IRRIGATION DEPARTMENT

GOVERNMENT OF THE PUNJAB

FLOOD FIGHTING PLAN 2026

IRRIGATION ZONE SARGODHA

THAL CANAL CIRCLE MIANWALI

KALABAGH HEADWORKS DIVISION DAUDKHEL

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FLOOD FIGHTING PLAN 2026

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Chaper-15 Back up divisions (In case of breach)

Last page of Part-A & Part-B signed by the concerned Superintending Engineer and Chief Engineer in token of correctness of the Flood Fighting Plan.

PART-A

CHAPTER-1

SALIENT FEATURES OF KALABAGH HEADWORKS DIVISION DAUDKHEL

1.1 LOCATION

Kalabagh Headworks Division comprises of Jinnah Barrage & Thal Canal (Main Line Upper). Jinnah Barrage previously called Kalabagh Headworks, situates on the River Indus about three miles downstream of Kalabagh Town. Its topographic location is at latitude 32.95° and longitude 71.50°. The terrain U/S of the Head works is hilly and the general topographic slope is in the North East to South West direction. River approach from Kalabagh Town to Barrage is confined between mountains of salt range on the West and high ridges on the East. The average altitude of the area of East of the Barrage is 670.00 above mean sea level.

1.2 GENERAL DESCRIPTION

Territorial jurisdiction of Kalabagh Headworks Division includes Jinnah Barrage and allied structures, Thal Canal (Main Line Upper) in the reach from RD: 0+000 (Head) to RD: 157+662 (Tail), off-taking channels in the uppermost reach and Kas Umar Khan Canal system, the latter being an inundation canal. The Division administers three Sub Divisions *viz.* Headworks Sub Division, Isakhel Canal Sub Division and Electrical Sub Division, all stationed at Jinnah Barrage Daudkhel. Executive Engineer is the technical and administrative in-charge of the Division who is responsible for reporting to the Superintending Engineer Thal Canal Circle Mianwali. He is supported by the Sub Divisional Officers, Subordinate technical and administrative staff. XEN & SDOs reside at Canal Colony Daudkhel that situates at almost 4 KM from the Barrage. The inundation channel, Kas Umar Khan Canal off takes from Kurram River near Isakhel.

In addition to above infrastructure, different Nullahs like Chichali, Broach, Rakka, Darsola and Jabba do fall under the jurisdiction of Kalabagh Headworks though not administratively controlled by the Division. These Nullahs carry flood waters (hill torrents) from nearby mountainous ranges, locally known as Koh-e-Suleiman.

Index Plan of Division is enclosed at page 52.

The infrastructure of Kalabagh Headworks Division comprises of following major components:

1. Jinnah Barrage:

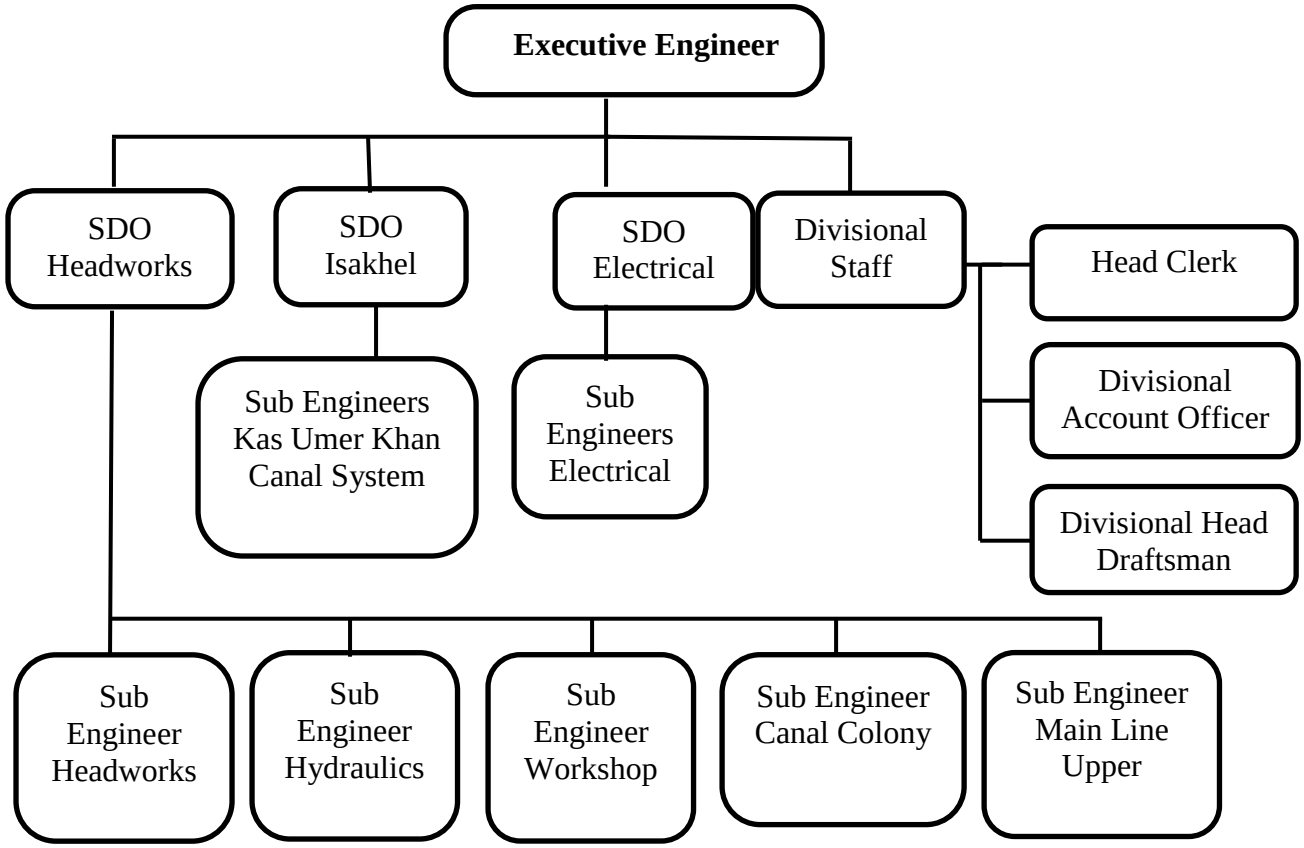
    i. Left Guide Bund (LGB) U/S & D/S.
    ii. Right Guide Bund (RGB) U/S & D/S.
    iii. Left Marginal Bund (LMB).
    iv. Right Marginal Bund (RMB) including breaching section.
    v. Tie Bund.
    vi. Colony Protection Bund.
    vii. Subsidiary Weir.

2. Thal Canal Main Line Upper RD: 0+000 to 157+662 (31.53 Canal Miles).
3. Daudkhel Lift Irrigation Scheme.
4. Mooch Lift Irrigation Scheme.
5. Kas Umar Khan Canal System (Inundation Canal).
6. Right Paikhel Canal (Flood Channel).
7. Bokhara Disty (Flood Channel).
8. Paikhel Lift Irrigation scheme.
9. Disty & Minors. = 81.48 Miles.
10. Nos. of outlets. = 161 Nos.
11. G.C.A. = 0.068 M. Acres.
12. C.C.A. = 0.061 M. Acres.

Total length of Disty & Minors is 81.48 Miles that irrigate 61000 acres of area (CCA) through 161 number outlets. Whereas total Gross Command area is 68000 acres.

1.3 ADMINISTRATION

Organization of Kalabagh Headworks Division is shown as under: -



CHAPTER-2

FLOOD PROTECTION AND RIVER TRAINING WORKS

The river training works of Jinnah Barrage are as under:

A) RIVER TRAINING WORKS OF JINNAH BARRAGE.

1. Left Guide Bund U/S.
2. Left Guide Bund D/S.
3. Right Guide Bund U/S.
4. Right Guide Bund D/S.
5. Left Marginal Bund.
6. Right Marginal Bund.
7. T – Head Spur at RD: 6+500 of RMB (Length of T – Head = 500 ft.)
8. Canal Colony Protection Bund.

B) OTHER RIVER TRAINING WORKS ON INDUS RIVER.

1. Flood protection works of Kalabagh Town and other adjoining area on Right Flank of River Indus.

C) RIVER TRAINING WORKS ON KURRAM RIVER.

1. Solid stone Studs = 9 Nos. (For protection of villages of Tehsil Isa Khel on Left Bank of River Kurram).
2. Flood Protection Bund RD: 10+000 to RD: 19+500 & RD: 46+000 to RD: 61+000.
3. Hockey Spur at RD: 46+000.
4. Stone Guide Wall Kas Umar Khan Canal.

D) ONGOING FLOOD PROTECTION WORKS.

1. M & R Works.

(i) Restoration of downstream floor loose stone apron of Jinnah Barrage.
(ii) Replenishment stone apron of Left Guide Bund of Jinnah Barrage during year 2025-26.

2. ADP Works.

(i) Channelization of Jabba Nullah Tehsil & District Mianwali.

3. CPEC (Deposit Work).

(i) Construction of Inverted Hockey Spur at RD 19+000 downstream Jinnah Barrage.
(ii) Construction of Left Flood Protection Bund of 6 miles (Flood bund upstream of CPEC Bridge).
(iii) Construction of Right Flood Protection Bund of 3 miles (Flood bund upstream of CPEC Bridge).
(iv) Construction of J-Head Spur RD: 27+000 R/S.

2.1 DESIGN PARAMETERS OF RIVER TRAINING WORKS

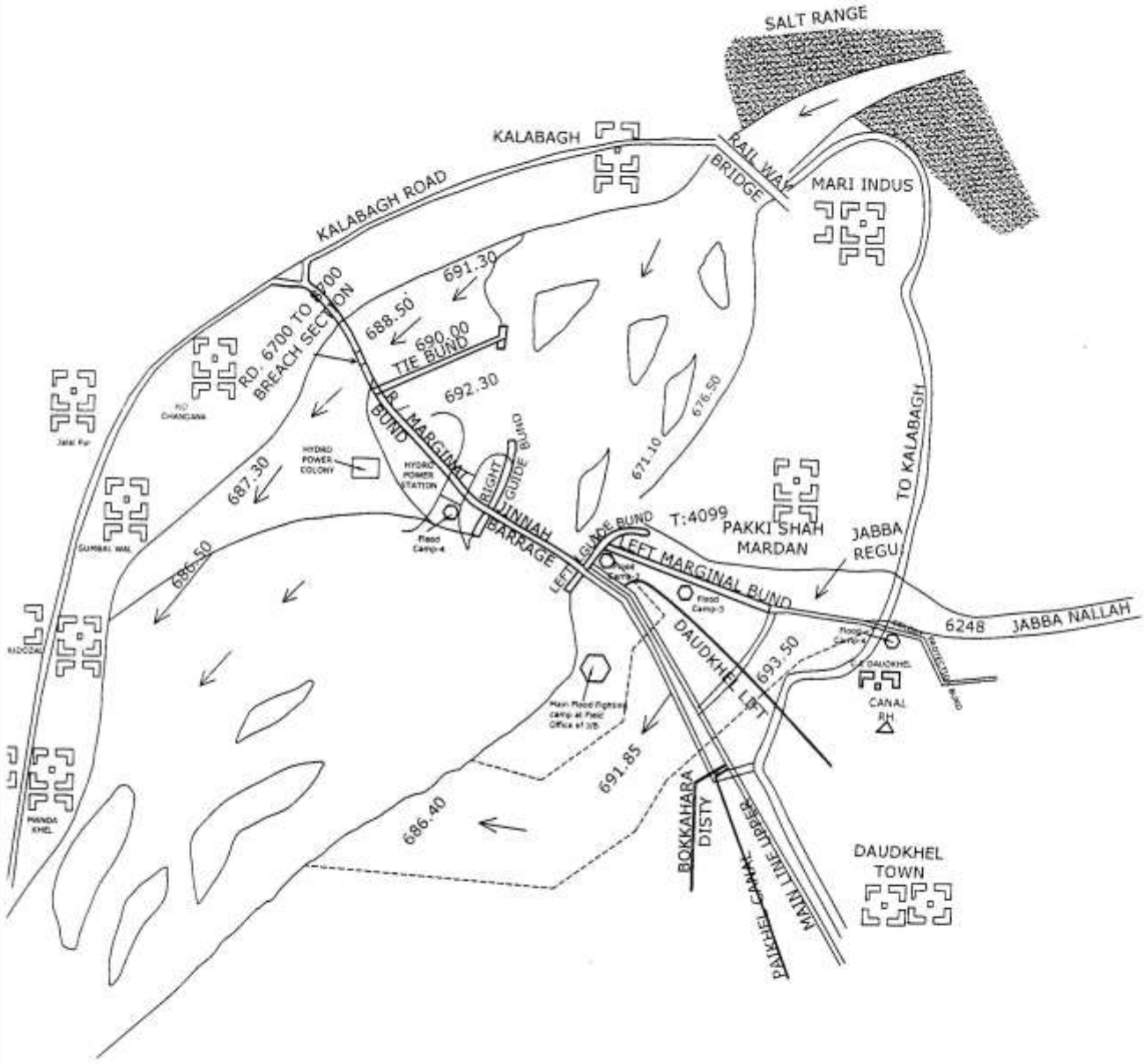
Sr.	Name of Structure	Length (Ft)	Designed Top R.L.	Top Width. (Ft).	side slopes
1	Left Guide Bund U/S	4099	706.00	0+000-2+028 = 30ft 2+028-2+528 = 30- 60ft 2+528-4+099 = 60ft	1:2 River side. 1:3 Country side
2	Left Guide Bund D/S	1522	702.00	30	1:2 River side. 1:3 Country side
3	Right Guide Bund U/S	1761	706.00	30	1:2 River side. 1:3 Country side
4	Right Guide Bund D/S	1957	702.00	30	1:2 River side. 1:3 Country side
5	Left Marginal Bund	7410	708.30 – 715.80	30 – 40	1:3 both sides
6	Right Marginal Bund	9084	706.00	30	1:3 both sides
7	T – Head Spur at RD: 6+500 of RMB. (Length of T – Head = 500 ft.)	4820	706.00	15	1:2 both sides
8	Canal Colony Protection Bund	11730	715.80 – 734.20	30	1:2 River side. 1:3 Country side
9	Flood protection works of Kalabagh Town and other adjoining area on Right Flank of River Indus.	1100	705.50	4 to 5	1.5:1 River side.
10	Guide Wall Wandha Kukranwala.	1150	705.00	9	N.A
11	Solid Stone Stud = 9 No. for Protection of Villages of Tehsil Isa Khel.	2 No. = 115' each, 3 No. = 145' Each 4 No. = 40 each	675.00	15	1:1 Both side.
12	Ganda bund near village Muqarabwala on left side of River Indus	1500	680.50	30	1:3 on country 1:2 River side
13	Hokey Spur Near Village Beho Sydian.	3585	686.00	25	1.5:1 Both side
14	Flood Protection Bund (i) RD:12000-19500 (ii) RD: 46000-61000	7500 15000	725.00 686.00	10 15	1.5:1 Both side 1.5:1 Both side
15	Stone Guide Wall Kas Umer Khan	1200	732.50	12.72	N.A

NOTE: - All Guide Bunds are armored with stone pitching whereas Marginal Bunds are made of local earth. Metaled Road (Mianwali – Bannu) has been constructed on Right Marginal Bund. After construction of Jinnah Hydro Power, alignment of Right Marginal Bund has been changed between RD: 0+200 to RD: 4+000. Strengthening and raising of Left Marginal Bund has been completed under Jinnah Barrage Rehabilitation & Modernization Project.

2.2 LOCATION MAP

Location of River Training Works at the Barrage is marked on index plan of Jinnah Barrage attached.

