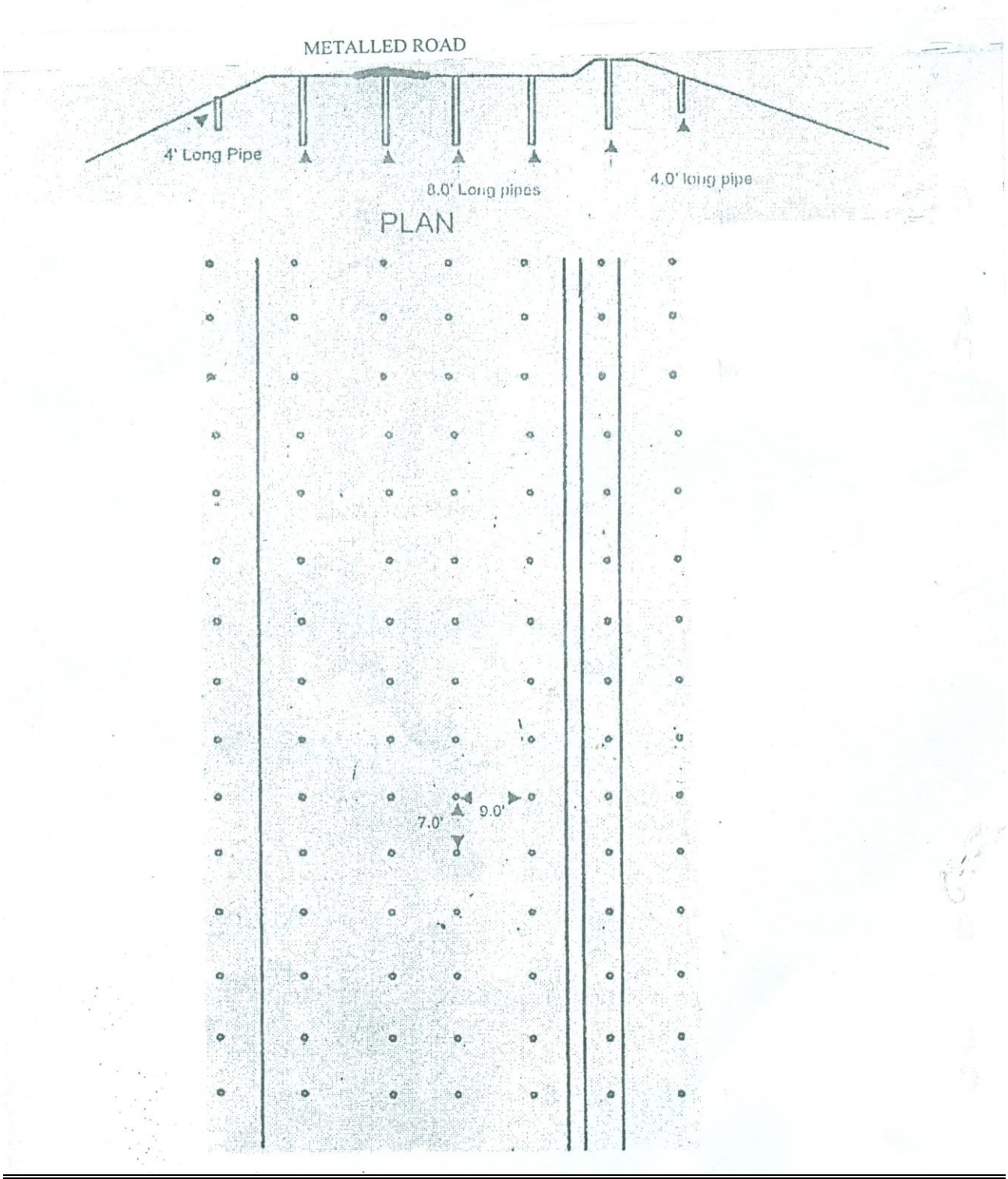
All the departments shall coordinate through effective command and control room which shall be established at Barrage by irrigation department.

11.11 PARALLEL COMMUNICATION ARRANGEMENTS.

Telephone and wireless system will be the parallel arrangements for communication.

SITE PLAN OF BREACHING SECTION
AT
RD 5000 OF RIGHT MARGINAL BUND
OF MARALA BARRAGE

X- SECTION


METALLED ROAD
4' Long Pipe
8.0' Long pipes
4.0' long pipe
PLAN
7.0'
9.0'

ANNEXURE.

ARMY REGISTERED

To

The Headquarter Engineer, 30 Crops.
Gujranwala Cantonment.

