**GOVERNMENT OF THE PUNJAB**

**IRRIGATION DEPARTMENT**

# FLOOD FIGHTING PLAN 2026

## KHANGARH CANAL DIVISION
## MUZAFFARGARH.

**Muzaffargarh Canal Circle**
**Multan**

**D.G. Khan Irrigation Zone**
**Dera Ghazi Kha**

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# PART.

# A

# CHAPTER.1

# SALIENT FEATURE

## 1.1 LOCATION

Khangarh Canal Division is located along the right flank of the River Chenab on its eastern side. The division encompasses an extensive canal network, including the Rangpur Canal System extending from RD 320+000 to RD 442+025 (tail) along with its allied distributaries. In addition, the Muzaffargarh Branch Canal, ranging from RD 0+000 to RD 97+000 (tail), and the Ali Pur Branch Canal, extending from RD 0+000 to RD 117+050 (tail), along with their respective allied systems, are also situated on the right side of the River Chenab.

## 1.2 GENERAL DESCRIPTION

Khangarh Canal Division is situated along one of the country's major rivers, the River Chenab, on its eastern side. The river has a confluence point near Village Sarki in Tehsil Alipur. To safeguard the irrigation network and other public and private infrastructure from spill flows and the erosive action of the River Chenab, an extensive system of flood protection and river training works has been developed along its course.

The division is responsible for the operation and maintenance of approximately 151.62 miles of flood embankments, along with a substantial number of river training structures, including J-Head Spurs, Mole Head Spurs, Sloping Spurs, Stone Studs, and Guide Head Spurs.

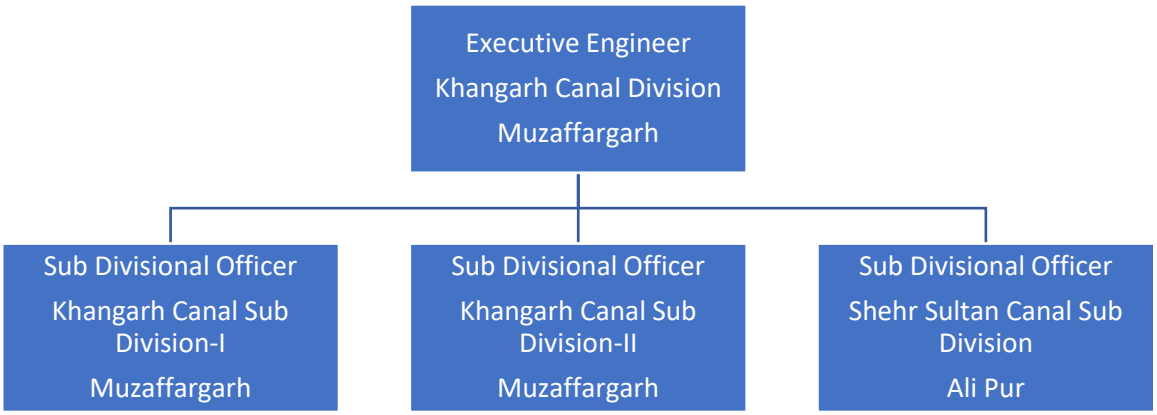
The details of flood embankments and river training works falling within the jurisdiction of Khangarh Canal Division are as follows:

| SR. NO. | STRUCTURES | LENGTH (MILES) |
|---|---|---|
| **1.** | Flood Embankments. | 125.25 |
| **2.** | J-Head Spurs | 18.95 |
| **3,** | Guide Head Spurs | 2.13 |
| **4.** | Mole Head Spurs | 2.88 |
| **5.** | Sloping Spurs | 5.11 |
| **6.** | Stone studs | 0.14 |
| **7.** | Inverted Hockey Spurs | 0.51 |
| | **Total** | **154.97 Miles** |

These flood protection structures safeguard a population of approximately 2.6 million inhabitants of Muzaffargarh District. Furthermore, with the presence of key industrial installations such as the Thermal Power Plant, Thal Jute Mills Limited, and various textile and sugar mills, Muzaffargarh has emerged as an important industrial zone, thereby increasing its strategic significance at the national level. The district remains highly vulnerable to flooding as it is located between two major rivers, the Chenab and the Indus, each having distinct catchment

areas, flood characteristics, and peak timings. In view of this critical situation, a comprehensive and effective Flood Fighting Plan has been prepared to mitigate potential flood risks and ensure the protection of life, infrastructure, and agricultural assets.

## 1.3 ADMINISTRATIVE SETUP.




This Division also manages major irrigation systems, namely the Rangpur Canal System, Muzaffargarh Branch System, and Ali Pur Branch System. These systems collectively serve a cultivable gross command area (CGCA) of approximately 0.143 million acres and a cultivable command area (CCA) of about 0.134 million acres within Muzaffargarh District.

Detail of area as under:-

| Sr. No. | Name of Canal System | GCA in Acres | CCA in Acres |
|---|---|---|---|
| **1** | Rang Pur Canal System | 142849 | 134253 |
| **2** | Muzaffargarh Canal System<br>(Alipur Branch Canal system) | 175834 | 169134 |

# CHAPTER.

# 2

# FLOOD PROTECTION AND RIVER TRAINING WORKS

## 2.1 DESIGN PARAMETER OF TRAINING WORKS (CHENAB RIVER)

| Sr # | Name of Work | Length in Mile | Designed free Board (feet) | Designed top Width (feet) | Designed side Slope | |
|---|---|---|---|---|---|---|
| | | | | | River Side | Country Side |
| **1** | **Muzaffargarh Flood Bund RD 0-188+000.** | **37.6** | **6** | **25** | **3:1** | **2:1** |
| | **X-Structures along Muzaffargarh Flood Bund** | | | | | |
| 1 | J-Head Spur No.1 RD.7+000 Muzaffargarh Flood Bund | 0.45 | 6 | 25 | 3:1 | 2:1 |
| 2 | Concavo Convex at RD: 67+000 of Muzaffargarh Flood bund. | 0.84 | 6 | 30 | 3:1 | 2:1 |
| **2** | **Doaba Flood Bund RD 0-19+000.** | **3.80** | **6** | **25** | **3:1** | **2:1** |
| **3** | **Rohari Flood Bund RD 0-23+400.** | **4.68** | **6** | **25** | **3:1** | **2:1** |
| | **X-Structures along Rohari Flood Bund** | | | | | |
| 1 | J-Head Spur No.1 RD: 10+500 of Rohari Flood Bund | 2.4 | 6 | 25 | 3:1 | 2:1 |
| **4** | **Khangarh Flood Bund RD 0-153+000.** | **30.60** | **6** | **25** | **3:1** | **2:1** |
| | **X-Structures along Khangarh Flood Bund** | | | | | |
| 1 | J-Head Spur No.2 at RD:14+500 of Khan Garh Flood Bund | 0.9 | 6 | 25 | 3:1 | 2:1 |
| 2 | Sloping Spur RD:18+500 Khan Garh Flood Bund | 0.85 | 6 | 25 | 3:1 | 2:1 |
| 3 | Guide Spur No.3 at RD: 25+500 of Khan Garh Flood Bund | 1.72 | 6 | 25 | 3:1 | 2:1 |
| 4 | J-Head Spur No.4 at RD: 36+500 of Khan Garh Flood Bund | 1.26 | 6 | 25 | 3:1 | 2:1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 5 | Sloping Spur RD 45+500 Khan Garh Flood Bund | 0.3 | 6 | 25 | 1.5:1 | 1.5:1 |
| 6 | J-Head Spur RD 47+000 Khan Garh Flood Bund | 1.3 | 6 | 25 | 3:1 | 2:1 |
| 7 | Inverted Hokey Stud RD:49+000 Khangarh flood bund | 0.3 | 6 | 25 | 3:1 | 2:1 |
| 8 | Mole Head Spur RD 54+500 Khan Garh Flood Bund | 0.3 | 6 | 25 | 3:1 | 2:1 |
| 9 | Extension of Mole Head in to Sloping Spur RD:64+000 Khangarh flood bund | 0.88 | 6 | 25 | 3:1 | 2:1 |
| 10 | J-Head Spur RD 96+000 Khan Garh Flood Bund | 1.3 | 6 | 25 | 3:1 | 2:1 |
| 11 | J-Head Spur RD 104+750 Khan Garh Flood Bund | 0.81 | 6 | 25 | 3:1 | 2:1 |
| 12 | Mole Head Spur RD 106+750 Khan Garh Flood Bund | 0.48 | 6 | 25 | 3:1 | 2:1 |
| 13 | Stone studs RD 105-109 Khan Garh Flood Bund | 0.14 | 6 | 25 | 3:1 | 2:1 |
| 14 | Mole Head Spur RD 109+600 Khan Garh Flood Bund | 0.5 | 6 | 25 | 3:1 | 2:1 |
| 15 | J-Head Spur RD 125+500 Khan Garh Flood Bund | 0.81 | 6 | 25 | 3:1 | 2:1 |
| 16 | Sloping Spur RD 127+170 Khan Garh Flood Bund | 0.52 | 6 | 25 | 3:1 | 2:1 |
| 17 | Sloping Spur RD 128+680 Khan Garh Flood Bund | 0.04 | 6 | 10 | 1.5:1 | 1.5:1 |
| 18 | Sloping Spur RD 129+500 Khan Garh Flood Bund | 0.04 | 6 | 10 | 1.5:1 | 1.5:1 |
| 19 | Sloping Spur RD 130+500 Khan Garh Flood Bund | 0.04 | 6 | 10 | 1.5:1 | 1.5:1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 20 | J-Head Spur RD 131+500 Khan Garh Flood Bund | 0.55 | 6 | 10 | 1.5:1 | 1.5:1 |
| 21 | Sloping Spur RD 132+500 Khan Garh Flood Bund | 0.06 | 6 | 20 | 3:1 | 2:1 |
| 22 | Sloping Spur RD 133+500 Khan Garh Flood Bund | 0.03 | 6 | 20 | 3:1 | 2:1 |
| 23 | Sloping Spur RD 134+600 Khan Garh Flood Bund | 0.7 | 6 | 20 | 3:1 | 2:1 |
| 24 | J- Head Spur RD 136+500 Khan Garh Flood Bund | 0.38 | 6 | 25 | 3:1 | 2:1 |
| 25 | J-Head Spur RD 142+000 Khan Garh Flood Bund | 1.3 | 6 | 25 | 3:1 | 2:1 |
| **5** | **Shehr Sultan Flood Bund RD 0-96+850.** | **19.37** | **6** | **25** | **3:1** | **2:1** |
| | **X-Structures along Shehr Sultan Flood Bund** | | | | | |
| 1 | J-Head Spur RD 15+000 Shehr Sultan Flood Bund | 1.26 | 6 | 25 | 3:1 | 2:1 |
| 2 | Sloping Spur at RD 22+000 of Shehr Sultan Flood Bund. | 0.22 | 6 | 15 | 2:1 | 2:1 |
| 3 | Hockey Spur at RD 23+500 of Shehr Sultan Flood Bund. | 0.21 | 6 | 25 | 3:1 | 2:1 |
| 4 | Guide Head Spur at RD: 25+500 of Shehr Sultan Flood Bund. | 0.41 | 6 | 25 | 3:1 | 2:1 |
| 5 | Sloping Spur at RD 27+500 of Shehr Sultan Flood Bund. | 0.21 | 6 | 20 | 3:1 | 2:1 |
| 6 | Sloping Spur at RD 29+500 of Shehr Sultan Flood Bund. | 0.21 | 6 | 6 | 3:1 | 2:1 |
| 7 | Mole Head Prong at RD 35+000 of Shehr Sultan Flood Bund. | 0.2 | 6 | 25 | 3:1 | 2:1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8 | Mole Head Prong at RD 44+000 of Shehr Sultan Flood Bund. | 0.2 | 6 | 25 | 3:1 | 2:1 |
| 9 | J-head Spur RD 50+000 Shehr Sultan Flood Bund | 1.78 | 6 | 25 | 3:1 | 2:1 |
| 10 | Sloping Spur No 1.at RD: 63+000 of Shehr Sultan Flood Bund | 0.9 | 6 | 25 | 3:1 | 2:1 |
| 11 | J-Head Spur No 2. At RD: 75+900 of Shehr Sultan Flood Bund | 0.53 | 6 | 25 | 3:1 | 2:1 |
| 12 | Mole Prong at RD: 75+900 of Shehr Sultan Flood Bund | 0.53 | 6 | 25 | 3:1 | 2:1 |
| 13 | J-Head Spur RD 88+200 Shehr Sultan Flood Bund | 1.17 | 6 | 25 | 3:1 | 2:1 |
| **6** | **Chandar Bhan Flood Bund RD 0-146+000.** | **29.20** | **6** | **25** | **3:1** | **2:1** |
| | **X-Structures along Chandar Bhan Flood Bund** | | | | | |
| 1 | J-Head Spur RD 60+500 of Chandar Bhan Flood Bund. | 0.78 | 6 | 25 | 3:1 | 2:1 |
| 2 | J-Head Spur RD 70+500 of Chandar Bhan Flood Bund. | 1.05 | 6 | 25 | 3:1 | 2:1 |
| 3 | Mole Head Prong at RD: 88+500 Chandar Bhan Flood Bund. | 0.06 | 6 | 25 | 3:1 | 2:1 |
| 4 | Mole Head Prong at RD: 89+000 Chandar Bhan Flood Bund. | 0.06 | 6 | 25 | 3:1 | 2:1 |
| 5 | Mole Head Prong at RD: 90+500 Chandar Bhan Flood Bund. | 0.06 | 6 | 25 | 3:1 | 2:1 |
| 6 | Mole Head Prong at RD: 92+500 Chandar Bhan Flood Bund. | 0.06 | 6 | 25 | 3:1 | 2:1 |
| 7 | J-Head Spur RD 105+500 of Chandar Bhan Flood Bund. | 0.92 | 6 | 25 | 3:1 | 2:1 |
| 8 | Mole Head Prong at RD: 105+500 Chandar Bhan Flood Bund. | 0.06 | 6 | 25 | 3:1 | 2:1 |

# 2.2 LOCATION MAP



# CHAPTER.

# 3

# Chapter. 3

# BRIEF HISTORY OF PAST FLOOD EVENTS

## CHENAB RIVER.

A super flood was experienced in the Chenab River during the year 1992, with peak discharge of 888143 cusecs. Therefore, breaching section along Sher Shah Flood bund on left side was operated, but it could not become active. Due to heading up caused bychocking at Sher Shah Bridge, Doaba flood bund was over topped and vast area of the Muzaffargarh Tehsil became inundated. Huge damages occurred to the infrastructure and evacuation took place on large scale. in River Chenab experienced Exceptional high floods during the years 1993, 1994, 1996 and 1997 and 2014.

During flood of 1992, Muzaffargarh Flood bund breached at three locationsbetween reach RD 32 to RD 188. In reach RD 45-78 the Rang Pur Canal and 6-R Disty, running parallel to Muzaffargarh flood bund were washed away. Similarly in reach RD 50-188Muzaffargarh flood bund over topped and consequently inundated vast area of Muzaffargarh City. These damages have since been restored together with restoration of Rang Pur Canal. The Reach RD 32000-335500 Rang Pur Canal is still under the direct hit of the River Chenab and due to provision of Pitching and apron; in a length of 1320 ft in this reach further advancement of erosive action is in controlled position.

J-head spurs were constructed along Khangarh flood bund at RD. 96,104,125 and 142 have also been under threat for last many years. These structures are required to be kept under strict vigilance and monitoring during every flood season. Shehr Sultan Flood Bund was constructed in 1993-94 and tied up with Khangarh Flood Bund on the Up Stream and with RMB of Punjnad Head Works on D/s end. When 1992 the Chenab River became active, eroding the valuable agriculture land and the infrastructure. Shehr Sultan Flood Bund was punctured at three places. Bunds were constructed at RD: 13-21, 44-54 and 88-94 for the safety of infrastructures in retired positions. The inhabitants of the area made hue and cry for resolving the problem of River erosion.

After conducting Model Study No. 2336/838-C dated: 13-07-2004, the following structures were constructed under PSDP, during the year 2008.

1. J-head spur at RD. 131+500Khangarh Flood Bund
2. J-head Spur at RD. 15+000Shehr Sultan Flood Bund
3. J-head Spur at RD. 50+000
4. J-head spur at RD. 88+200& mole head prong along j-head spur No. 2at RD:75+900 Shehr Sultan Flood Bund.

The Chenab River from Trimmu to Punjnad Head works has adopted the drifting tendency on the right side fromRD: 320 Rang Pur Canal to D/s Sher Shah Bridge, all along the Muzaffargarh Flood Bund, Khangarh Flood Bund and Sher Sultan Flood Bund. Due to constant running of Chenab River during the year 2006, 2007 for diverting irrigation supply to province of Sindh during the execution of work of rehabilitation and modernization of Taunsa Barrage, the fertile lands alongwith orchards were swallowed by erosive action. The inhabitants of area again agitated and made hue and cry to save their agriculture area from River erosion.

The Taunsa Punjnad Link Canal breached at RD: 172-173 Right on 3-8-2010. The Excessive Flood water entered in the system. In this alarming condition, there was no alternate except to make relief cut on left bank on left of Rang Pur Canal at RD: 419-420/L 435-436/L and 0-1/L, 4-5/L of Muzaffargarh Branch with the help of Pak Army to divert the flood water into the Chenab River as and when the similar situation arises in future, the permanent relief cut sites will be proposed as under.

**Rang Pur Canal.**

RD: 419-420 /L

RD: 435-436 /L.

**Muzaffargarh Branch**

RD: 0-1 /L
RD: 4-5 /L

Chander Bhan Flood Bund is situated down-stream Punjnad Headworks. River Chenab has tendency of flow towards right since 1988. Chander Bhan Flood Bund was constructed during 1994-95 for the safety of irrigation system of Alipur Branch and thickly populated abadies of Tehsil Alipur. Due to continuous erosive tendency, river eroded the Chander Bhan Flood Bund in reach R.D. 58-61.

**FLOOD 2014**

During exceptionally high flood 2014 in River Chenab, the peak discharge recorded D/S Trimmu Barrage as 7,67,849 Cs passed through Sher Shah Bridge in the jurisdiction of Khangarh Canal Division. The following structures were badly damaged due to the exceptional high flood.

1 J-Head Spur No. 3 Khangarh flood bund
2 Apron of J-Head Spur RD 125+500 Khangarh Flood Bund
3 Apron of J-Head Spur RD 142+000 Khangarh Flood Bund
4 of J-Head Spur at RD 15+000 Shehr Sultan Flood Bund
5 Muzaffargarh Flood Bund Breached at RD148-149 (Breached on 13-09-2014)
6 Muzaffargarh Flood Bund Breached at RD157-158 (Breached on 14-09-2014)

| | | |
|---|---|---|
| 7 | Breaching Section RD 12-13 Doaba Flood Bund | (Operated on 14-09-2014) |
| 8 | Breaching Section RD 14-15 Doaba Flood Bund | (Operated on 14-09-2014) |
| 9 | Breaching Section RD 8-9 Rohari Flood Bund | (Operated on 14-09-2014) |
| 10 | Breaching Section RD 15-16 Rohari Flood Bund | (Operated on 14-09-2014) |
| 11 | J-head Spur RD 50+000 Shehr Sultan Flood Bund | |
| 12 | 6-L Disty RD 0+000 to 5250 Tail | |
| 13 | Murad Abad Disty RD 0 to 15250 (Tail) | |
| 14 | Doaba Disty RD 0 to 33333 (Tail) | |

Due to breached took place along Muzaffargarh Flood Bund at RD:148-149 &RD 157-158 andthrough breach of right bank of Muzaffargarh Branch at various sites, the flood water entered to the Muzaffargarh city and badly damaged the valuable abadies and other important infrastructures.

