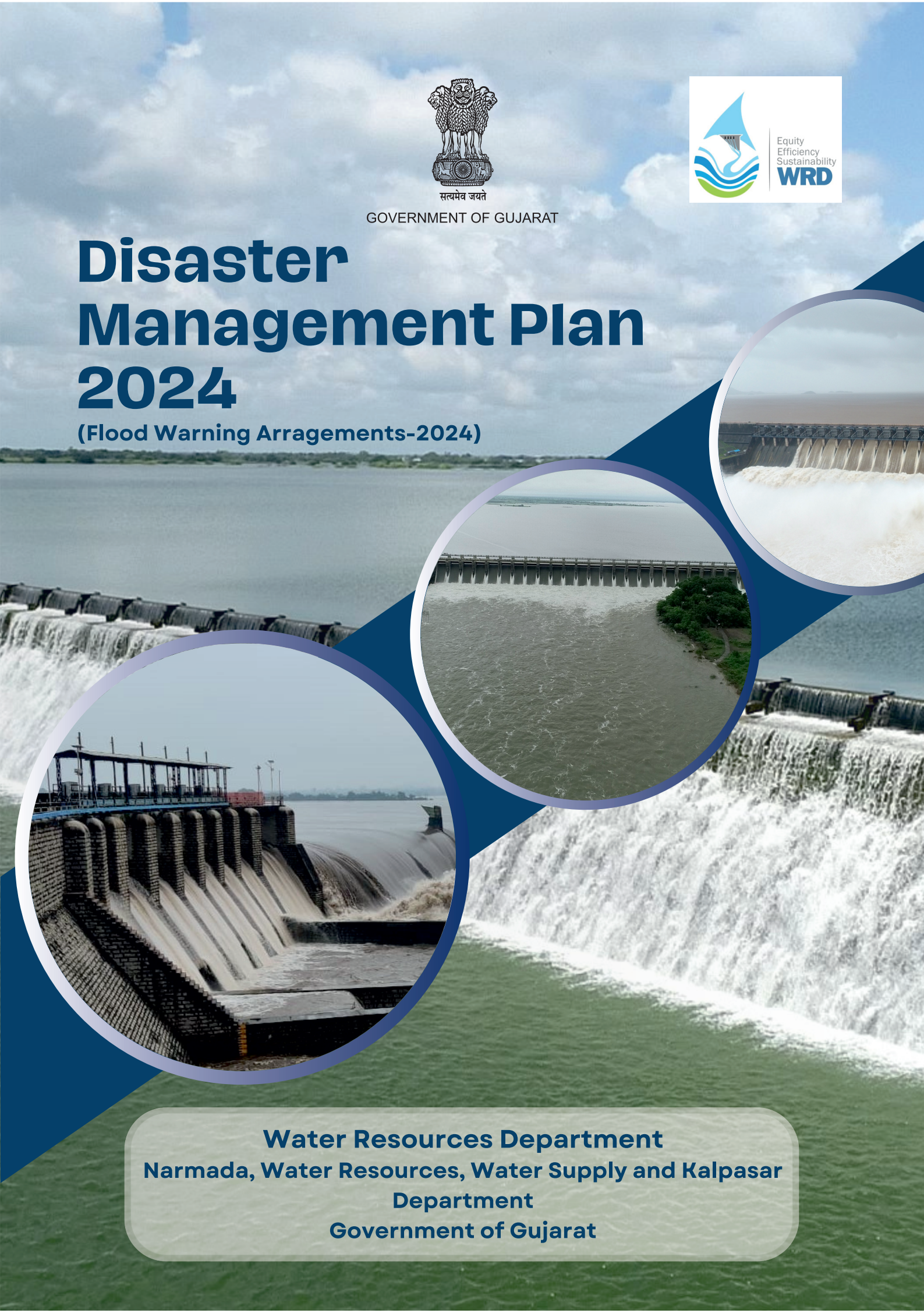
सत्यमेव जयते

GOVERNMENT OF GUJARAT

Equity
Efficiency
Sustainability
WRD

Disaster Management Plan 2024

(Flood Warning Arragements-2024)



Water Resources Department

Narmada, Water Resources, Water Supply and Kalpasar Department

Government of Gujarat

(for official use only)

सत्यमेव जयते

GOVERNMENT OF GUJARAT

Disaster Management Plan 2024

(Flood Warning Arrangements 2024)

Flood Control Cell,
1st Floor, State Water Data Centre
SECTOR - 8, Gandhinagar
Telephone No. (079) 23248735, (079) 23248736
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Water Resources Department
Narmada, Water Resources, Water Supply and Kalpasar Department
Government of Gujarat

P R E F A C E

There are 18 major dams in the Gujarat State and 6 interstate river basins namely Tapi basin, Narmada basin, Damanganga basin, Mahi basin, Sabarmati basin and Banas basin in the State. Narmada, Water Resources, Water Supply and Kalpasar Department every year updates the information in this publication which provides information for flood warning arrangements during monsoon. Relief activities are not incorporated in this document as they are not supposed to be dealt with by the personnel of the Water Resources Department.

This disaster management plan includes information and terminology regarding cyclone warning specified by India Meteorological department, guide lines for maintenance of flood embankments, circulars regarding precautionary measures before monsoon, alerting concerned departments, details of wireless stations, type of warning and affected villages. The information is updated based on the suggestions received from various field officers related the flood warning arrangements.

Secretary (WR)

I N D E X

A B B R E V I A T I O N

Addl. Secy.	Additional Secretary
B.D.O.	Block Development Officer
BBY	Bombay (Mumbai)
BOSL	Below Outlet Sill Level
C.A.D.	Command Area Development
C.D.	Civil Defense
C.D.O.	Central Designs Organisation
Circle- H.I.P.C.	Himmatnagar Irrigation Project Circle
Circle- P.P.C.	Panam Project Circle
Circle- R.I.C.	Rajkot Irrigation Circle
Circle- R.I.P.C.	Rajkot Irrigation Project Circle.
Circle- S.I.C.	Surat Irrigation Circle
Circle- V.I.C.	Vadodara Irrigation Circle.
C.W.C.	Central Water Commission
CRF	Cumulative Rainfall
CUM/CUS	Cumecs / Cusecs
Cumecs	Unit of measurement of Discharge in Metric System (Cubic Meter per Second)
Cusecs	Unit of Measurement of Discharge in British System (Cubic Feet per Second)
CWDS	Cyclone Warning Dissemination System
D.D.S.	Design Dead Storage
D.E.E.	Deputy Executive Engineer
D.G.S.	Design Gross Storage
D.L.S.	Design Live Storage
D.S.	Deputy Secretary
D.S.P.	District Superintendent of Police
D.S.R.P.	Dam Safety Review Panel
D'Ganga	Damanganga
Dam-Warning	The dam/reservoir filled more than 70% and upto 80% with respect to its Design Gross Storage
Dam-Alert	The dam/reservoir filled more than 80% and upto 90% with respect to its Design Gross Storage
Dam-High Alert	The dam/reservoir filled more than 90% with respect to its Design Gross Storage
Datum Level	Level with Respect to Sea Level
Disc.	Discharge
EOC	Emergency Operation Cell
ERC	Emergency Response Cell
Ft./ Mt.	Feet / Meter
G.E.B.	Gujarat Electricity Board
Gate-(FG)	Fuse Gated Scheme
Gate-(G)	Gated Scheme
Gate-(UG)	Un Gated Scheme
Gauge Height	Difference between two levels
HOC	Hydrological Observation Circle of CWC
I.M.D.	India Meteorological Department
I.P.Sub. Dn.	Irrigation Project Sub Division

A B B R E V I A T I O N

IBPT	Irrigation Bye-pass Tunnel
Inf.	Inflow
IST	Indian Standard Time
Kts.	Knot (Unit of Measurement for wind Speed)
Lat / Long.	Latitude / Longitude
Level-D.L.	Danger Level
Level-F.R.L.	Full Reservoir Level
Level-H.F.L.	High Flood Level
Level-O.S.L.	Operational Sill Level
Level-P.W.L.	Present Water Level
Level-R.L.	Reduced Level
Max. / Min.	Maximum / Minimum
Mcft/(Mft^3)	Million Cubic Feet
Mcm/MM^3	Million Cubic Meter
MDDL	Minimum Draw Down Level
N.W.R.W.S. & K. Dept.	Narmada, Water Resources, Water Supply and Kalpasar Department
NA	Not Available
NTBO	Narmada and Tapi Basin Organisation
O.S.D.	Officer on Special Duty
Pri. Secy.	Principal Secretary
R & B	Roads and Building Department
R.H.	Rest House
Region-CG	Central Gujarat
Region-NG	North Gujarat
Region-Pan	Panchayat
Region-Sau	Saurashtra
Region-SG	South Gujarat
RF	Rainfall
Rule Level	A Rule level is a pre-defined level on a specified date to be maintained in the reservoir to fill the reservoir in stages during on-going monsoon season considering conservation and flood control aspects.
S.D.O.	Sub Divisional Officer
Sch. No.	Scheme No.
Secy.	Secretary
Signal-Blue	Ready for Evacuation
Signal-Red	Immediate Evacuation
Signal-White	Alert Condition
SRT	Surat
Storage-Dead	(Gross Storage - Live Storage)
Storage-Gross	(Live Storage + Dead Storage)
Storage-Live	(Gross Storage - Dead Storage)
U.S.	Under Secretary
U.T.	Union Territory
U/s, D/s	Up Stream, Down Stream
UTC/GMT	Universal Time Code / (Greenwich Mean Time)
V.M.C.	Vadodara Municipal Corporation

INFORMATION AND TERMINOLOGY REGARDING CYCLONE WARNING AND COASTAL BULLETINS SPECIFIED BY INDIAN METEOROLOGICAL DEPARTMENT (IMD)

FAVOURABLE WEATHER PARAMETERS FOR FORMATION OF CYCLONE:-

1. Large sea area with sea surface temperature 27 ^{0} C or more
2. Minimum vertical wind shear.
3. Minimum value of Coriolis parameter. (Generally originates between 5 ^{0} to 22 ^{0} North Latitude.)
4. Upper air divergence.
5. Sufficient moisture in the lower and middle troposphere.