SUBJECT: - BREACHING SECTION ACTIVATION ORDER

PART-I PREPARATION

a. Holes Planned by
b. Date
c. Holes Charged and connected by

PART-II ORDER FOR FIRING

- Full address of Department for the order for activation of Breaching Section
- Name of the Army Officer with Unit In-charge for activation of Breaching Section / Old Breaching Party.

SUBJECT: - BLASTING OF BREACHING SECTION

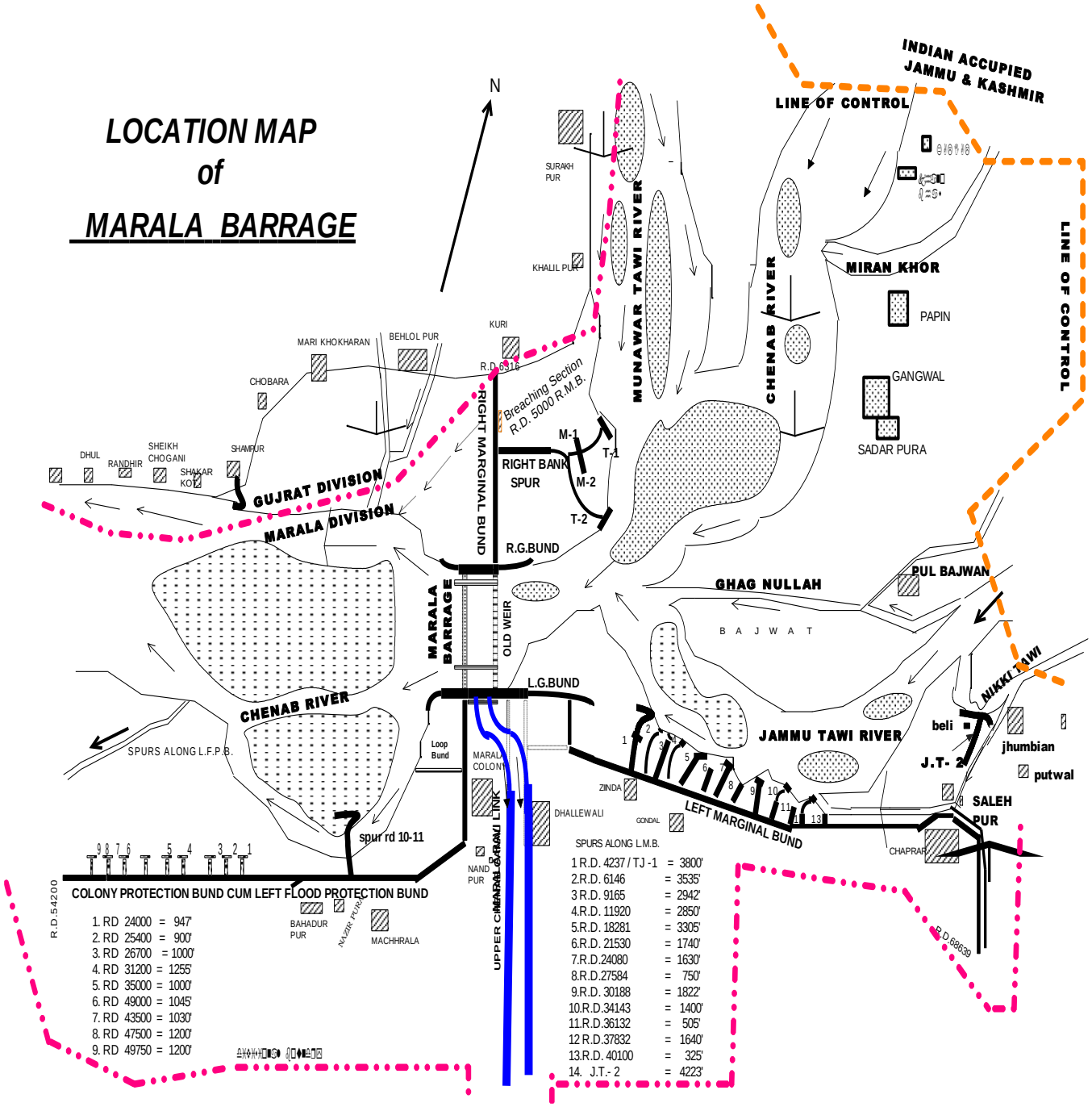
Being Empowered to Blast I _____ S/o _____ at Hrs._____ Order you to fire now the Breaching Section Holes.

You will fire Breaching cut No._____ as soon as prepare it / them.

OR

You will fire Breaching cuts in sequence given you at _____ Hrs. On _____ (date).

11.12 INDEX PLAN



Executive Engineer,
Marala Division UCC,
Marala.

Superintending Engineer,
Upper Chenab Canal Circle
Lahore.

Chief Engineer,
Irrigation Lahore Zone,
Lahore.

