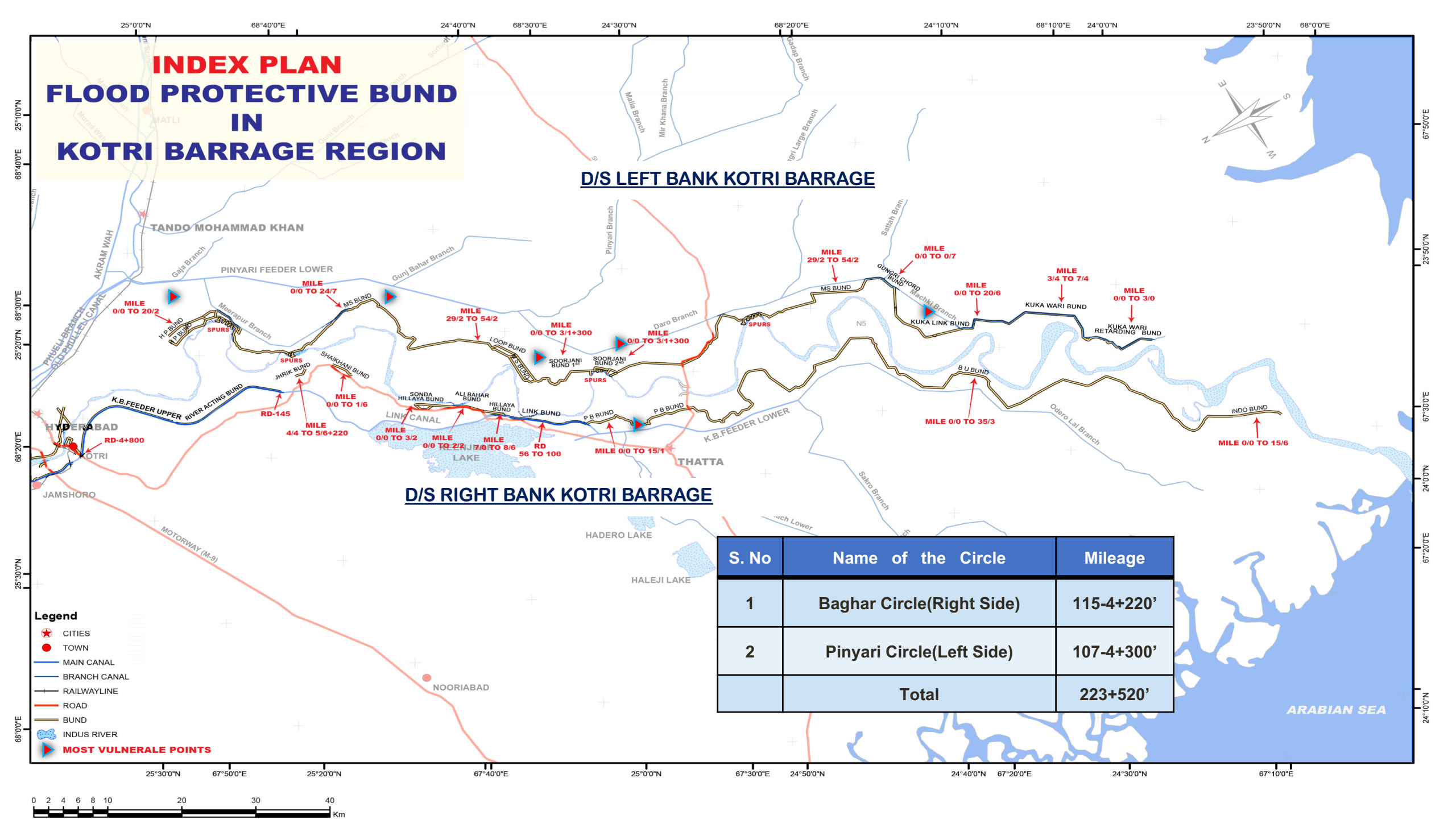
IRRIGATION DEPARTMENT
GOVERNMENT OF SINDH

# CONTINGENCY PLAN-2024

## KOTRI BARRAGE REGION HYDERABAD




| S. No | Name of the Circle | Mileage |
|---|---|---|
| 1 | Baghar Circle(Right Side) | 115-4+220’ |
| 2 | Pinyari Circle(Left Side) | 107-4+300’ |
| | Total | 223+520’ |

# INTRODUCTION

- **Kotri Barrage is situated in the tail of River Indus.**
- **So in the lowest riparian.**
- **Flattest gradient.**
- **The duration of High Flood on the Bunds under Kotri Barrage command is therefore longer as compared to upper reach Bunds in the country.**

| S. No | Name of the Circle | Mileage |
|---|---|---|
| 1 | Baghar Circle(Right Side) | 115-4+220’ |
| 2 | Pinyari Circle(Left Side) | 107-4+300’ |
| | Total | 223+520’ |