Terminologies for Tropical Cyclone:-

The classification adopted by Indian Meteorological Department to classify such disturbances is based on maximum strength of sustained wind in the circulation.

Type of Disturbance.	**Associated wind speed.**
Low Pressure area	Less than 17 kts.
Depression	17-27 kts.
Deep Depression	28-33 kts.
Cyclonic Storm	34-47 kts.
Sever Cyclonic Storm	48-63 kts.
Very Severe Cyclonic Storm	64-119 kts.
Super Cyclonic Storm	120 kts. and above
(1 Knot = 1.85 kmph.)	

Expected Wind Speed	**Expected Damage**
60-90 kmph	Tree branches broken off; Some damage to kachcha house
90-120 kmph	Trees uprooted; Pucca houses damaged; Communication disrupted.
More than120 kmph	Big trees uprooted; Widespread damage to houses and installation. Total disruption of communication.

FORMATION OF TROPICAL CYCLONE

Tropical cyclones generally form over the open areas where the sea surface temperature is 27^0 C or more.

Very cold temperatures of South Atlantic, Eastern parts of South Pacific and Eastern parts of North Pacific even during the warmest season are not congenial for formation of cyclones while in the warm Indian Ocean cyclones are frequent.

A Tropical cyclone generally forms from a pre-existing low pressure area over warm Tropical oceans and air from all directions rushes the area in an anticlockwise motion in Northern hemisphere due to deflection caused by rotation of earth. Greater pressure fall, greater the speed of wind rushing inward to the vacume - Low Pressure.

Simultaneously, in view of favorable conditions in the upper atmosphere at 6 km and above for the out flow or divergence of air, a large scale vertical motion of up rushing air takes place, as the moisture laden warm air rises, it cools and excess moisture, which it cannot sustain at these warm temperatures, falls as rain. The latent heat liberated in this process supplies further energy to this low pressure system of intensification.

વાવાઝોડા – ચેતવણી પ્રચાર તંત્ર મારફત વાવાઝોડા અંગે ભય – ચેતવણી પ્રસારણ માટેની રૂપરેખા

.....ખાતેની હવામાન ખાતાની કચેરીએ તા..... ના રોજ ભારતીય માનક સમય પ્રમાણે..... કલાકે બહાર પાડેલું વાવાઝોડા ચેતવણી બુલેટીન નંબર.....

તારીખ..... ના રોજ ભારતીય માનક સમય પ્રમાણે.....કલાકે.....(સ્થળ) થી લગભગ.....કિ.મી. ના અંતરે .....દિશામાં વાવાઝોડું કુંકાશે ; જે વધુ તીવ્ર બનવાની અને.....દિશામાં ફંટાવવાની શક્યતા છે. આના પરિણામે.....(જિલ્લા) માં.....વાર, ...(તારીખ/સમય) થી ભારીથી અતિભારે વરસાદના છુટાછવાયા ઝાપટા સાથે વ્યાપોક પ્રમાણમાં વરસાદ થવાની શક્યતા છે. .....વાર,..... (તારીખ/સમય) થી આ જિલ્લાઓના દરિયાકાંઠાના વિસ્તારોમાં કલાકના.....કિ.મી. સુધીની ઝડપે તોફાની પવન કુંકાવા માંડે તેવી શક્યતા છે. આ દરિયાકાંઠા વિસ્તારોના માછીમારોને દરિયામાં ન જવાની સલાહ આપવામાં આવે છે.

FOR AIR STATION - (INCLUDING BBY AND SRT) AND REVENUE OFFICIALS.
FORMAT FOR CYCLONE WARNING (SEVERE CYCLONIC STORM)

CYCLONE BULLETIN NO.....ISSUED BY CYCLONE WARNING CENTRE, AHMEDABAD AT .....HRS IST OF .....(DATE) FOR REPEATED BROAD CAST IN GUJARATI, SINDHI, HINDI AND ENGLISH AT HOURLY / HALF HOURLY INTERVALS (aaa) CYCLONE WARNING FOR ....DISTRICTS (aaa) SEVERE CYCLONIC STORM LOCATED..... KM..... (DIRECTION) OF..... OF..... (TIME) LATITUDE..... NORTH, LONGITUDE..... EAST, (aaa). EXPECTED TO STRIKE COAST BETWEEN..... AND..... ON..... (DAY)..... (MORNING/EVENING ETC) (aaa) GALES REACHING..... KMPH UPROOTING TREE, DAMAGING PUCCA HOUSE AND DISTRUPTING COMMUNICATION LIKELY..... DISTRICTS..... FROM..... (DAY)..... (DATE) (aaa) WIDE SPREAD RAIN WITH SCATTERED HEAVY TO VERY HEAVY FALLS LIKELY COMMENCE FROM..... DISTRICTS FROM..... (DAY)..... (DATE)..... (TIME) (aaa) TIDAL WAVES..... METERS ABOVE NORMAL TIDE LIKELY INUNDATE COASTAL AREAS..... OF DISTRICTS AROUND..... (DAY/TIME) (aaa) STATE OF SEA..... OFF COAST (aaa) FISHERMEN ARE ADVISED NOT TO GO OUT IN THE SEA (aaa) DANGER/GREAT DANGER SIGNAL NO..... HOISTED AT PORTS (aaa) LOCAL WARNING SIGNAL NO 4: HOISTED AT..... PORTS (aaa) LOCAL CAUTION ARY SIGNAL No: 3 HOISTED AT..... PORTS (aaa) ABOVE WARNINGS ARE FOR..... .....DISTRICTS (aaa)

(FOR AIR STATIONS ONLY (NOT TO BROADCAST) KINDLY MAINTAIN ROUND THE CLOCK WATCH TO RECEIVE AND BROADCAST THE SUBSEQUENT NUMBERED WARNING BULLETINS) (aaa)

CYCLONE ALERT

CYCLONE ALERT NO. ..... ISSUED BY CYCLONE WARNING CENTRE AHMEDABAD ..... IST ON ..... (DATE). DEPRESSION / CYCLONIC STORM LAY ..... AREBIAN SEA CENTRED .....HRS. ..... IST ..... (DAY) ..... (DATE) CENTRED AT LATITUDE ..... NORTH, LONGITUDE ..... EAST, ABOUT ..... KMS ..... (DIRECTION) OF ..... (PLACE) aaa LIKELY INTENSIFY FURTHER AND MOVE IN ..... (DIRECTION) aaa UNDER ITS INFLUENCE WIDESPREAD RAIN WITH SCATTERED HEAVY TO VERY HEAVY FALLS LIKELY COMMENCE ..... DISTRICTS ..... FROM ..... (DAY) ..... (DATE/TIME) (F/N ETC) aaa GALE WINDS SPEED REACHING ..... KMPS LIKELY COMMENCE A LONG COASTAL AREAS OF ....DISTRICTS:..... ....

ભારે સંકટ અંગેની ચેતવણીને અનુમોદન આપતા પત્રની નકલ

પ્રાદેશિક હવામાન કચેરી, અમદાવાદ દ્વારા ભારે સંકટ અંગેની ચેતવણી તંત્ર મારફત પ્રસારીત કરવા માટે તારીખ ..... ના રોજ ભારતીય સમય પ્રમાણે ..... કલાકે આપવામાં આવ્યું.

..... જિલ્લાઓ માટે વાવાઝોડાની ચેતવણી તારીખ ..... ના રોજ ભારતીય સમયાનુસાર ..... વાગે, ... ની તે (સ્થળે), ... દિશા તરફ સુમારે કિ.મી. દુરી પર થયેલું વાવાઝોડું/અતિભારે વાવાઝોડું, સાગરનું તોફાન તીવ્ર સ્વરૂપ ધારણ કરીને, ... દિશા તરફ જવાની શક્યતા છે, અને તે (દિવસ) ..... તારીખ ..... (સમયે) દરીયાના કિનારાના સ્થળ પર ત્રાટકવાની શક્યતા છે.