**BREACHING SECTION**

As per SOP's of breaching committee, when the gauge fixed at 16$^{th}$ right pier of Sher Shah Railway Bridge attained the level of raising condition R.L. 393.50, Sherh Shah breaching section on left side of River Chenab is to be operated. If no relief is obtained and gauge of Sher Shah Bridge is further rising, breaching section of Doaba flood bund is to be operated. In pursuance to the SOP's for operation of breaching section. R.L. 393.50 at Sher Shah Bridge was obtained on 13.09.2014 and Sher Shah breaching section on left side of River Chenab was operated by Multan Zone. Discharge of River Chenab went on further rising. A request was made to Army authorities, NHA authorities and Pakistan Railways through breaching committee on 14.09.2014 for making necessary arrangements to operate breaching sites. Breaching section on right side of Rive Chenab is of complex nature. It is not just to breach Doaba Flood bund, but also to breach N-70 Muzaffargarh bypass, Railway Track & N-70 old Muzaffargarh-Multan road and then Rohari Flood Bund.

Due to rising level of gauge above RL:393.50 breaching committee requested Army authorities, NHA authorities and Pakistan Railways to operate breaching section on 14.09.2014 at 16:00Hours. After operation of breaching section maximum 78000 Cs Discharge was passed through breaching section. The breaching section remained operative till 20.09.2014.

It is pertinent to mention here that during the flood of 2014, the highest flood level (HFL) observed at Sher Shah Railway Bridge was R.L 394.00, which may now considered as a critical gauge reference for future review and operation of the breaching section.

**FLOOD 2018**

During Flood 2018, there was again normal flood of discharge peak 81680 Cusecs dated:17.08.2018 in River Chenab and due to this normal flow everything remained safeand the flood water not touched the limit of low flood even. The flood water passed through Muzaffargarh District jurisdiction without any damage and the District remained safe.

**FLOOD 2019**

During Flood 2019, there was again normal flood of discharge 91229 Cusecs dated:22.08.2019 in River Chenab and due to this normal flow everything went good. In 2019 flood D/S Trimmu was natural and not touches the limit of low flood even. The flood water passed to M.Garh District without any damage and the District remained safe.

**FLOOD 2020**

During Flood 2020, there was again low flood of discharge 196077 Cusecs dated: 01.09.2020 in River Chenab and due to this low flood everything went good. In 2020 flood D/S Trimmu was natural and not touches the limit of medium flood even. The flood water passed to M.Garh District without any damage and the District remained safe.

**FLOOD 2021**

During Flood 2021, there was again low flood of discharge 106867 Cusecs dated: 31.07.2021 in River Chenab and due to this low flood everything went good. In 2021 flood D/S Trimmu was natural and not touches the limit of medium flood even. The flood water passed to M.Garh District without any damage and the District remained safe.

**FLOOD 2022**

During Flood 2022, there was again low flood of discharge 106867 Cusecs dated: 31.07.2021 in River Chenab and due to this low flood everything went good. In 2021 flood D/S Trimmu was natural and not touches the limit of medium flood even. The flood water passed to M.Garh District without any damage and the District remained safe

**FLOOD 2023**

During Flood 2023, there was again the flood attained the peak discharge 116786 Cusecs on dated: 26.07.2023 in River Chenab and due to this low flood no removable danger was observed in 2023 flood D/S Trimmu was natural and not touches the limit of medium flood even. The flood water passed to M.Garh District without any damage and the District remained safe

**FLOOD 2024**

During Flood 2024, there was again the flood attained the peak discharge 82680 Cusecs on dated: 19.08.2024 in River Chenab and due to this low flood no

removable danger was observed in 2024 flood D/S Trimmu was natural and not touches the limit of medium flood even. The flood water passed to M.Garh District without any damage and the District remained safe.

**FLOOD 2025**

The flood events of 2025 in River Chenab were characterized by two major flood spells, both of which exerted prolonged hydraulic pressure on the flood protection system within the jurisdiction of Khangarh Canal Division. The first peak, corresponding to a discharge of approximately 550,965 cusecs at Head Trimmu, reached Muzaffargarh on 04 September 2025, while the second peak of about 543,579 cusecs arrived on 09 September 2025. Both flood spells remained sustained for considerable durations, thereby testing the structural integrity of embankments and associated river training works.

At the upstream reach near Rangpur Canal (RD 320+000), a critical deficiency was observed where approximately 21 RDs of flood bund do not exist in a proper designed shape and are instead composed of natural sand dunes (tibba formations). During the flood, water overtopped this stretch and entered the Rangpur Canal prism through low-lying points. The situation was further aggravated by the collapse of fish ponds located on the river side, which created direct inlets for floodwater intrusion in the Rangpur Canal. However, through timely field response involving earthwork, sandbagging, and plugging of inlets, the situation was effectively controlled, preventing further spread of inundation.

As the flood wave progressed downstream, a ponding effect developed near Head Muhammad Wala due to backwater conditions and bridge constriction, resulting in sustained pressure on the Muzaffargarh Flood Bund. Despite prolonged high levels, the bund remained safe due to continuous patrolling and effective flood-fighting operations.

**Performance of Flood Protection System**

The overall performance of the flood protection system during Flood-2025 remained satisfactory. Although multiple incidents such as seepage, toe boiling, slope sloughing, and localized erosion were seriously observed along various reaches, all such issues were promptly addressed through timely interventions, including trenching, puddling, compaction, earth filling, and sandbagging.

In the reach between Head Muhammad Wala and Sher Shah Bridge, the Muzaffargarh Flood Bund remained under direct hydraulic attack due to the rightward inclination of river flow. Despite structural limitations such as reduced top width, steep side slopes, and restricted cross-section between RD 150+000 to RD 165+000 of

Muzaffargarh Flood Bund (between Thattha Sial to Kali Pul) due to adjacent irrigation channels, no breach occurred. The coordinated response of field staff ensured stabilization of all affected sections before water levels receded.

| Location | | Date & Time (Peak Observation) | Gauge (ft) | Subsequent Drop | Duration | Remarks |
|---|---|---|---|---|---|---|
| Head Muhammad Wala | 1st Peak | 04-09-2025, 18:00 | 413.90 | RL: 413.70 (by 05-09-2025, 06:00) | 12 hrs | Peakdischargereceiving at Muzaffargarh reach |
| Sher Shah Bridge | | 05-09-2025, 00:00 | 393.70 | RL: 393.60 (by 05-09-2025, 21:00) | 21 hrs | Same peak reached Sher Shah with ~10–12 hr lag |
| Head Muhammad Wala | 2nd Peak | 09-09-2025, 20:00 | 413.70 | RL: 413.60 (by 10-09-2025, 08:00) | 12 hrs | Second peak observed |
| Sher Shah Bridge | | 09-09-2025, 11:00 | 393.40 | RL: 393.30 (by 10-09-2025, 21:00) | 34 hrs | Corresponding second peak reached Sher Shah ~10 hr later |

Although the critical gauge RL 393.50 at Sher Shah Bridge—prescribed for operating the breaching section—was achieved, the section was not operated because the upstream trend at Head Muhammad Wala was falling, indicating recession of the discharge.

Similarly, in the downstream reach from Sher Shah Railway Bridge to Panjnad Headworks, embankments including Rohari, Khangarh, and Shehr Sultan Flood Bunds remained under continuous hydraulic stress due to backwater effects and prolonged high flood levels. The silty sand composition of these embankments made them susceptible to seepage and piping; however, continuous monitoring and timely remedial measures ensured their stability throughout the flood period.

**Critical Issues and Vulnerable Reaches**

The flood of 2025 highlighted several structural, hydraulic, and geotechnical weaknesses in the existing flood protection system. The most significant issue was the absence of a properly constructed embankment in the initial 21 RDs near Rangpur Canal, which allowed overtopping and inflow into the canal prism.

In addition, the entire Muzaffargarh Flood Bund within the Thal region is founded on silty sand strata, which possesses low cohesion and high permeability, making it highly vulnerable to seepage, sloughing, and erosion under prolonged high water levels.

A parallel flow zone observed around RD 64–65 further increased the risk of riverside erosion.

The reach between RD 150+000 and RD 165+000 was identified as the most critical section, where the embankment does not meet FFC design standards. The top width in this reach is significantly deficient (8–12 ft against the required 25 ft), and the side slopes are steeper than prescribed limits. Moreover, the presence of irrigation channels on both sides restricts the effective width, thereby reducing structural stability.

At Sher Shah Bridge, additional complications were observed, including turbulent flow conditions affecting gauge readings, choked bridge bays, and prolonged ponding, which created severe hydraulic pressure on the adjoining embankments.

**Major Failure at Chandar Bhan Flood Bund**

The most critical situation during Flood-2025 occurred along the Chandar Bhan Flood Bund in the reach between Panjnad Headworks and Sarki. A major unconstructed gap of approximately 14,000 feet between RD 33+600 and RD 46+600 proved to be the primary cause of failure.

During the exceptionally high flood, with discharge exceeding 703,000 cusecs at Panjnad, water overtopped this gap and escaped towards the country side near Azmatpur, resulting in widespread inundation of Seetpur, Basti Bhango, and surrounding areas. The situation worsened due to the collapse of locally constructed zamindara bunds, which led to a secondary breach near RD 91+000–92+000.

As a result, floodwaters spread extensively across the downstream areas and continued towards Sarki, causing significant damage to agricultural lands, infrastructure, and settlements. This event clearly demonstrated that the absence of a continuous embankment can render the entire flood protection system ineffective.

# CHAPTER.

# 4

# Chapter. 4

## DESIGN DATA, HISTORIC PEAK FLOOD DATA AND PREVIOUS FIVE YEAR FLOOD DATA OF HEAD WORKS /BARRAGES AND OTHER CONTROL POINTS

### 4.1 FLOOD LIMITS

| Sr. No. | DISCHARGES LIMITS. Lac (Cusecs) | FLOOD STAGE |
|---|---|---|
| 1. | Below 1.50 | Normal |
| 2. | 1.50 or above but below 2.00 | Low |
| 3. | 2.00 or above but below 3.00 | Medium |
| 4. | 3.00 or above but below 4.50 | High |
| 5. | 4.50 or above but below 6.00 | Very High |
| 6. | 6.00 or above | Exceptionally High |

### 4.2 TIME LAGS OF FLOODS

| S.No. | Name of Head Work | Distance in K.M. | Time in Hours |
|---|---|---|---|
| 1. | Marala to Khanki | 56 | 12 |
| 2. | Khanki to Qadirabad Head Works | 30 | 7 |
| 3. | Qadirabad Head Works to Trimmu | 214 | 72 |
| 4. | Trimmu Barrage to Tail T.P Link | 162 | 48 |
| 4. | Tail T.P.Link to Sher Shah Bridge | 32 | 10 |
| 5. | Sher Shah to Punjnad Head works | 63 | 20 |
| 6. | Punjnad Head works to Mithan Kot | 78 | 24 |

### 4.3 HIGHEST FLOODS

#### CHENAB RIVER

The maximum discharge received down stream

Trimmu Head works on 08.07.1959 = 9,43,212 Cusecs

## 4.4 PEAK DISCHARGE.

**CHENAB RIVERD/S TRIMMU HEAD WORKS.**

| YEAR | DATE | Discharge (in Cs) |
|---|---|---|
| 2011 | 20-09-2011 | 127790 |
| 2012 | 07-08-2012 | 67694 |
| 2013 | 20-08-2013 | 234487 |
| 2014 | 14-09-2014 | 767849 |
| 2015 | 31-07-2015 | 134765 |
| 2016 | 10-08-2016 | 153339 |
| 2017 | 05-08-2017 | 87613 |
| 2018 | 17-08-2018 | 81680 |
| 2019 | 22-08-2019 | 91229 |
| 2020 | 01-09-2020 | 196077 |
| 2021 | 31-07-2021 | 106867 |
| 2022 | 19.08.2022 | 118618 |
| 2023 | 26.07.2023 | 116786 |
| 2024 | 19.08.2024 | 82680 |
| 2025 | 01.09.2025 | 550965 |

# CHAPTER.

# 5

# CHAPTER. 5

## FLOOD FIGHTING STRATEGY

During flood alert,all the vulnerable points will be kept under keen watching. If any damage occurs to any structure, matter will be brought to the notice of high ups of the department by the concerned S.D.O. In case of any damage, the Standard Operating Procedure (S.O.P's) defined by the Administrative Department.

## RIVER CHENAB

### STAGE-1

When the discharge of River Chenab is bellow than1.5 Lac Cs which is considered as Normal Flood, The Sub Divisional Officer, Khangarh Canal Sub Division and Shehr Sultan Canal Sub Division will be In-charge of overall Flood operation and the Sub Engineer In-charge of their Sections will perform watching duties in their respective jurisdictions. No special watching is required.

### STAGE-2

When the discharge of River Chenab is between 1.5 Lac Cs to 2.00 Lac Cs which is considered as Low Flood, The Sub Divisional Officer, Khangarh Canal Sub Division and Shehr Sultan Canal Sub Division will be In-charge of overall Flood operation and the Sub Engineer In-charge of their Sections will perform watching duties in their respective jurisdictions.

### STAGE-3

When the discharge of River Chenab is between2.00 Lac Cs to 3.00 Lac Cs which is considered as Medium Flood, The Executive Engineer, Muzaffargarh Canal Division and the Sub Divisional Officer, Khangarh Canal Sub Division and Shehr Sultan Canal Sub Division will be In-charge of overall Flood operation and the Sub Engineer In-charge of their Sections will perform watching duties in their respective jurisdictions.

### STAGE-4

When discharge of River Chenab is between 3.00 Lac Cs to 4.50 Lac Cs which is considered as High Flood, The Executive Engineer, Muzaffargarh Canal Division will be overall In-charge of Flood operation. In addition the Sub Divisional Officers, will be In-charge of watching operations of Flood Bunds along with supervisory staff and Sub Engineer concerned, along with their watching teams as listed in duty roster.

### STAGE-5

When discharge of River Chenab is between 4.50 Lac Cs to 6.00 Lac Cs which is considered as Very High Flood, The Executive Engineer, Muzaffargarh Canal Division will be overall In-charge of Flood operation. In addition the Sub Divisional Officers, will be In-charge of watching operations of Flood Bunds along with supervisory staff and Sub Engineer concerned, along with their watching teams as listed in duty roster.

## STAGE-6

When the discharge isabove 6.00 Lac Cs which is considered as Exceptionally High Flood,the Executive Engineer, Muzaffargarh Canal Division will be overall In-charge of Flood operation. The Sub Divisional officer Khangarh Canal Sub Division and Shehr Sultan Canal Sub Division, along with supervisory staff of all the concerned Sub Engineers will also be responsible for the Flood operation.

## Responsibility of Staff

(1) Executive Engineer, of Khangarh Canals Division will be responsible for watch and ward of Khangarh Canal Division. The Executive Engineer, will have an overall control over the flood preparedness and should have clarity in mind how to control and avert any grievous situation developing at any point around Khangarh Canal Division. He should also apprise himself and alert other concerned about weather report and flood forecast.

(2) Sub Divisional Officer's along with their supervisory staff of all the concerned Sub Engineers will also be responsible for watch and ward ofFlood operation.

## LIAISON WITH OTHER DEPARTMENT

Executive Engineer Khangarh Canal Division and Sub Divisional Officer will keep liaison with their counter parts in other departments. Higher authorities of other department will be approached through Superintending Engineer Muzaffargarh Canal Circle Multan and Chief Engineer Irrigation Zone D.G.Khan if any need arises. At site, Sub Engineers will conduct inspections with the visiting officers of Civil and Army if no higher officer is available on spot.

# CHAPTER.

# 6

# CHAPTER. 6

# FLOOD DAMAGES / RESTORATION WORKS

Damages to the following structures were occurred during flood 2025.

| SrNo. | Name of Work | Cost (M) | Status |
|---|---|---|---|
| 1 | Restoration of J-Head Spur at RD: 47+000 of Khangarh Flood Bund. | 25.165 | Under Tendering process |
| 2 | Restoration of J-Head Invertwd Hockey Stud at RD: 49+000 of Khangarh Flood Bund. | 7.81 | Under Tendering process |
| 3 | Restoration of Apron of J-Head Spur at RD: 142+000 of Khangarh Flood Bund. | 45.457 | Under Tendering process |
| 4 | Restoration of Guide Head Spur at RD: 25+500 of Shehr Sultan Flood Bund. | 28.735 | Under estimation process |
| 5 | Restoration of Sloping Spur at RD: 63+000 of Shehr Sultan Flood Bund. | 4.356 | Under estimation process |
| 6 | Restoration of J-Head Spur at RD: 88+200 of Shehr Sultan Flood Bund. | 15.113 | Job Order Issued |
| 7 | Conversion of Existing J-head Spur into Mole Head Spur at RD: 70+500 of Chandar Bhan Flood Bund by Sect During Flood 2025. | 220 | Under estimation process |
| 8 | Restoration Damaged Side Slopes of Chandar Bhan Flood Bund at RD 105+500. | 350 | Under estimation process |
| 9 | Strengthening / Restoration of design parameters from RD 0+000 to RD 67+000 of Muzaffargarh Branch. | 33.311 | Work in progress |
| 10 | Restoration of Chander Bhan Disty from RD 14+000 to 47+600 damaged during flood 2025. | 12.437 | Work in progress |
| 11 | Restoration of Ghalwan Disty from RD 22+000 to 47+300 damaged during flood 2025. | 6.682 | Work in progress |
| 12 | Restoration of Ali pur Disty from RD 35+000 to 44+500 damaged during flood 2025. | 5.531 | Work in progress |
| 13 | Restoration of Qadra Disty from RD 58+000 to 64+000 damaged during flood 2025. | 9.032 | Work in progress |
| 14 | Construction of Chander Bhan Flood Bund on River Chenab | 3494.548 | At Approval Stage |
| 15 | Remodeling and protection of Flood Bunds and allied structures on right side of Chennab river between head Muhammad Wala and Punjnad | 1508.397 | At Approval Stage |

# CHAPTER.

# 7

# CHAPTER. 7

# FLOOD FIGHTING WATCHING ARRANGEMENTS

## 7.1 PRE-FLOOD ARRANGEMENTS

a. **Flood Warning:** it is important that as soon as the Officer Incharge of canal head works knows about any probable rise in the River, he will initiate the necessary watch over embankment and regulate the weir and canal according to the rules sanctioned for each head works.

b. During High Flood, when the River over flows the banks, expensive area along the River banks is liable to be inundated. It is therefore, necessary to warn civil officer to be on the alert and to be ready to evacuate villages likely to be inundated.

c. For the reasons stated in paragraph above, flood warning are to be sent by higher officer to the Civil administration & other Irrigation officers. Flood warning will be issued by telegraph office to concerned officers.

d. Between the dated October 01 and March 31 warning will be issued immediately when a River rises to "Low" flood level. The Executive Engineer Muzaffargarh Canal Division and Executive Engineer Dera Ghazi Khan will be intimated whenever the gauge at Attock is 10' ft or above.

e. For the period April 01 to September 30 warning will be issued only when a river reaches the "Medium" stage. No warning is issued for low flood during flood season.

**SPECIAL FLOOD WARNING TO THE CHIEF ENGINEER**

In addition to issuing of warning as described above, when the river rises to the high flood stage, warning by postal \ wireless will also be issued to Chief Engineer from Tarbella Dam, Chashma Barrage, Kala Bagh, Mangla, Marala, Trimmu and Taunsa Barrage.