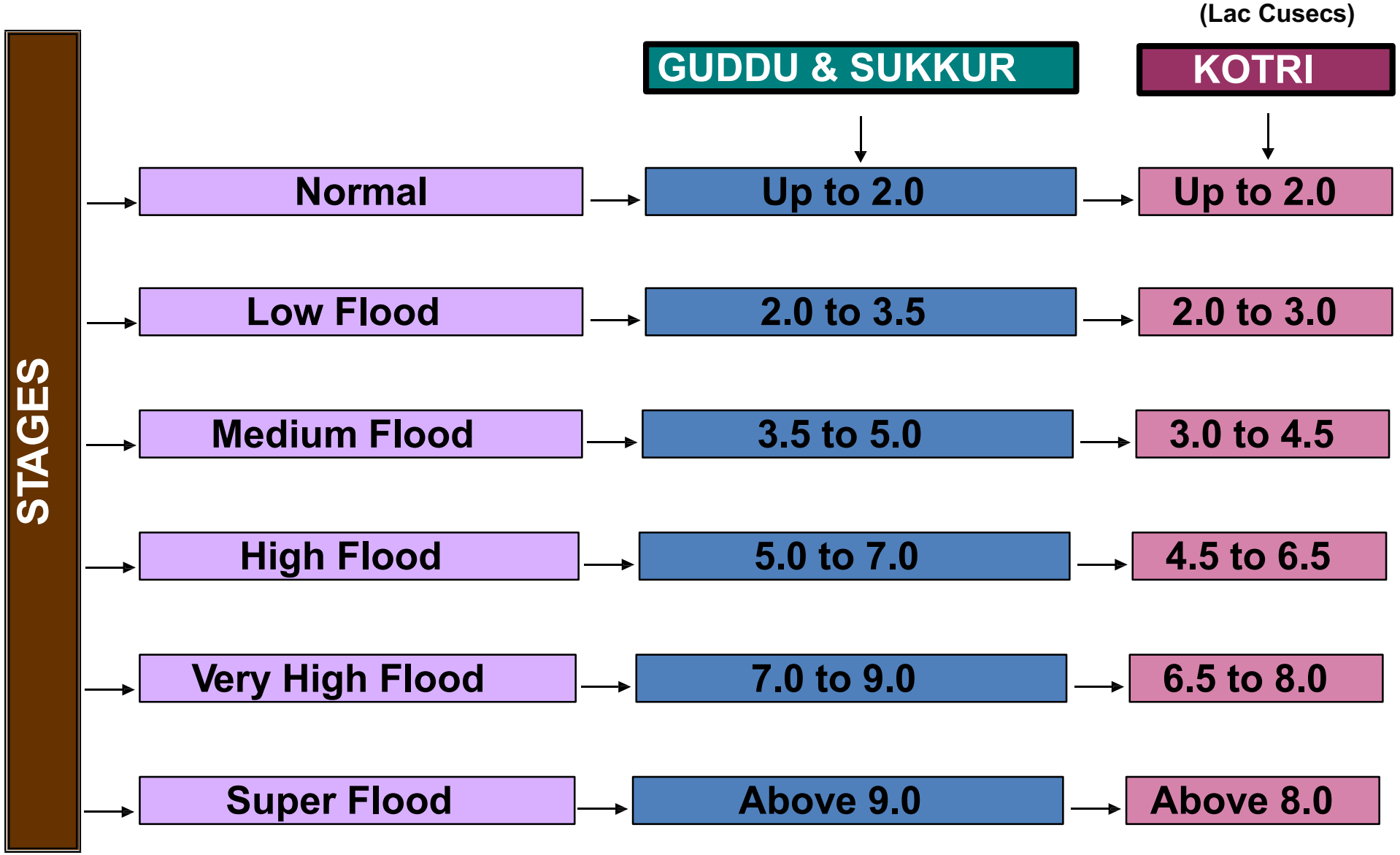
## ❖ DURING FLOOD 2023

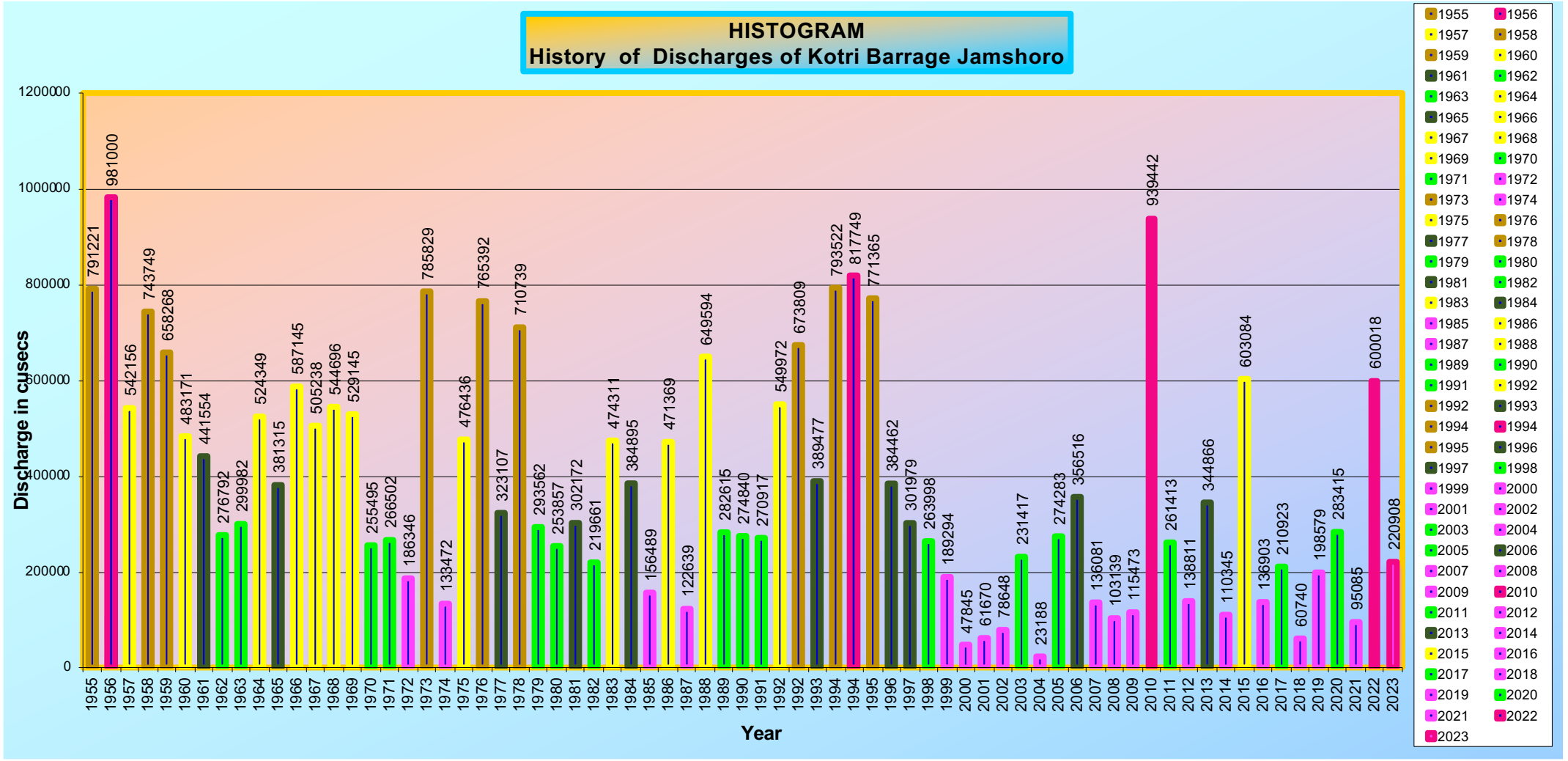
- During the year 2023 the maximum ***peak discharge of Down Stream Kotri Barrage was recorded 220908 cusecs***

# SALIENT FEATURES OF KOTRI BARRAGE

| | |
|---|---|
| • Barrage Construction Started | January 1950 |
| • Barrage Completed /Commissioned | March 1955 |
| • Designed Discharge of Barrage | 8,75,000 Cusecs |
| • Highest Flood passed in 1956 | 9,81,000 Cusecs |
| • Highest Flood passed in 2010 | 9,64,897 Cusecs |
| • Length of Barrage between abutments | 2,984 Feet |
| • Gates of Main Barrage | 44 Nos. |
| • Width of each Span | 60 feet |
| • Height of Barrage Gates | 23 feet |

# Flood Stages in Sindh






| | | | | | |
|---|---|---|---|---|---|
| Super Flood | 3 time | | Medium Flood | 10 time | |
| V. High Flood | 9 time | | Low Flood | 16 time | |
| High Flood | 14 time | | Normal | 19 time | |

# DETAILS OF BUNDS, LOOP BUNDS & SPUR

# DETAILS OF BUNDS, LOOP BUNDS & SPUR

## BAGHAR CIRCLE HYDERABAD

| S/N | District | Name of Main Bund | 1st Line | Name of Loop Bund | 2nd Line | Spurs |
|---|---|---|---|---|---|---|
| | KALRI BAGHAR DIVISION THATTA | | | | | |
| 1 | Thatta | Left Bank K.B Feeder Upper RD 4 to 135 (Acting River Bund) | 26-0 | Sonda Loop, Behind S.H. Bund, mile 0/0 to 1/6. | 1-6 | -- |
| 2 | Thatta | Jherruck Bund Mile 0/0 to 5/6+220. | 5-6+220 | Sonda Loop No.1, Behind S.H. Bund, mile 1/2 to 3/0. | 1-7 | -- |
| 3 | Thatta | Shaikhani Bund Mile 0/0 to 1/6. | 1-6 | Sonda Loop No.2 Behind S.H Bund, Mile 2/6 to 3/2. | 0-4 | -- |
| 4 | Thatta | Sonda Hillaya Bund Mile 0/0 to 3/2 | 3-2 | Hillaya Loop Behind S.H Bund, mile 7/0 to 7/5. | 0-6 | -- |
| 5 | Thatta | Ali Bahar Bund Mile 0/0 to 2/2 | 2-2 | Link Canal Loop Bund from RD 56 to 65 | 1-7 | -- |
| 6 | Thatta | Sonda Hillaya Bund Mile 7/0 to 8/6 | 1-6 | Retarded Mangli Behind B.U Bund, Mile 15/3 to 16/3. | 1-1 | -- |
| 7 | Thatta | Link Bund from RD 56 to 100 | 8-4 | Delaying action Mangli with Trench Below B.U. Bund, mile 33/4 to 34/1. | 0-3 | -- |
| 8 | Thatta | Panna Baghar Bund mile 0/0 to 15/1 | 15-1 | Orderolal Loop Bund Behind B.U Bund, mile 24/0 to 0/4 of Indo Bund. | 2-0 | -- |
| 9 | Thatta | Baghar Uchito Bund Mile 0/0 to 10/0 | 10-0 | - | | -- |
| | | Total K.B.Thatta: | 74-3+22 | | 10-2 | |
| | SAKRO DIVISION MIRPURSAKRO | | | | | |
| | Thatta | Baghar Uchito Bund Mile 10/0 to 35/3 | 25-3 | - | | -- |
| 10 | Thatta | Indo Bund Mile 0/0 to 15/6 | 15-6 | - | | -- |
| | | Total Sakro Division: | 41-1 | | - | |
| | | Grand Total Baghar Circle: | 115-4 | | 10-2 | |

# DETAILS OF BUNDS, LOOP BUNDS & SPUR

## PINYARI CIRCLE HYDERABAD

| Sr# | District | Name of Main Bund | 1st Line | Name of Loop Bund | 2nd Line | Spurs |
|---|---|---|---|---|---|---|
| | UPPER PINYARI DIVISION HYDERABAD | | | | | |
| 1 | T.M.Khan | Hajipur Bund Mile 0/0 to 20/2 | 20-2 | 1st Mile Loop Bund Mile 0/0 to 2/6. | 2-6 | 4 Nos Spurs. (2 T Spurs and J Spurs) 07 Nos Studs |
| 2 | T.M.Khan | | - | Jones Wah Cross Bund Mile 0/0 to 0/6. | 0-6 | |
| 3 | T.M.Khan | | - | Wasi Loop Bund Mile 0/0 to 1/6. | 1-6 | |
| 4 | T.M.Khan | | - | Wasi Cross Bund Mile 0/0 to 0/6. | 0-6 | |
| 5 | T.M.Khan | | - | Wasing Wah Bund Mile 0/0 to 0/6. | 0-6 | |
| 6 | T.M.Khan | | - | Katiar Loop Bund Mile 0/0 to 3/1. | 3-1 | |
| 7 | T.M.Khan | | - | Miranpur Loop Bund Mile 0/0 to 1/3 | 1-3 | |
| 8 | T.M.Khan | | - | 8th Mile Loop Bund Mile 0/0 to 2/2. | 2-0 | |
| 9 | T.M.Khan | | - | 12th Mile Loop Bund Mile 0/0 to 5/1. | 5-1 | |
| 10 | T.M. Khan | | - | Budhka Cross Bund Mile 0/0 to 0/6. | 0-6 | |
| 11 | Sujawal | M.S Bund Mile 0/0 to 24/7 | 24-7 | 2nd Kot Almo Bund Mile 0/0 to 3/2. | 3-2 | -- |
| 12 | Sujawal | | | Bano Wakri Bund Mile 0/0 to 1/5. | 1-5 | -- |
| 13 | Sujawal | | | Ranto Loop Bund Mile 0/0 to 2/3. | 0-7 | -- |
| 14 | Sujawal | | | New Loop Bund Mile 0/0 to 2/3. | 2-3 | -- |
| | | Total UPD: | 45-1 | | 26-4 | |