ભરતીના મોજાઓની ઊંચાઇ સામાન્ય મોજાની ઊંચાઇથી ..... મીટર ઊંચા રહેવાની સંભાવના છે. તોફાન કાંઠો ઓળંગશે ત્યારે ભરતીના મોજા સામાન્ય ભરતીના મોજાથી ..... મીટર ઊંચા હશે જે વિનાશકારી હોવાની સંભાવના છે. .... જિલ્લાઓને કાંઠે સામાન્ય ભરતીના મોજાની ઊંચાઇ કરતાં ..... મીટર ઊંચા રહેશે તેથી અગાઉ જણાવ્યા પ્રમાણેના જિલ્લાઓના કાંઠાના નિંચાણ વાળા વિસ્તારો ઉપર પાણી ફરી વળવાની સંભાવના છે. કાંઠાના પ્રદેશના લોકોને સલામત ઊંચાઇ વાળા સ્થળે આશરો લેવા સલાહ આપવામાં આવે છે. ..... જિલ્લામાં પવનનો વેગ વધીને કલાકના ..... કિ.મી. થવાની સંભાવના છે, જેથી ..... દરમિયાન ..... જિલ્લામાં મોટા વૃક્ષો મુળમાંથી ઉખડી જવાની, મકાન-મિલકતોને તથા ઇમારતોને મોટુ નુકશાન થવાની અને સંદેશા વ્યવહાર સંપુર્ણ પણે ખોરવાઇ જવાની સંભાવના છે.

..... જિલ્લામાં પવનનો વેગ કલાકના ..... કિ.મી. નો થશે, જે વૃક્ષો ઉખાડી નાખશે અને પાકા મકાનોને નુકશાન પહોંચાડશે તેમજ સંદેશા વ્યવહાર ખોરવાઇ જવાની સંભાવના છે.

..... જિલ્લામાં પવનનો વેગ કલાકના ..... કિ.મી. નો થશે. વૃક્ષની ડાળીઓ તુટી પડવાની અને કાચા મકાનો ને નુકશાન પહોંચવાની સંભાવના છે.

અતિભારે વરસાદથી ..... જિલ્લાઓમાં પૂર આવવાની સંભાવના છે.

..... જિલ્લાઓમાં ભારે વરસાદ થવાની સંભાવના આપવામાં આવે છે.

વાવાઝોડાની ચેતવણી અંગેનો બુલેટીન ક્રમાંક ..... અહિં સમાપ્ત થાય છે.

For Air Station - (Including BBY and SRT) and Revenue Officials

FORMAT FOR CYCLONE WARNING (VERY SEVERE CYCLONIC STORM (120 knots & above SUPER CYCLONIC STORM) 64 -119 knots)

CYCLONE BULLETIN NO ..... ISSUED BY CYLONE WARNING CENTRE AHMEDABAD AT ..... Hrs. IST OF ..... (DATE) FOR REPEATED BROADCAST IN GUJARATI, SINDHI, HINDI AND ENGLISH AT HOURLY / HALF HOURLY INTERVALS aaa CYCLONE WARNING FOR ..... DISTRICTS (aaa) HURRICANE LOCATED ..... K.M. (DIRECTION) OF ..... (PLACE) ..... (TIME) LAT .....^{0} N LONG ..... ^{O} E (aaa) EXPECTED TO STRIKE COAST BETWEEN ETC) aaa GALES REACHING ..... Kmph UPROOTING TREES AND CAUSING WIDESPREAD DAMAGE TO HOUSES AND INSTALLATION AND TOTAL DISRUPTION OF COMMUNICATION LIKELY .... DISTRICTS FROM ..... (DAY) ..... (DATE) (aaa) TIDAL WAVES ..... METERS ABOVE NORMAL TIDE LIKELY INUNDATE COASTAL AREAS OF .... DISTRICTS AROUND ..... (DAY/TIME) (aaa) PEOPLE IN THESE COASTAL AREAS OF ..... DISTRICTS ARE ADVISED TO TAKE SHELTER IN HIGH BUILDINGS aaa VERY HEAVY RAIN LIKELY CAUSE FLOODS IN THE ....STATE OF SEA ..... OFF ..... COAST aaa FISHER MEN ARE ADVISED NOT TO GO IN THE SEA aaa DANGER / GREAT DANGER SIGNAL No ..... HOISTED AT ..... PORTS (aaa) LOCAL WARNING SIGNAL NO 4 HOISTED AT .... PORTS (aaa) LOCAL CAUTIONARY SIGNAL NO 3 HOISTED AT ..... PORTS (aaa) ABOVE WARNINGS ARE FOR ..... DISTRICTS (aaa)

FISHERIES WARNING BY CYCLONE WARNING CENTRE AHMEDABAD

CRITERIA FOR THE ISSUE OF FISHERIES WARNING ARE:

1. STRONG OFF SHORE AND ON SHORE (OR WITH APPROPRIATE DIRECTION) WIND - SPEED EXCEEDING 45 KMPS (25 KNOTS).
2. SQUALLY WEATHER.
3. GALES (STRONG WIND UNDER STEEP PRESSURE GRADIENT, 34-47 KNOT & 8-9 IN BEAUFORT SCALE).
4. STATE OF SEA VERY ROUGH OR WAVES OF 4 METERS OR MORE UPTO A DISTANCE OF 75 KM OFF THE COAST.

FISHERIES OFFICIALS ARE WARNED BY LAND LINE HIGH PRIORITY TELEGRAMS (INDIVIDUAL FISHERIES OFFICIALS WHO ARE ON THE WARNEES LIST OF CYCLONE WARNING CENTRE, I.M.D., AHMEDABAD.

FISHERIES WARNINGS ARE BROADCAST FOUR TIMES A DAY BY THE STATIONS OF ALL INDIA RADIO IN THE RESPETIVE REGIONAL LANGUAGES OF CONCERNED AREAS.

FISHERMEN WARNING

CHART UTILISED		TIME OF ISSUE		VALIDITY PERIOD FROM	
HRS IST	UTC	HRS	IST	HRS	IST
0830 (03 Z)	MID DAY	1200	HRS	1500	24 HRS
1130 & 1430 (06 & 09 Z)	EVENING	1500	HRS	1800	24 HRS
1730 (12 Z)	MID NIGHT	2030	HRS	0800 (NEXT DAY)	24 HRS

ADDITIONAL WARNING DURING CYCLONE

2030 (18 Z)		2330	HRS	0200 (MORNING)	24 HRS

SCHEDULE OF BROADCAST OF WARNINGS FOR FISHERMEN OVER ALL INDIA RADIO IN PLAIN LANGUAGE

Name of the Station	Language of Broadcasting	Area Covered Broadcast	Time IST	Wave Length
1	2	3	4	5
Ahmedabad	Gujarati	Gujarat coast	0645	358.6 KHz
			1600	
			1530	
			(Sunday/Holiday)	
			1814	
			2310	
Vadodara	Gujarati	Gujarat coast	0635	693 KHz
			1920	
Rajkot	Gujarati	Gujarat coast	0650	693 KHz
			0945	
			1100(only Sunday)	
			1530	
			1805 (between	
			1920 & 1950)	
Bhuj	Gujarati and Gujarati North Kachchha Local dialect	Gujarat coast	0645	13.14 KHz
			1500	228.3 MTS.
			1530	
			1600 (at the end	
			Second of transmission)	
			1800	

COASTAL BULLETIN

COASTAL BULLETINES ARE MEANT FOR BENEFIT OF SHIPS PLYING MAINLY IN COASTAL AREAS i.e. SEA AREA UPTO 75 km OFF THE COAST LINE. COASTAL BULLETINES ARE BROADCAST IN MORSE CODE BY FROM COASTAL RADIO STATIONS ON FREQUENCIES NORMALLY USED BY SHIPS CYCLONE WARNING CENTRE AHMEDABAD ISSUES THESE BULLETINES FOR GUJARAT COAST.

ISSUED BY	FOR RADIO STATION	COASTAL STRIP	FREQUENCY
CWC AHMEDABAD	MUMBAI	SOUTH GUJARAT	521 KHz

TIME (UTC) OF BROADCAST COASTAL RADIO STATION (FOR GUJARAT COAST)

EXTRA	2320	2330
STORM-ONE	0420	0430
DAILY – ONE	0820	0830
STORM - TWO	1220	1230
DAILY -- TWO	1620	1630
STORM - THREE	2020	2030
SPECIAL	AT ANY TIME	

COASTAL BULLETIN CHART

CODE WORD FOR COASTAL RADIO STATIONS	TYPE OF BULLETIN	WEATHER CONDITION	CHART ON WHICH BASED IST (Z)	TIME OF ISSUE HRS IST
AURORA	DAILY-ONE	UNDISTRUBED WEATHER	0830 (03 Z)	1130
BALLON	DAILY-TWO	UNDISTURBED WEATHER	1730 (12 Z)	1930
DEW DROP	EXTRA	DEPRESSION	2330 (18 Z)	0400
ELECTRON	STORM-ONE	CYCLONE	0530 (00 Z)	0930
FORMULA	STORM-TWO	CYCLONE	1430 (09 Z)	1600
GAS BAG	STORM THREE	CYCLONE	2030 (15 Z)	2330
HEXAGON	SPECIAL		AT ANY TIME	

.