## ADDITIONAL INFORMATION
## LATEST POSITION OF RESERVE STOCK OF STONE

| Sr # | Name of Structure | Reserve stock Limit Lac Cft | Available at Site (In Lac Cft) | Balance Required (In Lac Cft) |
|---|---|---|---|---|
| 1 | Muzaffargarh Flood bund RD:88+000 | 0.50 | 0.00 | 0.50 |
| 2 | Muzaffargarh Flood bund RD:148+000-149+000 | 0.25 | 0.00 | 0.25 |
| 3 | Muzaffargarh Flood bund RD:165+000 | 0.25 | 0.00 | 0.25 |
| 4 | J-Head Spur No. 1 Rohari Flood Bund | 1.50 | 1.04 | 0.462 |
| 5 | Khan Garh flood Bund RD: 0+000 | 0.20 | 0.0815 | 0.118 |
| 6 | J-Head Spur No. 2 Khan Garh Flood Bund RD:14+500 | 1.50 | 0.907 | 0.592 |
| 7 | J-Head Spur No. 3 RD.25+500 of Khan Garh Flood Bund | 1.50 | 1.04 | 0.460 |
| 8 | J-Head Spur No. 4 RD: 36+500 of Khan Garh Flood Bund | 1.50 | 0.00 | 1.50 |
| 9 | J-Head Spur Rd 47+000 Khangarh Flood Bund | 1.50 | 0.587 | 0.912 |
| 10 | Inverted Hockey Stud RD: 49+000 of Khangarh Flood Bund. | 1.50 | 0.0489 | 1.45 |
| 11 | Sloping Spur Rd 64+000 of Khangarh Flood Bund | 1.50 | 0.00 | 1.50 |
| 12 | J-Head Spur RD 96+000of Khan Garh Flood Bund | 1.50 | 0.00 | 1.50 |
| 13 | J-Head Spur RD: 104+750 of Khangarh Flood Bund | 1.50 | 0.00 | 1.50 |
| 14 | J-Head Spur RD 125+500 of Khan Garh Flood Bund | 1.50 | 0.130 | 1.37 |
| 15 | Reach RD 127-135 of KhanGarh Flood Bund | 2.00 | 0.00 | 2.00 |
| 16 | J-Head Spur RD 131+500 of Khan Garh Flood Bund | 1.50 | 0.00 | 1.50 |
| 17 | Sloping Spur RD 136+500 Khan Garh Flood Bund | 0.50 | 0.00 | 0.50 |
| 18 | J-Head Spur RD 142+000 of Khan Garh Flood Bund | 1.50 | 0.00 | 1.50 |
| 21 | J Head Spur RD: 15+000 Shehr Sultan Flood Bund | 1.50 | 0.221 | 1.28 |
| 22 | Shehr Sultan Flood Bund RD20+000-27+500 | 1.00 | 0.695 | 0.305 |
| 23 | Inverted Hockey Spur at RD 23+500 Shehr Sultan Flood Bund | 0.50 | 0.350 | 0.20 |
| 24 | Guide Head Spur at RD 25+500 Shehr Sultan Flood Bund | 0.50 | 0.448 | 0.05 |
| 25 | J-Head Spur RD: 50+000 Shehr Sultan Flood Bund | 1.50 | 0.465 | 1.03 |
| 19 | Sloping Spur No. 1RD: 63+000 of ShehrSultan Flood Bund | 1.50 | 0.980 | 0.520 |
| 20 | J-Head Spur No. 2 RD: 75+900 of ShehrSultan Flood Bund | 1.50 | 0.0 | 1.50 |
| 29 | Mole Head Spur RD:75+900 Shehr Sultan Flood Bund | 1.50 | 0 | 1.50 |
| 32 | J-Head Spur RD 88+200 of Shehr Sultan Flood Bund | 1.50 | 0.0747 | 1.42 |
| 26 | J-Head Spur at RD 60+500 Chander Bhan Flood Bund | 1.50 | 0.559 | 0.940 |
| 27 | J-Head Spur at RD 70+500 Chander Bhan Flood Bund | 1.50 | 0.447 | 1.05 |
| 28 | Chandar Bhan Flood Bund | 1.50 | 0.00 | 1.50 |
| 30 | Chander Bhan Flood Bund RD: 84+000 | 0.50 | 0.00 | 0.50 |
| 31 | Loop Portion at RD: 101+000 of Chander Bhan Flood Bund | 0.50 | 0.00 | 0.50 |
| 33 | J-Head Spur at RD 105+500 Chander Bhan Flood Bund | 1.50 | 0 | 1.50 |
| 34 | Chander Bhan Flood 146+000 (Confluence Point of River Chenab & River Indus). | 0.50 | 0 | 0.50 |
| 35 | Concavo Convex at RD: 67+000 of Muzaffargarh Flood Bund | 1.50 | 0 | 1.50 |
| | **G.Total:-** | **41.700** | **8.074** | **33.626** |

## STATUS OF RESERVE STOCK STONE

| Total Sanctioned reserve stock limit. | All ready Available Quantity. | Balance Quantity. | Remarks |
|---|---|---|---|
| **41.700** | **8.074** | **33.626** | Balance quantity of reserve stock of stone should be purchased before start of flood season. |

## 7.2 WATCHING ESTABLISHMENT

| Sr No | Name of Structure | Lengthof Flood Bund in Feet | Length in Mile | Normal Flood Season | | | Low Flood | | | Medium / High Flood | | | Very High / Exp. High Flood | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Men | Shift | | Men | Shift | | Men | Shift | | Men | Shift | |
| | | | | 1Person/2mile/shift(1 shift) | | | 1Person/mile/shift(1 shift) | | | 2 Person /mile/shift(2 shift) | | | 5 Person /mile/shift(3 shift) | | |
| **1** | Muzaffargarh Flood Bund RD: 0+000-188+000 | 188000 | 37.6 | 19 | 1 | | 38 | 1 | | 76 | 2 | | 190 | 3 | |
| **2** | Doaba Flood Bund | 19000 | 3.8 | 2 | 1 | | 4 | 1 | | 8 | 2 | | 20 | 3 | |
| **3** | Rohari Flood Bund | 23400 | 4.68 | 2 | 1 | | 5 | 1 | | 10 | 2 | | 20 | 3 | |

# KHANGARH FLOOD BUND AND ITS ALLIED STRUCTURES

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **4** | **Khangarh Flood Bund** | 153000 | 30.6 | 15 | 1 | | 30 | 1 | | 60 | 2 | | 150 | 3 | |

### X-SPURS OF KHANGARH FLOOD BUND

| Sr No | Name of Structure | Lengthof Flood Bund in Feet | Length in Mile | Normal Flood Season | | | Low Flood | | | Medium / High Flood | | | Very High / Exp.High Flood | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Men | Shift | | Men | Shift | | Men | Shift | | Men | **Shift** | |
| | | | | 1Person/2mile/shift( 1 shift) | | | 1Person/mile/shift(1 shift) | | | 2 Person /mile/shift(2 shift) | | | 5 Person /mile/shift(3 shift) | | |
| I | J-Head Spur RD 47+000 Khan Garh Flood Bund | 1.3 | 1.3 | - | 1 | | 1 | 1 | | 2 | 2 | | 5 | 3 | |
| II | Inverted Hokey Stud RD:49+000 Khangarh flood bund | 0.3 | 1.18 | - | 1 | | 1 | 1 | | 2 | 2 | | 5 | 3 | |
| III | Extension of Mole Head in to Sloping Spur RD:64+000 Khangarh flood bund | 0.88 | | | | | | | | | | | | | |
| IV | J-Head Spur RD 96+000 Khan Garh Flood Bund | 1.3 | 1.3 | - | 1 | | 1 | 1 | | 2 | 2 | | 5 | 3 | |
| V | J-Head Spur RD 104+750 Khan Garh Flood Bund | 0.81 | 1.62 | - | 1 | | 1 | 1 | | 2 | 2 | | 5 | 3 | |
| VI | J-Head Spur RD 125+500 Khan Garh Flood Bund | 0.81 | | | | | | | | | | | | | |
| VII | Sloping Spur RD 127+170 Khan Garh Flood Bund | 0.52 | 1.07 | - | 1 | | 1 | 1 | | 2 | 2 | | 5 | 3 | |
| VIII | J-Head Spur RD 131+500 Khan Garh Flood Bund | 0.55 | | | | | | | | | | | | | |
| IX | J- Head Spur RD 136+500 Khan Garh Flood Bund | 0.38 | 1.68 | - | 1 | | 1 | 1 | | 2 | 2 | | 5 | 3 | |
| X | J-Head Spur RD 142+000 Khan Garh Flood Bund | 1.3 | | | | | | | | | | | | | |
| | Total | | | - | | | 6 | | | 12 | | | 30 | | |

# SHEHR SULTAN FLOOD BUND AND ALLIED STRUCTURES

| Sr No | Name of Structure | Lengthof Flood Bund in Feet | Length in Mile | Normal Flood Season | | | Low Flood | | | Medium / High Flood | | | Very High / Exp .High Flood | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Men | Shift | | Men | Shift | | Men | Shift | | Men | Shift | |
| | | | | 1Person/2mile/shift(1 shift) | | | 1Person/mile/shift(1 shift) | | | 2 Person /mile/shift(2 shift) | | | 5 Person /mile/shift(3 shift) | | |
| **5** | **Shehr Sultan Flood Bund** | **96850** | **19.37** | 10 | 1 | | 19 | 1 | | 38 | 2 | | 95 | 3 | |
| | **Structures of Shehr Sultan Flood Bund** | | | | | | | | | | | | | | |
| 1 | J-Head Spur RD 15+000 Shehr Sultan Flood Bund | 6300 | 1.26 | 1 | - | 1 | | 1 | 1 | | 2 | 2 | | 5 | 3 |
| 2 | Sloping Spur at RD 22+000 of Shehr Sultan Flood Bund. | 1100 | 0.22 | 1 | - | 1 | | 1 | 1 | | 2 | 2 | | 5 | 3 |
| 3 | Hockey Spur at RD 23+500 of Shehr Sultan Flood Bund. | 1050 | 0.21 | | | | | | | | | | | | |
| 4 | Guide Head Spur at RD: 25+500 of Shehr Sultan Flood Bund. | 2050 | 0.41 | | | | | | | | | | | | |
| 5 | Sloping Spur at RD 27+500 of Shehr Sultan Flood Bund. | 1050 | 0.21 | | | | | | | | | | | | |
| 6 | J-head Spur RD 50+000 Shehr Sultan Flood Bund | 8900 | 1.78 | 2 | 1 | 1 | | 2 | 1 | | 4 | 2 | | 10 | 3 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Sloping Spur No 1.at RD: 63+000 of Shehr Sultan Flood Bund | 4500 | 0.9 | 2 | 1 | 1 | | 2 | 1 | | 4 | 2 | | 10 | 3 | |
| 8 | J-Head Spur No 2. At RD: 75+900 of Shehr Sultan Flood Bund | 2650 | 0.53 | | | | | | | | | | | | | |
| 9 | Mole Prong at RD: 75+900 of Shehr Sultan Flood Bund | 2650 | 0.53 | | | | | | | | | | | | | |
| 10 | J-Head Spur RD 88+200 Shehr Sultan Flood Bund | 5850 | 1.17 | 1 | - | 1 | | 1 | 1 | | 2 | 2 | | 5 | 3 | |
| **Total of X-spurs of Shehr Sultan** | | | | | 2 | | | 7 | | | 14 | | | 35 | | |

## CHANDERBHAN FLOOD BUND AND ITS ALLIED STRUCTURES

| Sr No | Name of Structure | Lengthof Flood Bund in Feet | Length in Mile | Normal Flood Season | | | Low Flood | | | Medium / High Flood | | | Very High / Exp.High Flood | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Men | Shift | | Men | Shift | | Men | Shift | | Men | Shift | |
| | | | | 1Person/2mile/shift(1 shift) | | | 1Person/mile/shift(1 shift) | | | 2 Person /mile/shift(2 shift) | | | 5 Person /mile/shift(3 shift) | | |
| **6** | **Chander Flood Bund** | **146500** | **29.3** | 15 | 1 | | 29 | 1 | | 58 | 2 | | 145 | 3 | |
| **Structures of Chander Bhan Flood Bund** | | | | | | | | | | | | | | | |
| 1 | J-Head Spur RD 60+500 of Chandar Bhan Flood Bund. | 0.78 | 1.83 | 1 | 1 | | 2 | 1 | | 4 | 2 | | 10 | 3 | |
| 2 | J-Head Spur RD 70+500 of Chandar Bhan Flood Bund. | 1.05 | | | | | | | | | | | | | |
| 3 | Mole Head Prong at RD: 88+500 Chandar Bhan Flood Bund. | 0.06 | 1.16 | - | 1 | | 1 | 1 | | 2 | 2 | | 5 | 3 | |
| 4 | Mole Head Prong at RD: 89+000 Chandar Bhan Flood Bund. | 0.06 | | | | | | | | | | | | | |
| 5 | Mole Head Prong at RD: 90+500 Chandar Bhan Flood Bund. | 0.06 | | | | | | | | | | | | | |
| 6 | Mole Head Prong at RD: 92+500 Chandar Bhan Flood Bund. | 0.06 | | | | | | | | | | | | | |
| 7 | J-Head Spur RD 105+500 of Chandar Bhan Flood Bund. | 0.92 | | | | | | | | | | | | | |
| 8 | Mole Head Prong at RD: 105+500 Chandar Bhan Flood Bund. | 0.06 | | | | | | | | | | | | | |
| | | | | **1** | | | **3** | | | **6** | | | **15** | | |
| **Total Per Shift** | | | | **66** | | | **141** | | | **282** | | | **700** | | |
| **Total** | | | | **66** | | | **141** | | | **564** | | | **2100** | | |
| **No. of Mates** | | | | **5** | | | **12** | | | **47** | | | **175** | | |

**Note:- Payment for Machinery and workcharge establishment will be subject to verification by the TPM /Consultants.**

- Note:- 01 No. Mate is for every 12 No. Beldars
- Beldar Should be provided with hand tools (01 kassi 01 axe and 1 Rechargeable Torch for Night Shift incase of above no flood limit)
- The activities of staff during normal flood season should be included but not limited to:
  - Removing jungle and bushes from slopes and toe of embankment
  - Filling of rain cuts / Gharas.
  - Dressing of slopes.
  - Filling porcupine holes and rat holes.
  - Keeping the track motor able.
- Note:- Payment of work charge employees subjected to verification by consultants.

  The establishment for maintaining flood embankments will be employed on 15/06/2026 to 15/10/2026 as per requirement stated above. WATCHING ESTABLISHMENT WILL be employed keeping in view the depth of water above general NSL as described Below.

## 7.3 ARRANGEMENTS AT SENSITIVE SITES

### Established Camp Detail

| Sr No | Name of Structure | Length in Miles | Vulnerable Site | | No. Of camps Established Except Vulnerable Points | | |
|---|---|---|---|---|---|---|---|
| | | | Reach | Camp | Normal Flood Season/ Low 15 Miles | Medium / High Flood 7 Miles | Very High/ Exp. High Flood 5 Miles |
| 1<br>2<br>3 | Khangarh Flood Bund RD 0+000 to 153+000 | 28.98 | 46+000 - 47+000 95+500- 96+500,125+000- 126+000 | 3 | - | 1 | 2 |
| | Muzaffargarh Flood Bund | 35.60 | - | - | 2 | 3 | 2 |
| | Rohari | 4.43 | - | - | - | - | 1 |
| 4 | Shehr Sultan Flood Bund RD 0+000 to 96+850 | 18.34 | 22+000 - 25+000 | 1 | - | 1 | 1 |
| | Chander Bhan Flood Bund | 27.65 | - | - | 2 | 2 | 1 |
| | **Total** | | | 4 | 4 | 7 | 7 |

- Note:- The Superintending Engineer (SE) will notify all vulnerable points as per recommendation of Executive Engineer(XEN) and if the vulnerable sites within 15 miles of embankment, then camp will be established at vulnerable sites.

Emergency gang of 5 men per mile will be employed when the river rises beyond low flood mark and will be maintained till the end of the season. This strength will be sufficient for medium and high flood stages. In case of very high and exceptionally high flood, this scale may be increased where-ever necessary by the Executive Engineer Khangarh Division in consultation with Superintending Engineer M. Garh Canal Circle Multan.

In case, where it is difficult to get Labour at the time of high discharge, it will be arranged through the civil authorities or contractors. A group of tractors with blade or dozers must be there as a standby arrangement for use in emergency during very high floods.

## 7.4 Watching Material

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

| Sr. No. | Item | Unit | Total Required Quantity | Available Quantity | Balance Quantity | Remarks |
|---|---|---|---|---|---|---|
| 1 | Shouldari / Tent | No. | 01 | 0 | 01 | Will be Purchased before coming of Flood Season 2026 |
| 2 | Chairs | No. | 06 | 0 | 06 | |
| 3 | Table | No. | 01 | 0 | 01 | |
| 4 | Generator (2-3 KVA) | No. | 01 | 0 | 01 | |
| 5 | Pedestal Fans | No. | 01 | 0 | 01 | |
| 6 | Charpois | No. | 02 | 0 | 02 | |
| 7 | Symbolic Jackets | No. | 50 | 0 | 50 | |
| 8 | Polythene Sheets | Kg | 100 | 0 | 100 | |
| 9 | Bamboos (4" dia and 10 ft long) | No. | 100 | 0 | 100 | |
| 10 | Water Cooler | No. | 01 | 0 | 01 | |
| 11 | Portable Umbrella | No. | 02 | 0 | 02 | |
| 12 | Life Jackets | No. | 05 | 0 | 05 | |
| 13 | Utensils (10 person serving) | No. | 01 | 0 | 01 | |
| 14 | Jute / Plastic Bags | No. | 1000 | 0 | 1000 | |
| 15 | Walke Talkie Set | Set | 02 | 0 | 02 | |
| 16 | Raincoats | No. | 10 | 0 | 10 | |
| 17 | LED Flood Light | No. | 10 | 0 | 10 | |
| 18 | Extension Cable (10 ft) | No. | 02 | 0 | 02 | |
| 19 | Rechargeable Torches | No. | 20 | 0 | 20 | |
| 20 | Kassi | No. | 20 | 0 | 20 | |
| 21 | Axes | No. | 20 | 0 | 20 | |
| 22 | G.I Buckets | No. | 05 | 0 | 05 | |
| 23 | 7/44 cable | Feet | 500 | 0 | 500 | |
| 24 | Sutli | Kg | 02 | 0 | 02 | |
| 25 | Sewing Needles | No. | 10 | 0 | 10 | |
| 26 | Emergency Medical Kit | No. | 1 | 0 | 1 | |
| 27 | Wire crates (3x3x3) (at only those camp near river action and reserve stock exists) | No. | 100 | 0 | 100 | |

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

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

## 7.5 ARRANGEMENT FOR SOUNDING & PROBING

For every Spur site and vulnerable

serious location following arrangement will be made for probing.

| S. No. | Item. | Period. |
|---|---|---|
| 1. | 1 Large boat with boatman | 15-04-2026 to 30-09-2026 |
| 2. | 1 Small boat with boatman. | -do- |
| 3. | 2 Helpers to boatmen. | -do- |
| | 2 Sounders per boat. | -do- |

## 7.6 LIGHTING ARRANGEMENT.

Sufficient stock of dry cell torches, lanterns and patronages etcwill be kept available in the emergency store. Mobile Generating set will be arranged at vulnerable points. Sub Engineer concerned assisted by electricians will be responsible to keep these in working order

## 7.7 RATION ARRANGEMENT

The District Co-Ordination Officer Muzaffargarh and District food controller will make food arrangement. District Co-Ordination Officer Muzaffargarh will be requested to keep a reserve stock of at Muzaffargarh Canal Colony for supply to the labour if any flood emergency occurs.

## 7.8 P.O.L ARRANGEMENT FOR VEHICLE

Reserve stock of P.O.L for vehicle will be kept at Taliri Canal Colony Muzaffargarh on the following scale.

| | | |
|---|---|---|
| 1. | Petrol | 2500 Liters |
| 2. | Diesel | 1500 // |
| 3. | K.Oil | 1000 // |

## 7.9 TRANSPORTATION

During extreme emergency, Tehsil Municipal officer Muzaffargarh/Jatoi /Ali Pur Deputy Superintendent Police and District Co Ordination Officer Muzaffargarh will be requested to arrange vehicles as per requirements.

## 7.10 LAW AND ORDER.

Law and Order situation may arise due to occurrence of breach in any of the flood retaining embankment (God forbid). In such a situation Police will maintain the law-and-order situation.