INDEX PLAN
SHOWING EXISTING BUNDS AT KALABAGH HEAD WORKS AND RIVER INDUS U/S AND D/S OF JINNAH BARRAGE



RIGHT MARGINAL BUND				
. TOP WIDTH	=	30 FT	1. RIVER	
. TOP R.L	=	706.0	2. CANAL	
SIDE SLOPE	=	1:3	3. BUNDS	
BREACHING SEC: = RD.6700-8700			4. ROAD 5. HILLS	
CRICTICAL LEVEL AT RD. 5+000 LMB		= 701.00	6. VILLAGE	
			7. REST HOUSE	
			8. FLOOD FIGHTING CAMPUS	

CHAPTER-3

BRIEF HISTORY OF PAST FLOOD EVENTS

Jinnah Barrage was constructed during 1943 and commissioned in 1946. It consists of a weir, left under sluice and right under sluice. It is designed for 9,50,000 cusec and its ultimate capacity is 11,00,000 cusec. Since its construction, the maximum discharge passed is 10,87,000 cusecs on 30-07-2010. Therein that event, about 937,453 cusec passed through the Barrage and 150,000 cusecs through the breaching section.

During Super Flood event of 2010, U/S Left Guide Bund was completely washed away. It was restored during annual closure of January, 2011 as per original design. The Breaching Section was operated for the first time in history during the Super Flood event of 2010.

PAST FLOODS AT JINNAH BARRAGE

Histogram of past floods at Jinnah Barrage is given below:

Year	Date	U/s gauges	D/s gauges	D/s discharge	Flood Category
1947	09/08/1947	690.20	686.0	526799	High
1948	14/08/1948	691.45	690.65	769262	very High
1949	20/07/1949	689.95	689.6	698166	very High
1950	02/08/1950	691.25	690.75	743757	very High
1951	12/08/1951	690.80	688.95	445973	Medium
1952	21/07/1952	691.50	6.88.90	463038	Medium
1953	12/07/1953	692.05	691.25	689661	very High
1954	03/08/1954	691.50	686.3	416768	Medium
1955	19/08/19955	692.10	687.75	520622	High
1956	18/07/1956	691.90	688.15	566657	High
1957	20/07/1957	691.60	687.2	443088	Medium
1958	16/07/1958	693.30	690.4	776311	very High
1959	04/07/1959	692.00	688.4	598304	High
1960	13/07/1960	692.00	689.1	529400	High
1961	30/07/1961	692.00	688.3	523144	High
1962	22/07/1962	692.00	685.55	422239	Medium
1963	31/07/1963	692.10	687.1	463718	Medium
1964	16/07/1964	691.60	690	555933	High
1965	27/07/1965	691.20	687.9	466850	Medium
1966	26/06/1966	691.50	689.2	500099	High
1967	30/07/1967	692.00	688.85	541835	High
1968	15/08/1968	692.00	687.05	476166	Medium
1969	13/08/1969	692.0	687.2	465346	Medium
1970	13/08/1970	692.50	685	408067	Medium
1971	29/06/1971	692.50	686.25	428431	Medium
1972	20/07/1972	692.50	686.3	397700	Medium
1973	30/08/1973	692.50	689.2	545917	High
1974	02/08/1974	693.00	685.7	373854	Low
1975	02/08/1975	692.60	689.1	602541	High
1976	02/08/1976	693.00	690.7	861965	Exceptionally High
1977	17/07/1977	692.50	688.25	574391	High
1978	06/08/1978	692.50	689	639790	High

Year	Date	U/s gauges	D/s gauges	D/s discharge	Flood Category
1979	10/08/1979	692.50	684.65	456840	Medium
1980	26/08/19s80	692.50	683.7	331197	Low
1981	03/07/1981	692.50	683.8	369944	Low
1982	17/08/1982	692.50	684.8	474231	Medium
1983	04/09/1983	692.50	685.2	499793	Medium
1984	15/08/1984	692.50	683.9	491280	Medium
1985	02/08/1985	692.50	682.1	313340	Low
1986	05/08/1986	692.50	684.3	471073	Medium
1987	28/07/1987	692.50	683.3	351268	Low
1988	02/08/1988	692.50	684.3	598303	High
1989	01/08/1989	692.50	685.65	557811	High
1990	10/08/1990	692.50	685.1	546260	High
1991	15/07/1991	692.50	682.8	445847	Medium
1992	10/09/1992	692.50	688.4	846040	Exceptionally High
1993	23/07/1993	692.50	680.6	355569	Low
1994	13/07/1994	692.50	683.4	491375	Medium
1995	27/07/1995	692.50	684	544663	High
1996	16/08/1996	692.50	682	441410	Medium
1997	28/08/1997	692.00	684.9	654179	Very High
1998	14/07/1998	692.50	682.1	473221	Medium
1999	10/08/1999	692.50	682.1	456146	Medium
2000	02/08/2000	692.50	678.3	261141	Low
2001	24/07/2001	693.00	681.7	412238	Medium
2002	14/08/2002	693.00	681.3	395589	Medium
2003	03/08/2003	692.50	683	399352	Medium
2004	11/07/2004	693.00	679.7	245067	Low
2005	02/07/2005	693.00	685.8	515073	High
2006	06/08/2006	692.50	684.50	489606	Medium
2007	16/08/2007	693.00	682.10	359912	Low
2008	05/08/2008	693.00	681.00	336530	Low
2009	17/08/2009	693.50	681.20	348320	Low
2010	**30/07/2010**	**695.50**	**690.10**	**937453**	**Super flood**
2011	26/07/2011	692.50	668.80	306983	Low
2012	18/07/2012	693.00	679.65	277027	Low
2013	13/08/2013	692.50	682.50	472303	Medium
2014	25/07/2014	694.00	681.00	249992	Normal
2015	02/08/2015	692.00	685.40	529080	High
2016	05/07/2016	693.00	681.80	351490	Low
2017	03/08/2017	693.00	681.95	419460	Medium
2018	15/08/2018	693.00	682.80	311154	Low
2019	15/08/2019	693.00	684.00	364346	Low
2020	03/09/2020	693.00	685.20	457031	Medium
2021	01/08/2021	693.00	682.00	291309	Low
2022	28/08/2022	693.50	683.60	433910	Medium
2023	25/07/2023	693.50	683.00	365549	Low
2024	09/08/2024	693.50	683.70	393739	Medium
2025	18/08/2025	693.00	684.50	464391	Medium

CHAPTER-4

DESIGNED DATA, HISTORIC PEAK FLOOD DATA AND PREVIOUS YEAR FLOOD DATA OF HEAD WORKS / BARRAGES AND OR OTHER CONTROL POINTS

DESIGNED DATA OF JINNAH BARRAGE

A. GENERAL DATA OF HEADWORKS

River U/S of Weir:

i)	Design Discharge	= 9,50,000 Cs
ii)	Ultimate Capacity.	= 11,00,000 Cs
iii)	Pond level to feed canal with 7500 Cs: discharge	= 692.00
iv)	Pond level to feed canal with 9, 000 Cs: discharge	= 694.00
v)	Highest flood level in 1929 (Pre Barrage Construction)	= 693.00
vi)	Highest flood level of Super flood 2010 (RD: 5+000 LMB)	= 701.30
vii)	Assumed maximum H.F.L.	= 701.30
viii)	Assumed lowest water level D/S	= 674.00
ix)	Critical Gauge location	= RD: 5+000 LMB
x)	Critical Gauge Value	= 701.30

B. WATER WAY

Length of Barrage between the abutments: -

i)	55 Bays of 60 ft. each		= 3300 ft.
ii)	01 number Bay		= 33 ft.
iii)	01 number navigation lock channel		= 20 ft.
iv)	54 Piers of 7 ft. each		= 378 ft.
v)	02 number Divide walls and fish ladders 25 ft. each		= 50 ft.
		Total	= 3781 ft.
vi)	Water way including navigation lock channel		= 3353 ft.

C. WEIR

i)	No of bays (Clear Span)	= 42 of 60 ft.
ii)	Crest level	= 678.00
iii)	U/S floor level	= 673.00
iv)	U/S curtain level of bottom	= 663.00
v)	D/S floor level	= 670.00
vi)	Pile line under D/S floor bottom RL	= 656.00
vii)	Crest width	= 6.00 ft.
viii)	U/S glacis	= 4H:1V
ix)	D/S glacis	= 3H:1V
x)	Length of impermeable floor U/S and D/S	= 140.00 ft.
xi)	U/S blocks protection	= 11.00 ft.
xii)	U/S loose stone protection	= 25.00 ft.
xiii)	D/S blocks protection	= 60.58 ft.
xiv)	D/S loose stone protection	= 40.00 ft.
xv)	Height of gates	= 19.00 ft.

D. SUB-WEIR

i)	Crest level (Central Portion)	= 675.00 ft
ii)	Crest level (Left & Right under sluices)	= 674.00 ft
iii)	Elevation of u/s floor (ft) (Central Portion)	= 670.00 ft
iv)	Elevation of u/s floor (ft) (Left & Right under sluices)	= 667.00 ft
v)	Elevation of d/s floor (ft) (Central Portion)	= 662.00 ft
vi)	Elevation of d/s floor (ft) (Left & Right under sluices)	= 662.00 ft
vii)	Length of U/S floor (ft)	= 20
viii)	Thickness of u/s floor (ft)	= 2 ft
ix)	Slope of u/s Glacis	= 2H:1V
x)	Slope of d/s Glacis	= 3H:1V
xi)	Crest width (ft.)	= 4 ft
xii)	Crest thickness (ft.)	= 3 ft

E. UNDER SLUICES

i)	Left 7 bays of 60’ each	
ii)	Right 6 bays of 60’ each one bay 33 ft. and one lock channel 20 ft.	
iii)	Crest level	= 675.00
iv)	U/S Glacis	= 4H:1V
v)	D/S Glacis	= 3H:1V
vi)	U/S Floor level	= 670.00
vii)	U/S curtain wall, R.L of bottom	= 660.00
viii)	D/S floor level	= 667.00
ix)	Pile line under Toe of D/S floor Bottom R.L.	= 653.00
x)	Crest width	= 6.00 ft.
xi)	Length of pacca floor	= 150.00 ft.
xii)	U/S loose stone protection	= 30.00 ft.
xiii)	U/S blocks protection	= 16.50 ft.
xiv)	D/S blocks protection	= 63.50 ft.
xv)	D/S loose stone protection	= 50.00 ft.
xvi)	Height of gates	= 22.00 ft.
xvii)	Road width	= 20.00 ft.
xviii)	Road R.L.	= 706.36
xix)	Overhead Bridge, width of Decking	= 8.00 ft.
xx)	Overhead Bridge, R.L.	= 736.30

F. FISH LADDER

i)	Clear span	= 11.00 ft.
ii)	Crest R.L.	= 684.00
iii)	Length of pacca floor	= 237.00
iv)	Length of divided wall	= 731.00
v)	Top R.L. U/S	= 702.00
vi)	Top R.L. D/S	= 693.00

G. SILT EXCLUDER

i.	No. of tunnels (4 number in Bay No. 1 & 2 of Under sluice)	= 8
ii.	Clear span	= 13.50 ft.
iii.	Thickness of pier	= 3.00 ft
iv.	Bottom of floor level	= 675.0
v.	Top of slab (Level with Head Regulator crest)	= 683.00
vi.	Overall width of slab	= 132.0 ft.

H. HEAD REGULATOR OF THAL CANAL

i)	No. of Bays (Clear Span, water way)	= 7 No of 24 ft.
ii)	Thickness of pier	= 5 ft.
iii)	Crest R.L.	= 683.00
iv)	Length of crest	= 30 ft.
v)	Total length of pacca floor	= 85 ft.
vi)	D/S block protection	= 100 ft.
vii)	D/S stone filling	= 30 ft.
viii)	Bottom of breast wall	= 694.00
ix)	Top of breast wall	= 706.00
x)	Clear road way	= 25 ft.
xi)	Road R.L.	= 706.15

I. SILT EJECTORS

There exist 4 number silt ejectors at RD: 0600, 0835, 1250 and 2100 of Thal Canal as detailed below:

Sr. No	Silt Ejectors	RD-600	R.D. 835	R.D. 1250	R.D. 2100
i)	No of 8 feet bays	4	2	2	2
ii)	U/S Bed R.L.	682.83	682.00	681.50	682.000
iii)	D/S Bed R.L.	682.00	681.50	681.00	680.65
iv)	Top of slab	682.83	682.00	681.50	681.00
v)	Bed floor level of Tunnels	678.00	677.37	676.87	676.37
vi)	Height of gates	4.0’	4.0’	4.0’	4.0’
vii)	Size of orifice	2x1	2x1	2x1	2x1
viii)	Discharge.	480 Cs.	240 Cs.	240 Cs.	240 Cs.

4.1-a FLOOD LIMITS OF RIVER INDUS AT JINNAH BARRAGE

Limits of flood for different categories are fixed by the Punjab Flood Commission as under:-

Normal.	=	Up to 2.5 Lac Cs.
Low Flood.	=	2.5 to 3.75 Lac Cs.
Medium Flood.	=	3.75 to 5.0 Lac Cs.
High Flood	=	5.0 to 6.50 Lac Cs.
Very High Flood.	=	6.50 to 8.0 Lac Cs.
Exceptionally high flood	=	8.00 to 9.50 Lac Cs.
Super flood	=	above 9.50 Lac Cs.

4.1-b FLOOD LIMITS OF RIVER KURRAM AT DARRA TANG

Limits of flood for different categories are fixed by the Punjab Flood Commission as under:-

Low Flood	=	40000 Cs.
Medium flood	=	60000 Cs.
High flood	=	75000 Cs.

4.2 TIME LAGS OF FLOODS

DISTANCE		TIME LAG
From Tarbela to Attock	= 32 KM.	2 Hours
From Attock to Jinnah Barrage	= 168 KM.	24 Hours
From Jinnah Barrage to Chesham Barrage	= 59 KM.	8 Hours
From Chesham Barrage to Taunsa	= 237 KM.	60 Hours

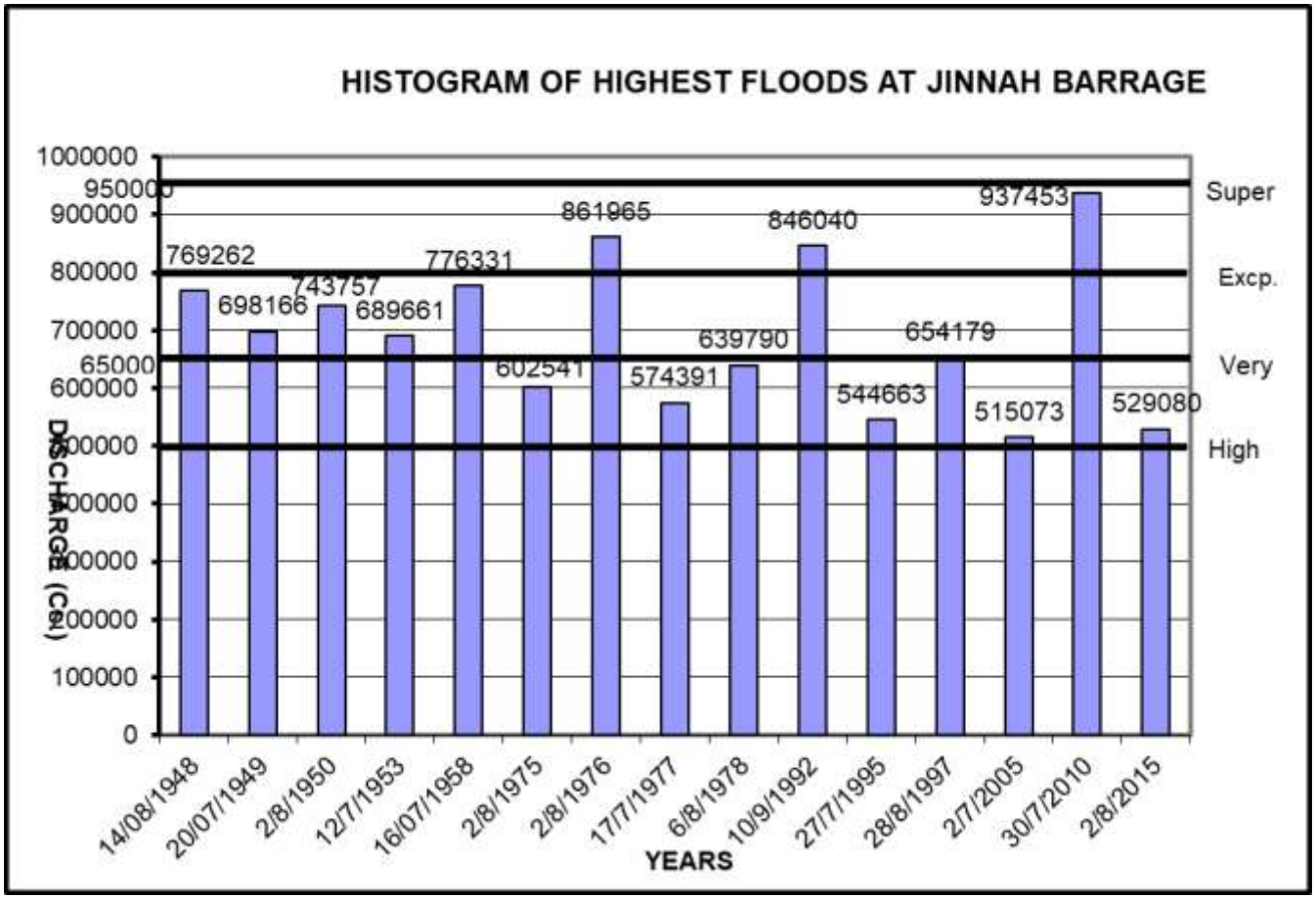
NOTE: Time lag varies according to category of flood.