# DETAILS OF BUNDS, LOOP BUNDS & SPUR

PINYARI CIRCLE HYDERABAD

| S/No | District | Name of Main Bund | 1st Line | Name of Loop Bund | 2nd Line | Spurs |
|---|---|---|---|---|---|---|
| | LOWER PINYARI DIVISION SUJAWAL | | | | | |
| 15 | Sujawal | 1st Surjani Bund Mile 0/0 to 3/1+300 | 3-1+300 | - | - | 05 Nos. |
| 16 | Sujawal | 2nd Surjani Bund Mile 0/0 to 1/5 | 1-5 | - | - | - |
| 17 | Sujawal | M.S Bund Mile 29/2 to 58/2. | 29-0 | - | - | - |
| 18 | Sujawal | Gungri Chord Bund Mile 0/0 to 0/7. | 0-7 | - | - | - |
| 19 | Sujawal | Kuka Link Bund Mile 0/0 to 20/6. | 20-6 | - | - | - |
| 20 | Sujawal | Kuka Wari Bund Mile 3/4 to 7/4. | 4-0 | - | - | - |
| 21 | Sujawal | Kuka Wari Retarding Bund Mile 0/0 to 3/0 | 3-0 | - | - | - |
| | | Total LPD: | 62-3+300 | | 26-4 | 05 Nos. |
| | | Grand Total Pinyari Circle: | 107-4+300 | | 26-4 | 09 Nos. |
| | | Grand Total of Kotri Barrage Region: | 223+520 | | 36-6+300 | |
| | | Net Total of Main Bund & Loop Bund: | 259-7+160 Mile | | | |

# VULNERALBE POINTS
# IN KOTRI BARRAGE REGION.

# BAGHAR CIRCLE

**There are 12 designated points and one is the most important vulnerable point at serial No.10.**

| S.No. | Name of Bund | District | Location Mile | Reason | Condition |
|---|---|---|---|---|---|
| 1. | Left Bank KBF Upper Nai Baran Super passage | Jamshoro & Thatta | RD.90 of KBF. Upper | Under direct hit of hill torrents | Satisfactory |
| 2. | Left Bank of KBF Upper | Thatta | RD.107 to 118 | Active erosion in front of KBF Upper | Satisfactory |
| 3. | Link Canal Bund | Thatta | RD.65 to 90 | Wave wash erosion site | Satisfactory |
| 4. | Sonda Hillaya Bund | Thatta | Mile 1/3 – 1/7 | Erosion site | Satisfactory |
| 5. | Sonda Hillaya Bund | Thatta | Mile 2/1 to 3/2 | Under heavy wave3 wash erosion site | Satisfactory |
| 6. | Ali Bahar Bund | Thatta | Mile 0/0 to 0/5 | Active erosion site | Satisfactory |
| 7. | Doolah Bridge (Thatta Sujawal Road Bridge). | Thatta | Left Guide Bund | Due to change of the River course erosion site occurs at this point | Satisfactory |
| 8. | P.B Bund | Thatta | Mile 13/4 | Old Breach site | Satisfactory |
| 9. | P.B Bund | Thatta | Mile 0/3 | Due to collapse of Mangli | Satisfactory |
| 10. | P.B Bund | Thatta | Mile 4/6 | Breach site occurred due to abrupt rise of river flow in year 2010. | Satisfactory |
| 11. | B.U Bund | Thatta | Mile 14/7 to 16/2 | Severe erosion site | Satisfactory |
| 12. | B.U Bund & Indo Bund | Thatta | Mile 34/2 to 35/3 & Mile 0/0 to 1/6 | Severe erosion site. | Satisfactory |

# PINYARI CIRCLE

**There are 16 designated points and three are the most important vulnerable point at serial No. 2, 8, 9,12 & 16.**

| S/No | Name of Bunds | District | Location Miles | Reasons | Condition |
|---|---|---|---|---|---|
| 1 | Hajipur | T.M Khan | 0/0 to 0/5 | Treacherous soil, River main current is following very closed to bund. | Satisfactory |
| 2 | Hajipur | T.M Khan | 3/7 | Treacherous soil, River is flowing very near and bund is under direct hit of River there is old Bund sluice. | Satisfactory |
| 3 | Hajipur | T.M Khan | 6/0 to 6/6 | River is flowing along the bund & there is old bund sluice. | do |
| 4 | Hajipur | T.M Khan | 6/2 to 8/4 | River is flowing along the bund & there is old bund sluice. | do |
| 5 | Hajipur | T.M Khan | 12/4 to 13/5 | River hit direct to the Bhudhka point (Nose Point) | do |
| 6 | M.S Bund | Sujawal | 3/2 | Escape regulator, hence weak point. | do |
| 7 | M.S Bund | Sujawal | 5/7 | Treacherous soil | do |
| 8 | M.S Bund | Sujawal | 18/3 | Serious erosion, due to heavy wave wash. (Breach site 2010) | Satisfactory |
| 9 | 1st Surjani Bund | Sujawal | 0/0 to 1/5 | Bund is under direct hit of River main current | Satisfactory |
| 10 | 2nd Surjani Bund | Sujawal | 0/0 to 1/5 | River flowing along bund which is under direct hit of River current. | do |
| 11 | M.S Bund | Sujawal | 42/5 to 44/3 | 1. River flowing along faced during 2005 & 2006.<br>2. River diverts its course towards right side the work providing stone apron and pitching were carried out and intact. | do |
| 12 | M.S Bund | Sujawal | 43/5 to 44/0+200 | Munarki Bund was collapsed after passing heavy flood at mile 44/1+200 and there was no damage to public property because water was not flanked out. Restoration work has been Completed at site | Satisfactory |
| 13 | Gungri chord Bund | Sujawal | 0/0 to 0/7 | The River is active at this point. | do |
| 14 | Kuka Link Bund | Sujawal | 6/0 to 7/0 | Heavy wave wash & sea is near to this point. | do |
| 15 | KUka Link Bund | Sujawal | 9/4 to 20/6 | Heavy wave wash & sea is near it. | do |
| 16 | Kuka Link Retarded Bund | Sujawal | 0/0 to 3/0 | The bund is not as per specification and there is great wave wash. | Satisfactory |

# MOST VULNERABLE POINTS

| S/N | Name of Bunds | District | Location Miles | Reasons | Condition |
|---|---|---|---|---|---|
| 1 | Hajipur | T.M Khan | 3/7 | • Down stream of this Bund river passing a very narrow gorge of Jehhark & total bund to bund distance is only one Mile.<br>• High difference between H.F.L & G.L i-e 26` Mile 8th.<br>• Treacherous soil.<br>• River is flowing very near to bund.<br>• Bund is under direct hit of River | Satisfactory |
| 2 | M.S Bund | Sujawal | 18/3 | Serious erosion, due to heavy wave wash. (Kot Almoo Breach 2010) | Satisfactory |
| 3 | 1st Surjani Bund | Sujawal | 0/0 to 1/5 | Bund is under direct hit of River main current (Breach site) | Satisfactory |
| 4 | M.S Bund (Munarki) | Sujawal | 43/5 to 44/0+200 | • Bund is under direct attack from river.<br>• Total width of main current of river has been reduced upto 800ft.<br>• River diverting the current towards Bund and severe launching/ erosion problem was faced during the year 2005 and 2006, 2010 & 2012.<br>• Bund was collapsed after passing heavy flood 2015 at mile 44/1+200. Restoration work has been completed. | Satisfactory |
| 5 | Kuka Wari Retarded Bund | Sujawal | Mile 4/3 | The bund is not as per specification and there is great wave wash | Satisfactory |
| 6 | P.B Bund | Thatta | Mile 4/6 | Breach occurred due to abrupt rise of river flow in year 2010 | Satisfactory |