## 7.11 MEDICAL ARRANGEMENT FOR LABOUR.

District health office, Muzaffargarh will set up a mobile dispensary on the different points along flood bunds with sufficient medical staff and medicines required against epidemics, snake bit, Choler etc. In case of any eventuality, a mobile dispensary will be kept on wheels at short notice. Executive Engineer Khangarh Canal Division will inform to Civil Administration as well as District Health Officer in such a case.

## 7.12 LIAISON WITH OTHER DEPARTMENT

Executive Engineer Khangarh Canal Division and Sub Divisional Officer will keep liaison with their counter parts in other departments. Higher authorities of other department will be approached through Superintending Engineer Muzaffargarh Canal Circle Multan and Chief Engineer Irrigation Zone D.G.Khan if any need arises. At site, Sub Engineers will conduct inspections with the visiting officers of Civil and Army if no higher officer is available on spot.

## 7.13 ROLE OF THE ARMY

In case of acute flood emergency, Executive Engineer Khangarh Canal Division will issue SOS message to District Co-Ordination officer Muzaffargarh who will be requested to call the Army. The District Co-Ordination officer Muzaffargarh will be requested to call the Army for immediate help and rescue. It is also appropriate to ask for 100 Army men to be stationed at Khangarh as and when discharge in the River exceeds 8.0 Lac, Cusec.

## 7.14 DUTIES OF TELEPHONE ATTENDANT

Telephone and Telegraph office are located in office of Executive Engineer Khangarh and in the Taliri Canal Colony Muzaffargarh as well as in the others Canal Colonies. Telephone attendant and signalers will be available round the clock in order to collect and provide information regarding flood situation. Executive Engineer Khangarh office is telephonically connected with telephone No. 066-920013

| Sr No | Name of Offical | Period | Time | | Mobile No. |
|---|---|---|---|---|---|
| | | | From | To | |
| 1 | Waqar Hassan Junior Clerk | 15-07-2026 to 31-07-2026 | 9:00 AM | 4:00 PM | 0300-5112134 |
| | Mohammad Fahed Naib Qasid | | | | 0301-7880099 |
| | Muhammad Madni, Junior Clerk | | 4:00 PM | 11:00 PM | 0303-3267306 |
| | Allah Bachya Naib Qasid | | | | 0300-0556659 |
| | Rana Asif, Tracer | | 11:00 PM | 9:00 AM | 0304-7847072 |
| | Bilal Hussain Naib Qasid | | | | 0304-7234755 |
| 2 | Rizwan Qamar Sub Divisional Clerk | 01-08-2026 to 31-08-2026 | 9:00 AM | 4:00 PM | 0301-6500702 |
| | Mohammad Fahed Naib Qasid | | | | 0301-7880099 |
| | Rana Asif, Tracer | | 4:00 PM | 11:00 PM | 0304-7234755 |
| | Mohammad Shaid Naib Qasid | | | | 0304-7003585 |
| | Mohammad Fahed Junior Clerk | | 11:00 PM | 9:00 AM | 0305-2489163 |
| | Allah Bachya Chowkidar | | | | 0300-0556659 |
| 3 | Waqar Hassan Junior Clerk | 01-09-2026 to | 9:00 AM | 4:00 PM | 0300-5112134 |
| | Mohammad Fahed Naib Qasid | | 4:00 PM | 11:00 PM | 0301-7870099 |

| | | | | | |
|---|---|---|---|---|---|
| | Muhammad Madni Junior Clerk | 30-09-2026 | 4:00 PM | 11:00 PM | 0303-3267306 |
| | Allah Bachya Naib Qasid | | 4:00 PM | 11:00 PM | 0300-0556659 |
| | Rana Asif, Tracer | | 11:00 PM | 9:00 AM | 0304-7234755 |
| | Bilal Hussain Naib Qasid | | | | 0304-7234755 |
| 4 | Waqar Hassan Junior Clerk | 01-10-2026 To 15-10-2026 | 9:00 AM | 4:00 PM | 0300-5112134 |
| | Mohammad Fahed Naib Qasid | | | | 0301-7880099 |
| | Muhammad Madni, Junior Clerk | | 4:00 PM | 11:00 PM | 0303-3267306 |
| | Allah Bachya Naib Qasid | | | | 0300-0556659 |
| | Rana Asif, Tracer | | 11:00 PM | 9:00 AM | 0304-7847072 |
| | Bilal Hussain Naib Qasid | | | | 0304-7234755 |

## 7.15 WIRELESS ARRANGEMENTS

There will be long-range wireless base set in Canal Telegraph office at Muzaffargarh during flood season. Only one mobile set is allowed by the Punjab Flood Commission for vehicle of Executive Engineer Khangarh Canal Division. There is a necessity of at least three more mobile sets for the vehicles of the Sub Divisional Officer's Khangarh-I, Khangarh-II and Shehr Sultan Sub Division. These mobile units will help the officers while on tour to remain in touch with flood situation. All the wireless system lying unserviceable needs replacement.

# CHAPTER.

# 8

# CHAPTER. 8
# DETAIL OF ENCROACHMENT

The encroachment reported by the field staff in the jurisdiction of Muzaffargarh Canal Division has been submitted to the District Coordination Officer Muzaffargarh for taking necessary action against un-authorized occupation.

## DETAIL OF CRITICAL ENCROACHMENT

| Sr. No. | Total Encroachments | Removed | Remaining | Remarks |
|---|---|---|---|---|
| **1** | **Nil** | - | - | - |

## DETAIL OF NORMAL ENCROACHMENT

| Sr. No. | Total Encroachments | Removed | Remaining | Remarks |
|---|---|---|---|---|
| **1** | **258** | **60** | **190** | The Balance encroachments will be removed soon with the cooperation / Help of District Administration. |

## DETAIL

| Sr. No. | Name of Bund | Nature of encroachments | Reach RD. | Status |
|---|---|---|---|---|
| 1 | Doaba flood bund | 16 No Houses.<br>05 No Shops | 5-6, 14-15 | 3 No. Shop removed |
| 2 | Rohari Flood Bund | 35 No Houses.<br>7 No Shops | 0-3, 8-12 | 6 No. Houses removed. |
| 3 | Spur No.1 | 2. No Houses.<br>1 No Khokha | 0+000 - 7+000 | 1 No. Khokha removed. |
| 4 | Spur No.2 | 5 No Houses. | 0+000 – 6+000 | 1 No. House removed. |
| 5 | Khangarh flood bund | 66 No Houses<br>22 No Shops<br>5 No Khokha | 0-1, 13-122 | 12 No. houses, 2 No. shops and 2 No. Khokha removed. |
| 6 | Spur No. 3 | 7 No Houses | 0+000 – 5+000 | 4 No. House removed. |
| 7 | Spur No. 4 Khangarh flood bund | 2 No Houses<br>1 No Khokha | 35+000 – 39+000<br>51+000 – 54+000 | 1 No. House removed. |
| 8 | Spur RD 54000 Khangarh flood bund | 4 No Houses | 54+000 – 64+000 | 1 No. House removed. |
| 9 | Spur RD. 64000 Khangarh flood bund | 3 No Houses | 64+000 – 70+000 | 2 No. House removed. |
| 10 | Spur RD. 96000 Khangarh flood bund | 3 No Houses | 96+000 – 97+000 | 2 No. House removed. |
| 11 | Shehr Sultan flood bund<br>Ring Bund along Shehr Sultan Town | 64 No Houses<br>10 No Shops | 2-15, 25-26,<br>62+100, 71-71+250 | 10 No. House removed. |
| **Total** | | **258 No.** | | **60 No.** |

# CHAPTER.

# 9

# CHAPTER. 9

# DUTY ROASTER /FLOOD FIGHTING PROGRAM

**Vulnerable reaches**

RD 0-40000,RD 150-188, RD 45-78500 of Muzaffargarh Flood Bund

ii. Khangarh Flood Bund REACH RD:46+000-47+000, 95+000-96+500, 125+000-126+500

iii. Shehr Sultan Flood Bund RD:0-14+000-15+000

iv. Reach RD 0+000-35+000, RD 35+000-99+000, RD 99+-153+000

**Contribution of Civil authorities.** Tehsil Municipal Officer M.Garh will arrange Average 50. No Volunteers.

Police = 6 No Police men i.e 2 at each site to work for 8 hours.

Army = 100 Hundred Jawans will be requisitioned in extra emergency

# DETAIL OF FLOOD FIGHTING CAMPS

| Sr. # | Name of embankment | Reach allocated to the camps | Incharge of Camp (Sub Engineer) | NAME OF SDOs |
|---|---|---|---|---|
| 1 | M.Garh Flood Bund | 45+000-92+000-112+000- | Fakhar-U-Din | Tanveer Ahmad |
| 2 | Doaba Flood Bund | 0+000 - 19+000 | Muhammad Tanveer Saqi | Tanveer Ahmad |
| 3 | J-Head Spur No. 3 | | Rana Muhammad Haneef | Skinder Jameel |
| 4 | Rohari Flood Bund | 8+000 | Rana Muhammad Haneef | Skinder Jameel |
| 5 | Khangarh Flood Bund | 47+000 –96+000-104+750-125+000-136+500-142+000 | Muhammad Imran & Rashid | Skinder Jameel |
| 6 | J-Head Spur RD:15+000 | 15+000 | Muhammad Rashid | Skinder Jameel |
| 7 | Shehr Sultan Flood Bund | 25+500-50+000- | Muhammad Jaffer Hussain | Umar Farooq |
| 8 | Shehr Sultan Flood Bund | 75+900-92+000 | Rana Sohail | Umar Farooq |
| 9 | Chandar Bhan Flood Bund | 60+500 -70+500-117+000-136+000-146+000 | M.Abubaker | Umar Farooq |

| FLOOD STAGE | LANGER SECTION | GANESH SECTION |
|---|---|---|
| | **MUZAFFARGARH FLOOD BUND** | |
| **MEDIUM FLOOD** | | |
| i. Vulnerable reaches | RD 0-40000<br>RD 45-78500 | RD 150-188 M.Garh Flood Bund |
| | Rang Pur Canal RD 320-322 | |
| ii . S.D.O. | I) S.D.O Khangarh Sub Division-I with<br>Head quarter at Langer Rest House.<br>Reach RD 21-60<br>II) Sub Engineer Langer with<br>Head quarter at Khudai Rest House. | |
| iii. Sub Engineer | Reach RD 60-92 | |
| 3 | Sub Engineer Langer with<br>Head quarter at RD 128-165. | |
| | RD 75 M.Garh flood Bund | I)Sub Engineer Ganesh +Headquarter<br>at RD: 150 M Garh F.Bund. |
| | Reach RD 9200-112+000 | Reach RD 165-RD 188 |
| | ii) Sub Engineer Khangarh Sub Division with H/quarter at Langer R/House Reach. | ii) Sub Engineer Khangarh Sub Division |
| iv) Sectional Mistri | 1. No | 1. No |
| v) Mate | 4. No's per shift for 8 hours 20 | 4. No's per shift for 8 hours |
| **HIGH FLOOD.** | | |
| S.D.O Khangarh-I | Reach RD 0-128 M. Garh Flood Bund | Reach RD 128-188 M.Garh Flood Bund |
| | Sub Engineer Langer H/quarter Langer Rest House and one Sun Engineer from 150 and two Sub Engineer of K.garh Sub Division at RD 110 & 135. | Sub Engineer Ganesh at H/quarter RD Khangarh |
| Sectional Mistri | 1.No for each Sub Engineer | 1.No for each Sub Engineer |
| Mates | 4.No per shift of 8 hours | 4.No per shift of 8 hours |
| Beldars | 40 No per shift of 8 hours | 40 No per shift of 8 hours |
| Dozers | 1. No at RD 330 Rang Pur Canal | 1.No at RD 149 M.Garh Flood bund<br>& 1. No at Doaba Flood Bund |
| Contribution of Civil authorities. | Tehsil Municipal Officer M.Garh will arrange Average 30. No Volunteers. | |
| Police | Ten Police men i.e 2 at each site to work for 8 hours. | |
| Army | Two hundred Jawans will be requisitioned in extra emergency. | |
| **DOABA FLOOD BUND** | | |
| REACH RD: | 0-19000 | S.D.O K.Garh Sub Division with |
| | Head quarter at Taliri Canal Rest House.<br>Reach RD 0-19000 & RD:165+000 | |
| | Muzaffargarh Flood Bund | Sub Engineer Ganesh |

| | | |
|---|---|---|
| Breaching Section | RD:11-12 & 13-14 | Sub Engineer Ganesh. |

**HIGH FLOOD**

| | |
|---|---|
| Sectional Mistri. | 1. No |
| Mate. | 2. No |
| Beldar. | 40 No |
| Dozer at RD:19000 | 1 No |

**ROHARI FLOOD BUND**

| | | |
|---|---|---|
| REACH | RD:0-23400 | S.D.O K.Garh Sub Division with |
| | Head quarter at Taliri Canal Rest House. | |
| | Reach RD 0-23400 | |
| | Muzaffargarh Flood Bund | Sub Engineer Muzaffargarh section |
| Breaching Section | RD:8-9 & 14-15 | Sub Engineer Muzaffargarh. section |

**HIGH FLOOD**

| | |
|---|---|
| Sectional Mistri. | 1. No |
| Mate. | 2. No |
| Beldar. | 46 No |
| Dozer at RD:23400 | 1 No |

## DUTY ROSTER

| **FLOOD STAGE** | **M.GARH SECTION** | **K.GARH SECTION.** | **ROHILLANWALI (SEC).** |
|---|---|---|---|
| | RD 0-35 | RD 35-99 | RD 99-153 |
| | **KHANGARH FLOOD BUND.** | | |
| | RD 0-35 | RD 35-50<br>RD 65-96 | RD 96-110<br>RD 123-153 |
| **MEDIUM FLOOD** | | | |
| S.D.O with Head Quarter | S.D.O K.Garh-II at Mochi Wali will watch all flood bunds of Khangarh flood bunds | | |
| Sub Engineer | Sub Engineer M.Garh sec With Headquarter at RD: 14500 | Sub Engineer K.Garh sec With Headquarter at RD: 47000 | Sub Engineer RHW sec With Headquarter at RD: 136500 |
| Sectional Mistri | 1. No | 1. No | 1. No |
| Mates | 2. Nos per shift 8 hours | 3. Nos per shift 8 hours | 3. Nos per shift of 8 hours |
| Beldars | 15. Nos per shift 8 hours | 20. Nos per shift 8 hours | 20. Nos per shift of 8 hours |
| Dozers | 1. No at RD 14+500 Wafa Disty | 1. No at RD 47+000 of K. Garh flood Bund | 1. No at RD 136+500 of K. Garh flood Bund |

**HIGH FLOOD**

| | | | |
|---|---|---|---|
| Vulnerable reaches<br>S.D.O. Head quarter | 0-35000 | RD 35-50 & RD 65-96<br>Sub Divisional Officer Khangarh | RD 96-110 & 123-137,141-153<br>S.D.O. Khangarh-II<br>Sub Engineer Rohillanwali with Head quarter at Mochiwali |
| Sub Engineer H/quarter | Sub Engineer M.Garh at | 2.No Sub Engineer from | |

| | | | |
|---|---|---|---|
| | RD 14500 Wafa Disty | Drainage at<br>RD 35-70 & 70-96 | |
| Sectional Mistri | 1. For each Sub Engineer | 1. For each Sub Engineer | 1. For Each Sub Engineer |
| Mate | 3 no per shift of 8 hours | 8. No per shift of 8 hours | 4. No per shift of 8 hours |
| Beldars | 30. No per shift 8 hours | 45 No per shift 8 hours | 45 no's per shift of 8 hours |
| Dozers | 1. RD 14500 Wafa Disty | 1.No RD 47000<br>Khangarh flood Bund | 1. O at RD 136500 K.Garh F/bund<br>Khangarh Flood Bund |

Contribution of Civil authorities. Tehsil Municipal Officer M.Garh will arrange average 100. No Volunteers.

Police = 6 No Police men i.e 2 at each site to work for 8 hours.

Army = 200 Hundred Jawans will be requisitioned in extra emergency.

## DOABA FLOOD BUND

**MEDIUM FLOOD**

i. Vulnerable reaches RD 0-19000
Doaba Flood Bund RD 0-19000

ii . S.D.O. I) S.D.O Khangarh-I Sub Division with
Head quarter at Taliri Rest House.
Reach RD 0-19000
II) Sub Engineer Ganesh with
Head quarter at Taliri Rest House.

iii. Sub Engineer Reach RD 0-19000

4 Sub Engineer Ganesh with
Head quarter at RD 19000
RD 165 M.Garh flood Bund
Reach RD 9200-112+000
ii) Sub Engineer Khangarh Sub Division
with H/quarter at Langer R/House Reach.

iv) Sectional Mistri 1. No

v) Mate 4. No's per shift for 8 hours 20 No's per shift of 8 hours

## HIGH FLOOD.

S.D.O Muzaffargarh Reach RD 0-19000 Doaba Flood Bund
Sub Engineer Ganesh H/quarter Taliri
Rest House and one Sun Engineer from
Khangarh Sub Division

| | |
|---|---|
| Sectional Mistri | 1.No for each Sub Engineer |
| Mates | 4.No per shift of 8 hours |
| Beldars | 40 No per shift of 8 hours |
| Dozers | 1. No at RD 330 Rang Pur Canal |
| Contribution of Civil authorities. | Tehsil Municipal Officer M.Garh will arrange Average 30. No Volunteers. |
| Police | Ten Police men i.e 2 at each site to work for 8 hours. |
| Army | Two hundred Jawans will be requisitioned in extra emergency. |

## SHEHR SULTAN FLOOD BUND

Vulnerable reach of Shehr Sultan flood Bund RD 20-45

1. Shehr Sultan flood Bund RD 0-96+850 **S.D.O. Shehr Sultan with H/quarter** **Sub Engineer Hamze Wali**

at RD: 20-45 Shehr Sultan F. Bundwith H/quarter RD: 84400 & RD: 20-45.

2. Spur No. 1 Sub Engineer Dammar Wala

Attached with Sub Engineer additional Hamzy Wali as Sub Engineer

Spur No 2.

Shehr Sultan Flood Bund RD 0-96000

## ESTABLISHMENT.

| | |
|---|---|
| Sectional Mistri. | 1. No each for Sub Engineer |
| Mate. | 2. No's per shift of 8 hours |
| Beldars. | 30. No's per shift of 8 hours |
| Dozers. | 2. No RD:20-45, RD: 84400 Shehr Sultan Flood Bund |
| Contribution of Civil authorities. | Tehsil Municipal Officer M.Garh will arrange Average 50. No Volunteers. |

Police = 6 No Police men i.e 2 at each site to work for 8 hours.