PORT WARNINGS

A UNIFORM SYSTEM OF STORM WARNING SIGNALS FOR PORTS

IS BEING USED BY INDIA METEROROLOGICAL DEPARTMENT SINCE 1898.

1. GENERAL PORTS

GENERAL PORTS USE ELEVEN SIGNALS OF WHICH' I 'AND' II' INDICATE EXISTANCE OF DISTANT DISTURBED WEATHER.

SIGNALS 'III' TO 'X' INDICATE THE PORT ITSELF IS THRETENED BY BAD WEATHER AND 'XI' INDICATES THAT THE COMMUNICATION WITH THE FORECASTING CENTRE HAS BEEN BROKEN DOWN BUT THERE IS A DANGER OF BAD WEATHER AT THE PORT.

2. BRIEF PORTS

IT USED ONLY FIVE SIGNAL (VIZ.SIGNAL' III, IV, VII, X AND XI ').

3. PORTS WITHOUT SIGNALS.

THESE ARE MINOR PORTS WHICH GET WARNINGS SIMILAR TO BRIEF PORTS. THE WARNING MESSAGES WILL CONTAIN INFORMATION ON THE LOCATION, DIRECTION OF MOVEMENT OF DISTURBANCE AND EXPECTED WEATHER OVER PORTS.

PORTS IN GUJARAT

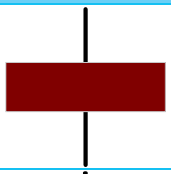
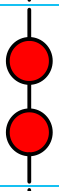
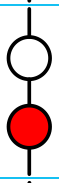
Ports with signals

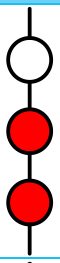
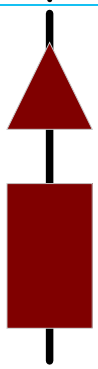
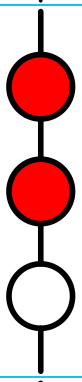
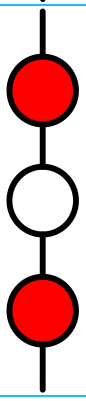
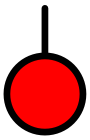
North Gujarat Coast		South Gujarat Coast	
(01)	Portal Mandvi - Kachchh (General Port)	(10)	Cyclone Mangrol (General Port)
(02)	Cyclone Mundra (General Port)	(11)	Cyclone Veraval (General Port)
(03)	Cyclone New Kandla (General Port)	(12)	Cyclone Diu (Brief Port)
(04)	Portal Morbi (For Navlakhi Port) (General Port)	(13)	Cyclone Jafrabad (General Port)l
(05)	Cyclone Jamnagar Bedi (General Port)	(14)	Cyclone Pipavav (Dunger/Rajula) (General Port)
(06)	Cyclone Sikka (General Port)	(15)	Portal Bhavnagar (General Port)
(07)	Cyclone Salaya (General Port)	(16)	Portal Alang (General Port)
(08)	Portal Okha (General Port)	(17)	Port Office Dahej (General Port)
(09)	Cyclone Porbandar (General Port)	(18)	Cyclone Magdalla (Surat) (General Port)
		(19)	Cyclone Daman (Brief Port)

Ports without Signals

North Gujarat Coast		South Gujarat Coast	
(01)	Cyclone Jakhau	(03)	Port Officer Mul Dwarka
(02)	Cyclone Dwarka (Rupen)		(Dist.Junagadh via Kodinar)
		(04)	Port Officer Victor (Amreli)
		(05)	Portal Bharuch

Pictorial form of visual Storm warning signals in use

Storm Warning	Signal No.	Day Signal	Night Signal
Distant Cautionary There is a region of squally weather in which a storm may be forming	I		
Distant Warning A Storm has formed	II		
Local Cautionary The port is threatened by squally* weather	III		
Local Warning The port is threatened by a storm but it does not appear that the danger is as yet sufficiently great to justify extreme measures of precaution	IV		
Danger Port will experience severe weather from a cyclone expected to move keeping the port to the left of its track.	V		
Danger Port will experience severe weather from a cyclone expected to move keeping the port to the right of its track.	VI		
Danger Port will experience severe weather from a cyclone expected to move over or close to the port. Note :- This signal is also hoisted when a storm is expected to skirt the coast without (actually) crossing it.	VII		

Storm Warning	Signal No.	Day Signal	Night Signal
Great Danger Port will experience severe weather from a severe cyclone expected to move keeping the port to the left of its track.	VIII		
Great Danger Port will experience severe weather from a severe cyclone expected to move keeping the port to the right of its track.	IX		
Great Danger Port will experience severe weather from a cyclone expected to move over or close to the port. Note :- This signal is also hoisted when a storm is expected to skirt the coast without (actually) crossing it.	X		
Failure of Communications Communications with the meteorological warning centres has broken down and the local officer considers that there is danger of bad weather.	XI		

Note:-

'*' Squally weather is meant to cover occasional/frequent squalls with rain or persistent type of strong gusty winds (mean wind speed not less than 20 knots) accompanied by rain. Such conditions are associated with low pressure systems or onset and strengthening of monsoon. Mean wind speeds exceeding 33 knots associated with cyclone storms are generally covered by signals higher than LC-III. The word generally has been added to permit hosting of LC-III at ports outside the inner storm area where wind speed may exceed 33 knots.

Note:-

Night signals shaded in Grey indicates Red Light.

CYCLONE WARNING DISSEMINATION SYSTEM. (CWDS)

Government of India announced a policy decision 1975 to utilize a satellite based communication network to cater to domestic requirements.

The INSAT - CWDS make use of community broadcast capability of the INSAT satellite system. The system enables the Cyclone Warning Center, CWC to directly and selectively address a particular area likely to hit by a cyclone.

The uplink to satellite is done from ACWC for disseminating the warning messages. These messages are picked up by C/S band transponder in C - band and their frequency is translated to S - band for down link purposes. A total of 150 receivers have been installed in the vulnerable coastal areas in the initial two phases. Another set of 100 receivers are being installed to augment the density of these CWDS network. The warnings are transmitted in speech mode in both English and Local language.

CYCLONE WARNING DISSEMINATION SYSTEM CWDS STATION IN GUJARAT STATE

NO.	STATIONS	ADDRESS
1.	Ahmedabad	Director, Met. Center, Ahmedabad (Monitoring Station)
2.	Gandhinagar	Director of Relief, Sachivalaya, Gandhinagar (State Head Quarter)
3.	Surat	Collector Office, Surat Dist. Surat
4.	Bharuch	Collector office Bharuch Dist. Bharuch
5.	Bhavnagar	Collector Office Bhavnagar Dist. Bhavnagar
6.	Mahuva	Mamlatdar Office Mahuva Dist. Bhavnagar
7.	Veraval	Mamlatdar Office Veraval Dist. Junagadh
8.	Porbander	Collector Office Porbander Dist. Porbander
9.	Dwarka	Mamlatdar Office, Dwarka Dist. Jamnagar
10.	Mandvi	Mamlatdar Office, Mandvi Dist. Kachchh
11.	Okha	Police Station, Okha Dist. Jamnagar
12.	Jamnagar	Civil Defence Office, Jamnagar Dist. Jamnagar
13.	Mangrol	Mamlatdar Office, Mangrol Dist. Junagadh
14.	Diu (Union Territory)	Police Station, Diu.
15.	Jafrabad	Mamlatdar Office,Jafrabad Dist. Amreli
16.	Khambhat	Mamlatdar Office, Khambhat Dist. Anand
17.	Baroda	Collector Office Vadodara Dist. Vadodara
18.	Valsad	Collector Office, Valsad Dist. Valasad
19.	Gandhidham	Civil Defence Office, Gandhidham Dist.Kachchh
20.	Daman (Union Territory)	Port Office Daman
21.	Silvassa(Union Territory)	Mamlatdar Office, Silvassa
22.	Kandla Port	Dist. Kachchh

GENERAL TERMINOLOGY USED IN WEATHER BULLETINS

(A)	**Intensity of Rainfall**		**Terminology Used.**
1.	0.1.mm to 2.4 mm	(24 hrs)	Very light rain
2.	2.5 mm to 7.5 mm	”	Light rain.
3.	7.6 mm to 34.9 mm	”	Light to Moderate rain
4.	35.0 mm to 64.9 mm	”	Moderate rain
5.	65.0 mm to 124.9mm	”	Heavy rain
6.	Exceeding 125 mm.	”	Very Heavy rain.
(B)	**Spatial distribution of weather phenomenon.**		
	Percentage Area Covered		**Terminology Used**
1.	1 to 25		Isolated
2.	26 to 50		Few Places
3.	51 to 75		Many Places
4.	76 to 100		At Most Places
(C)	**Emergency Situation**		
1.	When water level is rising above the danger of H.F.L		
2.	When intensity of rainfall is above 65 mm /hr		
3.	When breaches are anticipated which may cause disaster.		
4.	When water levels are rising abruptly which may cause disaster.		
(D)	**Evacuation**		
1	White Signal	-	Alert condition
2	Blue Signal	-	Ready for Evacuation
3	Red Signal	-	Immediate Evacuation

POST LAND FALL OUTLOOK FROM
METEOROLOGICAL CENTER, AHMEDABAD.