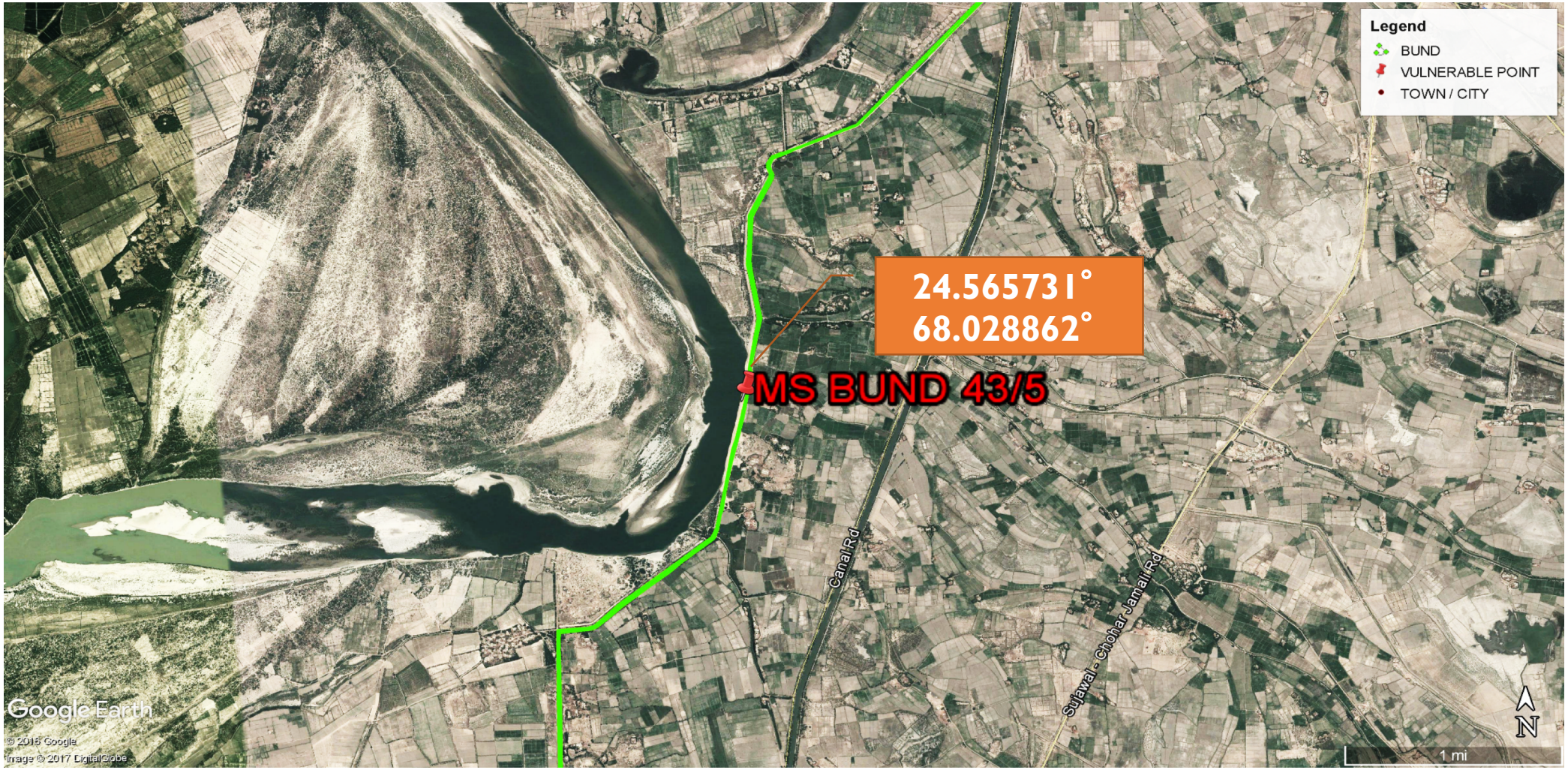
# VULNERABLE POINT HP BUND 3/7

# VULNERABLE POINT MS BUND 18/3

# VULNERABLE POINT 1ST SURJANI BUND 0/0 TO 1/5

# VULNERABLE POINT PB BUND 4/6

# VULNERABLE POINT MS BUND 43/5



# VULNERABLE POINT KUKA WARI RETARDED BUND 4/3

# FLOOD CONTINGENCY PLAN 2024

| Sr No. | Activity | May | | June | | | | July | | | | August | | | | September | | | | REMARKS | Bund Manual Chapter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 15th | 31st | 7th | 15th | 22nd | 30th | 7th | 15th | 22nd | 30th | 7th | 15th | 22nd | 30th | 7th | 15th | 22nd | 30th | | |
| 1 | Reconnaissance Survey | | | | | | | | | | | | | | | | | | | Reconnaissance survey is to done by Sub engineer and AXEN | IX |
| 2 | Detailed Survey of the bunds to be made to ascertain the Free Board | | | | | | | | | | | | | | | | | | | IRC Form 4 Chapter XIII be followed | IX |
| 3 | Old borrow pits to be filled | | | | | | | | | | | | | | | | | | | | IX |
| 4 | Mile Stones to be installed | | | | | | | | | | | | | | | | | | | | IX |
| 5 | Gauge Pillars to be repaired and painted | | | | | | | | | | | | | | | | | | | | IX |
| 6 | All hollows and depressions be filled | | | | | | | | | | | | | | | | | | | | |
| 7 | Opening up and refilling of leaks be carried out | | | | | | | | | | | | | | | | | | | IRC Form 6 Chapter XIII be followed | |
| 8 | All masonry works be inspected. | | | | | | | | | | | | | | | | | | | | |
| 9 | Side slopes of all the bunds be cleared at least 20ft on Land side and 10ft on Water side | | | | | | | | | | | | | | | | | | | | |
| 10 | All abandoned bunds likely to cause pocketing should be given large and effective cuts | | | | | | | | | | | | | | | | | | | | |
| 11 | XEN to issue certificate duly countersigned by the SE for the Good Condition of the Bunds | | | | | | | | | | | | | | | | | | | | |
| 12 | Coordination with LEA & Local Administration | | | | | | | | | | | | | | | | | | | All important telephone Nos. to be noted. | |
| 13 | Preparation of Duty Roster | | | | | | | | | | | | | | | | | | | All the staff to be mobilised at site according to Bund Manual Chapter No.X, para 104, 107. | |
| 14 | Procurement of abkalani Material | | | | | | | | | | | | | | | | | | | | |
| 15 | Construction of Katcha Landhies | | | | | | | | | | | | | | | | | | | Initially 1 Landhi/ Mile be constructed and then as per strength of abkalani be increased Chapter X, Para 108 of the Bund Manual | |
| 16 | Patrolling to be made along the Bund | | | | | | | | | | | | | | | | | | | As per Para 107 of the Bund Manual | |
| 17 | Equipment/ Machinery to be mobilized/ Demobilized | | | | | | | | | | | | | | | | | | | | |
| 18 | Advance arrangements & contacts for Chherr (Borrowed) labour to be made | | | | | | | | | | | | | | | | | | | | |
| 19 | End of Abkalani to be announced & relevant IRC Forms to be submitted | | | | | | | | | | | | | | | | | | | | |

## Flood Emergency Control Center

In order to know the Flood situation in the country an Emergency Officer and Liaison Officer are posted at Kotri Barrage Head Works. From the discharge figures of various stations when collected by the Emergency / Liaison Officers, it becomes possible to assess the quantum of discharge, expected to be reached at Kotri Barrage Head Works on the exact date. The anticipated discharge could be well assessed at least 10 days before of its receipt at the Head Works on the basis of which all the staff as well as other connected agencies will be informed in due course of time.

The First station, which controls the flood situation in the province, is Guddu Barrage from where 10 to 15 days, depending upon the quantum of discharges in the River, are supposed to reach at Kotri Barrage.

The Main Flood Warning Center is established at Karachi in the Secretariat of Irrigation and Power Department (Regulation Cell) and round the clock staff on duty is to be engaged. The subsidiary Flood Warning Center for Hyderabad is established at Kotri Barrage Head Works Control Room at Jamshoro.

The following officers are nominated as Flood Emergency by the Chief Engineer Kotri Barrage officer & Liaison Officer.

| S.No | Name & Designation | Telephone | |
|---|---|---|---|
| | | Office | Residence |
| 1 | Muhammad Adeel Shah<br>Executive Engineer,<br>Kotri Barrage Division Jamshoro. | 022-2119037 | 0345 8223503 |
| 2 | Ali Uzair Naeem Shaikh<br>Assistant Executive Engineer,<br>Weir Sub-Division Jamshoro. | 022-2119037 | 0300-3444336 |

# PROPOSED FLOOD CONTINGENT PLAN AS PER REVISED BUND MANUAL.

- **PRE ABKALANI ARRANGEMENTS.**

## 1. RECONNAISSANCE SURVEY.

The Reconnaissance Survey will carried out jointly with Army personnel along the Flood Protective Bund line also inside the Bund to observe the general conditions of the reverian area, River meanders, the erosion ordinates where the River meanders is following in the proximity of the Bund line

## 2. DETAILED SURVEY OF THE BUNDS.

After the High Flood 2015, the detailed survey of the entire Bund line was observed with view to frame and to execute the flood protective schemes for the restoration of the damages and further strengthening and re-sectioning of the Bunds with a view to provide the adequate free board with respect to the high flood level record along Bund line during the last flood.