Army = 100 Hundred Jawans will be requisitioned in extra emergency

# CHAPTER.
# 10

# CHAPTER. 10

# EMERGENCY TELEPHONE No's

| Sr. No. | Name of officer | Office | Residence/ Cell No |
|---|---|---|---|
| **IRRIGATION DEPARTMENT** | | | |
| 1 | Secretary Irrigation Department Lahore | 042-99212117<br>042-99212118<br>Fax #. 042-99212116 | |
| 2 | Chief Engineer Irrigation Zone D.G Khan | 064/9260245<br>064-9260251<br>Fax:064-9260252 | 064-9260539 |
| 3 | Chief Engineer D&F Lahore. | 042-99230602<br>042-99230368<br>Fax= 042-35862081 | |
| 4 | Director Flood Lahore. | 042-99231614 | |
| 5 | Flood Emergency Cell Lahore. | 042-99205371-72 | --- |
| 6 | Incharge Flood Relief Cell Board of Revenue Lahore | 042-99204409 | --- |
| 7 | Superintending Engineer, M.Garh Canal Circle, Multan. | Phone= 061-9200090<br>Fax = 061-9200088 | |
| 8 | Executive Engineer, Khangarh Canal Division, Muzaffargarh. | Phone = 066-9200013 | 0334-6095161 |
| 9 | Emergency Flood Control Centre X.E.N Office Khangarh | Phone = 066-9200013 | |
| **CIVIL DEPARTMENT** | | | |
| 10 | District Emergency Control Centre Muzaffargarh | 066-9200260 | 066-9200256 |
| 11 | Sub-Divisional Emergency Control Centre Muzaffargarh (T.M.A. M.Garh) | 066-9200274 | |
| 12 | Sub-Divisional Emergency Control Centre Muzaffargarh (T.M.A. Alipur) | 066-2700824 | |
| 13 | Sub-Divisional Emergency Control Centre Muzaffargarh (T.M.A. Jatoi) | 066-2391277 | |

| | | | |
|---|---|---|---|
| 14 | Emergency Flood Control Centre<br>D.C.O Office Muzaffargarh | 066-9200251<br>066-9200252-253 | 9200254<br>--- |
| 15 | D.P.O District Police Office | 066-9200311 | |
| 16 | Wireless Control Center S.P Office Muzaffargarh | 066-9200321 | |
| 17 | District Health Officer M.Garh. | 066-9200239 | |
| 18 | Medical Superintendent M.Garh D.H.Q Hospital M.Garh. | 066-9200226 | |
| 19 | Executive Engineer, Provincial Highway Muzaffargarh | 066-2422459 | |
| | **ARMY** | | |
| 20 | Military Officer Head Quarter Engineers 2 Corps Multan Cantt. | 061-5313388<br>061-5313389 | |
| 21 | Military Officer, Head Quarter Engineers 31-Corps Bahawalpur Cantt. | 0621/891/2353/2360 | |

# CHAPTER.
# 11

# CHAPTER. 11

# STANDARD OPERATING PROCEDURE (SOP) FOR BREACHING SECTIONS

## 11.1 HISTORY OF THE BREACHING SECTION

Shehr Shah Bridge, situated about 15 KM towards South of Multan Cantonment was constructed over River Chenab about a century ago. It has got a total length of 3592 feet, comprising 17 bays of 200 ft clear water way each. The designed capacity is 12 Lac cusecs, but such a high discharge has never passed through the bridge, resulting in shoal formation within the guide banks. Presently about 8 bays on left side of the bridge have been marked and the active Channel exists along the right guide bank. The left side shoal could not be washed away even during high Flood of 1992 and the entire discharge intensity remains on the right side forming a deep channel with deep scour pit along the bridge piers, in the events of floods the water headed up on up stream of the bridge due to restricted water way and exerts a lot of pressure on the upstream embankments, thus endangering the safety of Multan Cant and Muzaffargarh City. To avoid any eventuality and to reduce the pressure of flood flows on the embankments, breaches are done on the left side in Railway flood bund at 3-4 KM during extreme flood events.

During exceptionally high flood 1992, the Sher Shah Flood bund at reach 3-4 KM was cut but in spite of that the water level did not drop appreciably to the required safety level, consequently flood water over topped the Railway flood bund (Now Doaba Flood bund) on the right side in reach 12-13 and the entire flood pressure diverted towards Muzaffargarh City. As protective measures, highway flood bund K.M 9-10 of Railway bund and Rohari Flood bund at RD 8-9, 14-15 and 19-20 were also deliberately blown away to safe guard the urban population of the Muzaffargarh City.

So on the basis of past experience, following breaching sections have been approved by the Technical committee of Punjab flood commissions vide No. U/S (floods) MISC-96(I) dated 21-04-2000 (copy attached as per annex" A").

1. 2. No Breaching section in Railway flood bund on left of Sher Shah Bridge liners will be fixed.
2. 2. No in reach RD 12-13 and 13-14 of Doaba Flood Bund liners will be fixed.
3. 3. No in reach RD 8-9, 14-15 and 18-19 in Rohari Flood Bund.

4. Breaching section reach RD: KM 19+331, KM 23+720, National High Way, N-70 on Sher Shah Bridge, (Muzaffargarh bypass new 4 lines).

Liners will be fixed in breaching section between RD 8-9 and 14-15of Doaba Flood Bund. The breaching section at RD 18-19 of Rohari Flood Bund will operated mechanically. Breaching section will be operated when the main bridge structure is in danger, if it is not developed, Breaching sections at RD 12-13 of Doaba Flood bund will have to be activated. Corresponding breach in the road and Railway line will also be made. Preparation of breaching section and operation /activation will be carried out by the Army personals.

As agreed by National High Way Authority during site visit of Secretary Irrigation Department Punjab, a breaching section has been decided between railway line Multan Kot Adu and Muzaffargarh Branch in suitable reach as marked at site. This breaching section will be operated mechanically by National High Way Authority after intimation to breach operating committee.

National High Way Authorities are requested to make necessary arrangements before coming flood to avoid any complications.

**DETAIL OF BREACHING SECTION**

| **DOABA FLOOD BUND** | | **ROHARI FLOOD BUND** | |
|---|---|---|---|
| RD: 12-13 | = 1 No | RD: 8-9 | = 1 No |
| RD:13-14 | = 1 No | RD: 14-15 | = 1 No |
| | | RD: 18-19 | = 1 No |

**DETAIL FOR 1 NO BREACHING SECTION**

1. Number of Liners in a row
   - i. 7’ ft Long = 2 No
   - ii. 9’ ft Long = 3 No
2. Number of Rows = 13 No

**LENGTH OF LINERS**

| | | | |
|---|---|---|---|
| 7’ Long | 13 x 2 x 7 | | = 182 Rft |
| 9’ Long | 13 x 3 x 9 | | = 351 Rft |
| | | Total | = 533 Rft |

**RAILWAY TRACK**

Provision of Breaching Section on Railway Track. At KM -11/4 to 11/7

**NHA BYPASS N-70, MUZAFFARGARH**.

Breaching section by NHA on new Muzaffargarh Bypass N-70 should be taken up.

## 11.2 LOCATION, DESIGN, QUANTITY AND VARIETY OF THE EXPLOSIVE REQUIRED FOR DETONATION.

1. 2Nos. breaching sections in Railway Bund on left side of Sher Shah Bridge, which are under the control of Shujabad canal Division, Multan(Liner will be fixed).
2. 2 Nos.breaching sections in reach RD 12-13 and 13-14 Doaba Flood Bund (Liners will be fixed)
3. 2Nos. breaching sections in reach RD 8-9&14-15 of Rohari Flood Bund (Liner will be fixed) and 1 No breaching section between RD 19-20 Rohari flood Bundwill be operated mechanically. Pak Army is responsible to operate all the breaching sections.

**QUANTITY AND VARITY OF THE EXPLOSION**
**STATUS OF EXPLOSIVE / ACCESSRIES**

| Sr. No. | Name / Nomenclature of explosive Material / Accessories | Required Quantity / Nos. | Available Quantity / Nos. | Deficient Quantity / Nos. | Remarks |
|---|---|---|---|---|---|
| 1 | PE-3A (450-Gram Slab) | 2970 Kg | 2970 Kg | - | Already purchased and in the custody of Pak Army. |
| 2 | Primer CE-1-OZ | 200 Kg | 200 Kg | - | |
| 3 | Wobo Card 10gm | 500 Kg | 500 Kg | - | |
| 4 | Detonators No.8 Plain (Non-Electric) | 40 No | 40 No | - | |
| 5 | Detonators No.8 Plain (Electric) | 10 No | 10 No | - | |
| 6 | MS Elect. Delat Det (3M)0.25MS | 10 No | 10 No | - | |
| 7 | Safety Fuse | 250 No | 250 No | - | |
| 8 | Firing Cable | 1000 No | 1000 No | - | |

The Requirement of explosive accessories mentioned above has been purchased from Wah Cant Rawal Pindi & Handed over to head quarters Engineer 21 Battalion corps.

## 11.3 ARRANGEMENT OF EXPLOSIVE AND SECURITY OF EXPLOSIV STORES

The explosive stores are available at head quarters Engineer 313 Battalion 2-Crops Engineers Multan Cant. Therefore, it is the responsibility of Pak Army to arrange the explosives and security of explosive stores till use.

## 11.4 LIST OF THE SECURITY STAFF ALONGWITH DETAIL OF THEIR TRAINING ETC

Responsibility of 2Crop Multan.

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

Agricultural dozer will be requisitioned as stand by arrangement.

## 11.6 DUTY ROASTER IN CASE OF CRITICAL SITUATION

**FLOOD STAGE** **LANGER SECTION** **GANESH SECTION**

**MUZAFFARGARH FLOOD BUND.**

**MEDIUM FLOOD**

| | | |
|---|---|---|
| i. Vulnerable reaches | RD 0-40000<br>RD 45-78500<br>Rang Pur Canal RD 320-322 | RD 150-188 M.Garh Flood Bund |
| ii . S.D.O. | **I)** S.D.O Khangarh Sub Division-I with<br>Head quarter at Langer Rest House.<br>Reach RD 21-60 | |
| | **II)** Sub Engineer Khangarh-I with<br>Head quarter at Khudai Rest House. | |
| iii. Sub Engineer | Reach RD 60-92 | |
| 5 | Sub Engineer Langer with<br>Head quarter at RD 128-165. | |
| | RD 75 M.Garh flood Bund | I) Sub Engineer Ganesh +Headquarter<br>at RD: 150 M Garh F.Bund. |
| | **Reach RD 9200-112+000** | **Reach RD 165-RD 188** |
| | ii) Sub Engineer Khangarh Sub Division with H/quarter at Langer R/House Reach. | ii) Sub Engineer Khangarh Sub Division |
| iv) Sectional Mistri | 1. No | 1. No |
| v) Mate | 4. No's per shift for 8 hours 20 No's per shift of 8 hours | 4. No's per shift for 8 hours 32 No's per shift of 8 hours |

**HIGH FLOOD.**

| | | |
|---|---|---|
| S.D.O Muzaffargarh | Reach RD 0-128 M.garh Flood Bund Sub Engineer Langer H/quarter Langer Rest House and one Sub Engineer from Sub Division | Reach RD 128-188 M.Garh Flood Bund Sub Engineer Ganesh at H/quarter RD 150 and two Sub Engineer of Khangarh Sub Division at RD 110 & 135. Khangarh |
| Sectional Mistri | 1.No for each Sub Engineer | 1.No for each Sub Engineer |
| Mates | 4.No per shift of 8 hours | 4.No per shift of 8 hours |
| Beldars | 40 No per shift of 8 hours | 40 No per shift of 8 hours |
| Dozers | 1. No at RD 330 Rang Pur Canal | 1.No at RD 149 M.Garh Flood bund & 1. No at Doaba Flood Bund |
| Contribution of Civil authorities. | Tehsil Municipal Officer M.Garh will arrange Average 30. No Volunteers. | |
| Police | Ten Police men i.e 2 at each site to work for 8 hours. | |
| Army | Two hundred Jawans will be requisitioned in extra emergency. | |

**DUTY ROSTER**

| **FLOOD STAGE** | **M.GARH SECTION** | **K.GARH SECTION.** | **ROHILLANWALI (SEC).** |
|---|---|---|---|
| | RD 0-35 | RD 35-96 | RD 96-135 |
| | **KHANGARH FLOOD BUND.** | | |
| | RD 0-35 | RD 35-50 | RD 96-110 |
| | | RD 65-96 | RD 123-153 |

**MEDIUM FLOOD**

| | | | |
|---|---|---|---|
| S.D.O with Head Quarter | S.D.O K.Garh at Mochi wali will watch all flood bunds of Khangarh flood bunds | | |
| Sub Engineer | Sub Engineer M.Garh With Headquarter at RD: 14+500 | Sun Engineer M.Garh With Headquarter at RD: 47+000 | Sun Engineer M.Garh with With Headquarter at RD: 136+500 |
| Sectional Mistri. | 1. No | 1. No | 1. No |
| Mates. | 2. Nos per shift 8 hours | 3. Nos per shift 8 hours | 3. Nos per shift of 8 hours |
| Beldars. | 15. Nos per shift 8 hours | 20. Nos per shift 8 hours | 20. Nos per shift of 8 hours |
| Dozers. | 1. No at RD 14500 Wafa Disty | 1. No at RD 47000 of K. Garh flood Bund | 1. No at RD 136500 of K. Garh flood Bund |

**HIGH FLOOD**

| | | | |
|---|---|---|---|
| Vulnerable reaches | 0-35000 | RD 35-50 & RD 65-96 | RD 96-110 & 123-137,141-153 |
| S.D.O. Head quarter | | Sub Divisional Officer Muzaffargarh | S.D.O. Khangarh at Mochiwali |
| | | | Sub Engineer Rohillanwali with Head quarter at Mochiwali |
| Sub Engineer H/quarter | Sub Engineer M.Garh at RD 14500 Wafa Disty | 2.No Sub Engineer from Drainage at RD 35-70 & 70-96 | Sub Engineer leave reserve with head quarter at RD 136500 |
| | | | 2 No Sub Engineer from TOD reach RD 96-136 & 136-153 |
| Sectional Mistri. | 1. For each Sub Engineer | 1. For each Sub Engineer | 1. For Each Sub Engineer |
| Mate. | 3 no per shift of 8 hours | 8. No per shift of 8 hours | 4. No per shift of 8 hours |
| Beldars. | 30. No per shift 8 hours | 45 No per shift 8 hours | 45 no's per shift of 8 hours |
| Dozers. | 1. RD 14500 Wafa Disty | 1.No RD 47000 Khangarh flood Bund | 1. O at RD 136500 K.Garh F/bund Khangarh Flood Bund |

Contribution of Civil authorities. Tehsil Municipal Officer M.Garh will arrange average 100. No Volunteers.

Police = 6 No Police men i.e 2 at each site to work for 8 hours.

Army = 200 Hundred Jawans will be requisitioned in extra emergency

## SHEHR SULTAN FLOOD BUND

Vulnerable reach of Shehr Sultan flood Bund RD 75-90

| | | |
|---|---|---|
| 1. Shehr Sultan flood Bund RD 0-96850 | S.D.O. Shehr Sultan with H/quarter at RD: 84+400 Shehr Sultan F. Bund | Sub Engineer Hamze Wali with H/quarter RD: 84400 |
| **2. Spur No. 1** | | Sub Engineer Dammar Wala |

| | | |
|---|---|---|
| **Spur No 2.** | Shehr Sultan Flood Bund | Attached with Sub |
| Engineer | RD 0-96000 | Hamzay Wali as additional Sub Engineer Sub Engineer Ali Pur Sec |

## CHANDER BHAN FLOOD BUND

Vulnerable reach of Chander Bhan Flood Bund

| | | |
|---|---|---|
| 1. Chander Bhan flood Bund RD 58-61 & 84-85/90-91 | S.D.O. Shehr Sultan with H/quarter at RD: 59+000 Chander Bhan F. Bund | Sub Engineer Alipur with H/quarter RD: 59000 |
| 2. Spur No. 1 Wala | | Sub Engineer Dammar |
| | Engineer additional SBE | Attached with Sub Alipur as |

## ESTABLISHMENT.

| | |
|---|---|
| Sectional Mistri. | 1. No each for Sub Engineer |
| Mate. | 2. No's per shift of 8 hours |
| Beldars. | 30. No's per shift of 8 hours |
| Dozers. | 2. No RD 84400 Shehr Sultan Flood Bund |
| Contribution of Civil authorities. | Tehsil Municipal Officer M.Garh will arrange average 50. No Volunteers. |
| Police = | 6 No Police men i.e 2 at each site to work for 8 hours. |
| Army = | 100 Hundred Jawans will be requisitioned in extra emergency |

## 11.7 BREACHING COMMITTEE WITH THEIR ACTION PLAN

Worthy Secretary Irrigation Department Govt of The Punjab issued notification NO. SO(FLOOS) VI.33/97 dated 15/07/2015 by the approval of competent authority and Federal Flood Commission letter dated 28/02/2015 and in super session of all previous instruction on the subject the following procedure is here prescribed for the operation of breaching section in the Punjab. (Copy attached Annexure A). Breaching section shall be operated on the order of following committee.

| | | |
|---|---|---|
| 1. | District coordination Officer of the District. | **Convener.** |
| 2. | District Coordination Officer of the district likely to be affected by the operation of breaching section or his representative (in the area affected falls outside the District in which the breaching section is located). | **Member** |
| 3. | 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) Not below the rank of BS -18 | **Member** |

| | | |
|---|---|---|
| 4. | Executive Engineer Communication & Works Department (Not below the rank of BS -18) | **Member** |
| 5. | Executive Engineer concerned of the Irrigation Department | **Member** |
| 6. | Representative of Pakistan not below the rank of a Lt. Colonel | **Member** |

The Committee shall continuously monitor the flood situation and emergency conditions at each breaching site. The Breach Operating Committee shall remain responsible for taking decisions regarding operation of breaching sections in accordance with the prescribed criteria contained in the Flood Fighting Plan (Annexure-A attached).

The critical gauge level at Sher Shah Bridge shall be considered as R.L. 394.00, being the Highest Flood Level (HFL) historically recorded at the said site during Flood-2014. In case the gauge at Sher Shah Bridge attains R.L. 394.00 and the river continues to remain in a rising trend with increasing discharge and water levels, the Breaching Committee shall, in accordance with the approved SOPs and flood emergency requirements, coordinate with Army authorities, NHA authorities and Pakistan Railways for operation of the breaching section.

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

| Sr No | Name of Villages | Abadi/ Population |
|---|---|---|
| 1. | Thatha Siyal | 3,000 |
| 2. | Doaba Basti | 7,000 |
| 3. | Jaisla Wahin | 1,500 |
| 4. | Bhutta Pur | 4,500 |
| 5. | Taliri | 10,000 |
| 6. | Sunaki | 5,000 |
| 7. | Lal Pur | 3,500 |
| 8. | Chak Mithan | 2,500 |
| 9. | Chak Rohari | 3,800 |
| | **Total** | **40,800** |

## 11.9 ANNOUNCEMENT AND DETAIL OF EVACUATION ARRANGEMENTS

It will be done by the Civil Administration and Police / Army.

## 11.10 DETAILS OF COORDINATION WITH CIVIL /ARMY AUTHORITIES.

### P.O.L. ARRANGEMENTS FOR VEHICLES.

Khangarh Canal Division will make arrangements for reserve stock of P.O.L for vehicles which will be kept at Canal Colony Muzaffargarh on the following scale.

| | | |
|---|---|---|
| 1. | Petrol | 2500 Liters |
| 2. | Diesel | 1500 Liters |
| 3. | K.Oil | 1000 Liters |

**TRANSPORTATION ARRANGEMENT**.

During extra emergency Tehsil Municipal officer Muzaffargarh /Jatoi /Ali Pur, Deputy Superintendent Police and District Coordination Officer Muzaffargarh will be requested to arrange vehicles as per requirements.

## LAW AND ORDER

Law and Order situation may arise due to occurrence of breach in any of the flood retaining embankment (God forbid). In Such a situation Police will provide the necessary cover.

**MEDICAL ARRANGEMENTS FOR LABOUR**

District Health office, Muzaffargarh will set up a mobile dispensary on the different

points along flood bunds with sufficient medical staff and medicines required against epidemics, snake bit, Cholera etc. In case of any eventuality, a mobile dispensary will be kept on wheels at short notice. Executive Engineer Khangarh Canal Division will inform to Civil Administration as well as District Health Officer in such a case.

## LIAISON WITH OTHER DEPARTMENT.

Executive Engineer Khangarh Canal Division and Sub Divisional Officer will keep liaison with their counter parts in other departments. Higher authorities of other department will be approached if needed through Superintending Engineer Muzaffargarh Canal Circle Multan and Chief Engineer Irrigation Zone D.G.Khan. At site, Sub Engineers will conduct inspections with the visiting officers of Civil and Army if no higher officer is available on spot.

## ROLE OF THE ARMY.

In case of acute flood emergency, Executive Engineer Khangarh Canal Division will issue SOS message to District Co-Ordination Officer Muzaffargarh who shall be obliged to call the Army. Military Officer Head Quarter Engineers is responsible to provide 2 No. Army men to station at Khangarh as and when discharges in the River exceed 7.0 Lac Cusecs.