4.3 HIGHEST FLOODS AT JINNAH BARRAGE

Histogram of highest floods at Jinnah Barrage is given below:

Year	Date	U/s gauges	Critical Gauge RD: 5+000 (LMB)	D/s gauges	D/s discharge	Remarks
1948	14/8/48	691.45	-	690.65	769262	Very high
1949	20/7/49	689.95	-	689.60	698166	Very high
1950	2/8/50	691.25	-	690.75	743757	Very high
1953	12/7/53	692.05	-	691.25	689661	Very high
1958	16/7/58	693.30	-	690.40	776311	Very high
1976	2/8/76	693.00	-	690.70	861965	Exceptionally High Flood
1992	10/9/92	692.50	-	688.40	846040	Exceptional High Flood
1997	28/8/97	692.00	-	684.90	654179	Very High
2010	30/7/10	695.50	701.30	690.10	937453	Super flood

NOTE: Critical Gauge was not defined prior to Super Flood 2010.


HISTOGRAM OF HIGHEST FLOODS AT JINNAH BARRAGE
1000000
950000
900000
800000
700000
65000
600000
100000
0
769262
698166
743757
689661
776331
602541
861965
574391
639790
846040
544663
654179
515073
937453
529080
Super
Excp.
Very
High
14/08/1948
20/07/1949
2/8/1950
12/7/1953
16/07/1958
2/8/1975
2/8/1976
17/7/1977
6/8/1978
10/9/1992
27/7/1995
28/8/1997
2/7/2005
30/7/2010
2/8/2015
YEARS

4.4 PEAK DISCHARGE

Year	Date	U/s gauges	Critical Gauge RD: 5+000 (LMB)	D/s gauges	D/s discharge	Remarks
2003	3/08/03	692.50	-	683	399352	Medium
2004	11/7/04	693.00	-	679.7	245067	Low
2005	02/7/05	693.00	-	685.8	515073	High
2006	06/8/06	692.50	-	684.50	489606	Medium
2007	16/8/07	693.00	-	682.10	359912	Low
2008	05/8/08	693.00	-	681.00	336530	Low
2009	17/8/09	693.50	-	681.20	348320	Low
2010	30/7/10	695.50	701.30	690.10	937453	Super flood
2011	26/7/11	692.50		668.80	306983	Low
2012	18/7/12	693.00		679.65	277027	Low
2013	13/8/13	692.50		682.50	472303	Medium
2014	25/7/14	694.00		681.00	249992	Normal
2015	02/8/15	692.00		685.40	529080	High
2016	05/7/16	693.00		681.80	351490	Low
2017	03/8/17	693.00		681.95	419460	Medium
2018	15/8/18	693.00		682.80	311154	Low
2019	15/9/19	693.00		684.00	364346	Low
2020	03/9/20	693.00		685.20	457031	Medium
2021	01/8/21	693.00		682.00	291309	Low
2022	28/8/22	693.50		683.60	433910	Medium
2023	25/7/23	693.50		683.00	365549	Low
2024	09/8/24	693.50		683.70	393739	Medium
2025	18/8/25	693.00		684.50	464391	Medium

NOTE: Critical Gauge was not defined prior to Super Flood 2010.

CHAPTER-5

FLOOD FIGHTING STRATEGY

5.1 FLOOD FIGHTING STRATEGY FOR RIVER INDUS AT JINNAH BARRAGE

STAGE – I: MEDIUM FLOOD (3.75 LAC CS. TO 5.00 LAC CS.).

When river discharge ranges between these limits, watching establishment will be deployed as per specified criteria. Sub Engineer Headworks will supervise the entire watching operation of the right flank of river while Sub Engineer Hydraulic will supervise the watching operation of left flank. Sub Divisional Officer Headworks will act as the officer in charge of watching operation.

Establishment of workshop section comprising one fitter and 6 beldars shall remain present at the Headworks for emergent rectification of gates and gearing around the clock. The Sub Engineer workshop will not leave the Headquarter without prior permission of the SDO Headworks. He is authorized by the Divisional Officer to employee 6 seasonal coolies to make up deficiency caused by stationing six regular beldars / coolies at the Headworks so that normal operations do not suffer. Machinery plan attached at 14.3.

STAGE – II: HIGH FLOOD (5.00 LAC Cs. TO 6.50 LAC Cs.).

When the discharge ranges between these limits, watching establishment will be increased as per specified criteria. Supervisory staff shall be the same as in stage 1. Additionally, Sub Engineer, Workshop will shift his headquarter at the Headworks and will also be available at the Barrage to assist the operation of gates. Machinery plan attached at 14.3.

STAGE – III: VERY HIGH FLOOD (6.50 LAC Cs. TO 8.00 LAC Cs.).

Watching establishment shall be increased as per specified criteria. All establishment of Headworks Sub Division shall be engaged and deployed as detailed below:

Sub Divisional Officer Headworks will be the officer in-charge of entire watching operation on the left as well as on the right flank. Overall supervision of all operations will be done by the Executive Engineer. Sub Engineers of Headworks Sub Division shall supervise various reaches of the left flank as under:

Sub Engineer, Headworks Section	Regulation at Headworks with guide bunds U/S & D/S.
Sub Engineer, Colony Section	Left Marginal Bund and Colony protection Bund.
Sub Engineer, Hydraulic Section.	Right Marginal Bund in Reach RD: 0+000 to 9+084.
Sub Engineer, Main Line Upper Section.	Right Marginal Bund in Reach RD: 6+700 to 8+700 *i.e.* the Breaching Section & Tie Bund.

STAGE – IV: EXCEPTIONALLY HIGH FLOOD AND ABOVE (EXCEEDING 8.00 LAC CS).

At this stage, volunteer labors brought by civil administration and Army will help the watching operation. Police guards will be deputed on vulnerable points such as junction points of Canal Colony Protection Bund and Left Marginal Bund to guard against any mishap/sabotage. Overall supervision of all operations will be done by the Executive Engineer. Sub Divisional Officer Headworks Sub Division will be the officer in-charge of watching operation on the left / right flanks, operation of gates, LMB, RMB (U/S & D/S) and, liaison with other departments. Sub Engineers of Headworks Sub Division shall supervise various reaches of the left/right flank. The regulation staff will be under the supervision of SDO and Sub Engineer Headwork's. The operation will be carried out as per operation manual under the overall supervision of Executive Engineer. The other supporting staff will also be assigned duties as mentioned in chapter 9. Sub Divisional Officer Isakhel Sub Division will also be available at the barrage to assist the operations.

5.2 FLOOD FIGHTING STRATEGY FOR RIVER KURRAM D/S DARRA TANG BRIDGE

STAGE – I: LOW TO MEDIUM FLOOD (40000 Cs. TO 60000 Cs.).

River training works like Protection Bunds, Stone Studs and Hockey Spur have been constructed on left bank of River Kurram. Work charge establishment for watching during flood season will be required.

STAGE – II: MEDIUM TO HIGH FLOOD (60000 Cs. TO 75000 Cs.).

When river discharge ranges between these limits, watching establishment shall be deployed at the scale of 2 beldars for every structure for 24 hours. The Sub Divisional Officer Isakhel Sub Division and Sub Engineer Kas Umar Khan Section will handle each and every aspect of flood in River Kurram.

CHAPTER-6

FLOOD DAMAGES RESTORATION WORKS

The detail of flood damages restoration works is as under: -

Sr. No.	Name of work	Remarks
1	Replenishment Stone Apron of Left Guide Bund of Jinnah Barrage during year 2025-26.	Tender opening on 05.03.2026.
2	Restoration of Downstream Floor Loose stone apron of Jinnah Barrage.	Tender opening on 18.03.2026.

CHAPTER-7

FLOOD FIGHTING / WATCHING ARRANGEMENTS

During floods, Sub Divisional officers, in the absence of the Executive Engineer will not hesitate to adopt protective measures for the safety of the Bunds and the Headworks in real emergency, under intimation to higher hierarchy, through quickest means of Communication. Similarly, Sub Engineers in the absence of the Sub Divisional Officer will act accordingly and will show no slackness to inform the factual position to the high ups simultaneously.

7.1 PRE-FLOOD ARRANGEMENTS

The watching establishment starts making pre-flood arrangements during the month of June for main embankments as well as for 2nd defence line. Flood watching material is arranged in ample quantities. Particular care is exercised to ensure that adequate quantity of the required material is made available at every watching hut especially at the vulnerable sites and that all the articles and materials are in good condition. The scale of watching material has been given at page 20.

All Sub Engineers carryout the inspection of all flood bunds under his respective jurisdiction by foot. They walk all along the bund on river side at the toe of the bund to identify the rat or porcupine holes on the slope. These are subsequently opened, refilled and puddled as per departmental procedures for such works. SDO Headworks inspects all vulnerable reaches of flood bunds by foot and acts in similar manner. Moreover, the Executive Engineer personally watches the whole process to ensure that no rat / porcupine hole is left unattended. SDO SCADA inspects all electrical installations along-with concerned Sub Engineers. He ensures that the maintenance and upkeeping of the overall SCADA and instrumentation system is in order and calibrated for smooth operation during the normal and particularly in flood season.

The SDO Headworks will personally check that:

- All flood fighting and watching material like torches, Kassies, baskets etc... are in good working condition and lightening arrangements at important points of the Headworks and vulnerable reaches of the bunds are satisfactory.
- Adequate arrangements are made for communication of urgent messages from any part of the flood bund or spur to the Executive Engineer in case of an emergency. If there is no telephonic, telegraphic or wireless link, special messenger is kept ready at all time for this purpose.
- Entire watching establishment is properly trained. Dry rehearsals for flood fighting by the end of June is carried out and any shortcoming noticed is immediately get rectified.

During pre-flood period, the watching staff is engaged on following works: -

- All jungle growth from the outer and inner toe of all bunds up to five feet width is cleared.
- Rats / porcupines and other burrowing animals are eradicated through fumigation and closing their hideouts as per departmental procedures.
- Dressing of slopes.
- Filling of rain cuts / Gharas.
- Keeping the track motorable.

CONSOLIDATED UPDATE STATUS OF RESERVE STOCK OF STONE

Sanction Reserved stock of stone	Available Quantity	Balance Quantity	Remarks
7.90 Lac cft	7.52 Lac cft	0.38 Lac cft	95% available which is sufficient to meet with any emergency.

STRUCTURE WISE CURRENT STATUS OF RESERVE STOCK OF STONE

Status of reserve stock of stone on every structure is as under:

Sr. #	Name of Structure	Sanctioned Quantity	Available Quantity	Remarks
1	Left Guide Bund	2.50 Lac Cft:	2.154 Lac Cft:	7.524 Lac Cft quantity of stone is available which is sufficient to meet with an emergent situation.
2	Right Guide Bund U/S	2.50 Lac Cft:	0.914 Lac Cft:	
3	Right Guide Bund D/S	--	1.421 Lac Cft:	
4	Left Marginal Bund	2.60 Lac Cft:	1.734 Lac Cft:	
5	Right Marginal Bund	0.20 Lac Cft:	-	
6	T-Head Spur	0.10 Lac Cft:	-	
7	Plate Form Left Side of Jinnah Barrage.	--	1.301 Lac Cft:	
	Total: -	7.90 Lac Cft.	7.524 Lac Cft:	

7.2 WATCHING ESTABLISHMENT

Sufficient work charge establishment will be engaged for the flood season 2026 from 15th June to 15th October. Sole purpose to hire the work charge establishment is to combat any untoward incident during the flood season. Establishment will be deployed at sensitive sites as per following criteria.

Detail of watching Establishment (per shift) is as under:

Sr. No.	**Structure Name**	**Length (Miles)**	**Flood Limits**							
			Normal Flood Season		**Low Flood**		**Medium/High Flood**		**Very High/ Exp. High Flood**	
			Men	**Shift**	**Men**	**Shift**	**Men**	**Shift**	**Men**	**Shift**
			1 Person/ 2 mile (1 Shift)		**1 Person/ mile (1 Shift)**		**2 Person/ mile (2 Shift)**		**5 Person/ mile (3 Shift)**	
1	Colony Protection Bund RD 0+000 to RD 11+730	2.35	1	1	2	1	5	2	12	3
2	LGB (U/S) RD: 0+000 to 4+099	0.82	1		1		2		4	
3	LGB (D/S) RD: 0+000 to 1+522	0.3	1		1		1		2	
4	RGB (U/S) RD: 0+000 to 1+761	0.35	1		1		1		2	
5	RGB (D/S) RD: 0+000 to 1+957	0.39	1		1		1		2	
6	RMB RD: 0+000 to 9+084	1.82	1		2		4		9	
7	LMB RD: 0+000 to 7+410	1.48	1		1		3		7	
TOTAL (per shift)			**7**	**1**	**9**	**1**	**17**	**2**	**38**	**3**
Total			**7**		**9**		**34**		**114**	
Total No. of Mate		**-**	**-**	**-**	**1**	**-**	**3**	**-**	**10**	**-**

***Chowkidar:** 1 per flood camp (24/7) for all flood levels.
Note: - Payment for labour subject to verification by Third Party Monitoring.

7.3 ARRANGEMENTS AT SENSITIVE SITES

Following Watching Camps will be established for different flood stages as mentioned below in table:

Established Camps Details							
Sr. No.	**Structure Name**	**Length (Miles)**	**Vulnerable sites**		**No. of Camps Established Except Vulnerable Points**		
					Normal Flood season/Low Flood	**Medium/High Flood**	**Very High/Exp. High Flood**
			Reach	**No. of Camps**	**15 Miles**	**7 Miles**	**5 Miles**
1	LGB (U/S) RD: 0+000 to 4+099	0.82	RD.1+000 to 3+000	1	-	-	-
2	LMB RD: 0+000 to 7+410	1.48	RD.1+000 to 3+000 of LMB	1			
3	RMB RD: 0+000 to 9+084	1.82	RD.6+700 to 8+700 of RMB	1			
4	Colony Protection Bund RD 0+000 to RD 11+730	2.35	RD:6+500.	1			
Total			**-**	**4**	**-**	**-**	**-**

7.4 WATCHING MATERIAL

Conventional articles required for flood fighting are detailed below. In addition to this, provision of stand by machinery is made in view of experience of super flood 2010.