## 3. OLD BORROWPITS TO BE FILLED.

According to the Bund Manual, the borrowpit near the toe of the Bund line on either side of the body of the Bund are strictly prohibited. Particularly the borrowpits line on the side of the Bund be filled and it is also to be ensured that all the borrowpits are filled / leveled

## 4. MILESTONE BE INSTALLED.

Miles stones, bearing the location and identification of the Bund line are installed at site. However missing Mile Stones will be fixed / installed shortly.

## 5. GUAGE PILLARS TO BE REQUIRED AND PAINTED

The Gauge Pillars are to be installed at every mile along the Bund line to record the flood levels at different flood stages and to show the depth of water against the respective Bunds where it is located. The existing Gauge Pillars damaged during the last flood are repaired and re-painted at some Gauges, however the locations Gauge Pillars were collapsed or missing are to be reconstructed. (Work is in progress).

## 6. ALL HOLLOWS AND DEPRESSIONS BE FILLED.

All hollows and depressions will be filled and the design free board is to be achieved with respect to the floods 2010 before upcoming flood.

## 7. OPENING UP AND RE-FILLING OF LEAKS BE CARRIED OUT.

The Bunds where the leaks occurred during the last High Flood 2015 was located and identified at site. All these leaks have already been opened and properly attended.

## 8. ALL MASONRY WORKS BE INSPECTED.

The Bund sluices lying along the front bund line are properly inspected and attended. Since all loop Bunds are non-functional, hence all sluices are being/Sealed properly in order to avoid any adverse cover during flood.

## 9. SIDE SLOPES OF ALL THE BUNDS BE CLEARED.

The most important feature of the Pre-Abkalani arrangement along the Bund line is the clearance of Jungle, weeds, gross and other unwanted material along entire slopes and the top of Bund.

This Pre-Abkalani arrangement facilitates in exposure of the earthen body of the Bund, where it becomes very easy to detect the leaks, rat holes and other activity of burrowing animals are exposed and during the flood season the occurrence of leaks is to be easily detected and timely controlled.

## 10. ALL ABANDONED BUNDS LIKELY TO CAUSE POCKETTING SHOULD BE GIVEN LARGE AND EFFECTIVE CUTS.

This activity is being fully implemented with help of Revenue/Police Department.

# DURING ABKALANI ARRANGEMENTS

## 11. COORDINATION WITH LEA (LAW ENFORCING AGENCIES) AND D.C.OS.

All the Departments are in coordination with the irrigation Department.

## 12. PREPARATION OF DUTY ROASTER.

All the Staff employed along the Bunds and the staff of the Canal, Infrastructure is to be shifted and assigned the special task of performing the duties along Bunds during Abkalani season such duty roaster will be prepared and submitted.

## 13. PROCUREMENT OF ABKALANI MATERIAL

In wake of the ensuing flood season the Abkalani material is to be procured upto 15th June 2020 and staked and store at Landhies along the Bund line.

## 14. CONSTRUCTION OF KATCHA LANDHIES

- Landhies at one mile interval establishment to house labour.
- Numbers of Landhies will be increased in accordance with magnitude of flood.
- Minimum 1 Landhi per mile to Maximum 8 Landhies per mile.

## 15. PATROLLING ALONG THE BUNDS.

### → Deployment of Labour:

- From 1st June to 30th June, — 2 men/ Mile.
- From 1st July Till clear receding of river (below 2 lacs to discharge). — 4 men/ Mile.
- On encounter of Low and Medium Flood (2 to 4.5 lacs discharge). — 8 men/ Mile.
- On encounter of High Flood (4.5 to 6.5 lacs discharge). — 16 men/ Mile.
- On encounter of very High and Super Floods (6.5 lacs and above). along with gangs — 32 men/ Mile.

## 16. EQUIPMENT / MACHINERY BE MOBILIZED / DEMOBILIZED.

The most prominent and important feature of the pre-abakalani arrangements is the deployment of the equipment / machinery along the vulnerable / most vulnerable locations of the front bund line.

✓ ***One Excavator, Dozer, Dumper, Tractor Trollies and Datsun @ every vulnerable locations /points miles along Bund line will be deployed.***

## 17. MATERIAL

- ✓ As per consumption and requirement will be stream lined.
- ✓ JUST IN TIME arrangements to be made by June.
- ✓ Stone Boulders stocks at vulnerable locations/points will be arranged during month of June.
- ✓ Pertinent forest material to be obtained from the Forest Department.

## 18. ADVANCE PAYMENT AND CONTACT CHEER LABOUR BE MADE.

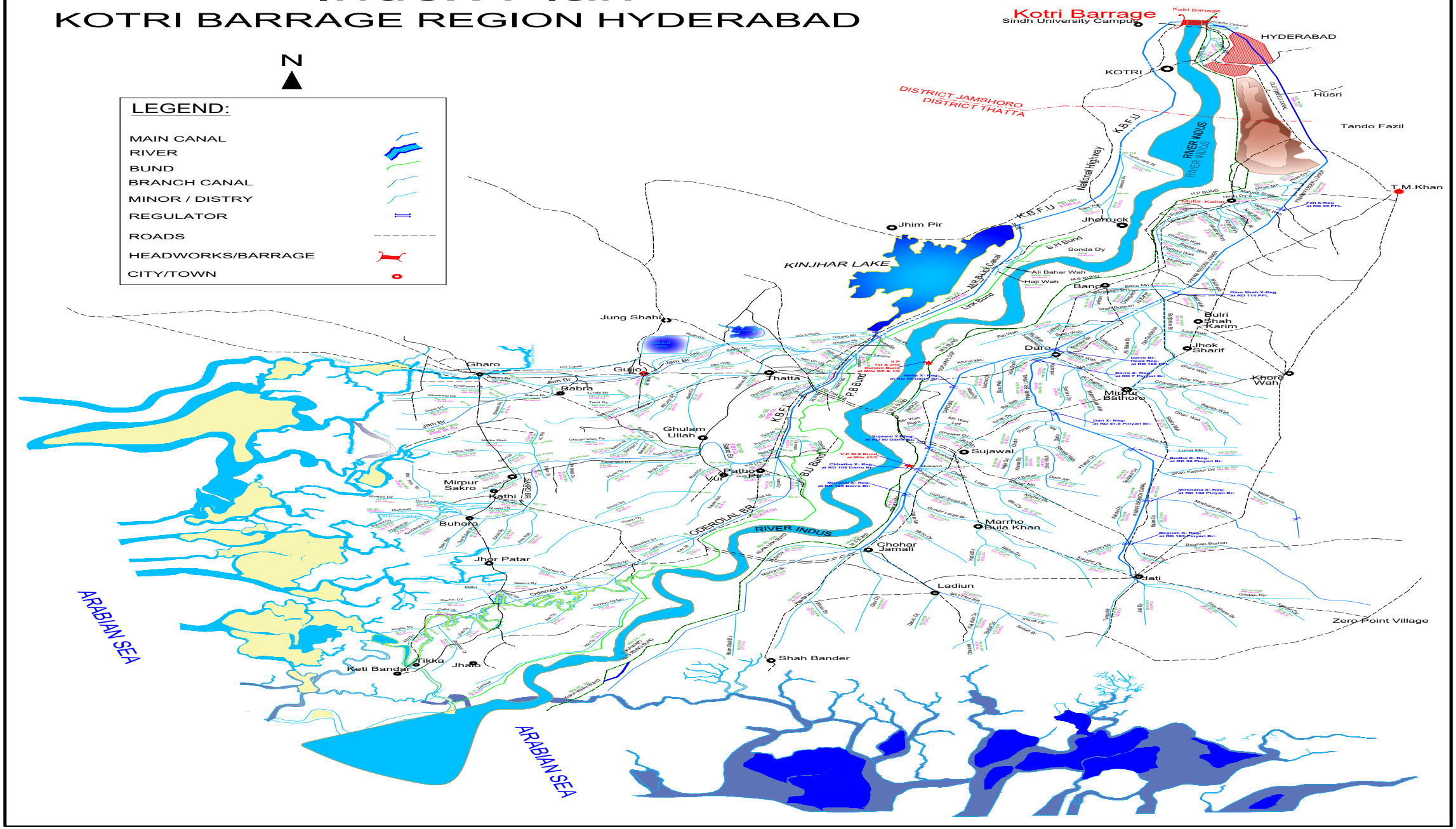
All the Revenue Officers / Officials and prominent Zamindars will be formally requested to provide the Cheer Labour during flood season. Such activity will commenced as soon as Floods water approaches Guddu Barrage

## 19. END OF ABKALANI BE ANNOUNCED AND RELEVANT IRC FORUM BE SUMBITTED.

***INSHALLAH with the help of ALMIGHTY ALLAH, the Abkalani season will end safely and the respective IRC Forum will be intimated.***

# Index Plan

## KOTRI BARRAGE REGION HYDERABAD



# INTRODUCTION

Kotri Barrage was commissioned in 1955.