1. EVEN AFTER LANDFALL, THE SYSTEM IS LIKELY TO MAINTAIN ITS INTENSITY FOR _____ Hrs. AND WEAKEN GRADUALLY AAA UNDER ITS INFLUENCE RAINS AT MOST / MANY PLACES WITH HEAVY TO VERY HEAVY FALLS AT_____ LIKELY COMMENCE / CONTINUE IN _____ (COASTAL DISTRICTS) FROM _____ (TIME) _____(DAY) _____ (DATES) CAUSING INUNDATION OF LOW-LYING AREAS AAA

   GALE WINDS / SQUALLY WINDS SPEED REACHING _____ Kmph. LIKELY COMMENCE / CONTINUE IN _____ (COASTAL DISTRICTS) FROM _____ (TIME) ON _____ (DAY) _____ (DATE) CAUSING DAMAGES TO _____ AND _____ (VEGETATION) AND GENERAL DISRUPTION OF COMMUNICATION AND POWER SUPPLY FOR _____

2. AS THE CYCLONE MOVES IN LAND _____ INTERIOR DISTRICTS MAY ALSO EXPERIENCE HEAVY / VERY HEAVY RAIN ACCOMPAINED WITH GALE WITH SPEED REACHING _____ Kmph. COMMENCING FROM _____ (TIME)ON _____ (DAY) _____ (DATE) FOR _____Hrs., CAUSING FLOODING OF LOW-LYING AREAS AND DAMAGE TO PROPERTY AS INDICATED IN IMD MONOGRAPH ON " DAMAGE POTENTIAL OF TROPICAL CYCLONE" (AS PER IMD INSTRUCTION)

3. PEOPLE ARE ADVISED TO REMAIN INDOORS / IN SAFE PLACES AND CO-OPERATE WITH STATE GOVERNMENT OFFICIALS AND DISASTER MANAGEMENT AGENCIES

State/Central Govt. Officials/Vital installations/Registered User

Cyclone Alert/Cyclone Warning Bulletin No.

Date and Time of Issue:

(i) Information on cyclone:

The cyclonic storm lay over _____ Arabian Sea Center_____ Kms. _____ (Direction) of _____ place

(ii) Forecast

Further intensification:

Direction of Movement:

Expected landfall area:

Expected time of landfall:

(iii) Weather Warning

(a) Rainfall _____ in _____Districts (Names)

(b) Gales reaching _____ Kmph _____ in _____

Districts (Names)

(c) Gale force winds reaching _____ knots in _____Districts

(d) Tidal waves_____upto _____ in coastal areas of _____ Districts (Names)

(e) Sea condition:

(f) Damage: _____ , _____ , _____Districts (Namjes)

(g) Likely impacts:

IMPORTANT TELEPHONE NUMBERS OF INDIA METEOROLOGICAL DEPARTMENT FOR CYCLONE PERIODS

Sr. No	Name	Designation	Address	Office	Mobile No.	Resi. / E-mail
1	Dr. M. Mohapatra	Director General of Meteorology, & PR of India with WMO	Mausam Bhavan Lodi Road, New Delhi-3	011-24611842 011-24611792 (F)	09868623475 08826354400	11-24122236 mohapatraimd@gmail.com mohapatra_imd@yahoo.com
2	Dr.R. K. Jenamani	Scientist -'F' and Head RSMC	Tropical Cyclones IMD Dept. Lodi Road, New Delhi-3	011-24652484 011-43824324	09971022981	rjenamani@hotmail.com
3	Dr. Anand Kumar Das	Scientist-'E'	Head Cyclone Warning Division, Lodi Road, New Delhi-3	011-24344334	09868126275	akuda.imd@gmail.com
4	Smt. Monica Sharma	Scientist-'D'	Cyclone Warning Division, Lodi Road, New Delhi-3	011-24344304	0999389494	moniimd@gmail.com
5	Cyclone Warning Division			011-2434437 (During Normal Period)		cwdhq2008@gmail.com cyclonewarningdivision@gmail.com
6	S.G. Kamble	Scientist -F	Head, RMC Mumbai, near R.C Chruch, Colaba, Mumbai-5	022-22150517	09819520521	sg.kamble@imd.gov.in sunilgk123@yahoo.com
7	Dr. Sushma Nair	Scientist-D	RMC Mumbai, near R.C Chruch, Colaba, Mumbai- 5	022-22150517	09819520521	sushma.nair@imd.gov.in
8	Ms. Nitha T	Scientist-C	RMC Mumbai, near R.C Chruch, Colaba, Mumbai- 5	022-22174709 022-151989 (F)	09745304441	nitha.ts@imd.gov.in
9	Mrs. (Dr.) Manorama Mohanty	Scientist-E	Head, M.C. Ahmedabad	079-29705011 079-29702419	09428909340	m.mohanty@imd.gov.in met_mm@yahoo.co.in
10	Shri Viginlal F.	Scientist-C	M.C. Ahmedabad	079-29702418	09604465468	viginlal.f@imd.gov.in
11	Shri Abhimanyu Chuhan	Scientist-C	M.C. Ahmedabad	079-29702419	09968571910	abhimanyu.imd@gmail.com
12	CWC Officer, Ahmedabad			079-29702419		mcahm@rediffmail.com metaahm01@gmail.com

Sr. No	Station	Website Address	Email address
1	IMD DELHI	https://mausam.imd.gov.in	cwdhq2008@gmail.com
2	IMD MUMBAI	https://mausam.imd.gov.in/mumbai/	acwc.mumbai@gmail.com
3	IMD AHMEDABDAD	https://mausam.imd.gov.in/ahmedabad/	mcahm@rediffmail.com metahm01@gmail.com

INTRODUCTION

1

1.0 INTRODUCTION

1.1 Disaster Management Plan (Flood Warning Arrangements):

1.1.1 Disaster Management Plan (Flood Warning Arrangement) consists of flood forecasting system for various rivers of State, instructions & functions to be performed by various officers at the time of flood in the river during monsoon period. The system of flood forecasting consists of four phases viz.,

(a) Observation and collection of operational data shall mean activities such as - Collection of field data regarding rainfall, water levels of gauge sites, etc., by different field officers at various places as described hereafter.

(b) Transmission of data to forecast centers means: - Transmission / Email / Facsimile / Physical copy of data collected as above to the concerned officers in charge of formulation of forecast.

(c) Formulation of forecast means: - Preparing flood forecast on the basis of the data collected above along with necessary data from the I.M.D.

(d) Issue of forecast: - All officers formulating the forecast are authorized to issue the forecast.

The complete list of gauge stations for which Hydro Meteorological data are being collected, danger level/F.R.L. of the stations and the officers in-charge with their telephone numbers are given vide Annexure 1-B and Flood Telephone Directory of the current year respectively. The warning and danger levels for the important gauge stations are also appended vide Annexure 1-C

1.2 Contact Numbers;

1.2.1 The Contact numbers of the concerned officers are listed in the Flood Telephone Directory of the current year

1.3 Meteorological Center and Flood Meteorological Officer.

1.3.1 Meteorological Center and Flood Meteorological office stationed at Ahmedabad collects information regarding meteorological situation of the State. These Hydro Meteorological data are transmitted by flood meteorological office to the Executive Engineer, Mahi Division, (C.W.C.) at Gandhinagar and Executive Engineer, Tapi Division (C.W.C.) Surat as per their specific requirements. Meteorological center also issues heavy rainfall warnings to those officers of N.W.R.W.S. & Kalpasar Dept. and Revenue Departments of Government of Gujarat who have specifically got their names registered with Meteorological Center, Ahmedabad for receiving of heavy rainfall warning by giving their specific requirements in the prescribed proforma known as “Album Page”. **The information and terminology regarding *WEATHER BULLETINS, COASTAL BULLETINS and POST LAND FALL OUTLOOK* specified by India Meteorology Department are given on Page No.(I) to (XIX) with Telephone Nos.** The website is https://mausam.imd.gov.in/ahmedabad/ address of Meteorological Centre and Flood Meteorological office are as under:

TABLE – 1.3.1

(a)	Director I/c Meteorological Center/Flood Meteorological Office RS/RW Building, Airport, Ahmedabad – 382475	**Note:-** Kindly refer Flood Telephone Directory of current year for Telephone Nos.
(b)	Meteorological Center Office, RS/RW Building, Airport, Ahmedabad 382475	
(c)	Flood Meteorological Office RS/RW Building, Airport, Ahmedabad 382475	