PART-B

CHAPTER-12

➢ VULNERABLE SITES ON FLOOD BUND / STRUCTURES:

12.1 Apprehended breaches in Flood Bunds/Structures

There is No vulnerable site in Marala Divisions exiting flood infrastructure

12.2 Operation of breaching section.

Not applicable.

12.3 Breaches due to rising of flood water, deterioration of flood bunds etc.

Not applicable.

CHAPTER-13

➢EMERGENCY CONTINGENCY PLAN FOR VULNERABLE SITES LISTED ABOVE.

EMERGENCY CONTINGENCY PLAN MUST INCLUDE

13.1 Plan showing route of flood water coming out of the breach supported with levels.

Not Applicable

13.2 Detail of Villages abadies likely to be affected and this should also be shown on the Plan.

Not Applicable

13.3 Strategy and action taken be explained in detail. This may include.

Not Applicable

13.3.1 Arrangements

Not Applicable

13.3.2 Establishment of Flood Fighting Camps

Not Applicable

13.3.3 Duties of officer / officials and their camp sits

Not Applicable

13.3.4 Departmental Machinery available.

Not Applicable

13.3.5 **Machinery available from private Source.**

Not Applicable

13.3.6 **Flood Fighting Material Required.**

Not Applicable

13.3.7 **Flood Fighting Material available.**

Not Applicable

13.4 Detail of other infrastructure like Electric, Sui gas, Telephone installations, Road Network, other Buildings, Canals and Drainage Network.

Not Applicable

CHAPTER-14

➢ ACTION PLAN

14.1 Re-shuffling / recouping plan of reserve stone departmentally.

Sufficient reserve stone is available at every flood protection structure. However, the balance quantity of reserve stock of stone for Marala Division will be procured through the project which s being executed by Disaster Climate Resilience Improvement Project (DECRIP). The tendering process has been completed and the contractor will be mobilized before upcoming flood season 2026.

14.2 Detail of inlet / outlet crossing along with closing methodology.

There is only one number inlet at RD; 6-7 of Colony Protection Bund Cum Left Protection Bund d/s of Marala Barrage and this structure having gate and gearing system and is operated as per site requirements.

14.3 Action plan for Deployment of Machinery (Normal to Low Flood)

Sr. No.	Structure Name	Length (Miles)	Excavators	Trolleys	Dumpers	Tractor with Front blade (1 per 15 mile reach)
1	LEFT MARGINAL BUND	13.73	S.E shall allow deputation of one (1) excavator & four (4) Trolleys during low flood at camps/vulnerable points & LMB / RMB.		-	1
2	RIGHT MARGINAL BUND	1.26				
3	COLONY PROTECTION CUM FLOOD PROTECTION BUND	10.84				1
4	BARRAGE	-				
5	Chumbiyan Flood Bund	3.3				
Total						2

14.4 Action plan for Deployment of Machinery (Medium to High flood)

Sr. No.	Structure Name	Length (Miles)	Excavators	Trolleys	Dumpers	Tractor with Front blade
			1 per 7 mile reach	4 per 7 mile reach	2 per 7 mile reach	1 per 7 mile reach
1	LEFT MARGINAL BUND	13.73	2	8	4	2

2	RIGHT MARGINAL BUND	1.26	0	1	1	0
3	COLONY PROTECTION CUM FLOOD PROTECTION BUND	10.84	2	7	3	2
4	BARRAGE	-	0	0	0	0
5	Chumbiyan Flood Bund	3.3	0	1	0	0
TOTAL			**4**	**17**	**8**	**4**

14.5 Action plan for Deployment of Machinery (Very High to Exceptionally High flood)

Sr. No.	Structure Name	Length (Miles)	Excavators		Trolleys	Dumpers	Tractor with Front blade	
			Very High Flood	Exp. High Flood	4 per 5-mile reach	2 per 5-mile reach	Very High Flood	Exp. High Flood
			1 per 5-mile reach	2 per 5-mile reach			1 per 5-mile reach	2 per 5-mile reach
1	LEFT MARGINAL BUND	13.73	3	6	11	5	3	5
2	RIGHT MARGINAL BUND	1.26	0	1	1	1	0	1
3	COLONY PROTECTION CUM FLOOD PROTECTION BUND	10.84	2	4	8	4	2	4
4	BARRAGE	-	0	0	0	0	0	0
5	Chumbiyan Flood Bund	3.3	0	1	3	1	0	1
TOTAL			**5**	**12**	**23**	**11**	**5**	**11**

Note: - Payment for machinery and work charge employees subject to verification by TPM.