## 11.11 PARALLEL COMMUNICATION ARRANGEMENTS

**DEPARTMENTAL COMMUNICATION( WIRELESS BASE SETS )**

1. Muzaffargarh Telegraph office
2. Ali Pur Telegraph Office
3. Hamzy Wali Telegraph Office
4. Langer Sarai Canal Rest House
5. Rohillan Wali Telegraph Office

In addition to above new base wireless sets will be installed at the following stations recently.

**1.** RD 15+000 Shehr Sultan Flood Bund

**2.** RD 50+000 Shehr Sultan Flood Bund

**MOBILE WIRELESS SETS.**

Mobile wireless sets will be installed in the vehicles of following officers.

1. Superintending Engineer Muzaffargarh Canal Circle Multan Vehicle
2. Executive Engineer Khangarh Canal Division Vehicles

3. Sub Divisional Officer Khangarh Canal Sub Division-I Vehicle.
4. Sub Divisional Officer Khangarh Canal Sub Division-II Vehicle.
5. Sub Divisional Officer Shehr Sultan Canal Sub Division Vehicle.

## WALKY – TALKY ( HAND SETS)

Walky Talky handsetswill be provided to the following officers

1. Superintending Engineer M.Garh Canal Circle Multan
2. Executive Engineer Khangarh Canal Division Muzaffargarh
3. Sub Divisional Officer Shehr Sultan Canal Sub Division
4 Sub Engineer Dammar Wala
5. Sub Engineer Ali Pur
6. Sub Engineer Hamzy Wali
7. Gauge Reader RD 62+350 Muzaffargarh Branch
8. Gauge Reader RD 246+000 Muzaffargarh Canal
9. Gauge Reader at Head Laskani Ali Pur Branch
10. Telephone Attendant Langer Sarai Canal Rest House.

The wireless system of Khangarh Canal Division is interred connected with Chief Engineer Irrigation Zone D.G.Khan, the Superintending Engineer Muzaffargarh Canal Circle Multan and Telegraph Office of Khangarh Canal Division Muzaffargarh.

## P.T.C.L. TELE PHONES

P.T.C.L Tele Phones are available with the following officers and offices as under:

1. **SUPERINTENDING ENGINEER MUZAFFARGARH CANAL CIRCLE MULTAN**.

i. Phone # 061-9200090
2.1 Phone # 066-9200225
2.2 Phone Fax # 061-9200088
2.3 Cell No.0307-4081390

**3. EXECUTIVE ENGINEER KHANGARH CANAL DIVISION MUZAFFARGARH.**

Phone #0305-8889222
Fax #.
Cell #.0305-8889222

**4. SUB DIVISIONAL OFFICER KHANGARH CANAL SUB DIVISION-I MUZAFFARGARH**

Phone #
Cell # 0300-7389535

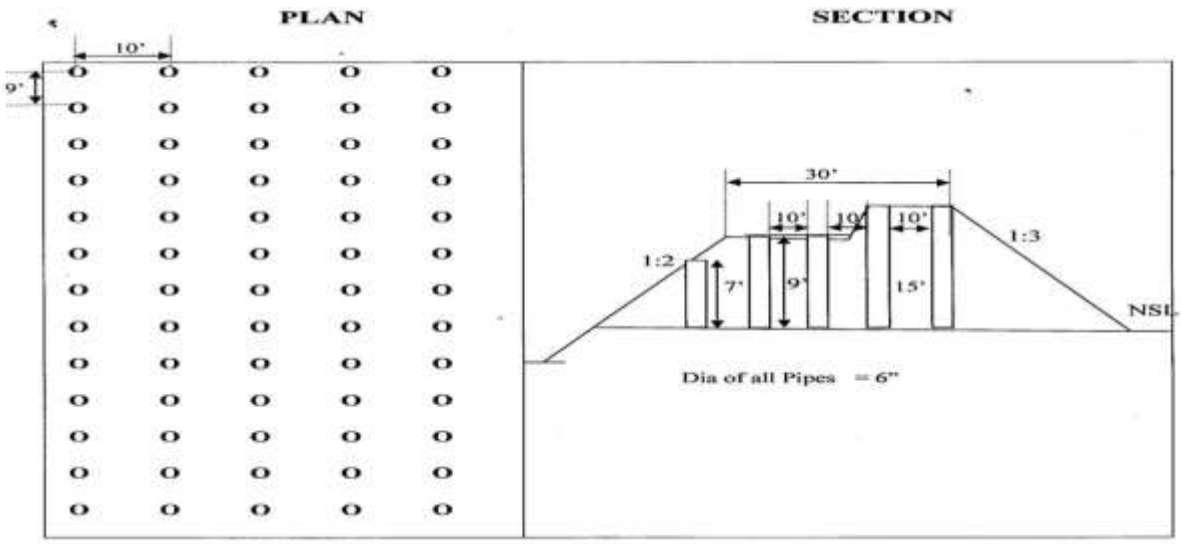
**5. SUB DIVISIONALOFFICER KHANGARH CANAL SUB DIVISION-II M.GARH**

Phone #
Cell # 0333-4974372

**6. SUB DIVISIONAL OFFICER SHEHR SULTAN CANAL SUB DIVISION ALI PUR**

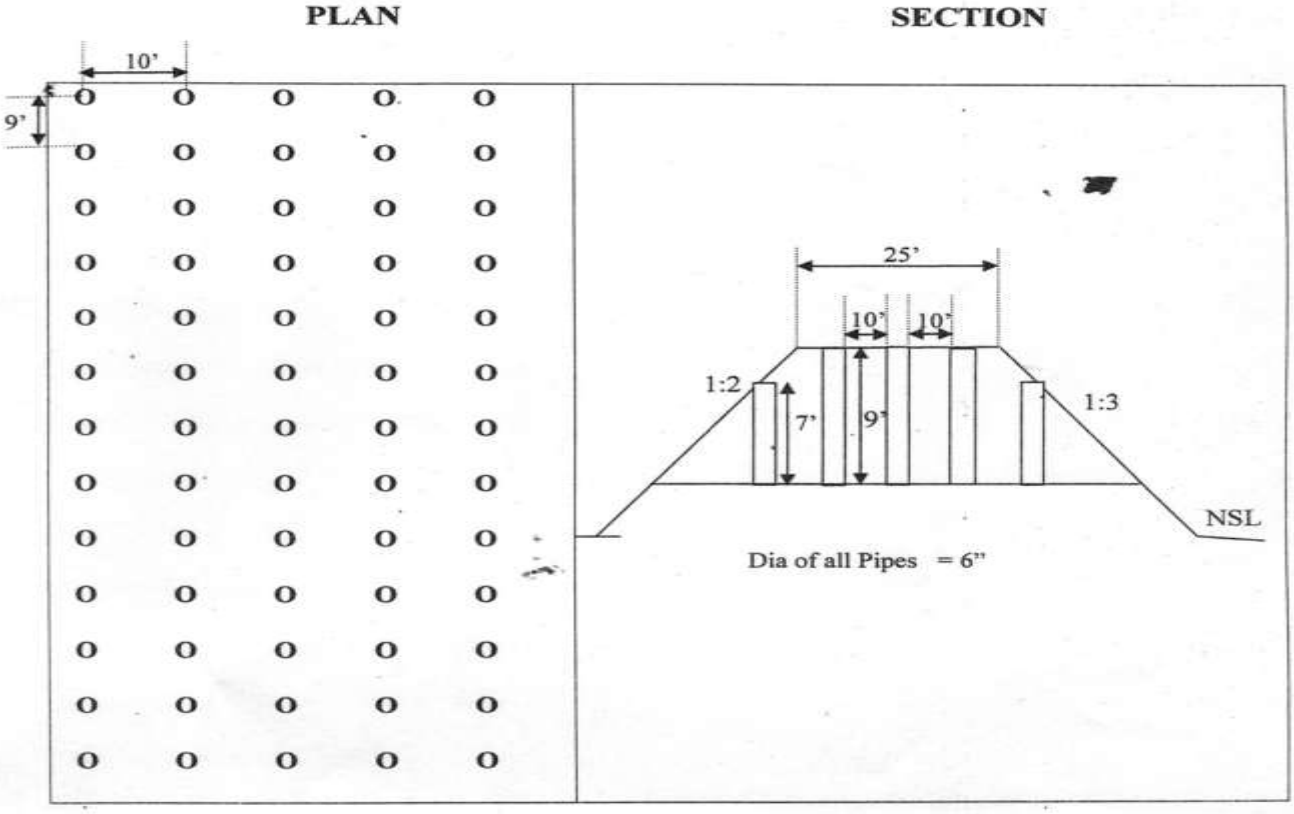
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## 11.12 INDEX PLAN OF BREACHING SECTION.




g

sections are created to protect the structure of Shehr Shah Bridge,City area of

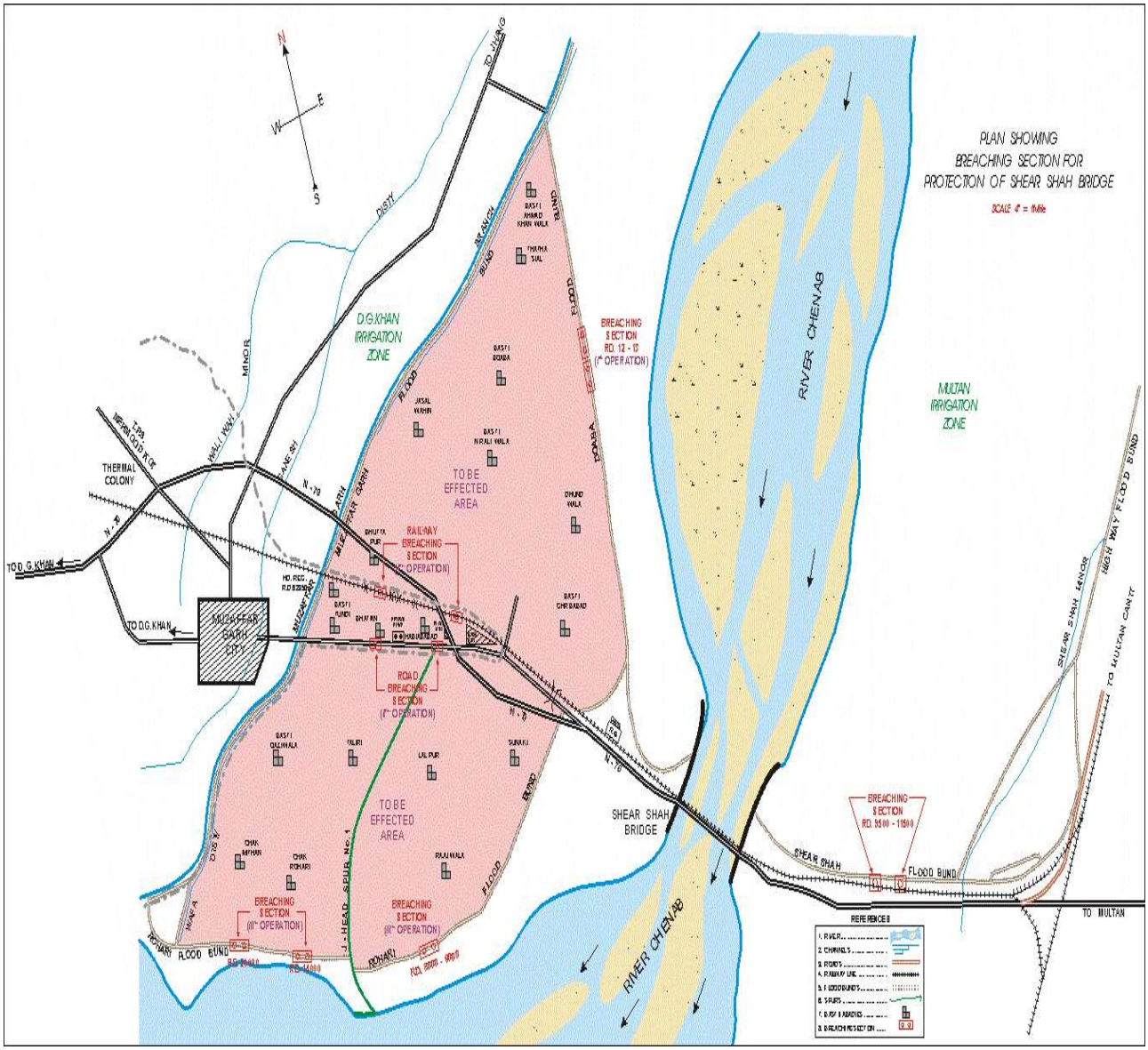



District Muzaffargarh, Infrastructure, Abadies and Irrigation Network.

**PLAN OF LINNERS AT DOABA FLOOD BUND.**

**11.12 PLAN OF**

**LINNERS AT ROHARI FLOOD BUND.**


PLAN SHOWING
BREACHING SECTION FOR
PROTECTION OF SHEAR SHAH BRIDGE
SCALE 4" = 1Mile
RIVER CHENAB
D.G.KHAN
IRRIGATION
ZONE
MULTAN
IRRIGATION
ZONE
TO BE
EFFECTED
AREA
TO BE
EFFECTED
AREA
BREACHING
SECTION
RD. 12 - 13
(1st OPERATION)
RAILWAY
BREACHING
SECTION
(1st OPERATION)
ROAD
BREACHING
SECTION
(1st OPERATION)
BREACHING
SECTION
(II nd OPERATION)
BREACHING
SECTION
(III rd OPERATION)
BREACHING
SECTION
RD. 9500 - 11500
SHEAR SHAH
BRIDGE
SHEAR SHAH
FLOOD BUND
TO MULTAN
SHEAR SHAH CANAL
HIGH WAY FLOOD BUND
TO MULTAN CANT
MUZAFFAR
GARH
CITY
THERMAL
COLONY
TO D.G.KHAN
TO D.G.KHAN
TO JHANG
MINOR
DISTY
SHAHGRH
BUND
FLOOD
BUND
ABADA
FLOOD
BUND
MAFA
DISTY
J-HEAD SPUR No. 1
ROHARI
FLOOD BUND
RD. 14000
RD. 8000 - 9000
SHEAR SHAH
FLOOD BUND
RIVER CHENAB
REFERENCE :-
1. RIVER
2. CHANELS
3. ROADS
4. RAILWAY LINE
5. FLOOD BUNDS
6. SPURS
7. BRIDGES
8. BREACH SECTION

# PART.

# B

# CHAPTER.

# 12

# Chapter. 12

# VULNERABLE SITES ON FLOOD BUNDS /STRUCTURES

## 12.1 APPREHENDED BREACHES IN FLOOD BUNDS /STRUCTURES

| Sr # | Name of Vulnerable site | Reach RD: | Length Ft. | Remarks |
|---|---|---|---|---|
| 1 | Khangarh Flood Bund | 46+000 – 47+000 | 1000 | Extra ordinary vigilance / watching will be done on all the vulnerable reaches from low flood limits. |
| 2 | Khangarh Flood Bund | 95+500 – 96+500 | 1000 | |
| 3 | Khangarh Flood Bund | 125+000 – 126+000 | 1000 | |
| 4 | Shehr Sultan Flood Bund | 14+000 – 15+000 | 1000 | |

## 12.2 OPERATION OF BREACHING SECTION

**DETAIL OF BREACHING SECTION**

**DOABA FLOOD BUND**

RD: 12-13 = 1 No
RD: 13-14 = 1 No
DETAIL

**1. Number of liners in a row**

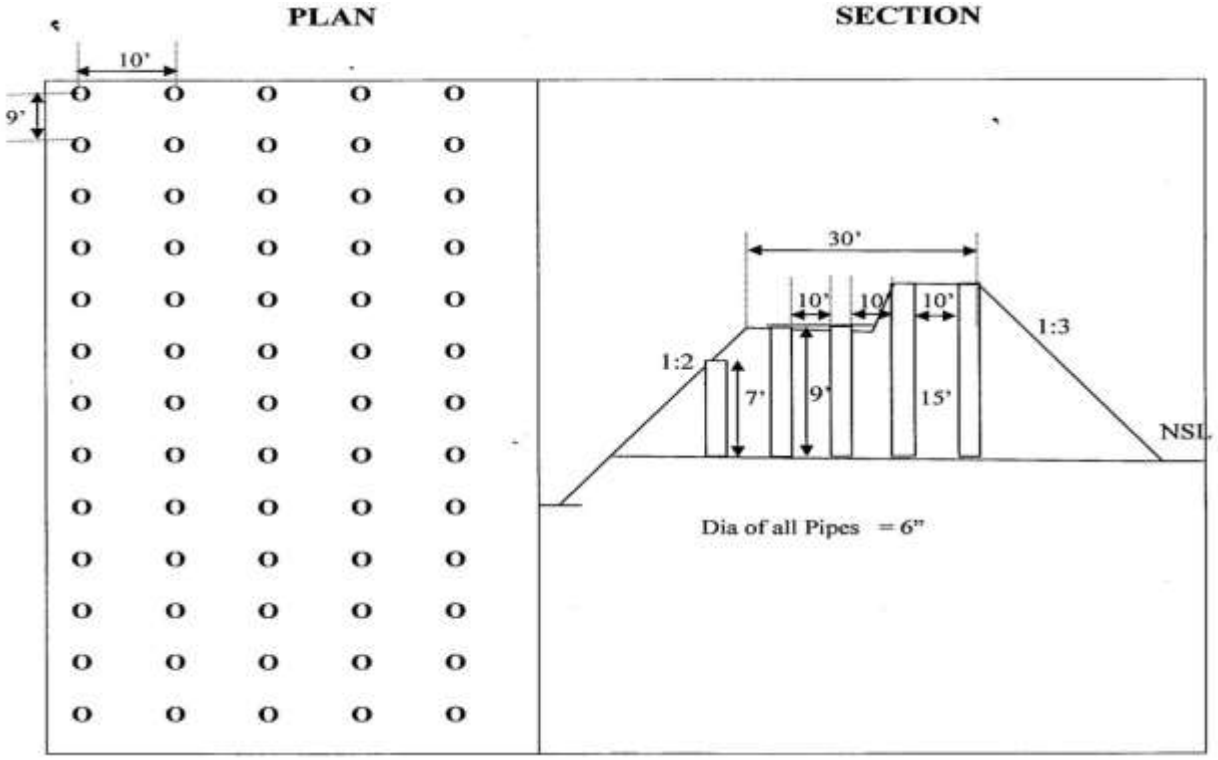
i. 15'Long = 2 No (Newly Constructed Dowel)
ii. 7' Long = 2 No (On Country Side Slope)
iii. 9'Long = 3 No (on Top of Bund)

**2. Number of Rows = 13 No**

**LENGTH OF LINERS ON DOABA**

15' Long 13x2x15 = 390 Rft
7' long 13x1x7 = 91 Rft
9' long 13x2x9 = 234 Rft
Total = 715 Rft

**For 2 No. Breaching Section = 715 x 2 = 1430 Rft**




## DETAIL OF BREACHING SECTION ROHARI FLOOD BUND

RD: 8-9 1. No
RD: 14-15 1. No
DETAIL

1. Number of liners in a row
2. i. 7' Long = 2 No (on River Side Slope)

ii. 7' Long = 2 No (On Country Side Slope)
iii.9' Long = 3 No (on Top of Bund)
2. Number of Rows = 13 No

## LENGTH OF LINERS ON ROHARI

| | | |
|---|---|---|
| 7' Long | 13x1x7 | = 91 Rft |
| 7' long | 13x1x7 | = 91 Rft |
| 9' long | 13x3x9 | = 351 Rft |
| | Total | = 533 Rft |