1.4 Central Water Commission Offices

1.4.1 Government of India has set up two Divisions**, Tapi Division, (C.W.C.), Kshetrapal Health Centre, Sangrampur, Surat – 395 002 and Mahi Division, (C.W.C.), 3rd Floor, Narmada Tapi Bhavan, Sector-10-A, Gandhinagar-382043**, working under Superintending Engineer, Hydrological Observation Circle, (C.W.C.) Gandhinagar for issuing flood warnings of six inter-state rivers viz. *(1) Damanganga (2) Tapi (3) Narmada (4) Mahi (5) Sabarmati and (6) Banas.* The inflow forecast and flood level forecast for the above basins are to be conveyed by Executive Engineer, Tapi Division, (C.W.C.) Surat and Executive Engineer, Mahi Division, (C.W.C.) Gandhinagar to Focal Officers; Flood Control Cell, Gandhinagar and respective project officers well in advance. The details of warnings and danger level for important stations of above **six interstate rivers are given in Annexure - 1(C).**

The names of Officer in-charge of above basins are as under:

TABLE - 1.4.1

Name Of Officer	Name of Basins
Executive Engineer Tapi Division (C.W.C.) Surat	(a) Damanganga (b) Tapi (c) Narmada
Executive Engineer Mahi Division (C.W.C.) Gandhinagar	(a) Mahi (b) Sabarmati (c) Banas

1.5 Appropriate Authorities (Focal Officers):

1.5.1 The State Government has considered the officer of the rank of Superintending Engineer or Collector of concerned districts or Municipal Commissioners, as Appropriate Authorities (Focal Officers) for various Basins / Regions during monsoon period (as per the *Gujarat State Disaster Management Act-2003*). The Focal Officer can nominate any Executive Engineer / Officers in his area as his second in command who will act as Sub-Focal Officer for discharging duties of Focal Officer. He will inform the name, address and telephone Nos. of sub-focal officer to all concerned. List of **Gauge Stations & Officer-in-Charge with telephone nos**, for monitoring the flood is **Annexure-1(B).**

The Focal Officers are responsible for :-

1.5.2 Keeping constant watch over the flood situation, flood warning, monitoring flood discharges through concerned project authorities, formulating flood forecast as and when required conveying these warning including conveying inflow forecast and flood level forecast from C.W.C. or the case may be in advance to the concerned Revenue and Police authorities for alerting and evacuating people of the area likely to be affected by the incoming floods if necessary. On receipt of flood warning the revenue authorities will in turn take necessary actions for alerting and evacuating the people likely to be affected in accordance with warning as per Flood Warning Arrangement.

1.5.3 Whenever heavy outflow is likely to be let off from the dam/weir or whenever bursting of dam is anticipated, warnings are also communicated by the Focal Officer/Executive Engineer either to the Assistant Engineer of Railway or to the Station Master of the nearest railway station or Divisional Railway Managers as per list below:

TABLE - 1.5.3

Divisional Railway Manager Western Railway

(a)	Mumbai	**Note:** Kindly refer Flood Telephone Directory of current year for Telephone Nos.
(b)	Vadodara	
(c)	Ratlam	
(d)	Bhavnagar para	
(e)	Rajkot	

Further the Divisional Railway Manager, Western Railway, Vadodara vide his letter No. W. 694/i/vol.V(W13) Dated 28-2-95 has requested that the Focal Officer should inform the control room of Vadodara Division wherever it is contemplated to release water from the Dams & in case, advance warning is received by the Railway authority in time it will be possible to take preventive measures to regulate the running of trains & to protect the Railway property, staff and passengers. The Chief Bridge Engineer, North-West Railway, Jodhpur and The Chief Bridge Engineer, Churchgate Mumbai office has requested to instruct the field engineers to carry out necessary inspections and execute required maintenance works well before next monsoon so that any damage to railway track on this account can be avoided. Also requested to contact on phone No. **22114588** Chief Area Manager @ **Ahmedabad** & **2638081** Vadodara Divisional Railway Manager @ **Vadodara in case of any emergency.**

1.5.4 During flood emergency, in any of the rivers it is the duty of the Focal Officer of the basin to intimate the full situation of the flood including measures taken etc. to the *Principal Secretary, Water Resources, Water Supply & Kalpasar Department, Secretary (Narmada), Chief Engineer (Central Gujarat) and Additional Secretary, concerned Chief Engineer and Additional Secretary of the Project and the Flood Control Cell, Gandhinagar.*

1.5.5 During emergency flood messages are also conveyed by Focal Officer or any officer authorized by him and **Collector of the District to Akashwani / Doordarshan** for necessary broadcast. The said messages should also be conveyed to the Flood Control

Cell, Gandhinagar, confirmation copies thereof are to be sent to **Akashwani / Doordarshan and Flood Control Cell** by return of post as per **Annexure 2-B.**

1.5.6 All concerned Focal Officers should prepare a drill to be followed during monsoon at the time of various floods including catastrophic flood and fix duties of all concerned persons at that moment. The rehearsal of this drill should be made before the onset of monsoon.

1.5.7 Following are the <u>Appropriate Authorities</u> (Focal Officers) for Various Basins/Areas.

TABLE - 1.5.7.

Sr. No.	Name of Basin/Area	Name & Address of Focal Officer	Telephone Nos. Office Residence
1.	Damanganga Basin	Superintending Engineer, Damanganga Project Circle, 2nd Floor, Damanganga Bhavan, Behind Jilla Seva Sadan-1, Valsad – 396 001	**Note:** Kindly refer Flood Telephone Directory of current year for Telephone Nos.
2.	Tapi Basin	Superintending Engineer, Surat Irrigation Circle, Near M.T.B. College, Surat	
3.	Narmada Basin	Superintending Engineer, N.P.Head Works Circle, New Administrative Block-B, First floor, Kevadia-393151	
4.	Rami & Sukhi (Sub Basins of Narmada)	Superintending Engineer Vadodara Irrigation Circle, New Kothi Building, Vadodara.	
5.	Karjan Basin (Sub Basins of Narmada)	Superintending Engineer Vadodara Irrigation Circle, New Kothi Building, Vadodara.	
6.	Mahi Basin	Superintending Engineer Mahi Irrigation Circle Nadiad Sarkari Vasahat Mission Road, Nadiad	
7.	Sabarmati Basin	Superintending Engineer Ahmedabad Irrigation Project Circle, L.D. Engineering College Campus, Ahmedabad – 380 015	
7a.	Sub Basin of Sabarmati Mohar & Shedhi River	Superintending Engineer Mahi Irrigation Circle Nadiad Sarkari Vasahat	

Sr. No.	Name of Basin/Area	Name & Address of Focal Officer	Telephone Nos. Office Residence
		Mission Road, Nadiad	
8.	River of Sabarkatha District	Superintending Engineer Himmatnagar Irrigation Project Circle, "Sinchai Bhavan" Himmatnagar	
9.	Banas Basin	Superintending Engineer Sujlam Suflam Circle No.2 Opp Administrative Block,Narmada Project colony Lakhvad road, Mehsana-1	
10.	Vishwamitry & Deo Basins	Superintending Engineer Vadodara Irrigation Circle Near Kothi Building, Vadodara.	
11.	Saraswati Basin	Superintending Engineer Sujlam Suflam Circle No.2 Opp Administrative Block,Narmada Project colony Lakhvad road, Mehsana-1	
12.	Rivers of Panchmahals & Dahod District	Superintending Engineer, Panam Project Circle, Civil Lines, Behind Collector Office, Godhra-389001.	
13.	Rivers of Rajkot, Morbi,Jamnagar, Dev Bhumi Dwarka & Surendranagar	Superintending Engineer, Rajkot Irrigation Circle Nr. Jilla seva Sadan-II, Opp. Prayag 'C' Appartment, Race Course,Rajkot.	
14.	Rivers of Bhavnagar, Amreli, Junagadh, Porbandar, Botad & Gir Somnath Districts	Superintending Engineer, Bhavnagar Irrigation Project Circle,S-3, Jila Seva Sadan-2, Bhavnagar	
15.	Rivers of Kachchh District.	Superintending Engineer Kachchh Irrigation Circle "Sinchai Sadan", Near Jubilee Ground, Bhuj.	
16.	Minor Irrigation Projects of Districts.		