Minimum Requirement of Flood Fighting Material for Permanent Camps (15 miles)

Sr. No.	Item	Unit	Total required Quantity (4 No Camp)	Available Quantity (4 No Camp)	Balance Quantity (4 No Camp)	Remarks
1	Shouldari / Tent	No.	04	-	04	Subject to availability of funds, the materials shall be purchased before start of flood season 2026.
2	Chairs	No.	24	12	12	
3	Table	No.	04	-	04	
4	Generator (2-3 KVA)	No.	04		04	
5	Pedestal Fans	No.	04	-	04	
6	Charpois	No.	08	-	08	
7	Symbolic Jackets	No.	200	-	200	
8	Polythene Sheet	Kg	400	-	400	
9	Bamboos (4” dia and 10 ft long)	No.	400	-	400	
10	Water Coller	No.	04	-	04	
11	Portable umbrella	No.	08	-	08	
12	Life Jackets	No.	20	12	08	
13	Utensils (10 person serving)	No.	04	-	04	
14	Jute / Plastic bags	No.	4000	-	4000	
15	Walke Talkie set	Sets	08	-	08	
16	Raincoats	No.	40	-	40	
17	LED flood light	No.	40	-	40	
18	Extension Cable (10 ft)	No.	08	-	08	
19	Rechargeable torches	No.	80	-	80	
20	Kassi	No.	80	40	40	
21	Axes	No.	80	40	40	
22	G.I Buckets	No.	20	-	20	
23	7/44 cable	Feet	2000	-	2000	
24	Sutli	Kg	08	-	08	
25	Sewing Needles	No.	40	-	40	
26	Emergency Medical Kit	No.	04	-	04	
27	Wire crates (3x3x3) (at only those camp near river action and reserve stock exists)	No.	400	-	400	

Following minimum requirement of Flood Fighting Material for Temporary Camp (7 or 5 miles during medium to exceptionally high flood to be outsourced)

Sr #	Items	Unit	Total Required Qty / Camp	Remarks
01	Shouldari / Tent	No	01	Material for temporary camps (07 or 05 miles during medium to exceptionally high flood) will be outsourced.
02	Walkie talkie set	No	01	
03	Chairs	No	06	
04	Raincoats	No	10	
05	Table	No	01	
06	Flood Light	No	10	
07	Generator (2–3 KVA)	No	01	
08	Extension cable	No	02	
09	Pedestal Fans	No	01	
10	Rechargeable torch	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 AND PROBING

For every vulnerable location, the arrangements made for sounding and probing are as follows:

Sr. #	Items
1.	One number large boat with boatman.
2.	One number small boat with boatman.
3.	Two number helpers to boatman.
4.	Two number sounders per boat.
5.	Sounding and probing equipment.

7.6 LIGHTING ARRANGEMENT

Sufficient stock of dry cell torches and chargeable emergency lights etc. will be made available in the emergency stores. Mobile Generating Sets shall be arranged at vulnerable points. Sub Engineer, Headworks assisted by electricians will be responsible to keep these items in working condition.

7.7 RATION ARRANGEMENT

The establishment and supervisory staff will make their own food arrangements. Deputy Commissioner Mianwali and District Food Controller Mianwali will be requested to keep a reserve stock of the articles at Jinnah Barrage / Canal Colony Daudkhel for supply to the labourers whenever a flood emergency occurs.

1. Wheat Flour (Atta) 10 Munds, per week of emergency period.
2. Gur, 10 Munds per week of emergency period.
3. Onions 2 Munds per week of emergency period.
4. Sugar 5 Munds per week of emergency period.
5. Rice 10 Munds per week of emergency period.

7.8 POL ARRANGEMENTS FOR VEHICLES

2 number nearby filling stations (one at Kot Chandna on right side of river and the other at RD 10+800 of Thal Main Line Upper on left side of river) are identified. Both stations situate within a distance of three Km from the Barrage. Supply order will be placed when the flood season commences. However, POL will be bought to the site on need basis. Overall contents of POL proposed are as under:

1. Petrol. = 1000 Litres
2. Diesel. = 2000 Litres
3. Kerosene Oil. = 500 Litres

7.9 TRANSPORTATION ARRANGEMENTS

Kalabagh Headworks Division has two Double Cabin, One Jeep, One truck, One Crane mounted, Truck and pickup vehicles and one number Tractor with Trolley. In the event of an emergency, 3 number Pick-Ups will be hired on receipt of information of discharge above the range of low flood. In case of an acute emergency, DC Mianwali and DPO Mianwali will be requested to arrange vehicles as per requirements.

7.10 LAW AND ORDER

Law and order situation may arise if a breach occurs in a flood embankment (God Forbid). In such a situation, Civil Administration and Police shall provide the necessary cover.

7.11 MEDICAL ARRANGEMENT FOR LABOUR

District Health Officer, Mianwali will ensure sufficient medical staff and medicine in B.H.U Canal Colony, Daudkhel. He will also set up a mobile dispensary on Barrage for emergency fully equipped with medical staff and medicine required against epidemics, snake bites, cholera, Dysenteries etc. The Rescue 1122 Centre Daudkhel will respond immediately in case of emergency. Executive Engineer, Headworks Division Daudkhel will inform Civil Administration as well as District Health Officer in such case.

7.12 LIAISON WITH OTHER DEPARTMENTS

Executive Engineer, Kalabagh Headworks Division, and Sub Divisional Officers, will keep liaison with their counter parts in other Departments. Higher Authorities of other Departments will be approached if needed. At site, Sub Engineer Headworks and Sub Engineer Hydraulics will coordinate inspections of visiting officers of Civil and Army if no other higher officer is available at spot.

7.13 ROLL OF THE ARMY

In case of extreme emergency, on request by Executive Engineer, the Deputy Commissioner, Mianwali shall be obliged to call the Army for immediate help and rescue. 100 Army men may be requested to station at the Barrage as and when discharge exceeds 6.50 Lac Cusecs.

7.14 DUTIES OF TELEPHONE ATTENDANT AND SIGNALLERS

Telephone & Telegraph office is located in Divisional Office, Jinnah Barrage and in Canal Colony Mianwali. Telegraph Office at canal colony Daudkhel is facilitated with PTCL Telephone No. 0459-236969. Telephone Attendants and Signallers shall be available round the clock in order to collect and provide information regarding flood situation. Detail of duties are as under: -

Sr No.	Name of Employee	Period	Time	
			From	To
1	Muhammad Ishtiaq, Signaller 0306 – 7810698 Muhammad Iqbal Khan, Signaller 0308-1435657	Flood Season	08:00	16:00
2	Tariq Mahmood, Telephone Attendant, 0300 – 5191099 Muhammad Ilyas, Regulation Beldar, 0308 – 7898136	Flood Season	16:00	00:00
3	Muhammad Rizwan, Signaller 0308-2783071 Habib Ullah, Peon 0301-6351421	Flood Season	00:00	08:00

7.15 COMMUNICATION/WIRELESS ARRANGEMENTS

All concerned officers and officials will be facilitated with cell phones. This arrangement will be ensured before onset of forth coming flood. All the official vehicles are also equipped with the mobile / wireless sets. These units will help the officers while on tour to remain in touch with flood situation.

CHAPTER-8

DETAIL OF ENCROACHMENT

There is no encroachment along flood works of Kalabagh Headworks Division Daudkhel. A certificate is added in this regard.

Detail of Encroachments:

Sr. No	Total Encroachments	Removed	Remaining	Remarks
NIL	NIL	NIL	NIL	NIL

Detail of Critical Encroachments:

Sr. No	Total Encroachments	Removed	Remaining	Remarks
NIL	NIL	NIL	NIL	NIL

CERTIFICATE

It is certified that no encroachment exists on Flood Protection Works and River Training Works in the Jurisdiction of Kalabagh Headworks Division Daudkhel.

Sub Divisional Officer
Headworks Sub Division
Daudkhel, Mianwali

Executive Engineer
Kalabagh Headworks Division
Daudkhel, Mianwali

CHAPTER-9

DUTY ROSTER / FLOOD FIGHTING PROGRAM

Duty Roster of key personal During Flood Season 2026:

SITE	LENGTH (ft.)	LABOR REQUIRED	STAFF FOR WATCHING BE DEPUTED (PER SHIFT)			
			SDO	SEN	MATE	BELDAR
STAGE – I: NORMAL FLOOD SEASON (UPTO 2.50 LAC CS.).						
Left Guide Bund U/S.	4099	1 Person/ 2 mile	-	-	-	-
Left Guide Bund D/S.	1522		-	-	-	1
Right Guide Bund U/S.	1761		-	-	-	1
Right Guide Bund D/S.	1957		-	-	-	-
Left Marginal Bund.	7410		-	-	-	1
Right Marginal Bund.	9084		-	-	-	1
Canal Colony Protection Bund.	11730		-	-	-	1
STAGE – II: LOW FLOOD SEASON (2.50 LAC CS. TO 3.75 LAC CS.).						
Left Guide Bund U/S.	4099	1 Person/ mile	-	-	-	1
Left Guide Bund D/S.	1522		-	-	-	-
Right Guide Bund U/S.	1761		-	-	-	-
Right Guide Bund D/S.	1957		-	-	-	1
Left Marginal Bund.	7410		-	-	-	1
Right Marginal Bund.	9084		-	-	-	2
Canal Colony Protection Bund.	11730		-	-	-	2
STAGE – III: MEDIUM TO HIGH FLOOD SEASON (3.75 LAC Cs. TO 6.50 LAC Cs.).						
Left Guide Bund U/S.	4099	2 Person/ mile / shift	-	-	1	2
Left Guide Bund D/S.	1522		-	-		1
Right Guide Bund U/S.	1761		-	-		1
Right Guide Bund D/S.	1957		-	-		1
Left Marginal Bund.	7410		-	-		3
Right Marginal Bund.	9084		-	-		4
Canal Colony Protection Bund.	11730		-	-		5
STAGE – IV: VERY HIGH TO EXCEPTIONALLY HIGH FLOOD SEASON (6.50 LAC Cs. TO 9.00 LAC Cs.).						
Left Guide Bund U/S.		5 Person/ mile / shift	SDO H/W	SEN H/W	1	4
Left Guide Bund D/S.			SDO H/W	SEN H/W		2
Right Guide Bund U/S.			SDO H/W	SEN H/W		2
Right Guide Bund D/S.			SDO H/W	SEN H/W		2
Left Marginal Bund.			SDO H/W	SEN C.C	1	7
Right Marginal Bund.			SDO H/W	SEN Hydraulic		9
Canal Colony Protection Bund.			SDO H/W	SEN C.C	1	12

XEN KBG

CHAPTER-10

EMERGENCY TELEPHONE NUMBERS

S.#	Name of post / Designation	Station / HQ.	Telephone No.		
			Office	Residence	Mobile
1	Superintending Engineer, Thal Circle	Mianwali.	0459-920181	0459-920183	0300-0147499
2	Executive Engineer, Kalabagh Headworks	Daudkhel	0459-236969	0459-236969	0348-8633368
3	Sub Divisional Officer, Headworks	Daudkhel	0459-236969	0459-236969	0344-6155669
4	Sub Divisional Officer, Isakhel	Daudkhel	0459-236969	0459-236969	
5	Sub Divisional Officer, Kundian	Kundian	0459-242544	-	
6	Deputy Commissioner,	Mianwali.	0459-234300	0459-232595	
7	Project Director Chashma Barrage	Chashma Barrage	0459-923285 0459-241473	0459-923285	
8	Canal Telephone Officer	Mianwali.	0459-920130	0459-920130	
9	Canal Telephone Officer	Daudkhel	0459-388036	0459-388036	
10	Assistant Engineer Agriculture	Mianwali.	0459-233168	-	
11	District Police Office	Mianwali.	0459-232704 0459-920092	-	
12	Flood Emergency of D.C.O. Office	Mianwali.	0459-230360 0459-920152	0459-232555	
13	D.H.O. Mianwali.	Mianwali.	0459-920128	-	
14	Medical Superintendent.	Mianwali.	0459-232888	-	
15	District Flood Controller.	Mianwali.	0459-233641	-	
16	Sub Divisional officer, Telephone.	Mianwali.	0459-232260	0459-920000	
SARGODHA / LAHORE.					
1	Secretary Irrigation Department	Lahore	042-99212117 042-99212118	04299200951	
2	Chief Engineer, Irrigation Zone,	Sargodha	048-9230445	048-9230451	0322-4486727
3	Flood emergency officer	Sargodha	048-9230456	048-9230003	
4	Executive Engineer Operation Irrigation	Sargodha	048-9230446	048-9230414	

S.#	Name of post / Designation	Station / HQ.	Telephone No.		
			Office	Residence	Mobile
5	Flood warning Center	Lahore	042-99205371 042-99205372	-	
6	Deputy Secretary (Op)	Lahore	042-99212126- 042-99212127	-	
7	Chief Engineer, Drainage & Flood.	Lahore	042-99233551	042-35900049	
8	Director Flood.	Lahore	042-99233552	042-36653943	
9	Telegraph Office	Lahore	042-99212166	-	
10	Director Regulation.	Lahore	042-99212147	-	
MISCELLANEOUS					
1	Executive Engineer, Mianwali Division	Mianwali	0459-920137	0459-920154	0301-4585765
2	Executive Engineer Bhakkar Division	Bhakkar	0453-9200016	-	0306-1577172
3	Executive Engineer Layyah Division	Layyah	0606-412435	-	0300-6371952

CHAPTER-11

STANDARD OPERATING PROCEDURE FOR BREACHING SECTION

11.1 HISTORY OF THE BREACHING SECTION

There are 04 nominated and well established breaching section between RD: 6+700 and 8+700 of RMB. It was approved by the Technical Sub Committee of Punjab Flood Commission on 09-02-1982. The critical RL for the operation of this breaching section is 701.30. The critical gauge situates at RD: 5+000 of LMB. This breaching section was operated for a single time in the history of Jinnah Barrage on 30-07-2010 *i.e.* during the event of super flood of 2010. No major damage was reported due to its operation. The spilled water again joined the main river stream approximately about two miles D/S of the breaching section. However, since the main Mianwali – Bannu road exists over RMB, operation of the breaching section resulted in closure of this road and the transportation remained suspended for 30 days. Alternate route for light traffic is available through Railway Bridge at Kalabagh Town.