14.6 Police Deployment Plan

Sr.	Site of Breaching section	Concerned Canal Division	Concerned Police station & District	Police personal to be deployed		Remarks (if any)
				Inspector / S.I / A.S.I	Constables	

1	RD. 5+000 of RMB	Marala Barrage Division	Tanda Police Station District Gujrat	Sub Inspector = 01 Nos.	6 Nos.	

Performa-2

Sr.	Vulnerable sites used for illegal cuts during floods	Concerned Canal Division	Concerned Police station & District	Police personal to be deployed		Remarks (if any)
				Inspector / S.I / A.S.I	Constables	
1	Nill	Marala Barrage Division	Nill	-	-	

Performa-3

Sr.	Name of Barrage	Concerned Canal Division	Concerned Police station & District	Police personal to be deployed		Remarks (if any)
				Inspector / S.I /A.S.I	Constables	
1	Marala Barrage	Marala Barrage Division	Marala Police Station	Sub Inspector = 02 Nos.	8 Nos.	

4-

Traffic police if required for smooth traffic flow at Barrage during flood. (add required detail)
04 Nos. Traffic Police constables will be required during flood.

5-

Any other suggestions.
NIL

14.7 Detail of synthetic bags with capacity of 100kg and 50kg

S. No.	Name of Article	Quantity Available	Quantity Required	Deficient Quantity	Remarks
1	Synthetic Bags 100 Kg Capacity	3000	6000	3000	Synthetic bags will be procured up to 30.06.2026
2	Synthetic Bags 500Kg Capacity	3000	6000	3000	

14.8 Detail of polythene sheets of black color to protect upstream slope against wave action and to control seepage through embankments.

S. No.	Name of Article	Quantity Available	Quantity Required	Deficient Quantity	Remarks
1	Polythene sheets of black color	-	800 kg	800 kg	Polythene sheet will be procured up to 30.06.2026

CHAPTER-15

➢ BACK UP-DIVISIONS

15.1 Back up Divisions (In case of Q= 400,000 cs +)

In case of very high to breach /serious situation, following Irrigation Divisions are at back up. The role of these backup division will be decided by Superintending Engineer UCC

1 Gujranwala Division UCC, Gujranwala.

2 Sheikhupura Division UCC, Sheikhupura.

Executive Engineer,	**Superintending Engineer,**	**Chief Engineer,**
Marala Division UCC,	Upper Chenab Canal Circle	Irrigation Lahore Zone,
Marala.	Lahore.	Lahore.

Note: Recommendations for Operation During Flood (SOPs)

I. The Superintendent Engineer (SE) will notify all vulnerable points of the Executive Engineer's (XEN) recommendations, and if the vulnerable site falls within 15 miles of the embankment, then a camp will be established at the vulnerable site.

II. The Superintendent Engineer shall allow the deputation of one (1) excavator and four (4) trolleys during low flood at camps/vulnerable points and LMB/RMB.

III. The Superintendent Engineer (SE) shall approve one additional shift during low to high flood based on site necessity, but shall clearly mention the range where the additional shift is allowed.

IV. For emergency situations when very high flood levels are reached at lower flood discharges, additional camps may also be established with the approval of the Superintendent Engineer.

V. The concerned division shall procure flood fighting material as required by seasonal flood fighting camps.

VI. Jackets with the official emblem of the PID should be purchased by the concerned division for use during the worst-case scenario, i.e. for exceptionally high flooding.

VII. All other camps and supplies, along with establishment personnel, i.e., Beldars and mates, shall be outsourced before the flood season for operational efficiency during flood fighting activities.

VIII. The above-mentioned yardstick of human resources includes 100% of the division's regular flood establishment at normal and low flood levels, and 50% of the division's total regular establishment and backup division for medium and above-average flood situations, as specified in the Flood Fighting Plan.

IX. The trigger point upstream of a canal division for commencing preparations shall be mentioned in the flood fighting plan and shall be such a point upstream with a lag time of 3 days/72 hours. The division shall initiate preparations corresponding to the discharge magnitude expected to be received at their jurisdiction with respect to discharge at trigger point with 2025 flood data.

X. Superintending Engineers shall approve additional resources above the approved FFP on the recommendations of the Executive Engineer based on site necessity, with a copy to TPM and the respective Chief Engineer, but must mention the scope and justify the reason for additional resources in the approval.

XI. Executive Engineers (XEN) shall decide the location and relocation of flood camps.

XII. The machinery mentioned above should be hired to remain on standby 24/7 to combat any extreme situation. The operation of deployed machinery during normal situations shall require prior approval from the Superintending Engineer.

XIII. Communication means must be arranged through the Government. It is recommended to allocate a unique frequency for the irrigation department.

XIV. In the event that water levels reach the 'High Flood' threshold, even if the recorded discharge remains below established benchmarks, all field preparations and personnel deployments must immediately escalate to Critical Level protocols.