Sr. No.	Name of Basin/Area	Name & Address of Focal Officer	Telephone Nos. Office Residence
	(A)		
1.	Ahmedabad	Superintending Engineer Gandhinagar Panchayat Irrigation Circle. Patnagar Yojna Bhavan Sector No. 16, Gandhinagar	
2.	Anand		
3.	Aravalli		
4.	Banaskantha		
5.	Gandhinagar		
6.	Kheda		
7.	Mehsana		
8.	Patan		
9.	Sabarkanta		
	(B)		
1.	Amreli	Superintending Engineer Rajkot Panchayat Irrigation Circle, M.S. Building, Race Course, Rajkot	
2.	Bhavnagar		
3.	Botad		
4.	Dev Bhumi Dwarka		
5.	Gir Somnath		
6.	Jamnagar		
7.	Junagadh		
8.	Morbi		
9.	Porbandar		
10.	Rajkot		
11.	Surendranagar		
	(C)		
1.	Bharuch	Superintending Engineer Vadodara Panchayat Irrigation Circle, Room No.512, 513, 5th Floor, kuber Bhavan Kothi Char Rasta, Vadodara	
2.	Chhotaudepur		
3.	Dahod.		
4.	Dangs		
5.	Mahisagar		
6.	Narmada		
7.	Navsari		
8.	Panchmahals		
9.	Surat		
10.	Tapi		
11.	Vadodara		
12.	Valsad		
	(D)		
1.	Kachchh District	Superintending Engineer Kachchh Irrigation Circle "Sinchai Sadan", Jubilee Ground, Bhuj.	

Sr. No.	Name of Basin/Area	Name & Address of Focal Officer	Telephone Nos. Office Residence
17.	Water Supply Schemes:		
	(A)		
1.	Tappar	Superintending Engineer, Public Health Circle, Bhuj.	
	(B)		
1.	Hasnapur	Municipal Commissioner, Junagadh, Municipal Corporation, Junagadh	
2.	Khambhala	Superintending Engineer, Public Health Circle, Porbandar	
3.	Phodarness		
	(C)		
1.	Ajwa	Municipal Commissioner, Vadodara Municipal Corporation, Vadodara	
2.	Pratappura		
	(D)		
1.	Nyari-I	Municipal Commissioner, Rajkot Municipal Corporation Rajkot.	
	(E)		
1.	Ranjit Sagar	Municipal Commissioner Jamnagar Municipal Corporation, Jamnagar.	

1.5.8 Where Government has not nominated any officer of Narmada, Water Resources Water Supply and Kalpasar Department as Focal Officer, the Collector of the District will be responsible for all the situations arising out of floods, heavy rains etc. for taking all necessary steps regarding rescue and relief operations and obtain meteorological data from I.M.D. directly.

TABLE – 1.5.8
District Collectors.

Sr. No.	Name of Districts	Telephone Nos. Office Residence
1.	Ahmedabad	**Note:** Kindly refer Flood Telephone Directory of current year for Telephone Nos.
2.	Amreli	
3.	Anand	
4.	Banaskantha (Palanpur)	
5.	Bharuch	
6.	Bhavnagar	
7.	Dangs (Ahwa)	
8.	Dahod	
9.	Gandhinagar	
10.	Jamnagar	
11.	Junagadh	
12.	Kheda	
13.	Kachchh (Bhuj)	
14.	Mehsana	
15.	Narmada (Rajpipla)	
16.	Navsari	
17.	Panchmahals (Godhra)	
18.	Patan	
19.	Porbandar	
20.	Rajkot	
21.	Sabarkantha (Himmatnagar)	
22.	Surat	
23.	Surendranagar	
24.	Tapi	
25.	Vadodara	
26.	Valsad.	
27.	Daman (Union Territory)	
28.	Dadra & Nagar Haweli (U.T).	
29.	Chhotaudepur	
30.	Morbi	
31.	Dev Bhumi Dwarka	
32.	Gir Somnath	
33.	Mahisagar	
34.	Botad	
35.	Aravalli	

1.6 Control Room

1.6.1 As a part of "Flood Warning Arrangements" The Flood Control Cell under the control of Superintending Engineer, State Water Data Centre, Sector - 8, Gandhinagar, is set up from 1st June to 31st October or up to one week after withdrawal of monsoon by I.M.D. or as directed by Govt. of Gujarat. Accordingly the Flood Control Cell, shall be setup at 1st Floor, State Water Data Centre Building, Sector - 8, CH-2 Road, Gandhinagar. The Telephone No E-mail ID for any detail related to the flood in Gujarat State is 079-23248735/36 /flood@gujarat.gov.in. This acts as the coordinating unit between the Focal Officers of various river basins and the Government. The Flood Control Cell operates round the clock during the monsoon period. The Flood Control Cell collects gauge levels of inter State rivers viz. Damanganga, Tapi, Narmada, Mahi, Sabarmati and Banas from Tapi and Mahi Divisions of C.W.C. The daily flood report, three hourly water levels of interstate basins and hourly water levels of schemes during floods are updated by online data entry on website http://wrd.guj.nic.in/dam The cell also collects information of other Major/Medium Projects and informs the officers of the Narmada Water Resources,Water Supply & Kalpasar Department & Revenue Department of the state at Sachivalaya, Gandhinagar about the situation of floods in various rivers of the State. The Flood Control Cell, Gandhinagar also obtains the weather forecast and rainfall data etc. from Indian Meteorological Department. The water levels and forecast is conveyed in morning after 8.00 A.M. to the following officers.

(i) Secretary, Narmada, Water Resources, Water Supply and Kalpasar Department
(ii) Secretary (Narmada), Sardar Sarovar Narmada Nigam Ltd. Gandhinagar
(iii) Secretary, Roads and Buildings Department (If necessary)
(iv) Chief Engineer, (Central Gujarat) and Addl. Secretary, Narmada, Water Resources, Water Supply and Kalpasar Department
(v) Chief Engineer and Addl. Secretary of concerned projects of Narmada, Water Resources, Water Supply and Kalpasar Department
(vi) Superintending Engineer, State Water Data Centre, Gandhinagar.
(vii) Officer on Special Duty (W.R.) Narmada, Water Resources, Water Supply and Kalpasar Department

1.6.2 The Collectors, District Superintendents of Police and Focal Officers who open the Control Room and issue flood warning and flood forecast, should intimate the opening of the flood cell with proper Address, Telephone Nos., etc. to the Executive Engineer, Tapi Division, (C.W.C.), Surat/Executive Engineer, Mahi Division (C.W.C.) Gandhinagar as per their jurisdiction and also to the Flood Control Cell, 1st Floor, State Water Data Centre Building, Sector - 8, Gandhinagar.

1.6.3. In addition to this when heavy rainfall warnings are received or when flood level is likely to cross White Signal in any of the rivers in the state, the information will be conveyed to the above officers immediately at Sr. No. (i) to (vii) of Para 1.6.1 and Flood Control Cell, Gandhinagar by the concerned Officer-In-Charge of the concerned control room.

1.6.4. During emergency rainfall i.e. more than 65 mm/hour intensity, rainfall data and other messages are conveyed at an interval of one hour in the morning session i.e. 6.00 to 10.00 A.M. and also in evening session after 6.00 PM at the residence of Officer on Special Duty (IP). The same are conveyed to his office during office hours i.e. 10.30 A.M. to 6.10 P.M. who in turn conveys the same to the above said officers appearing at Sr. (i) to (v) of para 1.6.1.

1.6.5 All the Officers-In-Charge of control rooms are requested to ensure that their Control Rooms are manned by responsible officers of Gazetted rank even on holidays.

1.6.6 As a part of Flood Warning Arrangements, the Narmada Water Resources, Water Supply and Kalpasar Department has been linked with point to point speech circuit (i.e. Hot line) with the following control rooms during **1st June to 31st October.**

(1) The Flood Control Cell Gandhinagar to : (12 Hotlines)

a. Office of The Chief Engineer (Central Gujarat) & Additional Secretary, Narmada, Water Resources, Water Supply and Kalpasar Department, Block No. 9, 1st Floor, New Sachivalaya, Gandhinagar (Local)

b. Officer on Special Duty (IP), Narmada, Water Resources, Water Supply and Kalpasar Department, Block No. 9, 3rd Floor, New Sachivalaya, Gandhinagar (Local)

c. The Superintending Engineer, Rajkot Irrigation Circle, Multi Storied Building, Race Course Road, Rajkot

d. The Superintending Engineer Bhavnagar Irrigation Project Circle, S-3, Jila Seva Sadan-2, Bhavnagar

e. The Executive Engineer, Mahi Division (C W C) Sector-10-A, Near to Ch-3 Circle, Gandhinagar (Local)

f. The Executive Engineer, Tapi Division (C W C) Kshetrapal Health Centre, Sangrampur Society, Surat.

g. The Executive Engineer and Sub Focal Officer, Surat Canal Dn, Athwa lines, M.T.B. College Road, Surat.

h. The Executive Engineer and Sub Focal Officer, Dharoi Canal Division No.3, Dharoi Colony Rest House, Visnagar, District: Mehsana.

i. The Superintending Engineer and Focal Officer, Kachchh Irrigation Circle "Sinchai Sadan" Nr. Jubilee Ground, Bhuj -- Kachchh.

j. The Superintending Engineer and Focal Officer, Panam Project Circle, Civil Lines, Behind Collector Office, Godhra, Dist. Panchmahals.

k. The Superintending Engineer, Panam Project Circle, Floodcell Kadana Division No.1, Diwada Colony Lunawada, Dist. Mahisagar

l. The Superintending Engineer, Ukai (Civil) Circle, Ukai, Via: Songadh, Taluka: Vyara, District: Surat

(2) Superintending Engineer, and Focal Officer, Rajkot Irrigation Circle, Rajkot i.e., Flood Control Cell Rajkot to, (4 Hotlines)

(a) Executive Engineer, Rajkot Irrigation Division, Rajkot.
(b) Executive Engineer, Irrigation Division, Morbi.
(c) Executive Engineer, Salinity Control Division, Jamkhambhaliya.
(d) Executive Engineer, Surendranagar Irrigation Division, Surendranagar.