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

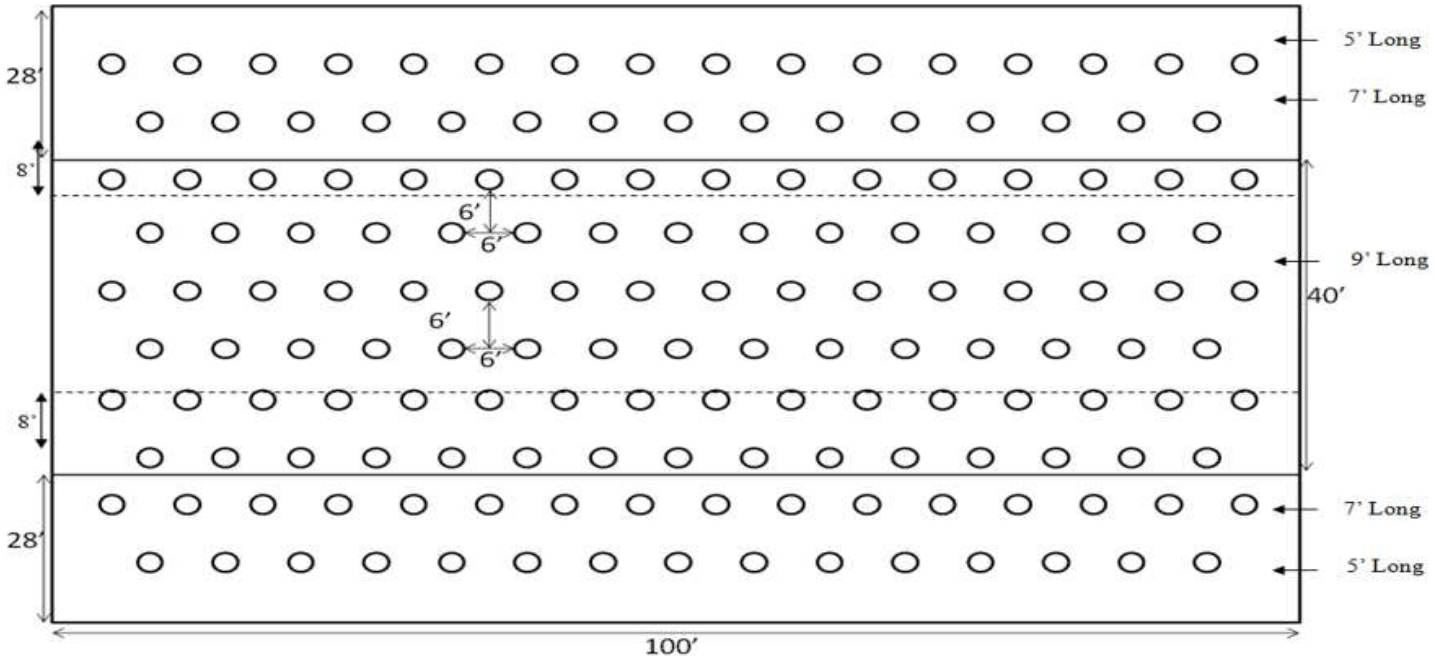
Updated status of explosive / accessories for flood season 2026 is as under:-

Sr. No.	Name / Nomenclature of explosive materials / Accessories	Required Quantity	Available Quantity	Deficient Quantity
1	Wabox 80 % - 25-32 mm.	9605-KG	8555-KG	1050-KG
2	Wabocord – 10 gm / Mtr.	3994-Mtr	3994-Mtr	-
3	Firing cable.	760-Mtr	760-Mtr	-
4	Det No. 8 – plain (non electrical).	138-Nos.	138-Nos.	-
5	Electronic Det no. 8 3 MWL.	19-Nos.	19-Nos.	-
6	M.S Electric Delay Det.	80-No.	80-No.	-
7	Blasting Machine German.	02-No.	02-No.	-
8	Hands crimpers.	08-No.	08-No.	-
9	Pe3 A.	4799-KG	4799-KG	-
10	PE – 3A (450-Gram Slab).	224.448 Kg	224.448 Kg	-
11	Wabonite.	1107.84 Kg	1107.84Kg	-
12	Detonating cord / Wabocord.	480 M	480 M	-
13	Primer.	48 No.	48 No.	-
14	Elec Detonator.	8 No.	8 No.	-
15	Non Electric Detonator.	8 No.	8 No.	-
16	Detonators No. 33 MS / 25 (0.25 Sec Delay).	12 No.	12 No.	-
17	Detonators No. 33 MS / 50 (0.5 Sec Delay).	12 No.	12 No.	-
18	Safety Fuse.	1547 No.	1547 No.	-

11.3 ARRANGEMENT OF EXPLOSIVES AND SECURITY OF EXPLOSIVE STORES

Explosive material is placed at Sargodha Cantonment under the control of Engineers Crops 1 Kharian and 3 Air Defense Division Sargodha. Security of the explosive store is the responsibility of the Army as directed by the higher authorities.

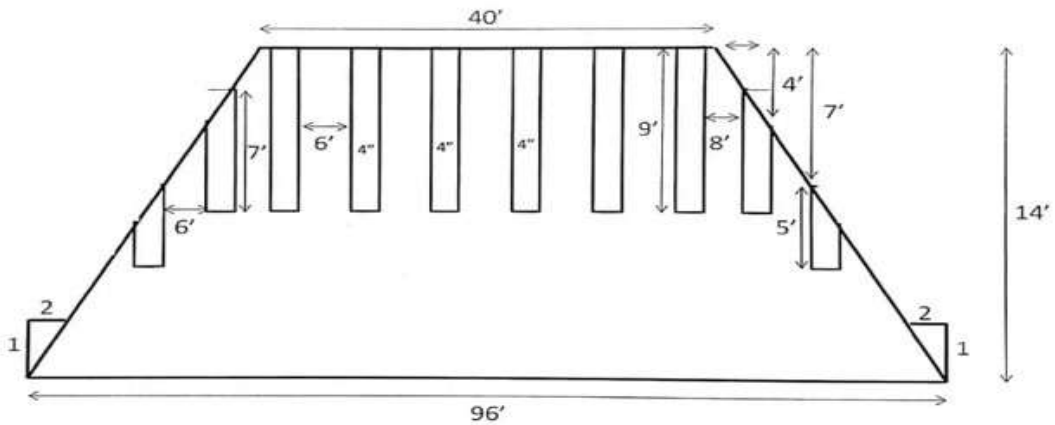
LINE PLAN – PROPOSED BREACHING SEC



RESTD

Anx-A

X- SEC OF PROPOSED BREACHING SEC



RESTD

11.4 LIST OF THE SECURITY STAFF WITH DETAIL OF THEIR TRAINING ETC

It has been explained in preceding para.

11.5 DETAIL OF MECHANICAL MEANS AS A STAND – BY ARRANGEMENTS IN CASE OF DETONATION FAILURE

At each breaching section, two (2) excavators, one (1) dozer and three (3) dumpers at Exceptionally High Flood will be arranged.

11.6 DUTY ROSTER IN CASE OF CRITICAL SITUATION

Arrangements as per duty roster will be ensured in case of critical situation. Duty roster of key personal during flood season 2026 is attached (Chapter – 9).

11.7 BREACHING COMMITTEE WITH ITS ACTION PLAN

The breaching committee was constituted in July 2015 vide Secretary, Irrigation Department Punjab, Lahore Notification No. SO (FLOOD) VI-33/97 dated 15.07.2015. The breaching section will be operated on the order of following committee:

1	Deputy Commissioner, Mianwali.	= Convener.
2	Executive Engineer, Kalabagh Headworks Division.	= Member.
3	Representative from C & W Department not below the Rank of Executive Engineer.	= Member.
4	Representative from Pakistan Army not below the Rank of Lt. Colonel.	= Member.

After receiving release information from Tarbela, only 26 hours for making necessary arrangements for operating breaching section are available. Executive Engineer Kalabagh issues warning to all concerned Departments / Agencies to become alert, vigilant and remain in contact with the committee. Before operation of Breaching Section, the explosive material placed at Sargodha would be shifted at Jinnah Barrage. Executive Engineer, Kalabagh Headworks will also convey time for operation of the breaching section through available communication system.

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

No village / abadies will be affected. Only 100 to 150-acre land will be inundated.

11.9 ANNOUNCEMENT & DETAIL OF EVACUATION ARRANGEMENTS

In case of emergency, proper announcement through speaker etc will be made to keep potential affected well informed. The evacuation will be carried by Civil Administration with the help of Army Authorities.

11.10 DETAIL OF COORDINATION WITH CIVIL / ARMY AUTHORITIES

There is a definite need to ensure good coordination with Provincial Departments for combating flood menace. Respective heads of Provincial Departments and Commanders Corps Engineers will have effective coordination on all matters relating to flood mitigation and relief measures. Provincial Departments as well as Army Authorities will be informed about various flood stages. The coordination will be carried out on telephone. The list of telephone numbers is attached in Chapter – 10.

11.11 PARALLEL COMMUNICATION ARRANGEMENT

All official vehicles will be equipped with the mobile / wireless sets. These units will help the officers while on tour to remain in touch with flood situation.

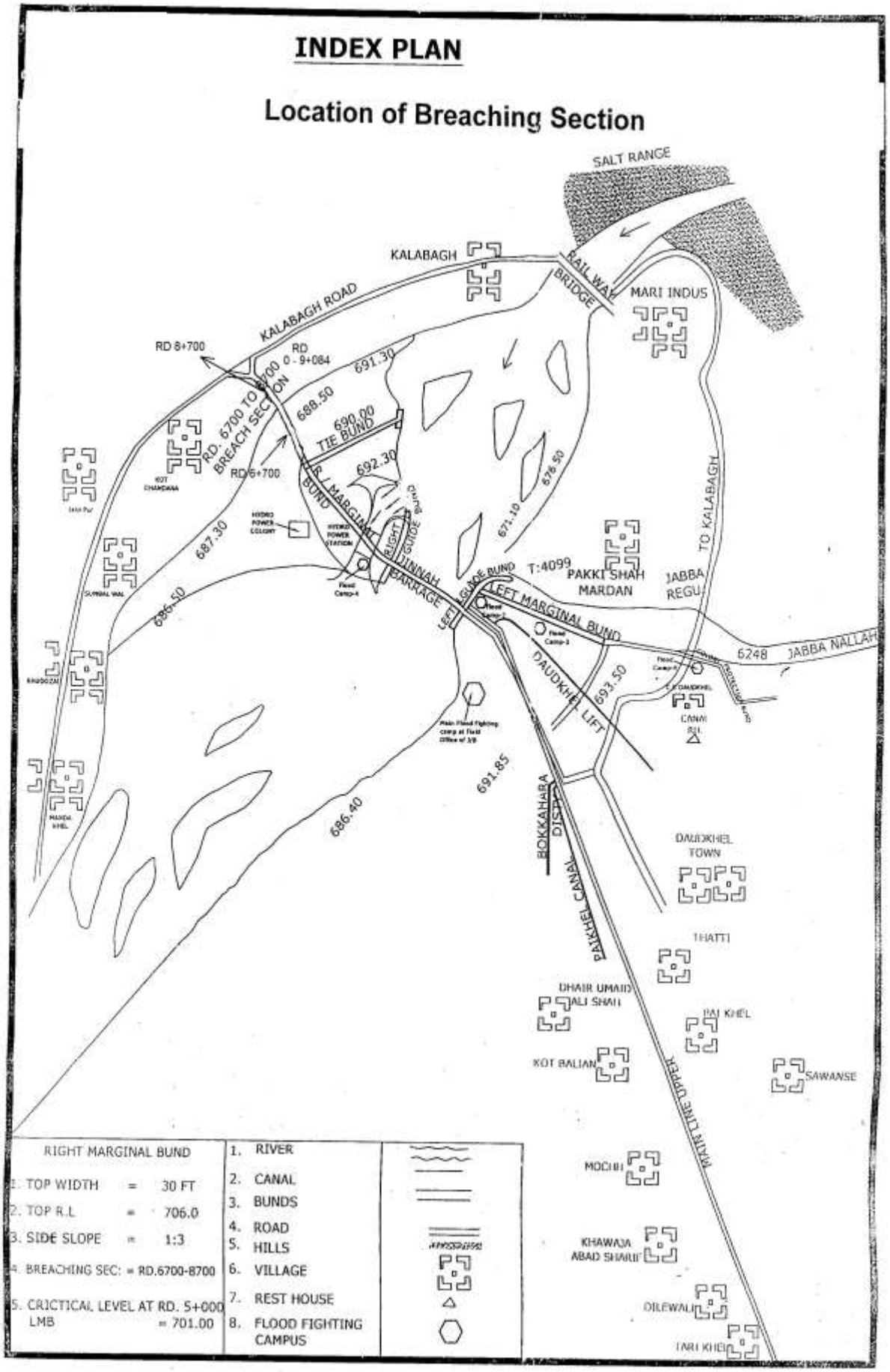
11.12 INDEX PLAN (BREACHING SECTION).

Index plan is attached at page 32.

Executive Engineer	**Superintending Engineer**	**Chief Engineer**
Kalabagh Headworks Division	Thal Canal Circle	Sargodha Irrigation Zone
Daudkhel	Mianwali	Sargodha

INDEX PLAN

Location of Breaching Section



XEN KBG

PART - B

CHAPTER-12

VULNERABLE SITES ON FLOOD BUND / STRUCTURES

12.1 APPREHENDED BREACH SITES IN FLOOD BUNDS / STRUCTURES.

Potential breach sites on different flood embankments are presented hereunder:

1. Left Guide Bund Upstream RD: 0 – 4+099.
2. Left Marginal Bund RD: 0 – 7+410.
3. Right Marginal Bund RD: 0 – 9+084.
4. Canal Colony Protection Bund RD: 0 – 11+730.

12.2 OPERATION OF BREACHING SECTION

After receiving release information from Tarbela, only 26 hours for making necessary arrangements for operating breaching section are available. Executive Engineer Kalabagh issues warning to all concerned Departments / Agencies to become alert, vigilant and remain in contact with the committee. Before operation of Breaching Section, the explosive material placed at Sargodha would be shifted at Jinnah Barrage. Executive Engineer, Kalabagh Headworks will also convey time for operation of the breaching section through available communication system.

12.3 BREACHES DUE TO RISING OF FLOOD WATER, DETERIORATION OF FLOOD BUNDS ETC.

Since its commissioning in 1946, maximum discharge ever passed through the barrage is 108,7000 recorded on 30-07-2010. Out of which, almost 937,000 cusecs passed through weirs and 150,000 cusecs through breaching section. Left Guide Bund at U/S of the Barrage breached during this event of Super Flood. It was restored during annual Closure of January, 2011 as per original design. The Breaching Section was also operated during this event to safeguard the Headworks.

CHAPTER-13

EMERGENCY CONTINGENCY PLAN FOR VULNERABLE SITES

A. EMERGENCY CONTINGENCY PLAN FOR SITE NO. 1: BREACH TO LEFT GUIDE BUND UPSTREAM RD: 0 – 4+099.

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

Route of water in case of failure of Left Guide Bund upstream is marked on the plan attached as Annex-A.

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

1 Daudkhel Town.
2 Thathi.
3 Pai Khel.
4 Dher Umaid Ali Shah.
5 Kot Belian.
6 Mooch.
7 Khawaja Abad Sharif.
8 Dillewali.
9 Tari Khel.

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

In case of breach to Left Guide Bund, water will remain in the pond area and no damage to any public property, infrastructure or inundation of agriculture land will occur. Left Marginal Bund will act as 2nd defence line in this case. If Left Guide Bund comes under unbearable stress and gives away, the following instructions will be followed.

1. Immediate arrangements will be made for closure of breach in following manner:-

   a) Watching establishment stationed at junction point of LGB and LMB will immediately move under the supervision of Sub Engineer Headworks for filling stone in trollies (stone stacked at LMB and LGB).

   b) Another group of establishment under the supervision of Sub Engineer Main Line Upper will start tree launching. For the purpose trees will be collected / cut from thick plantation existing between left bank of Thal Canal and LMB. The trees will be moved through tractor / trollies laying in stand by condition at junction of LMB and LGB.

   c) Administration of Maple Leaf Cement Factory situated 8 – Km away from Jinnah Barrage will be requested for logistic support if required *i.e* providing stone or boulders at site.

   d) At the same time nearby available Government Contractor will be engaged to enhance the resources in shape of machinery, supply of requisite material and labour at site.

   e) Labour of Kundian Sub Division and Other Sister Divisions of Irrigation Department will be called on phone.