- 04 main canals are off-taking from the Barrage, one from right bank "Kalri Baghar Feeder" and 03 from left bank " (i) Old Fulleli (Pinyari Feeder) (ii) Fuleli Canal and (iii) Akram Wah" .
- 02 Main Canals have been transferred to SIDA i.e. Fuleli Canal and Akram Wah.
- Total CCA of Kotri Barrage is 3,083,704 , acres.
- CCA Canals Under Kotri Barrage Region is 1,426, 592 acres.

## IRRIGATION NETWORK OF KOTRI BARRAGE REGION

| S. No | Name of Main Canals | Design Discharge | No. of Channels | | | | | Total Length of channels (in Mile) | No of outlet |
|---|---|---|---|---|---|---|---|---|---|
| | | | M/C | Br. | Distry | Minor | Total | | |
| 01. | KB Feeder | 9100 | 01 | 07 | 41 | 56 | 105 | 828 | 2586 |
| 02. | Pinyari Feeder Canal | 13636 | 01 | 10 | 40 | 64 | 115 | 851 | 3366 |
| | **Total : -** | **22736** | **2** | **17** | **81** | **120** | **220** | **1679** | **5952** |

**THE FOUR NUMBER CANALS OFF-TAKES FROM KOTRI BARRAGE.**

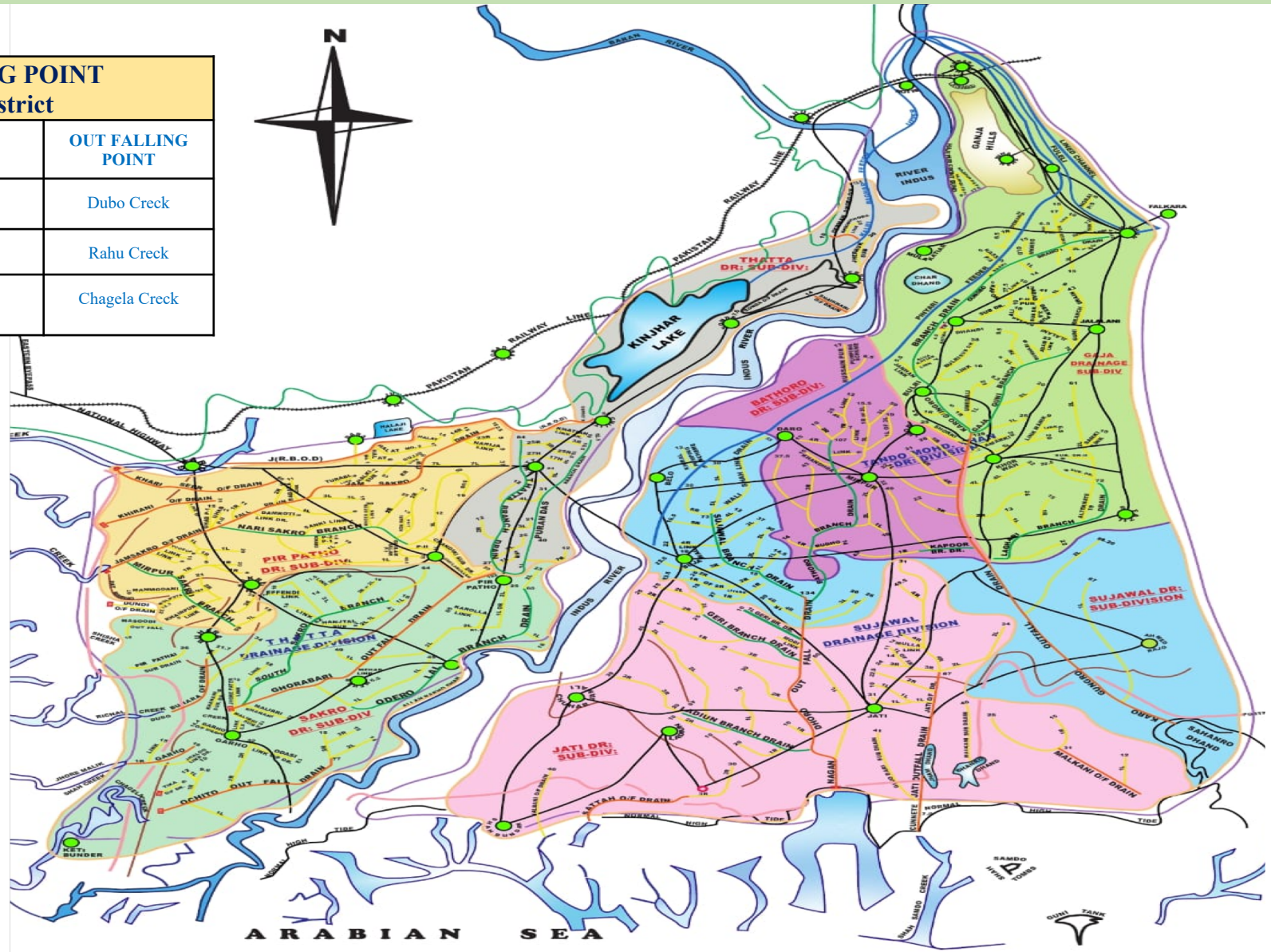
THREE FROM THE LEFT BANK **I.E. AKRAM WAH, FULELI CANAL & PINYARI CANAL** AND ONE FROM RIGHT BANK **I.E. KALRI BAGHAR FEEDER**

| S.No. | Canal System | Length of Main Canals in Miles | G.C.A Acres | C.C.A Acres | Discharge Cusecs | | Total Length of channels System (in Mile) |
|---|---|---|---|---|---|---|---|
| | | | | | Kharif | Rabi | |
| 01. | Pinyari Canal | 56.5 | 778,281 | 768,076 | 13,636 | - | 828 |
| 02. | Kalri Baghar | 58.4 | 708,886 | 683,652 | 9,100 | 3,300 | 851 |
| 03. | Fuleli Canal | 59.8 | 1,022,448 | 971,823 | 15,026 | - | 800 |
| 04. | Akram Wah | 76.2 | 566,065 | 546,418 | 3,714 | 1,900 | 481 |

# DRAINAGE NETWORK

# DRAINAGE NETWORK OF KOTRI BARRAGE REGION

| OUT FALLING POINT Thatta District | | |
|---|---|---|
| S.No: | NAME OF DRAIN | OUT FALLING POINT |
| 01. | Ghora Bari Outfall Drain | Dubo Creck |
| 02. | Jam Sakro Outfall Drain | Rahu Creck |
| 03. | Ochitto Outfall Drain | Chagela Creck |




| REFERENCE | |
|---|---|
| 1 | RIVER |
| 2 | LAKE |
| 3 | ROAD |
| 4 | TOWN & CITY |
| 5 | RAILWAY LINE |
| 6 | DHAND |
| 7 | NORMAL HIGH TIDE |
| 8 | KOTRI BARRAGE COMMAND |
| 9 | POST PONEMENT LINE |
| 10 | ULTRA SALINE LINE (HUNTING) |
| 11 | OUTFALL DRAIN |
| 12 | BRANCH DRAIN |
| 13 | SUB/ LINK DRAIN |
| 14 | MALIR WEIRS I, II & III |
| 15 | THADO DAM |
| 16 | BUND MURAD KHAN MINOR |
| 17 | BRIDGE / FLY OVER |
| 18 | OUTFALL REGULATOR / BARRAGE |
| 19 | DIVISION BOUNDARY |

| OUT FALLING POINT Sujawal District | | |
|---|---|---|
| S.No: | NAME OF DRAIN | OUT FALLING POINT |
| 01. | Karo Gungro Outfall Drain | Sahanro Dhand |
| 02. | Jati Outfall Drain | Sea Creck |
| 03. | Nagan Dhoro Outfall Drain | Sir Creck |
| 04. | Malkani Outfall Drain | Dhandh |