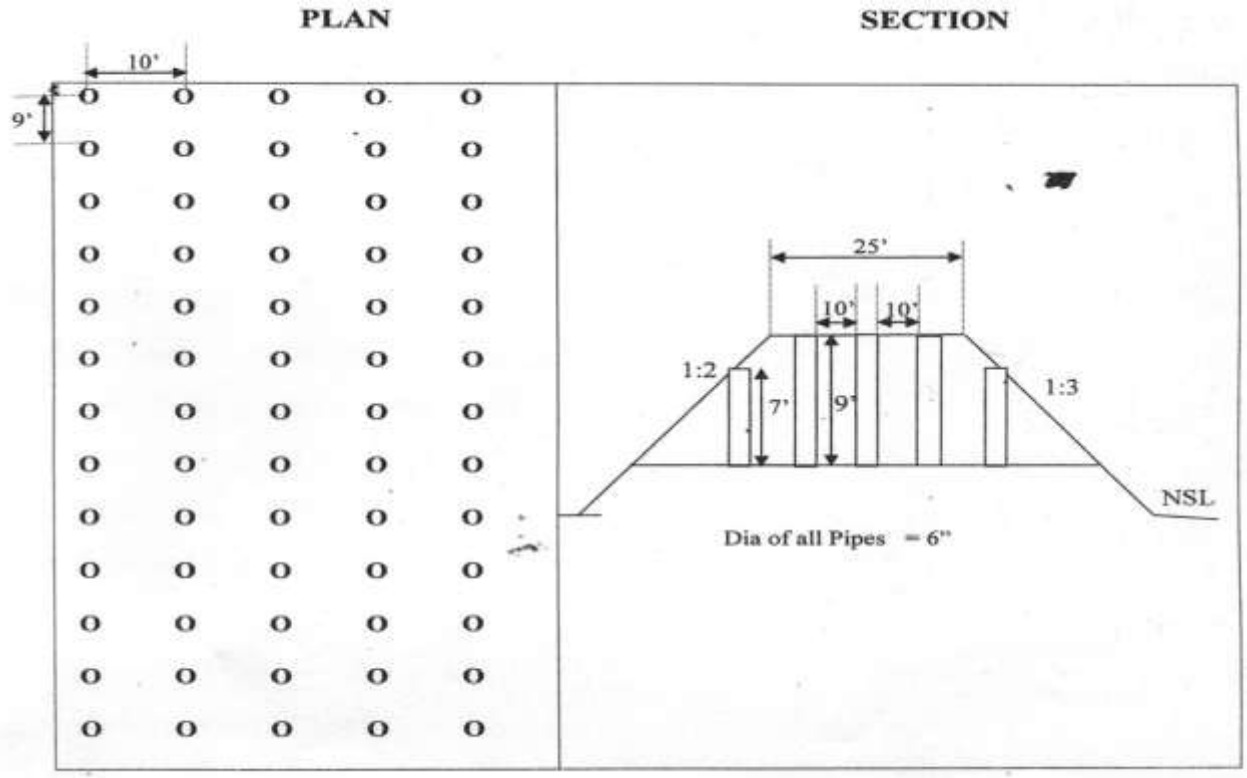
For 2 No. Breaching Section = 533x2 = 1066 Rft

## RAILWAY TRACK.

Provision of Breaching Section on Railway Track At KM – 11/4 to 11/7

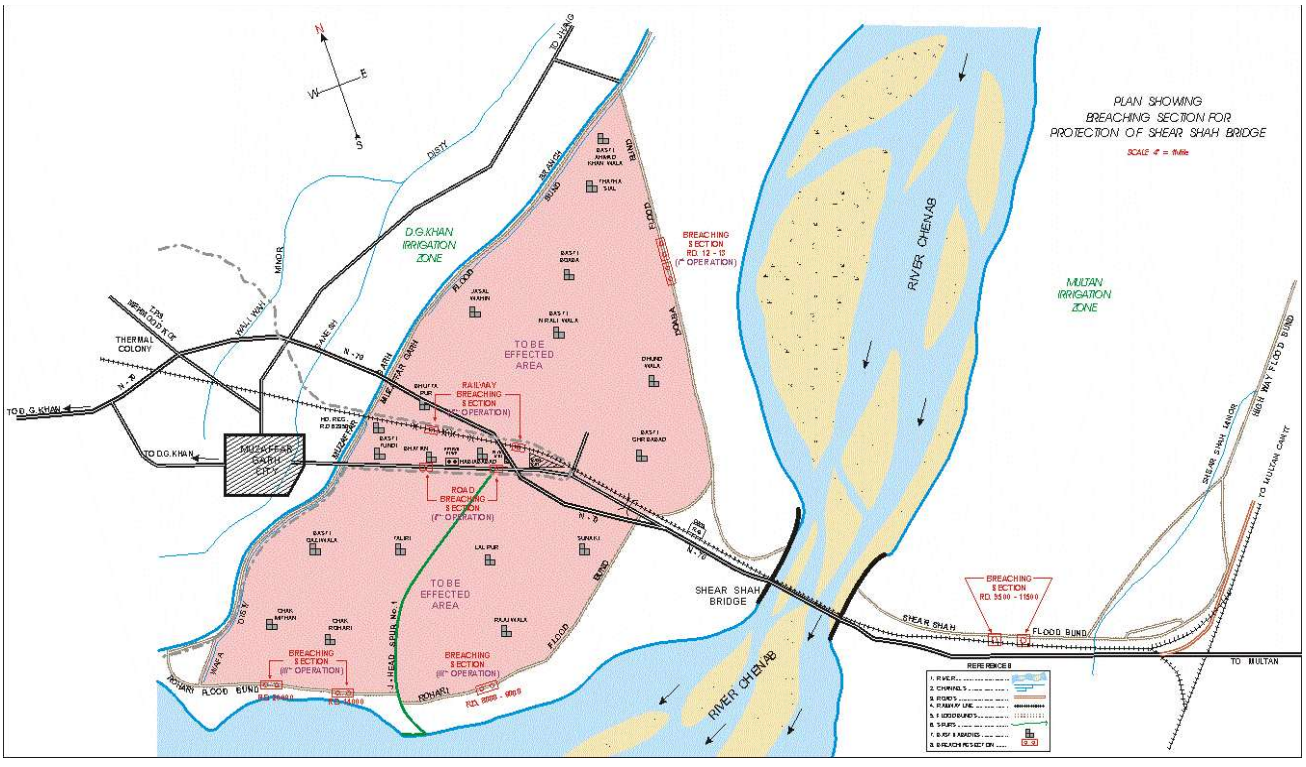
## NHA BY PASS N-70, MUZAFFARGARH.

Breaching section by NHA on new Muzaffargarh By Pass N-**70.s**




## 12.3 BREACHES DUE TO RISE OF FLOOD WATER, DETERIORATION OF FLOOD BUNDS.

These breaching sections are created to protect the structure of Shehr Shah Bridge,City area of District Muzaffargarh, Infrastructure, Abadies and Irrigation Network.



# CHAPTER.

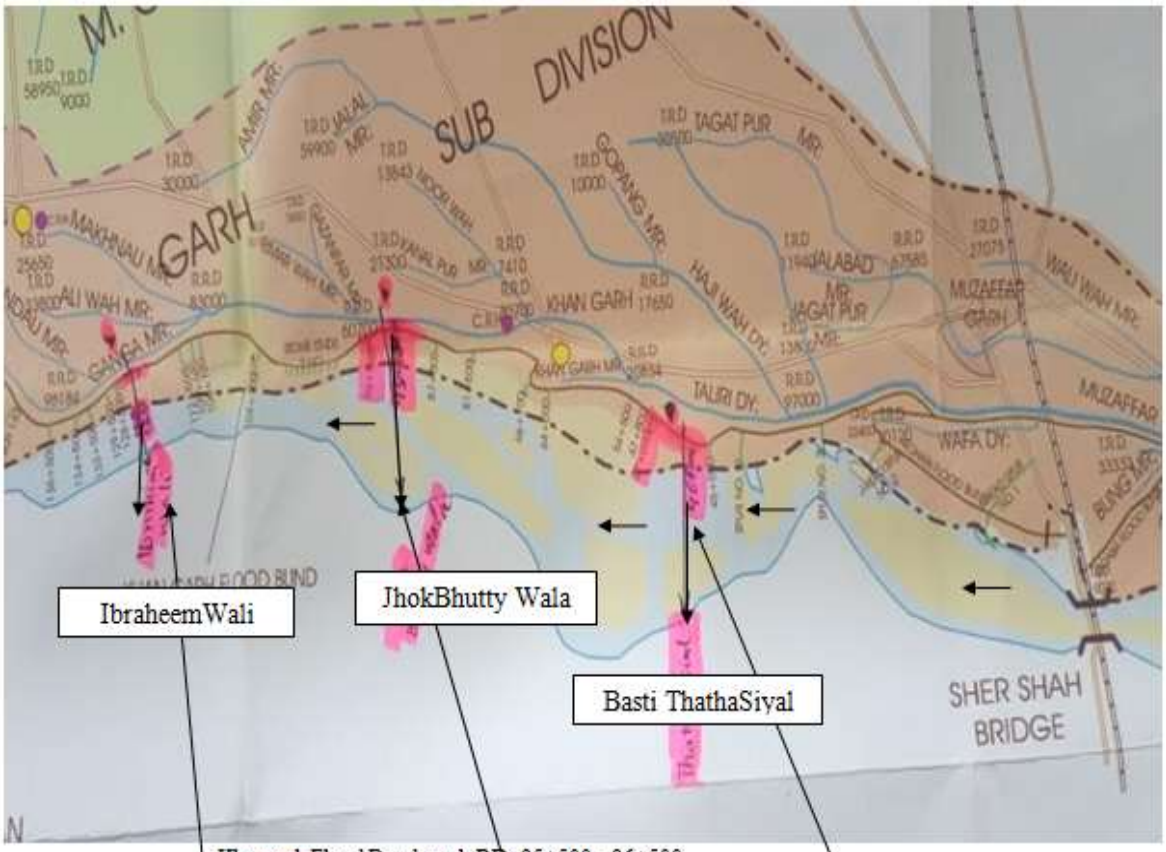
# 13

# EMERGENCY CONTINGENCY PLAN FOR VULNERABLE SITE

13.1 **PLAN SHOWING ROUTE OF FLOOD WATER COMING OUT OF THE BREACH SUPPORTED WITH LEVELS.**

Plan showing rout of flood water coming out of the breach from reach start

Khangarh Flood Bund reach RD: 46+000 – 47+000.




Khangarh Flood Bund reach RD: 95+500 – 96+500.

Khangarh Flood Bund reach RD: 125+500 – 126+500.

Khangarh Flood Bund RD: 125+500 – 126+500.

Khangarh Flood Bund RD: 95+500 – 96+500.

Khangarh Flood Bund RD: 46+000 – 47+000.

**13.2 DETAILS OF VILLAGES, ABADIES LIKELY TO BE AFFECTED AND THIS SHOULD ALSO BE SHOWN ON PLAN**

Khangarh Flood Bund reach RD: 46+000 – 47+000.

Khangarh Flood Bund reach RD: 95+500 – 96+500.

If any mishap occurs at this vulnerable reach RD: 140+000 – 146+000 the water inundated to the Basti Thatha Siyal, Jhok Bhutty Wali & Basti Iraheem Wali and allied Abadies.(Plan attached herewith).

| Sr # | Name of Flood Bund | Reach RD | Length (ft) | Villages to be affected |
|---|---|---|---|---|
| 1 | Khangarh Flood Bund | 46+000 – 47+000<br>95+500 – 96+500<br>125+500 – 126+500 | 3000 | Basti Thatha Siyal, Jhok Bhutty Wali & Basti Iraheem Wali |

**13.3 <u>STRATEGY AND ACTION TAKEN BE EXPLAINED IN DETAIL. THIS MAY INCLUDE.</u>**

Quick strategy will be adopted according to the flood situation.

**13.3.1 <u>ARRANGEMENT.</u>**

**<u>EMERGENCY GANGE</u>**

At important and dangers sites, emergency gang in strength of 20 Beldars with one or 2 mates will be maintained from the time the river rises above the prescribed gauges till it finally drops below that gauge. This gang will remain deployed on bunds and will shift to portions share lakes slips or wave action giving trouble for emergent action as deemed necessary In addition to the above, the Executive Engineer will employ additional labors as and when required in emergency under intimation to the superiors.

The District Coordination Officer Muzaffargarh will be requested to enlist able bodies persons living in the adjoining areas for theirs engagement in case of increased requirements.

**13.3. 2 <u>ESTABLISHMENT OF FLOOD FIGHTING CAMPS.</u>**
**<u>FLOOD CAMP</u>**

Khangarh Flood Bund RD: 46+000.
Khangarh Flood Bund RD: 96+000.
Khangarh Flood Bund RD: 125+000.

**13.3.3 <u>DUTIES OF OFFICERS/OFFICIALS AND THEIR CAMPS</u>**

| Camp No. | Location | Officer | Official |
|---|---|---|---|
| **Khangarh Section** | Khangarh Flood Bund RD: 47+000 – 96+000.<br>Khangarh Flood Bund RD: 95+500 – 96+500. | **Skinder Hyat**<br>**Sub Divisional Canal Officer**<br>**Khangarh Canal Sub Division-II.**<br>**Mob # 0304-5396871** | **Sub Engineer,**<br>**3 No. Mans / Shift of 8 Hours.** |

**13.3.4 <u>DEPARTMENTAL MACHINERY AVAILABLE</u>**

Nill

**13.3.5 <u>MACHINERY AVAILABLE FROM PRIVATE SOURCES</u>**

In case of emergency Private Machinery can be made available locally through Government Contractor.

1- Excavator
2- Dozer
3- Tractor with trolley

4- Tractor with Blade with Hall
5- Truck / Dalla
6- Vehicless

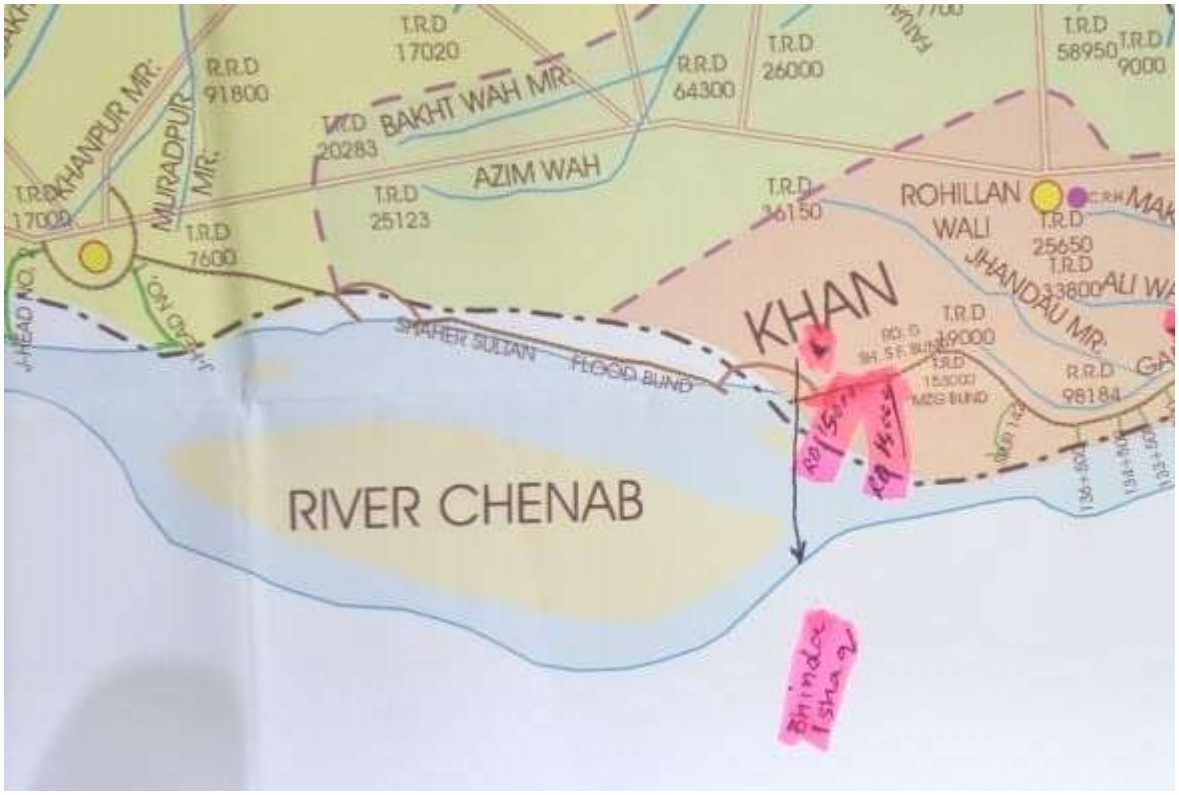
### 13.3.6 FLOOD FIGHTING MATERIAL REQUIRTED
### 13.3. FLOOD FIGHTING MATERIAL AVAILABLE

Flood watching material will be provided in ample quantity and to be readily available at every dangerous site.

The quantity of material required, depends upon the importance of the bund and the distance of the bund from the nearest store from which they can be collected. The following scale of material given here under is nearly an indication of relative quantities usually provided /needed. Material will be stored in each camp. Detail of material in each camp as under:-

| SR.# | Item | Unit | Total Required Qty | Available Quantity | Balance Quantity required | Remarks |
|---|---|---|---|---|---|---|
| 1. | Shouldari / Tent | No | 01 | 0 | 01 | Required qty will be purchased as per requirement before flood season 2026. |
| 2. | Chairs | No | 06 | 0 | 06 | |
| 3. | Table | No | 01 | 0 | 01 | |
| 4. | Generator (2-3 KVA) | No | 01 | 0 | 01 | |
| 5. | Pedestal Fans | No | 01 | 0 | 01 | |
| 6. | Charpois | No | 02 | 0 | 02 | |
| 7. | Symbolic Jackets | No | 50 | 0 | 50 | |
| 8. | Polythene Sheet | Kg | 100 | 0 | 100 | |
| 9. | Bamboos (4” dia and 10 ft long) | No | 100 | 0 | 100 | |
| 10. | Water Coller | No | 01 | 0 | 01 | |
| 11. | Portable Umbrella | No | 02 | 0 | 02 | |
| 12. | Life Jackets | No | 05 | 0 | 05 | |
| 13 | Utensils ( 10 person serving) | No | 01 | 0 | 01 | |
| 14. | Jute / Plastic Bags | No | 1000 | 0 | 1000 | |
| 15. | Walke Talkie Set | Sets | 02 | 0 | 02 | |
| 16. | Raincoats | No | 10 | 0 | 10 | |
| 17. | LED flood Lights | No | 10 | 0 | 10 | |
| 18. | Extension Cable ( 10 ft) | No | 02 | 0 | 02 | |
| 19. | Rechargeable Torches | No | 20 | 0 | 20 | |
| 20. | Kassi | No | 20 | 0 | 20 | |
| 21 | Axes | No | 20 | 0 | 20 | |
| 22. | G.I Buckets | No | 05 | 0 | 05 | |
| 23. | 7/44 Cable | Feet | 500 | 0 | 500 | |
| 24. | Sutli | Kg | 02 | 0 | 02 | |
| 25. | Sewing Needles | No | 10 | 0 | 10 | |
| 26. | Emergency Medical Kits | No | 01 | 0 | 01 | |
| 27. | Wire Crates (3x3x3) (at only those camp near river action and reserve stock exists) | No | 100 | 0 | 100 | |

**13.1** **PLAN SHOWING ROUTE OF FLOOD WATER COMING OUT OF THE BREACH SUPPORTED WITH LEVELS.**




S I T E . 2

**13.1** Plan

## 13.2 DETAIL OF VILLAGES ABADIES LIKELY TO BE AFFECTED AND THIS SHOULD ALSO BE SHOWN ON THE PLAN

**Shehr Sultan Flood Bund RD: 15+000.**

Basti Bhinda Ishaq and allied Abadies and villages along Shehr Sultan Flood Bund

If any mishap occurs at this vulnerable, the flood water will inundate the above abadies/structures and the water will come back into the River near Shehr Sultan Flood Bund at RD: 15+000 and the above abadies /structures, the flooded water will go to the confluence point of Rampur and enter into the River Indus (Plan attached herewith).

| Sr # | Name of Flood Bund | Reach RD | Length (ft) | Villages to be affected |
|---|---|---|---|---|
| 1 | **Shehr Sultan Flood Bund** | 14+000 - 15+000 | 1000 | Basti Bhinda Ishaq and allied Abadies and villages along Shehr Sultan Flood Bund. |

## 13.3 STRATEGY AND ACTION TAKEN BE EXPLAINED IN DETAIL. THIS MAY INCLUDE.

Quick strategy will be adopted according to the flood situation.