2. Fighting on Left Marginal Bund to protect against the severe threat by tree launching, stone dumping and strengthening will also be carried out by engaging above resources.

3. Civil Administration and local Police will be requested to maintain law and order as well as to provide volunteer labour and other resources on request of Executive Engineer Kalabagh Headworks Division.

13.3.1 ARRANGEMENTS AT SENSITIVE SITES

In all vulnerable reaches / sites, a gang of 10 beldars and one mate will be made available around the clock when river rises above low flood level. And a gang of 10 beldars including 2 mates will remain vigilant at Left Guide Bund. Junction point of LMB/LGB will be focused even in low flood till the end of flood season. A reasonable quantum of machinery will be kept ready at this place throughout the flood season to combat any emergency.

Plan showing route of flood water coming out of the breach is attached **Annex: A**

13.3.2 ESTABLISHMENT OF FLOOD FIGHTING CAMPS

i. Left Guide Bund RD: 1+000

13.3.3 DUTIES OF OFFICERS / OFFICIALS AND THEIR CAMP SITES

Camp No	Location	Officer Name / Designation / Mobile No.	Official Name / Designation / Mobile No.
Camp No. 1	Left Guide Bund RD: 1+000	Muhammad Rizwan / SDO Headworks / 0344-6155669	M Naveed / SEN Headworks / 0304-5428270

13.3.4 DEPARTMENTAL MACHINERY AVAILABLE

Kalabagh Headworks Division possesses 02 number tractors with trolley & water boozer, 01 number sand bag filling machine, 01 number small crane mounted truck and 01 number mini truck. However, contractor will be hired through competitive bidding before the flood season for hiring of machinery at the vulnerable sites to counter any untoward incident.

13.3.5 MACHINERY AVAILABLE FROM PRIVATE SOURCE

The requisite machinery will be arranged locally by engaging resourceful contractor as per requirements.

13.3.6 FLOOD FIGHTING MATERIAL REQUIRED

Sr. No.	Name of Articles	Unit	Qty: Required	Qty: Available	Qty: Balance	Remarks
1	Shouldari / Tent	No.	01	-	01	Balance quantity of watching material would be purchased before the onset of flood 2026.
2	Chairs	No.	06	03	03	
3	Table	No.	01	-	01	
4	Generator (2-3 KVA)	No.	01	-	01	
5	Pedestal Fans	No.	01	-	01	
6	Charpois	No.	02	-	02	
7	Symbolic Jackets	No.	50	-	50	
8	Polythene Sheet	Kg	100	-	100	
9	Bamboos (4” dia and 10 ft long)	No.	100	-	100	
10	Water Coller	No.	01	-	01	
11	Portable umbrella	No.	02	-	02	
12	Life Jackets	No.	05	03	02	
13	Utensils (10 person serving)	No.	01	-	01	
14	Jute / Plastic bags	No.	1000	-	1000	
15	Walke Talkie set	Sets	02	-	02	
16	Raincoats	No.	10	-	10	
17	LED flood light	No.	10	-	10	
18	Extension Cable (10 ft)	No.	02	-	02	
19	Rechargeable torches	No.	20	-	20	
20	Kassi	No.	20	10	10	
21	Axes	No.	20	10	10	
22	G.I Buckets	No.	05	-	05	
23	7/44 cable	Feet	500	-	500	
24	Sutli	Kg	02	-	02	
25	Sewing Needles	No.	10	-	10	
26	Emergency Medical Kit	No.	01	-	01	
27	Wire crates (3x3x3) (at only those camp near river action and reserve stock exists)	No.	100	-	100	

13.3.7 FLOOD FIGHTING MATERIAL AVAILABLE

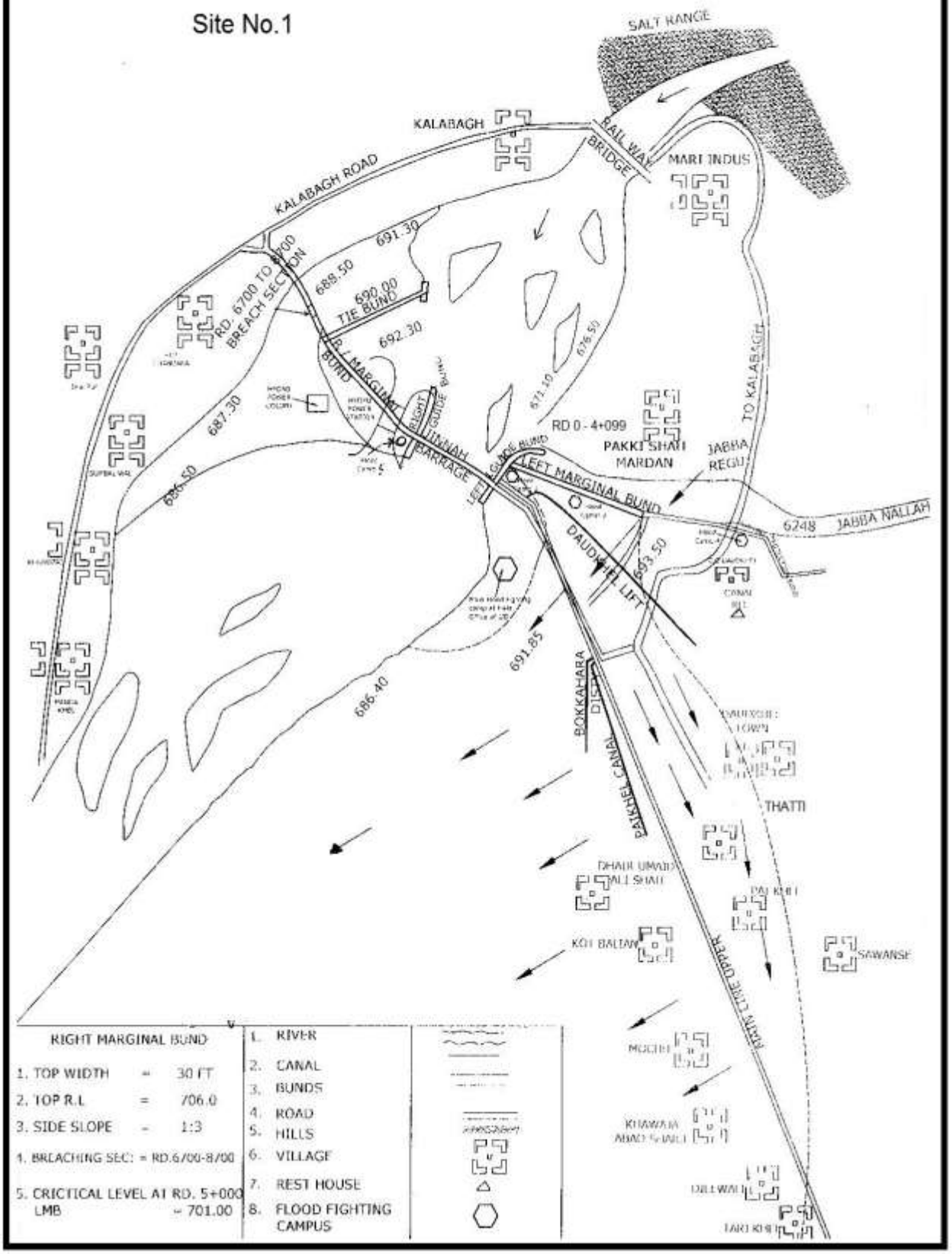
Detail of Flood Fighting Material available has already been discussed in section 13.3.6.

Annex: "A"

INDEX PLAN

SHOWING ROUTE OF FLOOD WATER AND ABADIES TO BE INUNDATED IN CASE OF FAILURE OF LEFT GUIDE BUND RD 0 -4+099

Site No.1



XEN KBG

B. EMERGENCY CONTINGENCY PLAN FOR SITE NO. 2: BREACH TO LEFT MARGINAL BUND RD: 0 – 7+410.

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

Route of water in case of failure of Left Marginal Bund is marked on the plan attached as Annex-B.

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

1. Daudkhel Town.
2. Thathi.
3. Pai Khel.
4. Dher Umaid Ali Shah.
5. Kot Belian.
6. Mooch.
7. Khawaja Abad Sharif.
8. Delewali.
9. Tari Khel.

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

Left Marginal Bund is the only defence line available to protect Thal Canal and Abadies laying on lower contour up to Mianwali. If God forbid, this embankment gives away, following instructions / steps will be followed:

1. It is a matter of fact that breach to Left Marginal Bund will put unbearable stress on left bank of Thal Canal. Therefore, in case of breach to Left Marginal Bund, Thal Canal will be closed from its Head. It will be plugged at RD: 10+800 and Canal banks will be cut between RD: 4+000 to RD: 8+000 to provide passage to flood water to enter back in the main river.

2. Immediate arrangements have to be made for closure of breach in following manner:

   a) Labour already stationed at junction point of LGB and LMB and at RD: 7+000 of LMB will immediately move under the supervision of Sub Engineer Headworks for filling stone in trollies stone stacked at LMB and D/S LGB.

   b) Another group of establishment in the supervision of Sub Engineer Main Line Upper will start tree launching. For this purpose trees will be collected / cut from thick plantation existing between left bank of Thal Canal and LMB. The trees will be moved through tractor / trollies laying in stand-by condition at junction point of LMB and LGB.

   c) Administration of Maple Leaf Cement Factory stationed at just 8 – Km from Jinnah Barrage will be requested for logistic support *i.e.* providing stone or boulders at site.

   d) At the same time, nearby available Government Contractor will be engaged to enhance the resources in shape of machinery, supply of requisite material and labour at site.

   e) Labour of Kundian Sub Division and Other sister Divisions of Irrigation Department will be called on phone.

3. Proclamation on vast scale will be made. Cable operators and T.V. channels will also be requested to facilitate the proclamation.

4. Civil Administration and local Police will be requested to maintain law and order as well as to provide volunteer labour and other resources on request of Executive Engineer Kalabagh Headworks Division.

5. Traffic on Mianwali Bannu road existing on right bank of Thal Canal between RD: 0+000 – 10+800 will be suspended and warning boards will be fixed at Kot Chandna and RD: 10+800 of Thal Canal to guide the traffic towards Kalabagh Railway Bridge.

13.3.1 ARRANGEMENTS AT SENSITIVE SITES

In all vulnerable reaches / sites such as RD: 0+000 to RD 1+000 and RD: 4+000 to 6+000 of LMB, gang of 10 beldars and one mate will be made available around the clock when river rises above low flood level. A gang of 10 beldars including 2 mates will remain vigilant at Junction point of LMB and LGB even in low flood till the end of flood season. A reasonable quantum of machinery will be kept ready at this place throughout the flood season to combat any emergency.

Plan showing route of flood water coming out of the breach is attached **Annex**: **B**

13.3.2 ESTABLISHMENT OF FLOOD FIGHTING CAMPS

i. Left Marginal Bund RD: 5+000.

13.3.3 DUTIES OF OFFICERS / OFFICIALS AND THEIR CAMP SITES

Camp No	Location	Officer Name / Designation / Mobile No.	Official Name / Designation / Mobile No.
Camp No. 1	Left Marginal Bund RD: 5+000	Muhammad Rizwan / SDO Headworks / 0344-6155669	M Naveed / SEN Headworks / 0304-5428270

13.3.4 DEPARTMENTAL MACHINERY AVAILABLE

Kalabagh Headworks Division possesses 02 number tractors with trolley & water boozer, 01 number sand bag filling machine, 01 number small crane mounted truck and 01 number mini truck. However, contractor will be hired through competitive bidding before the flood season for hiring of machinery at the vulnerable sites to counter any untoward incident.

13.3.5 MACHINERY AVAILABLE FROM PRIVATE SOURCE

The requisite machinery will be arranged locally by engaging resourceful contractor as per requirements.

13.3.6 FLOOD FIGHTING MATERIAL REQUIRED

13.3.7 FLOOD FIGHTING MATERIAL AVAILABLE

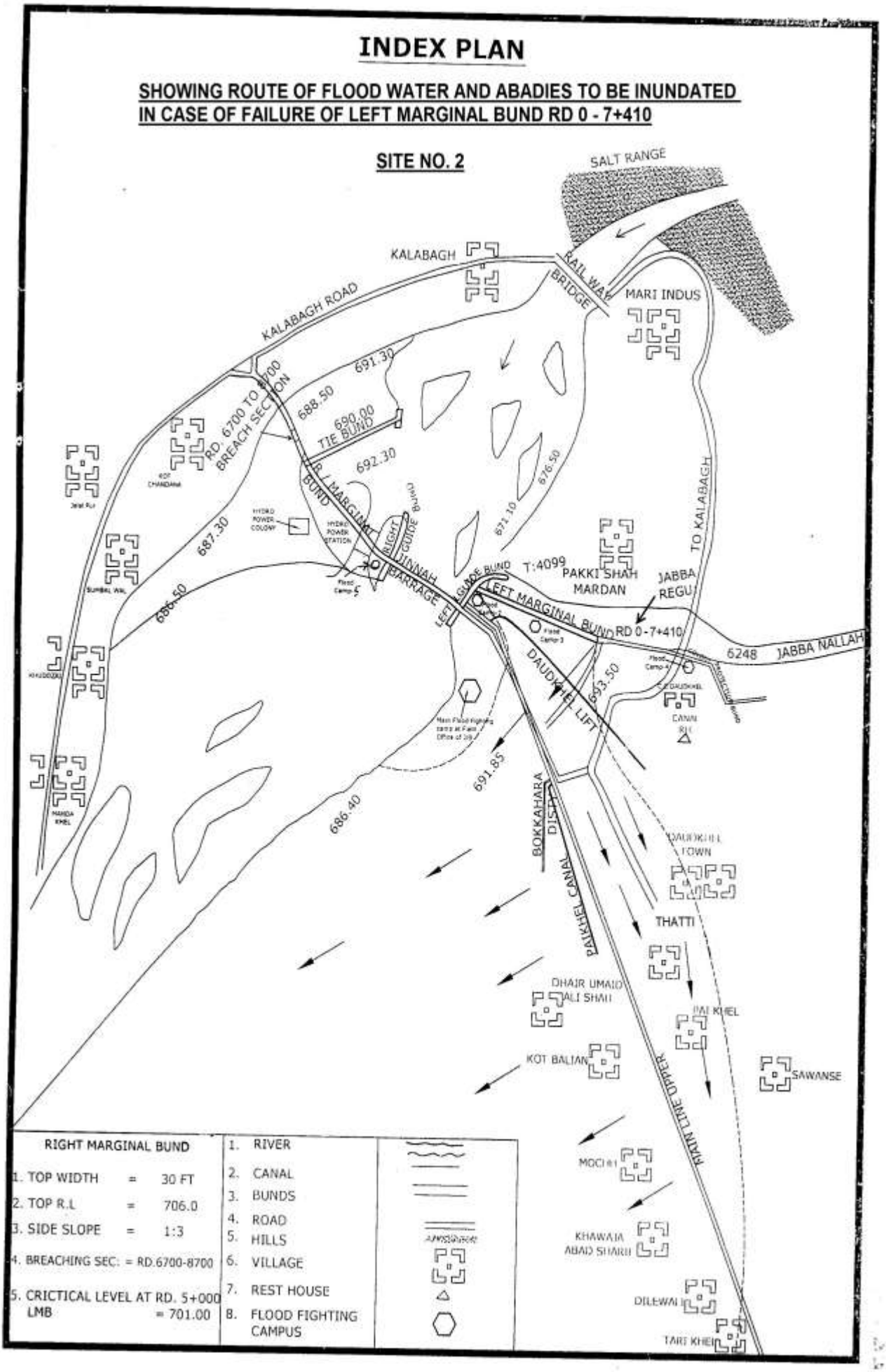
Detail of Flood Fighting Material required & available is same as discussed in Section 13.3.6 of Site A.