# DIVISION WISE DETAILS OF SURFACE DRAINS UNDER THE JURISDICTION OF CIVIL DIVISIONS OF LOWER SINDH DRAINAGE CIRCLE, HYDERABAD

| NAME OF DIVISION | NO: OF OUTFALL/ MAIN DRAINS | LENGTH OF OUTFALL/ MAIN 'S | NO: OF BRANCH DRAINS | LENGTH OF BRANCH 'S | NO: OF SUB/ LINK DRAINS | LENGTH OF SUB/ LINK 'S | TOTAL NO: OF DRAINS | TOTAL LENGTH OF 'S |
|---|---|---|---|---|---|---|---|---|
| THATTA DRAINAGE DIVISION | 03 | 381.50 | 06 | 396.50 | 115 | 2135.50 | 124 | 2913.50 |
| SUJAWAL DRAINAGE DIVISION | 04 | 380.00 | 03 | 153.00 | 55 | 1414.70 | 62 | 1947.70 |
| T.M.KHAN DRAINAGE DIVISION | -- | 73.00 | 05 | 425.50 | 82 | 1474.50 | 87 | 1973.00 |
| Grand Total | 07 | 834.50 | 14 | 975.00 | 252 | 5024.70 | 273 | 6834.20 |

| Number of Drain | Total Length in Miles | Drainage Area Covered |
|---|---|---|
| 273 Nos: | 1368.84 Miles | 1.48 M Acres |

# FLOOD EMERGENCY RAIN RELIEF PLAN 2023
# FOR KOTRI BARRAGE SURFACE DRAINAGE SYSTEM

## OBJECTIVES.

- The object of this plan is to have an efficient & close coordination available at district level, which could ensure effective precautionary measures regarding safety of Kotri Barrage Surface drainage network provided in the command of Pinyari Canal and Kalri Baghar Feeder Upper and Lower, having a cumulative command area of 1.48 million acres. These efforts are taken to minimize any chances of mishap in shape of loss of human beings or damages to properties.

- Lower Sindh Drainage Circle, Hyderabad has prepared a comprehensive plan in order to dispose off storm water through drainage network into sea with minimum chances of overtopping and breaches in drainage network.

- The major preventive measure is to stop hasty relief cuts provided by the upstream Zamindars/farmers during the period of heavy rainfall.

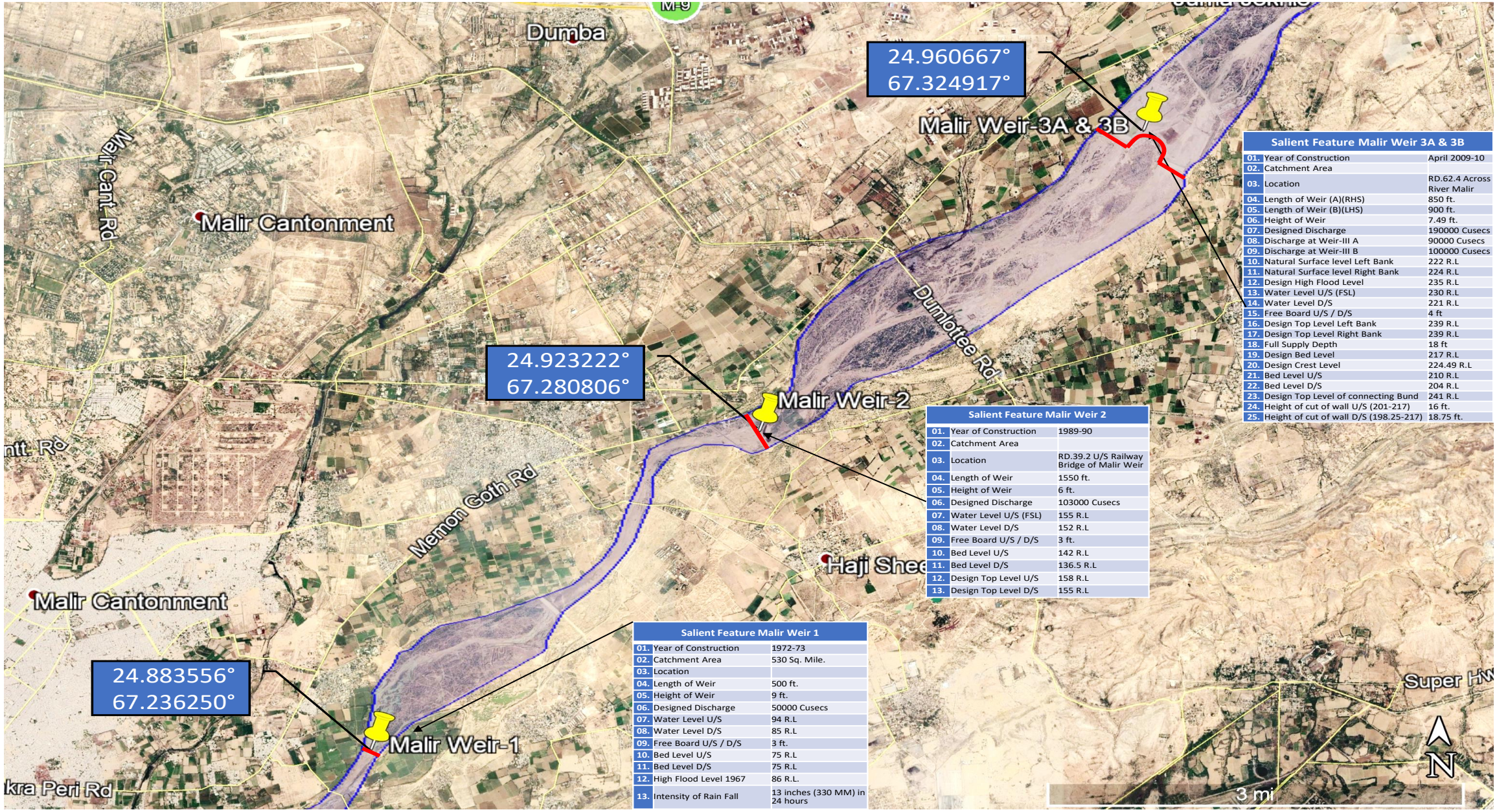
- In case of heavy down pour in lower Sindh area, the entire catchments of the drainage system is inundated, as most of the area already, being under paddy crop, having standing water for irrigation purpose .Diligent and efficient disposal of surface run off as well as surplus irrigation water is required, within a target period of 15 days.

# DETAILS OF WEAK/ VULNERABLE POINTS.

| S.No: | Name of Drain | Vulnerable points |
|---|---|---|
| 01. | Ghorabari Outfall Drain | Outfall Regulator @ RD – 3.7 |
| 02. | Jam Sakro Outfall Drain | Outfall Regulator @ RD – 6<br>RD 10 to 16 & RD 90 to 100 |
| 03 | Thatta Branch Drain | RD 40 to 83 |
| 04 | German Dhoro Sub Drain | Outfall Point |
| 05 | Khoni Dhoro Link Drain | RD 0 to 38 |
| 06. | Nari Sakro Branch Drain | RD 0 to 10, 60to 72 |
| 07. | Sonda Outfall Drain | RD. 0 to 5.0 |
| 08. | Tika O/F Drain | RD. 0 to 6 |
| 09. | Ochitto O/F Drain | RD 0 to 20 |
| 10. | Nagan Dhoro Outfall Drain | Outfall Regulator @ RD 2<br>Guided Bund L/S & R/S, Gungry Large RD.73.0 |
| 11. | Jati Outfall Drain | RD. 0 to 40 |
| 12. | Karo Gungro Outfall Drain | RD. 0 to 30, RD. 54 to 90,RD. 138 to 148 & RD. 150 to 160 |
| 13. | Malkani Outfall Drain | RD. 0.0 to 40.0 |
| 14. | Laghari Branch Derain | RD. 0 to 23 |
| 15. | 1-R Karo Gungro Outfall drain | RD. 0 to 15 |
| 16. | 4-R Karo Gungro Outfall Drain | RD. 0 to 8 |
| 17. | 4-L Karo Gungro Outfall drain | RD. 0 to 10 |
| 18. | Thado Dam @ Thado Nai | RD. 6.5 |
| 19. | Weir(I) Artificial | RD 19.5 |
| 20. | Weir -II | RD 39.2 |
| 21. | Weir-III | RD 62.4 |