### 13.3.1 ARRANGEMENT.

**EMERGENCY GANGE**

At important and dangers sites, emergency gang in strength of 20 Beldars with one or 2 mates will be maintained from the time the river rises above the prescribed gauges till it finally drops below that gauge. These gang will remain deployed on bunds and will shift to portions share lakes slips or wave action giving trouble for emergent action as deemed necessary In addition to the above, the Executive Engineer will employ additional labours as and when required in emergency under intimation to the superiors.

The District Coordination Officer Muzaffargarh will be requested to enlist able bodies persons living in the adjoining areas for their engagement in case of increased requirements.

### 13.3.2 ESTABLISHMENT OF FLOOD FIGHTING CAMPS.

**FLOOD CAMP**

Shehr Sultan Flood Bund RD: 15+000.

### 13.3.3 DUTIES OF OFFICERS/OFFICIALS AND THEIR CAMPS

| Camp No. | Location | Officer | Official |
|---|---|---|---|
| **Rohillan waliSection** | **Shehr Sultan Flood Bund RD: 15+000** | **Skinder Jameel Sub Divisional Canal Officer Khangarh Canal Sub Division-II. Mob # 0304-5396871** | **Sub Engineer, 3 No. Mans / Shift of 8 Hours.** |

### 13.3.4 DEPARTMENTAL MACHINERY AVAILABLE

Nill

### 13.3.5 MACHINERY AVAILABLE FROM PRIVATE SOURCES

In case of emergency Private Machinery can be made available locally through Government Contractor.

1. Excavator
2. Tractor with trolley
3. Tractor with Blade with Hall
4. Truck / Dalla
5. Vehicles.

### 13.3.6 FLOOD FIGHTING MATERIAL REQUIRTED

### 13.3.7 FLOOD FIGHTING MATERIAL AVAILABLE

The following flood fighting material is available for pre-flood arrangements and the required short items will be purchased before coming flood 2026.

| SR.# | Item | Unit | Total Required Qty | Available Quantity | Balance Quantity required | Remarks |
|---|---|---|---|---|---|---|
| 1. | Shouldari / Tent | No | 01 | 0 | 01 | Required qty will be purchased as per requirement before flood season 2026. |
| 2. | Chairs | No | 06 | 0 | 06 | |
| 3. | Table | No | 01 | 0 | 01 | |
| 4. | Generator (2-3 KVA) | No | 01 | 0 | 01 | |
| 5. | Pedestal Fans | No | 01 | 0 | 01 | |
| 6. | Charpois | No | 02 | 0 | 02 | |
| 7. | Symbolic Jackets | No | 50 | 0 | 50 | |
| 8. | Polythene Sheet | Kg | 100 | 0 | 100 | |
| 9. | Bamboos (4” dia and 10 ft long) | No | 100 | 0 | 100 | |
| 10. | Water Coller | No | 01 | 0 | 01 | |
| 11. | Portable Umbrella | No | 02 | 0 | 02 | |
| 12. | Life Jackets | No | 05 | 0 | 05 | |
| 13 | Utensils ( 10 person serving) | No | 01 | 0 | 01 | |
| 14. | Jute / Plastic Bags | No | 1000 | 0 | 1000 | |
| 15. | Walke Talkie Set | Sets | 02 | 0 | 02 | |
| 16. | Raincoats | No | 10 | 0 | 10 | |
| 17. | LED flood Lights | No | 10 | 0 | 10 | |
| 18. | Extension Cable ( 10 ft) | No | 02 | 0 | 02 | |
| 19. | Rechargeable Torches | No | 20 | 0 | 20 | |
| 20. | Kassi | No | 20 | 0 | 20 | |
| 21 | Axes | No | 20 | 0 | 20 | |
| 22. | G.I Buckets | No | 05 | 0 | 05 | |
| 23. | 7/44 Cable | Feet | 500 | 0 | 500 | |
| 24. | Sutli | Kg | 02 | 0 | 02 | |
| 25. | Sewing Needles | No | 10 | 0 | 10 | |
| 26. | Emergency Medical Kits | No | 01 | 0 | 01 | |
| 27. | Wire Crates (3x3x3) (at only those camp near river action and reserve stock exists) | No | 100 | 0 | 100 | |

# DETAIL

**Main Camps at offices of the Sub Divisional Officers Khangarh-I, Khangarh-II and Shehr Sultan Canal Sub Division.**

**DUTIES OF OFFICERS/OFFICIALS AND THEIR CAMPS**

| S.# | Name of Flood Bund/Structure | Sub Divisional Officer | Sub Engineer | Mate |
|---|---|---|---|---|
| a. | Shehr Sultan Flood Bund RD:15-67 | Ghulam Mustafa | Jaffer Hussain | Haqnawaz |
| b. | Shehr Sultan Flood Bund RD: 67-96+850 | | | Haqnawaz |
| c. | Muzaffargarh Flood Bund RD: 85+000-112+000 & 150+000-165+000 doaba flood bund RD:0-19000 & Roharri flood bund RD:0-23400 | Mehr Ghazanfer &Muhammad Saleem Ashraf | Fakhar / Rana Haneef / Imran | Muhammad Hussain |
| d. | J-Head Spur No. 3 at RD:25500,RD:47-153 Khangarh F. B.& RD:0-15+000 SHS Flood Bund | Muhammad Saleem Ashraf | Imran/ Anser | Haji Ahmad |

**13.4** **DETAIL OF OTHER INFRASTRUCTURE LIKE ELECTRIC, SUI GAS, TELEPHONE INSTALLATIONS, ROAD NETWORK, OTHER BUILDINGS, CANALS AND DRAINAGE NETWORK**.

Electric line Gas pipe line, Telephone Line and Roads are passing, other building i.e Petrol Pumps, Cotton Factories and Rice Factories are also present in surrounding localities.

## CANALS

a. Chandar Bhan Disty & Kot Adu Branch Drain

b. Murad Puri Minor, Dammar Wala Disty Khandar Minor

c. Tail of Bakhi Disty

d. Rang Pur Canal and Muzaffargarh Branch System located right side of River Chenab, along Muzaffargarh and Khangarh flood bund, which are direct hit

## ROADS

a. Shehr Sultan to Karachi Road, Basti Murad to Shehr Sultan Road

b. Ali Pur to Muzaffargarh Road

c. Muzaffargarh to Ali Pur Road, Road from Flood Bund to Ali Pur Road

d. Multan to Muzaffargarh NHA road to DG Khan x-ing on Sher Shah cum Railway Bridge on River Chenab.

## BACK UP DIVISION

Muzaffargarh Canal Division at Muzaffargarh will act as back up Division in case of emergency.

# CHAPTER 14

# ACTION PLAN

## 14.1 **RE-SHUFFLING/RECOUPING PLAN OF RESERVE STONE DEPARTMENTALLY**.

By deploying Private Contractor for re-shuffling/recouping plan of Reserve Stone in case of any emergency.

## 14.2 **DETAIL OF INLET/OUTLET CROSSING ALONG WITH CLOSING METHODOLOGY.**

| Sr. No. | Name of Embankment / Bund | Reach | Length (ft) | Category (A/B/C) | Outlet crossing RD's |
|---|---|---|---|---|---|
| **RIVER CHENAB** | | | | | |
| 1 | Muzaffargarh Flood Bund | RD 0-188+000 | 188000 | A | RD:45-46, 47-48, 81-82, 95-96, 107-108, 114-115, 122-123, 127-128, 176-177 **(Total = 9 No.)** |
| 2 | Doaba Flood Bund | RD 0-19+000 | 19000 | A | N I L. |
| 3 | Rohari Flood Bund | RD 0-23+400 | 23400 | A | RD:22-23 **(Total = 1 No.)** |
| 4 | Shank of Spur No. 2 | | | | RD:0-1, 2-3, 5-6 **(Total = 3 No.)** |
| 5 | Khangarh Flood Bund | RD 0-153+000 | 153000 | A | RD:23-24, 28-29 **(Total = 2 No.)** |
| 6 | Shehr Sultan Flood Bund | RD 0-96+850 | 96850 | A | RD:64-65, 66-67, 67-68, 69-70, 71-72, 72-73, 75-76 **(Total = 7 No.)** |
| 7 | Chandar Bhan Flood Bund | RD 0-95+600 | 95600 | B | RD:55-56, 56-57, 66-67, 67-68, 69-70, 73-74, 76-77, 81-82 **(Total = 8 No.)** |

## 14.3 **DEVELOPMENT MACHINERY (NORMAL TO LOW FLOOD)**

| Sr No | Name of flood bund | Length of flood bund | Total length (mile) | Normal to Low | | | |
|---|---|---|---|---|---|---|---|
| | | | | Excavator | Trolleys | Dumpers | Tractor with Front blade (1 per 15 mile) |
| 1 | Muzaffargarh Flood Bund | 188000 | 35.61 | S.E shall allow deputation of one (1) excavator & four (4) Trolleys during low flood at camps/vulnerable points & LMB / RMB | | 0 | 2 |
| 2 | Doaba Flood Bund | 19000 | 3.60 | | | 0 | 0 |
| 3 | Rohari Flood Bund | 23400 | 4.43 | | | 0 | 0 |
| 4 | Khangarh Flood Bund | 153000 | 28.98 | | | 0 | 2 |
| 5 | Shehr Sultan Flood Bund | 96850 | 18.34 | | | 0 | 1 |
| 6 | Chander bhan Flood Bund | 146500 | 27.75 | | | 0 | 2 |
| **Total:-** | | | | | | | **7** |

**Note:- Payment for Machinery and workcharge establishment will be subject to verification by the TPM /Consultants.**

# 14.4 DEVELOPMENT MACHINERY (MEDIUM TO HIGH FLOOD)

| Sr No | Name of flood bund | Length of flood bund | Total length (mile) | Medium to High | | | |
|---|---|---|---|---|---|---|---|
| | | | | Excavator | Trolleys | Dumpers | Tractor with front blade |
| | | | | 1 per 7 mile | 4 per 7 mile | 2 per 7 mile | 1 per 7 mile |
| 1 | Muzaffargarh Flood Bund | 188000 | 35.61 | 5 | 20 | 10 | 5 |
| 2 | Doaba Flood Bund | 19000 | 3.60 | 1 | 4 | 2 | 1 |
| 3 | Rohari Flood Bund | 23400 | 4.43 | | | | |
| 4 | Khangarh Flood Bund | 153000 | 28.98 | 4 | 16 | 8 | 4 |
| 5 | Shehr Sultan Flood Bund | 96850 | 18.34 | 2 | 8 | 4 | 2 |
| 6 | Chander bhan Flood Bund | 146500 | 27.75 | 4 | 16 | 8 | 4 |
| | **Total** | | | **16** | **64** | **32** | **16** |

**Note:- Payment for Machinery and workcharge establishment will be subject to verification by the TPM /Consultants.**

## 14.5 DEVELOPMENT MACHINERY (VERY HIGH TO EXCEPTIONALLY HIGH)

| Sr. No. | Structure Name | Length (Miles) | Excavators | | Trolleys | Dumpers | Tractor with Front blade | |
|---|---|---|---|---|---|---|---|---|
| | | | Very High Flood | Exp. High Flood | 4 per 5 mile | 2 per 5 mile | Very High Flood | Exp. High Flood |
| | | | 1 per 5 mile | 2 per 5 mile | | | 1 per 5 mile | 2 per 5 mile |
| 1 | Muzaffargarh Flood Bund | 35.61 | 7 | 14 | 28 | 14 | 7 | 14 |
| 2 | Doaba Flood Bund | 3.60 | 1 | 2 | 4 | 2 | 1 | 2 |
| 3 | Rohari Flood Bund | 4.43 | | | | | | |
| 4 | Khangarh Flood Bund | 28.98 | 6 | 12 | 24 | 12 | 6 | 12 |
| 5 | Shehr Sultan Flood Bund | 18.34 | 3 | 6 | 12 | 6 | 3 | 6 |
| 6 | Chander bhan Flood Bund | 27.75 | 5 | 10 | 20 | 10 | 5 | 10 |
| **Total** | | | **22** | **44** | **88** | **44** | **22** | **44** |

**Note:- Payment for Machinery and work charge establishment will be subject to verification by the TPM /Consultants.**

## 14.6 POLICE DEPLOYMENT PLAN

| Sr No | Site of breaching section | Concerned Canal Division | Concerned Police station & District | Police persons deployed | | Remarks (if any) |
|---|---|---|---|---|---|---|
| | | | | Inspector /SI/ ASI | Constable | |
| 1 | Doaba Flood Bund RD:11-12 | Khangarh Canal Division | Police Station Sadar, City & Civil Line Muzaffargarh | 1 No | 6 No | |
| 2 | Doaba Flood Bund RD:12-13 | Khangarh Canal Division | Police Station Sadar, City & Civil Line Muzaffargarh | | | |
| 3 | Rohari Flood Bund RD:8-9 | Khangarh Canal Division | Police Station Sadar, City & Civil Line Muzaffargarh | 1 No | 6 No | |
| 4 | Rohari Flood Bund RD:14-15 | Khangarh Canal Division | Police Station Sadar, City & Civil Line Muzaffargarh | 1 No | 6 No | |

**2**

| Sr No | Vulnerable sites used for illegal cuts during floods | Concerned Canal Division | Concerned Police station & District | Police persons deployed | | Remarks (if any) |
|---|---|---|---|---|---|---|
| | | | | Inspector /SI/ ASI | Constable | |
| 1 | Muzaffargarh Flood Bund RD:72000-78000 | Khangarh Canal Division | Police Station Sadar, | 1 No | 3 No | |
| 6 | Shehr Sultan Flood Bund RD:20000-27000 | Khangarh Canal Division | Police Station Sadar, Shehr Sultan | 1 No | 3 No | |
| 7 | Chandar Bhan Flood Bund RD:28000-44000 & RD:58000-65000 | Khangarh Canal Division | Police Station Sadar, Ali Pur | 1 No | 3 No | |

## 14.7 DETAILS OF SYNTHETIC BAGS WITH CAPACITY OF 50KG AND 100KG.

Funds are awaited on receipt of funds synthetic bags with capacity of 50kg and 100kg will be recouped.

| Sr. No. | Capacity | Required Quantity | Available Quantity | Balance Quantity | Remarks |
|---|---|---|---|---|---|
| 1 | 50 Kg | 70 No. | - | 70 No. | Will be procured before upcoming flood season 2026. |
| 2 | 100 Kg | 70 No. | - | 70 No. | |

## 14.8 DETAILS OF POLYTHENE SHEETS OF BLACK COLOR TO PROTECT UPSTREAM SLOPE AGAINST WAVE ACTION AND TO CONTROL SEEPAGE THROUGH EMBANKMENTS.

Funds are awaited on receipt of funds polythene sheets of black color to protect upstream slope against wave action and to control seepage through embankments.

| Sr. No. | Required Quantity | Available Quantity | Balance Quantity | Remarks |
|---|---|---|---|---|
| 1 | 5000 Square Feet | - | 5000 Square Feet | Will be procured before upcoming flood season 2026. |

14.9 **Recommended for operation during flood.**

**Recommendations for Operation During Flood**

i. The Superintending Engineer (SE) will notify all vulnerable points on the recommendations of Executive Engineer (XEN) and if the vulnerable site falls within 15 miles of embankment, then camp will be established at vulnerable site.

ii. Superintending Engineer shall allow deputation of one (1) excavator and four (4) Trolleys during low flood at Camps/ vulnerable points and LMB/RMB.

iii. The Superintending Engineer (SE) shall approve one additional shift during low to high flood based on necessity of site but he shall clearly mention the reach where additional shift is allowed.

iv. For emergent situation when very high flood levels are attained at lower flood discharges, additional camps may also be established with the approval of Superintending Engineer.

v. The concerned division shall procure flood fighting material as per requirement of seasonal flood fighting camps.

vi. Jackets with official emblem of the PID should be purchased by the concerned Division, to be used during the worst-case scenario, i.e., for exceptionally high flood.

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

viii. The above mentioned yard stick of human resource is inclusive of 100% of regular flood establishment of the division at normal and low flood and for medium and above flood situation 50% of total regular establishment of the division and backup division in Flood Fighting Plan.

ix. The **Trigger Point** upstream of a Canal Division for commencing preparations shall be mentioned in the flood fighting plan and it shall be such point upstream with lag time of 3 days / 72 hours. The division shall initiate preparation corresponding to discharge magnitude expected to receive at their jurisdiction with respect to discharge at trigger point with 2025 flood data.



SE MBN

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

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

xii. The machinery mentioned above should be hired to remain standby for 24/7 to fight any extreme situation. The working of deployed machinery during normal situation shall be with prior approval of Superintending Engineer.

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

(Zeeshan Ali)
**Member/ SE, Project Circle DG Khan**

(Abdul Qayyum Qadume)
**Member / SE, Mailsi Canal Circle, Multan**

19/01/2026
(Mohib Ullah Ali)
**Member / SE, Sukhrawa Canal Circle, Sahiwal**

19-01-26
(Imtiaz Hussain)
**Member / SE, Bahawalpur Canal Circle**

(Sammar Iqbal)
**Member / SE, LCC(West) Canal Circle, Faisalabad** 19/01/26.

(Hafiz Ijaz Ahmed)
**Member / SE, Mandi Bahauddin Canal Circle** 19/1/26

(Mudassar Rehan)
**Member / SE Link Circle, Lahore** 19/01/26

(Khurram Amin)
**Convener / Chief Engineer, Drainage & Flood Zone, Lahore.**

# CHAPTER

# 15

# BACKUP DIVISIONS (IN CASE OF BREACH)

In case of emergency Muzaffargarh Canal Division, Muzaffargarh will be back-up division.

**Executive Engineer**
Khangarh Canal Division
Muzaffargarh

**Superintending Engineer**
Muzaffargarh Canal Circle
Multan

**Chief Engineer**
D.G. Khan Irrigation Zone
Dera Ghazi khan

# FOLLOW UP ACTIONS ON FLOOD PREPAREDNESS ACTIVITES FOR THE YEAR 2026

| Sr. No. | Irrigation Zone | Preparation of Flood Fighting Plan | Field Inspection (Certificates) | Removal of Encroachments | Installation / repair/ painting of Gauges, RD Marks, Data Boards | Reserve Stock of Stone | Inspection Notes | Status of Breaching Sections | Status of Explosive Stores | Security of Explosive Stores | Notification of Flood Emergency Officer | Purchase of Flood Fighting Material |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| 1 | D.G. Khan | Flood Fighting Plan submitted to Chief Engineer D&F for approval on | Certified that I have been inspecting the Flood Bund and found satisfactory. Necessary repair is in progress. | The list of encroachments has already been submitted to the DCO/ DPO, Muzaffargarh for removal. | The work of repairing and painting of gauges, RD Marks and Data Boards will be completed upto 30.06.2026. | Reserve Stock Limit submitted to Chief Office for Approval. | I have been inspected the flood bunds, necessary repair is in progress. | The Breaching section of right side of Sher Shah Bridge on River Chenab has already been approved by the Punjab Flood Commission to save the Sher Shah Bridge. Total No of breaching sections are 7 No. Liner have been Fixed at sites. | The explosive store is available at Head Quarter Engineer 21 Battalion Core Abdul Hakeem. | Responsibility of 2 Core Abdul Hakeem. | Ameer Muslim Khangarh is notified as flood emergency Officer / Focal Person | Sufficient Flood fighting material is available as per provision in the flood fighting plan short item will be purchase soon. |