Annex : B

INDEX PLAN

SHOWING ROUTE OF FLOOD WATER AND ABADIES TO BE INUNDATED IN CASE OF FAILURE OF LEFT MARGINAL BUND RD 0 - 7+410

SITE NO. 2



RIGHT MARGINAL BUND		
1. TOP WIDTH	=	30 FT
2. TOP R.L	=	706.0
3. SIDE SLOPE	=	1:3
4. BREACHING SEC.	=	RD.6700-8700
5. CRICTICAL LEVEL AT RD. 5+000 LMB	=	701.00

1. RIVER
2. CANAL
3. BUNDS
4. ROAD
5. HILLS
6. VILLAGE
7. REST HOUSE
8. FLOOD FIGHTING CAMPUS

XEN KBG

C. EMERGENCY CONTINGENCY PLAN FOR SITE NO. 3: BREACH TO RIGHT MARGINAL BUND RD: 0 – 9+084.

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

Route of water in case of failure of Right Marginal Bund is marked on the plan attached as Annex-C.

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

1. Kot Chandna.
2. Sumbal Wala.
3. Khudozai.
4. Manda Khel

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

Right Marginal bund has dual function, Mianwali – Bannu road has been constructed on this marginal bund. In case of any mishap, traffic flow on Mianwali – Bannu road will be suspended. Therefore, its immediate restoration will be required and following measures will be implemented for this purpose:-

1. Closing of breach by earth filling will be managed.
2. Logistic support from Hydro Power Authorities will be requested.
3. Inform all concerned immediately to get help:

    a) SHOs of Police Station Daudkhel & Kalabagh for Law and order.
    b) Civil Administration for law and order and support in obtaining the relevant materials that are sometimes not available due to various reasons.

4. Traffic on Mianwali Bannu road existing on right bank of Thal Canal between RD: 0+000 – 10+800 will be suspended and warning boards will be fixed at Kot Chandna and RD. 10+800 of Thal Canal to guide the traffic towards Kalabagh Railway Bridge.

13.3.1 ARRANGEMENTS AT SENSITIVE SITES

In all vulnerable reaches / sites, gang of 10 beldars and one mate will be made available around the clock when river rises above low flood level. A gang of 10 beldars including 2 mates will remain vigilant at Junction point of LMB and LGB even in low flood till the end of flood season. A reasonable quantum of machinery will be kept ready at this place throughout the flood season to combat any emergency.

Plan showing route of flood water coming out of the breach is attached **Annex**: **C.**

13.3.2 ESTABLISHMENT OF FLOOD FIGHTING CAMPS

i. Right Marginal Bund RD 0+000.

13.3.3 DUTIES OF OFFICERS / OFFICIALS AND THEIR CAMP SITES

Camp No	Location	Officer Name / Designation / Mobile No.	Official Name / Designation / Mobile No.
Camp No. 1	Right Marginal Bund RD 0+000	Muhammad Rizwan / SDO Headworks / 0344-6155669	M Sarfraz / SEN Hydraulic / 0300-6079014

13.3.4 DEPARTMENTAL MACHINERY AVAILABLE

Kalabagh Headworks Division possesses 02 number tractors with trolley & water boozer, 01 number sand bag filling machine, 01 number small crane mounted truck and 01 number mini truck. However, contractor will be hired through competitive bidding before the flood season for hiring of machinery at the vulnerable sites to counter any untoward incident.

13.3.5 MACHINERY AVAILABLE FROM PRIVATE SOURCE

The requisite machinery will be arranged locally by engaging resourceful contractor as per requirements.

13.3.6 FLOOD FIGHTING MATERIAL REQUIRED

13.3.7 FLOOD FIGHTING MATERIAL AVAILABLE

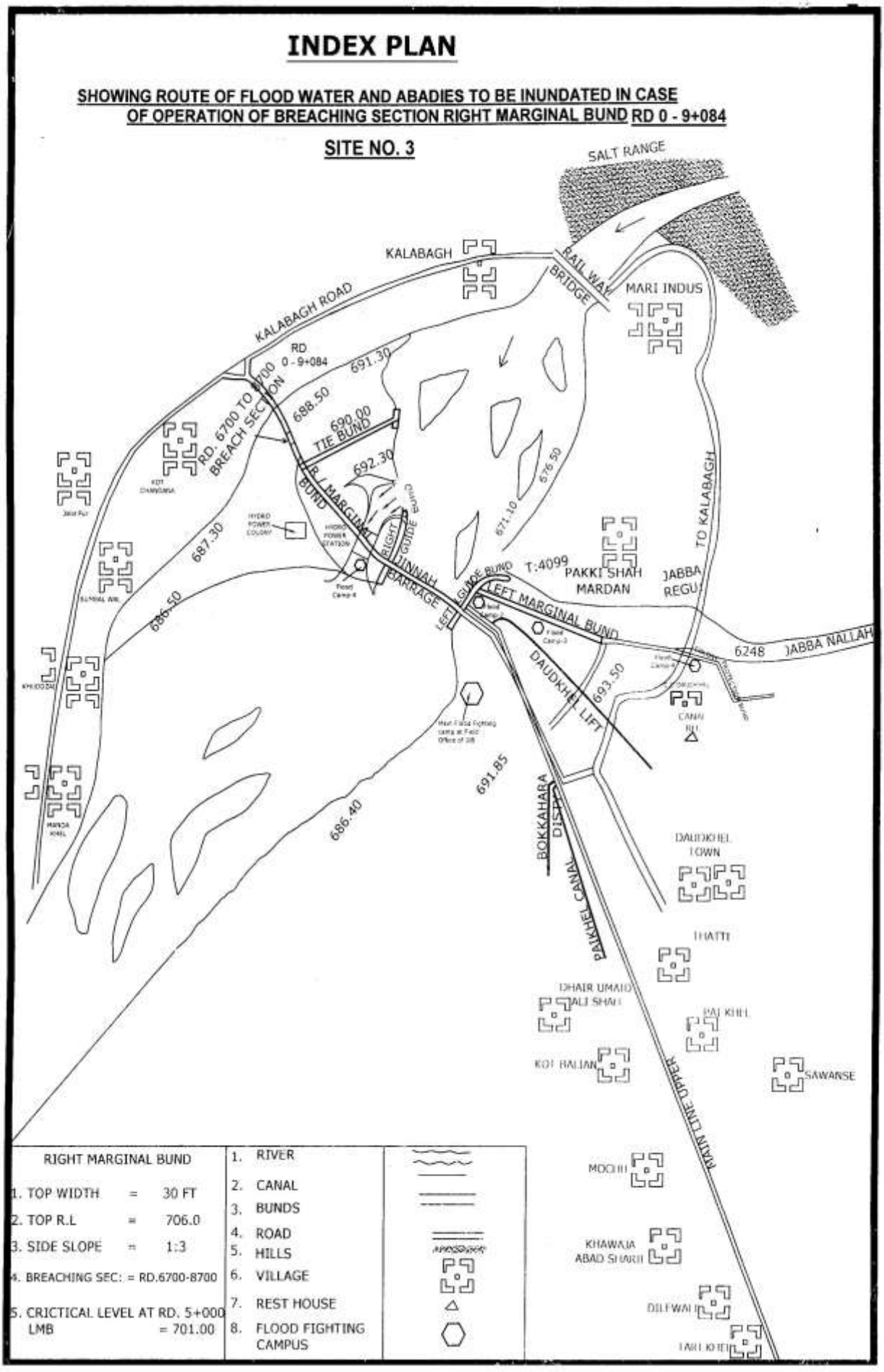
Detail of Flood Fighting Material required & available is same as discussed in Section 13.3.6 of Site A.

Annex: "C"

INDEX PLAN

SHOWING ROUTE OF FLOOD WATER AND ABADIES TO BE INUNDATED IN CASE OF OPERATION OF BREACHING SECTION RIGHT MARGINAL BUND RD 0 - 9+084

SITE NO. 3



XEN KBG

D. EMERGENCY CONTINGENCY PLAN FOR SITE NO. 4: CANAL COLONY PROTECTION BUND RD: 0 – 11+730

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

Route of water in case of failure of Canal Colony Protection Bund is marked on the plan attached as Annex-D.

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

1. Canal Colony Daudkhel Town.
2. Daudkhel Town.
3. Thathi.

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

As experienced during super flood 2010, breach to Canal Colony Protection Bund created havoc in the area. The vast area of Daudkhel town was inundated and many houses were destroyed. Moreover, Daudkhel Lift Irrigation Scheme was badly damaged. Mechanical workshop was badly hit by the breach RD 4+000 to 5+000. Keeping in view of above scenario immediate arrangements will be made for closure of breach in following manner:

1. Labour already stationed at junction point of LGB and LMB and at RD: 7+000 of LMB will immediately move under the supervision of Sub Engineer Headworks for filling earth in bags and brought to site through trollies. Killa / Bamboo bushing will also be carried out.
2. Another group of establishment in the supervision of Sub Engineer Main Line Upper will start tree launching. For this purpose, trees will be collected / cut from thick plantation existing between left bank of Thal Canal and LMB. The trees will be moved through tractor / trollies stationed at junction point of LMB and LGB.
3. At the same time some, nearby available Government Contractor will be engaged to enhance the resources in shape of machinery, supply of requisite material and labour at site. Logistic support from Hydro Power Authorities will also be requested.
4. Labour of Kundian Sub Division and Other Sister Divisions of Irrigation Department will be called on phone.
5. Proclamation on vast scale will be made. Cable operators and T.V. channels will also be requested to facilitate the proclamation.

13.3.1 ARRANGEMENTS AT SENSITIVE SITES

In all vulnerable reaches / sites such as RD: 0+000 to RD 11+730 of Colony Protection Bund, gang of 10 beldars and one mate will be made available around the clock when river rises above low flood level. A gang of 10 beldars including 2 mates will remain vigilant at Junction point of LMB and LGB even in low flood till the end of flood season. A reasonable quantum of machinery will be kept ready at this place throughout the flood season to combat any emergency.

Plan showing route of flood water coming out of the breach is attached Annex: D.

13.3.2 ESTABLISHMENT OF FLOOD FIGHTING CAMPS

i. Canal Colony Protection Bund RD: 6+500.

13.3.3 DUTIES OF OFFICERS / OFFICIALS AND THEIR CAMP SITES

Camp No	Location	Officer Name / Designation / Mobile No.	Official Name / Designation / Mobile No.
Camp No. 1	Canal Colony Protection Bund RD: 6+500.	Muhammad Rizwan / SDO Headworks / 0344-6155669	Hassan Raza / SEN Canal Colony / 0349-6586406

13.3.4 DEPARTMENTAL MACHINERY AVAILABLE

Kalabagh Headworks Division possesses 02 number tractors with trolley & water boozer, 01 number sand bag filling machine, 01 number small crane mounted truck and 01 number mini truck. However, contractor will be hired through competitive bidding before the flood season for hiring of machinery at the vulnerable sites to counter any untoward incident.

13.3.5 MACHINERY AVAILABLE FROM PRIVATE SOURCE

The requisite machinery will be arranged locally by engaging resourceful contractor as per requirements.

13.3.6 FLOOD FIGHTING MATERIAL REQUIRED

13.3.7 FLOOD FIGHTING MATERIAL AVAILABLE

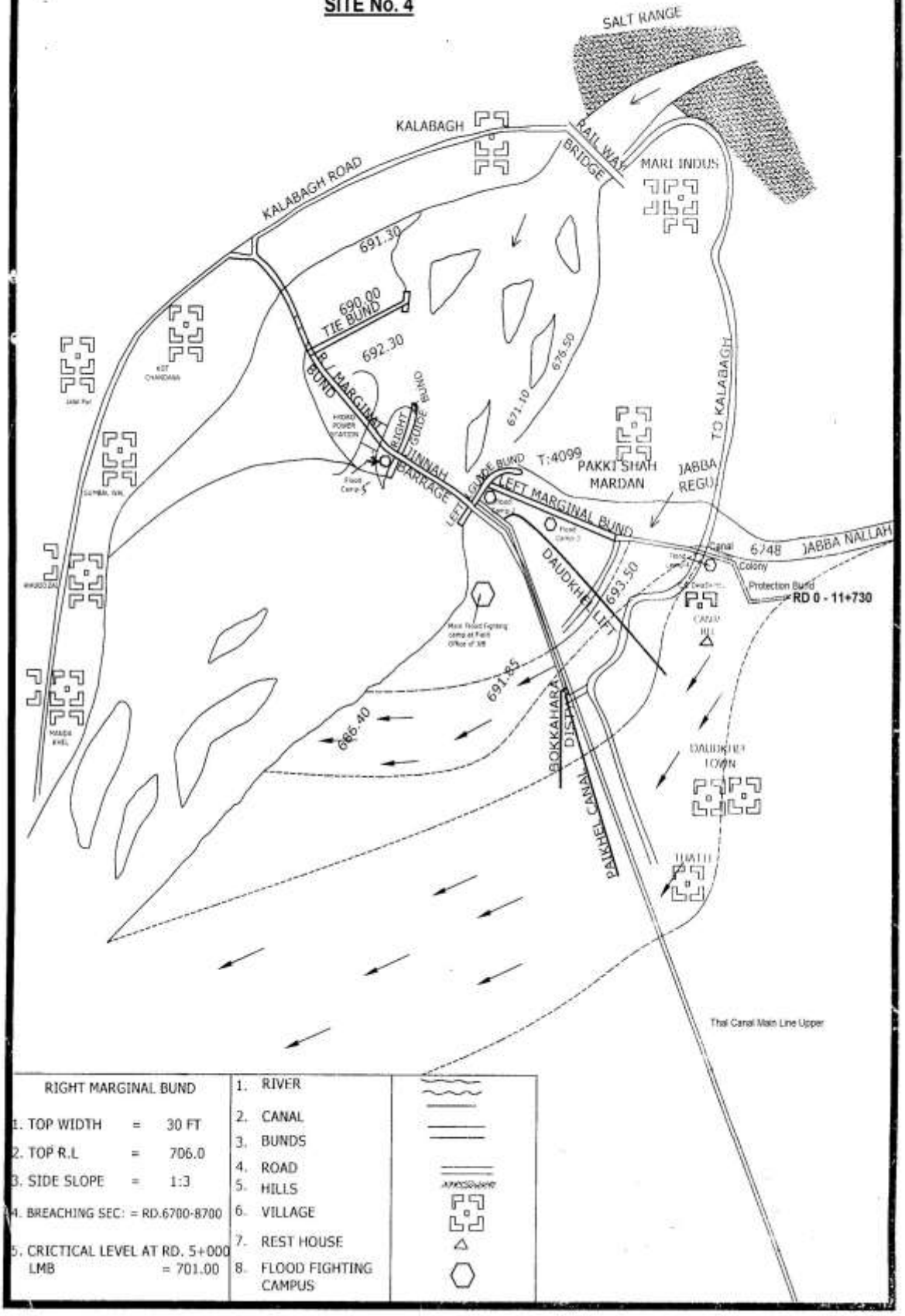
Detail of Flood Fighting Material required & available is same as discussed in Section 13.3.6 of Site A.

Annex: "D"

INDEX PLAN

SHOWING ROUTE OF FLOOD WATER AND ABADIES TO BE INUNDATED IN CASE OF BREACH OF CANAL COLONY PROTECTION BUND DAUDKHEL RD 0 - 11+730

SITE No. 4



RIGHT MARGINAL BUND		
1. TOP WIDTH	=	30 FT
2. TOP R.L	=	706.0
3. SIDE SLOPE	=	1:3
4. BREACHING SEC:	=	RD.6700-8700
5. CRICTICAL LEVEL AT RD. 5+000 LMB	=	701.00

1. RIVER
2. CANAL
3. BUNDS
4. ROAD
5. HILLS
6. VILLAGE
7. REST HOUSE
8. FLOOD FIGHTING CAMPUS

XEN KBG

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

a. IN CASE OF FAILURE OF LEFT GUIDE BUND AND LEFT MARGINAL BUND FOLLOWING INFRASTRUCTURES WILL BE EFFECTED.