# URBAN FLOODING IN KARACHI MONSOON 2020

# SALIENT FEATURES MALIR WEIR 1, 2, 3A & 3B KARACHI




| Salient Feature Malir Weir 3A & 3B | | |
|---|---|---|
| 01. | Year of Construction | April 2009-10 |
| 02. | Catchment Area | |
| 03. | Location | RD.62.4 Across River Malir |
| 04. | Length of Weir (A)(RHS) | 850 ft. |
| 05. | Length of Weir (B)(LHS) | 900 ft. |
| 06. | Height of Weir | 7.49 ft. |
| 07. | Designed Discharge | 190000 Cusecs |
| 08. | Discharge at Weir-III A | 90000 Cusecs |
| 09. | Discharge at Weir-III B | 100000 Cusecs |
| 10. | Natural Surface level Left Bank | 222 R.L |
| 11. | Natural Surface level Right Bank | 224 R.L |
| 12. | Design High Flood Level | 235 R.L |
| 13. | Water Level U/S (FSL) | 230 R.L |
| 14. | Water Level D/S | 221 R.L |
| 15. | Free Board U/S / D/S | 4 ft |
| 16. | Design Top Level Left Bank | 239 R.L |
| 17. | Design Top Level Right Bank | 239 R.L |
| 18. | Full Supply Depth | 18 ft |
| 19. | Design Bed Level | 217 R.L |
| 20. | Design Crest Level | 224.49 R.L |
| 21. | Bed Level U/S | 210 R.L |
| 22. | Bed Level D/S | 204 R.L |
| 23. | Design Top Level of connecting Bund | 241 R.L |
| 24. | Height of cut of wall U/S (201-217) | 16 ft. |
| 25. | Height of cut of wall D/S (198.25-217) | 18.75 ft. |

| Salient Feature Malir Weir 2 | | |
|---|---|---|
| 01. | Year of Construction | 1989-90 |
| 02. | Catchment Area | |
| 03. | Location | RD.39.2 U/S Railway Bridge of Malir Weir |
| 04. | Length of Weir | 1550 ft. |
| 05. | Height of Weir | 6 ft. |
| 06. | Designed Discharge | 103000 Cusecs |
| 07. | Water Level U/S (FSL) | 155 R.L |
| 08. | Water Level D/S | 152 R.L |
| 09. | Free Board U/S / D/S | 3 ft. |
| 10. | Bed Level U/S | 142 R.L |
| 11. | Bed Level D/S | 136.5 R.L |
| 12. | Design Top Level U/S | 158 R.L |
| 13. | Design Top Level D/S | 155 R.L |

| Salient Feature Malir Weir 1 | | |
|---|---|---|
| 01. | Year of Construction | 1972-73 |
| 02. | Catchment Area | 530 Sq. Mile. |
| 03. | Location | |
| 04. | Length of Weir | 500 ft. |
| 05. | Height of Weir | 9 ft. |
| 06. | Designed Discharge | 50000 Cusecs |
| 07. | Water Level U/S | 94 R.L |
| 08. | Water Level D/S | 85 R.L |
| 09. | Free Board U/S / D/S | 3 ft. |
| 10. | Bed Level U/S | 75 R.L |
| 11. | Bed Level D/S | 75 R.L |
| 12. | High Flood Level 1967 | 86 R.L. |
| 13. | Intensity of Rain Fall | 13 inches (330 MM) in 24 hours |

## INTRODUCTION

The Malir River and its tributaries originate in Khirthar range and its basin is located in vicinity of Karachi. There are three Nos. Weir-I, II, and III exists on Malir Basin under the administrative control of Thatta Drainage Division of this Circle.

## THADDO DAM

Thado dam is located in the Gadap Town in Thado Nai, a tributary of Malir river upstream of the Konker town. It is an earth fill dam 2600ft long with a maximum height of 64ft in the middle section adjacent to spillway. The 300ft long un-gated ogee spillway is located at the centre of the dam. The construction of Thaddo dam was conceived during early 1990.

| | WEIR-I | WEIR-II | WEIR-III |
|---|---|---|---|
| **Year of Construction** | 1972 | 1989-90 | 2009-10 |
| **D. Discharge** | 50000 cusec | 103000 cusec | Weir III A-90000 cusec Weir III B- 100000 cusec |
| **Length of Weir** | 500 Ft | 15500 Ft | Weir A-850 Ft Weir B-950 Ft |
| **D.H. Level** | 94 RL | 155 RL | Weir A-235 RL Weir B-235 RL |
| **Catchment Area** | 530 sq Mile | 530 sq Mile | 530 sq Mile |
| **Intensity of Rain Fall** | 13 inch in 24 hours | -- | -- |
| **Free Board** | 3 Ft | 3 Ft | 4 Ft |
| **Intensity of Rain Fall Recorded 2020** | **19 inch in 12 hours** | | |
| **Discharge Passes During Rain 2020** | **170000 Cusec approximate** | **185000 Cusec approximate** | **210000 Cusec approximate** |
| **Level Recorded** | **103 RL (5 to 6 Ft above)** | **161.5 RL (3 Ft above)** | **140.50 RL (1.5Ft above)** |

# SALIENT FEATURES.

## THADO DAM

| | | |
|---|---|---|
| 01. | Design Discharge | 16200 Cusecs |
| 02. | Storage Capacity | 17110 Acre ft. |
| 03. | Length of Spill way | 300 ft |
| 04. | Crest Level | 415.0 |
| 05. | Bed Level U/S & D/S | 378/378 |
| 06. | Ground level | 386 |
| 07. | R/S Embankment | 1500ft |
| 08. | L/S Embankment | 800 ft |
| 09. | Maximum Water level | 421 |
| 10. | Tap of Dam level | 424 |

# ISSUES / PROBLEMS OF IRRIGATION DEPARTMENT.

# ISSUES / PROBLEMS OF IRRIGATION DEPARTMENT.

## SECURITY ARRANGEMENTS

During Abkalani, it depends to the Police Department to provide security arrangements for safety of the staff deployed on Bunds.

## MEDICAL FACILITIES.

Floods do create health problem, mostly the staff suffers from Malaria, Dysentery, Sunstroke and Snake bite etc. As such mobile Medical Teams will have to be deployed to provide Emergency Medical Aid by Health Department.

## ELECTCIITY ARRANGMENTS.

HESCO / WAPDA to provide temporary power supply wherever required.

## DISTRICT ADMINISTRATION.

District Administration help required during flood season

## AGRICULTURAL MACHINERY.

The Directorate of Agricultural Engineering in Sindh will provide Bulldozers which will be deployed at vulnerable points as and when requisitioned by the Executive Engineer Incharge of Bund.

## RELEASED OF FUNDS FOR FLOOD FIGHTING 2022 AND 2023

The necessary Funds for Pre Abkalani arrangements, Flood fighting as well as Last Year 2022 remaining Funds related with Flood fighting and emergent restoration works will be released timely be the Government .

# STATUS OF RESTORATION WORKS

# STATUS OF RESTORATION WORKS

| S.No. | Name of Work | Cost of Work Rs. In Million | Physical Progress | Financial Progress | Remarks |
|---|---|---|---|---|---|
| 1. | Estimate For Emergent Work Recoupment / Restoration of Damaged / Launched Bund, Apron And Stone Pitching Along Hajipur (H.P Bund) Mile 6/2 To 6/7 | Rs 325.00 | **98% work in Progress** | Rs.150.00 | Permission accorded by Secretary to Government of Sindh, Irrigation Department, NO.SO(R&)/B-110/2019-22/(Permission), dated 26th January 2023, |
| 2. | Rehabilitation, Raising and Strengthening of Spurs along Surjani Complex Bund | Rs.860.138 | **75% work in Progress** | 00 | Permission accorded by Secretary to Government of Sindh, Irrigation Department, NO.SO(R&)/B-110/2013-24/(Permission), dated 17th July 2023, received through P.D FERP<br>2 running Bill submitted payment yet not made |

# STATUS OF RESTORATION WORKS

## FLOOD PROTECTION SECTOR SCHEME TAKEN UNDER UMBRELLA PC-I FPSP

| S.No. | Name of Work | Cost of Work Rs. In Million | Physical Progress | Financial Progress | Remarks |
|---|---|---|---|---|---|
| 01 | Rehabilitation of H.P. Bund from Mile 0/0 to 20/2 Stone Pitching 14/7 to 20/2 and Recouping of Stone Apron at Various Locations | **1335.00** | -- | -- | Scheme taken under umbrella PC-I FPSP |
| 02 | Extension of Indo Bund from Mile 15/6 to Mile 23/6 | **647.332** | | | |
| 03 | Raising and Strengthening and Stone Pitching along Upstream Right Guide Bund and Downstream Right Guide Bund at Kotri Barrage Head works | 164.522 | | | |
| 04 | Rehabilitation, improvement, stone Pitching along acting River Bund Sonda Hilaya Loop Bund P.B Bund and B.U Bund in Kalri Baghar Division Thatta | **545.804** | | | |
| 05 | Earth Work and Remaining portion of stone Pitching along B.U Bund and Indo Bund of Sakro Division Mirpur Sakro | **499.990** | -- | -- | |
| 06 | Extension of Kuka Wari Retarding River Bund from Mile 3/6 to 5/6 Common Bank of Machki Branch from RD 35.0 to 45.0 | **2,152.362** | -- | -- | |
| 07 | Raising and Strengthening by earth Work and Stone Pitching on M.S Bund Mile 29/2 to 43/0 | 839.132 | -- | -- | |
| 08 | Reconstruction/Rehabilitation of Malir Weirs-I, II, III & Thado Dam | 13950.348 | | | |
| 09 | Restoration of 2015 Flood Damages along U/S Left Guide Bund of Thatt Sujawal Bridge. | **482.236** | | | |

# THANK YOU

Thanks