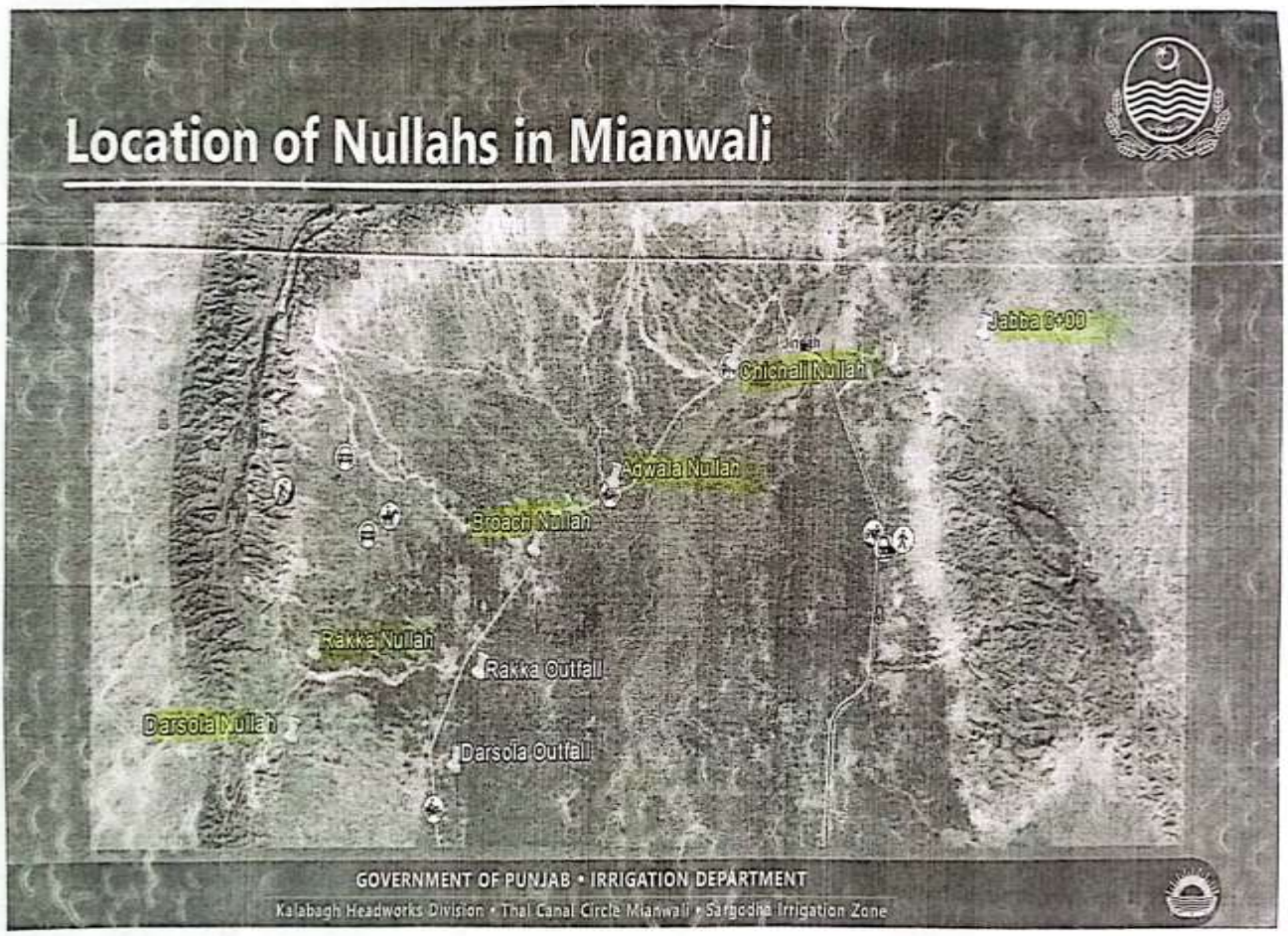
i. Canal Colony Daudkhel.
ii. Mianwali - Bannu Road up to Jinnah Barrage.
iii. Mechanical workshop Daudkhel.
iv. Thal Canal Main Line Upper RD: 0+000 to 10+000.
v. Daudkhel Lift Irrigation Scheme i/c Pump Houses etc.
vi. Bokhara Disty.
vii. Right Paikhel Canal.
viii. Rural Health Centre Thathi.
ix. Water Supply Scheme Daudkhel.
x. Water Supply Scheme Thathi.

b. IN CASE OF OPERATION OF BREACHING SECTION ON RIGHT MARGINAL BUND FOLLOWING INFRASTRUCTURE WILL BE EFFECTED.

i. Mianwali - Bannu road near Kot Chandna.

c. IN CASE OF FAILURE OF CANAL COLONY PROTECTION BUND FOLLOWING INFRASTRUCTURE WILL BE EFFECTED.

i. Canal Colony Daudkhel.
ii. Mechanical workshop Daudkhel.
iii. Daudkhel Lift Irrigation Scheme i/c Pump Houses etc.
iv. Water Supply Scheme Daudkhel.
v. Mianwali – Bannu road and internal roads of Daudkhel.



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CHAPTER-14

ACTION PLAN

14.1 RESHIFTING / RECOUPING PLAN OF RESERVE STONE DEPARTMENTALLY.

Sanction limit of reserve stone stock at Jinnah Barrage is 7.90 Lac Cft:. Reserve stock purchased in 2017-18 and now available quantity is 7.524 Lac Cft. Structure wise detail is given in Chapter No. 7 at 7.3. Sufficient quantity of stone is available and no shuffling of stone is required.

14.2 DETAIL OF INLET AND OUTLET CROSSING ALONG WITH CLOSING METHODOLOGY.

There is no such crossing in the jurisdiction of Kalabagh Headworks Division Daudkhel.

14.3 DEPLOYMENT OF MACHINERY (NORMAL TO LOW FLOOD).

Sr. No.	Structure Name	Length (Miles)	Excavators	Trolleys	Dumpers	Tractor with Front blade
1	Colony Protection Bund RD 0+000 to RD 11+730	2.35	S.E shall allow deputation of one (1) excavator & four (4) Trolleys during low flood at camps/vulnerable points & LMB / RMB.		-	-
2	LGB (U/S) RD: 0+000 to 4+099	0.82			-	-
3	LGB (D/S) RD: 0+000 to 1+522	0.3			-	-
4	RGB (U/S) RD: 0+000 to 1+761	0.35			-	-
5	RGB (D/S) RD: 0+000 to 1+957	0.39			-	-
6	RMB RD: 0+000 to 9+084	1.82			-	-
7	LMB RD: 0+000 to 7+410	1.48			-	-
Total					-	-

Note: For this stage, the machinery will be deployed after approval from Superintending Engineer

14.4 DEPLOYMENT OF MACHINERY (MEDIUM TO HIGH FLOOD).

Sr. No.	Structure Name	Length (Miles)	Excavators	Trolleys	Dumpers	Tractor with Front blade
			1 per 7 mile reach	4 per 7 mile reach	2 per 7 mile reach	1 per 7 mile reach
1	Colony Protection Bund RD 0+000 to RD 11+730	2.35	1	2	1	1
2	LGB (U/S) RD: 0+000 to 4+099	0.82				
3	LGB (D/S) RD: 0+000 to 1+522	0.3				
4	LMB RD: 0+000 to 7+410	1.48				
5	RGB (U/S) RD: 0+000 to 1+761	0.35	1	2	1	1
6	RGB (D/S) RD: 0+000 to 1+957	0.39				
7	RMB RD: 0+000 to 9+084	1.82				
Total			**2**	**4**	**2**	**2**

14.5 DEPLOYMENT OF MACHINERY (VERY TO EXCEPTIONALLY HIGH FLOOD).

Sr. No.	Structure Name	Length (Miles)	Excavators		Trolleys	Dumpers	Tractor with Front blade	
			Very High Flood	Exp. High Flood	4 per 5 mile reach	2 per 5 mile reach	Very High Flood	Exp. High Flood
			1 per 5 mile reach	2 per 5 mile reach			1 per 5 mile reach	2 per 5 mile reach
1	Colony Protection Bund RD 0+000 to RD 11+730	2.35	1	2	3	2	1	2
2	LGB (U/S) RD: 0+000 to 4+099	0.82						
3	LGB (D/S) RD: 0+000 to 1+522	0.3						
4	LMB RD: 0+000 to 7+410	1.48						
5	RGB (U/S) RD: 0+000 to 1+761	0.35	1	2	3	2	1	2
6	RGB (D/S) RD: 0+000 to 1+957	0.39						
7	RMB RD: 0+000 to 9+084	1.82						
Total			**2**	**4**	**6**	**4**	**2**	**4**

14.6 POLICE DEPLOYMENT PLAN.

S. No.	Name of Site.	Concerned Police Station & District.	Police personal to be deployed.
1	Breaching Section of Right Marginal Bund of Jinnah Barrage.	Kalabagh District Mianwali	Inspector = 1 No. SI = 1 No. ASI = 2 No. Constable = 12 No.
2	Jinnah Barrage.	Kalabagh District Mianwali	Inspector = 1 No. SI = 1 No. ASI = 2 No. Constable = 12 No.
3	Vulnerable sites used for illegal cuts during flood.	There is no such site in the jurisdiction of Kalabagh Headworks Division Daudkhel.	
4	Traffic Police if required for smooth traffic flow at Jinnah Barrage during flood.	ASI = 1 No. Head Constable = 1 No. ASI = 2 No. Constable = 12 No.	

14.7 DETAIL OF SYNTHETIC BAGS WITH CAPACITY OF 50 KG AND 100 KG.

S. No.	Capacity of bags.	Required Quantity	Available Quantity	Remarks
1	Synthetic bags 50 Kg.	2000 No.	-	This will be procured before flood season 2026.
2	Synthetic bags 100 Kg.	1500 No.	-	This will be procured before flood season 2026.

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

S. No.	Description.	Required Quantity	Available Quantity	Remarks
1	Polythene Sheets of Black Color.	2500 Sft.	-	This will be procured before flood season 2026.

14.9 ANY OTHER DETAILS AS PER SOPS APPROVED BY THE ADMINISTRATIVE DEPARTMENT

SOPs shared vide No.SO(FLOODS)VII-22/2017 DATED 26-12-2025 shall be strictly followed.

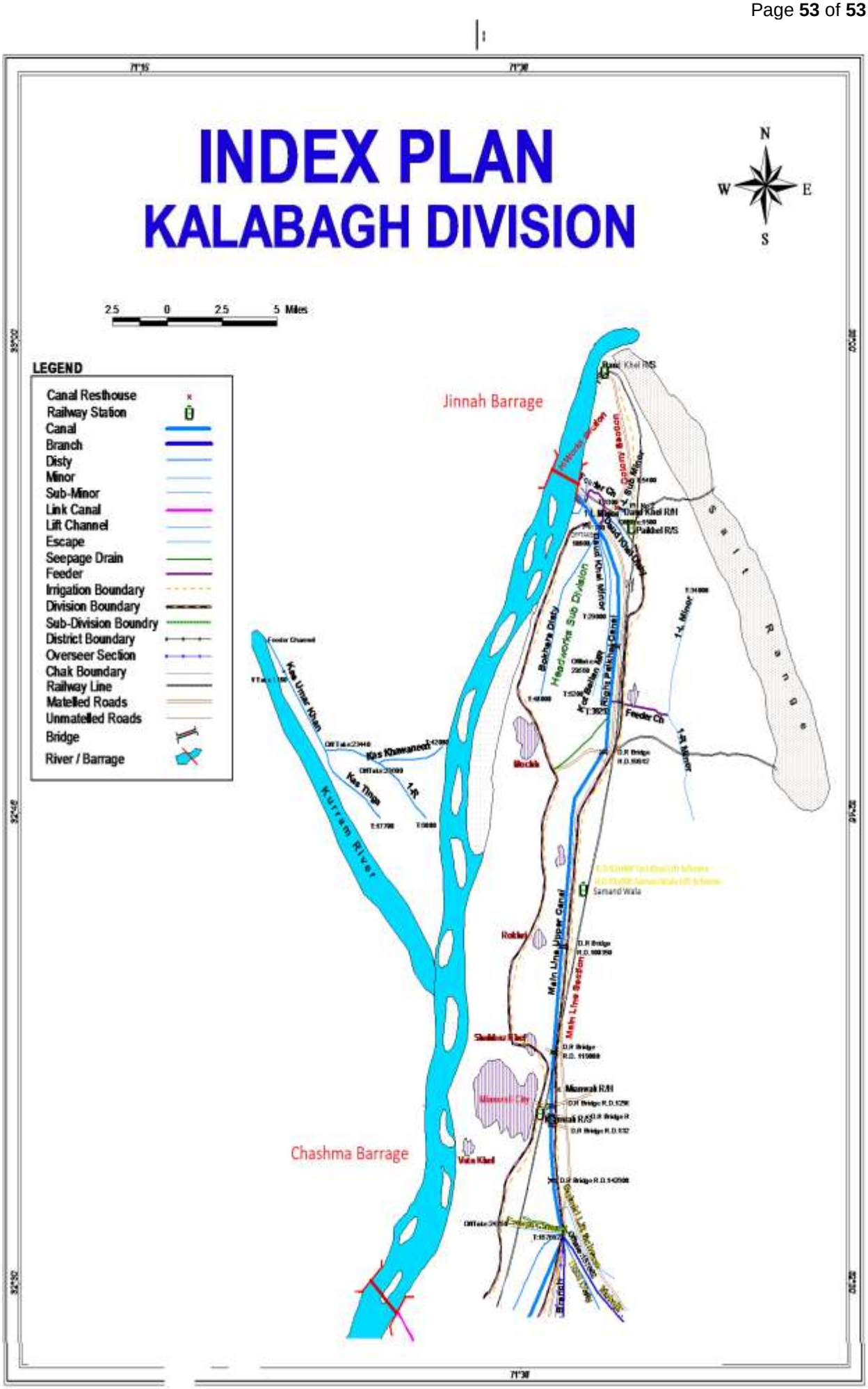
XEN KBG

CHAPTER-15

BACK UP DIVISIONS (IN CASE OF BREACH)

In case of an emergency, Mianwali Canal Division Mianwali of Thal Canal Circle Mianwali will be back-up Division.

Executive Engineer	**Superintending Engineer**	**Chief Engineer**
Kalabagh Headworks Division	Thal Canal Circle	Sargodha Irrigation Zone
Daudkhel	Mianwali	Sargodha


INDEX PLAN
KALABAGH DIVISION
N
W
E
S
2.5 0 2.5 5 Miles
LEGEND
Canal Resthouse
Railway Station
Canal
Branch
Disty
Minor
Sub-Minor
Link Canal
Lift Channel
Escape
Seepage Drain
Feeder
Irrigation Boundary
Division Boundary
Sub-Division Boundry
District Boundary
Overseer Section
Chak Boundary
Railway Line
Matelled Roads
Unmatelled Roads
Bridge
River / Barrage
Jinnah Barrage
Chashma Barrage
Kurram River
Main Line Upper Canal
Main Line Section
Kas Khawaneen
Kas Tinga
Kas Umar Khan
Feeder Ch
Samand Wala
Mianwali City
Mianwali R/S
Daud Khel R/S
Paikhel R/S
Bolchara Disty
Head Works Sub Division
Right Parking Canal
Salt Range