(3) Superintending Engineer, and Focal Officer, Bhavnagar Irrigation Project Circle, Bhavnagar i.e., Flood Control Cell Bhavnagar, to: (5 Hotlines)

(a) Executive Engineer, Amreli Irrigation Division, Amreli.
(b) Executive Engineer, Junagadh Irrigation Division, Junagadh.
(c) Executive Engineer, Botad Irrigation Division, Botad
(d) Executive Engineer, Gir Somnath Irrigation Division, Veraval
(e) Executive Engineer, Salinity Control Division, Porbandar

(4) Superintending Engineer and Focal Officer, Surat Irrigation Circle, i.e., Flood Control Cell, to: (1 Hotline)

(a) Ukai Flood Control Cell. (Ukai)

1.7 Miscellaneous

1.7.1 All the officers concerned with flood warning should see that necessary correspondence in connection with flood warning and flood forecasting with all officers of Tapi Division (C.W.C.) Surat/Mahi Division, (C.W.C.), Gandhinagar and other Central Government Officers are made in Hindi or English only.

1.7.2 The data will be conveyed in metric units by Executive Engineer, Tapi Division, (C.W.C.) Surat/Executive Engineer, Mahi Division, (C.W.C.), Gandhinagar.

1.7.3 In the event of any news items appearing in the newspapers/news media regarding flood damages including inundation etc. in any area, the concerned Superintending Engineer should immediately take stock of situation and issue necessary press release clarifying the actual situation. Intimation to this effect should immediately be sent to Flood Control Cell. Gandhinagar, Chief Engineer (Central Gujarat) and Additional Secretary and Chief Engineer & Additional Secretary of the project concerned.

1.7.4 Whenever the assistance of Air Force is required during the natural calamities and grave emergencies, the State Authorities are requested to liaison immediately in writing with local (Air Force) Station Commander/HQ Station Western Air Command, Gandhinagar (Phone No.079-23255725).

1.7.5 Whenever the assistance of military is required during the natural calamities and grave emergencies, the state Revenue Authorities are requested to liaison immediately to the nearest Military (H.Q) (Phone No.079-22867280).

1.7.6 In the case of emergency, the flood forecast and flood warning shall also be sent to the Secretary, Narmada, Water Resources, Water Supply and Kalpasar Department, Secretary (Narmada), Principal Secretary Roads and Buildings Department, Chief Engineer, (Central Gujarat) and Additional Secretary and Chief Engineer & Additional Secretary concerned project of the Government of Gujarat, Gandhinagar by the Appropriate Authorities (Focal Officers) of various basins, Focal Officers and Collectors of the District shall also convey the warning during emergency to the nearest Station Director, All India Radio/Doordarshan Kendra, for the broadcasting the said warning.

1.7.7 The provisions of offences and penalties will be applicable as per chapter XV para 38.1 of Gujarat Disaster Management Act-2003.

1.7.7 All the Project Officers, who are in-charge of the Irrigation Projects under construction as well as in case of completed schemes, shall remain more vigilant

during monsoon. In case of Irrigation tank or reservoirs, which are to be filled in for the first time, after construction, the field officer shall keep close watch and vigil during monsoon for safety of the Irrigation tank or reservoir. The field officer should follow the initial filling criteria given in **C.W.C. letter No. L/25/86-DSS/509 dated 13th May 1986, (Annexure 1-E)**. In case of any apprehension of danger to the scheme the same shall be immediately informed to the Chief Engineer and Add. Secretary, Superintending Engineers concerned of the project and Government officers at Sr. No. 1 to 10 under para 1.7.6 including Flood Control Cell, Gandhinagar and necessary remedial steps shall be taken to stop the danger and the safety of the structure.

1.7.8 The flood forecasting & flood warning arrangements for following water supply projects under **Municipal Corporation/ Gujarat Water Supply & Sewerage Board is being looked after by Municipal Commissioner/Superintending Engineer of the concerned projects.** They shall directly collect Weather Bulletin/H.R.W. from Indian Meteorological Department, Ahmedabad or Revenue Control Room of the concerned district and shall formulate the flood forecast and convey to the concerned Collector regarding the area likely to be affected for alerting and evacuation of the people as warranted by flood, simultaneously, they shall convey the flood forecast and action taken by them to the Flood Control Cell, (Irrigation) nearest to them.

TABLE 1.7.8

Sr. No.	Name of Water Supply Scheme	Officer In-charge of Scheme	Telephone Nos. Office Residence
1.	Tappar	Superintending Engineer, Kachchh Irrigation Circle, Bhuj	**Note:** Please refer Flood Telephone Directory of current year for Telephone Nos.
2.	Hasnapur	Muni. Commi., Junagadh	
3.	Khambhala	Executive Engineer, Public Health Division, Porbandar	
4.	Phodarness	Executive Engineer, Public Health Division, Porbandar	
5.	Ajwa	Municipal Commissioner Vadodara Municipal Corporation, Vadodara	
6.	Pratappura		
7.	Nyari-I	Municipal Commissioner Rajkot Municipal Corporation, Rajkot	
8.	Ranjit Sagar	Municipal Commissioner Jamnagar Municipal Corporation, Jamnagar	

1.7.9 The Narmada, Water Resources, Water Supply and Kalpasar Department, Gandhinagar has setup the flood fighting units for Monsoon, equipped with various

machinery @ various locations of Gujarat, Saurashtra and Kachchh as per para 30 of Chapter - 3 as per Annexure - 3.

1.8 DRAINS.

There are many drains in the state. These drains are linked up with inter taluka or inter-districts. Several drains are long and having a large capacity. Several drains are also passing from nearby villages or town. Due to heavy to very heavy rainfall in the catchment areas of drain, the drains cause damages to land, crops, property, cattle of the adjoining areas. Sometimes it is difficult to approach the drain sites, particularly when the drain overflows and makes breaches in the banks of the drains.

The Executive Engineer, in charge of drain has to function as a "FOCAL OFFICER" and has to take the necessary action. The Deputy Executive Engineer who is physically in-charge of the drains called as "Sub-Focal Officer", has to take necessary action and make efforts to control the situation.

The Sub-Focal Officer in-charge of the drains has to intimate his higher authorities and revenue authorities like Mamlatdar, Prant Officer, Collectors, Police Authorities, Home Guard Authorities and respective local/regional flood control cell regarding the situation. All authorities are requested to extend the help required by the sub-focal officer to overcome the situation.

1.9 Operation of Gates and Rule curve levels for Irrigation Projects

1.9.1 The detailed guidelines for gate operation with graphs of (1) Spillway discharges at different reservoir levels and gate opening and (2) Rate of change in storage to decide inflow based on rise/fall in Reservoir level in unit duration are prepared by CDO under NWR, WS

& K.D. For almost all the projects and are furnished to concern Project Officers. These guidelines may be followed for operation of reservoir, (Rule levels are appended in Annexure 1D).

1.9.2 The rule levels are prepared considering following points.

(i) There is no specific flood storage space provided in any of the dams in the State. Due to this, if the provision of artificial flood control space is proposed to be kept for flood moderation by keeping lower rule levels whenever feasible, then there may be a risk of non-filling of reservoir full up to FRL. If in later part of the monsoon, the availability as assumed is less and in turn as its repercussions, the irrigation requirements as planned thereafter may not be fulfilled.

(ii) For dams completed recently the initial filling criteria given in C.W.C. Letter No. L/25/86-DSS/509 dated 13/5/86 should be followed. The same is also reproduced in the Flood Warning Arrangement for ready reference. While following the CWC's criteria for initial filling, the concerned Superintending Engineer/Executive Engineer should assess the behavior of the structure on the basis of observed data of instruments provided in dams at different stages of filling as well as seepage through dams and review the decision for further filling of reservoir accordingly in consultation with CDO, Gandhinagar.

(iii) For the safety measures against the existence of hidden damages of dams restored recently or to be restored before june-2013, the initial reservoir filling criteria given in CWC's letter dated 13/05/1986 no. L-25-86-DSS-509 is advisable to be followed.

(iv) As an advance precaution to safe guard against occurrence of any abnormal condition required goods and materials like sand, rubble stone, empty cement bags wire cages, etc. should be stacked at suitable places. Gates, Hoists and other mechanical accessories, wireless sets, lighting arrangement, alternative arrangement in absence of electricity supply, D.G. set etc. approach road, should be kept in working condition. For further information Govt. Circular included in Chapter No.3 of this Disaster Management Plan may kindly be referred.

(v) In case of reservoir, which releases water for hydro power generation and the same water is utilized through downstream weir, as far as possible, the releases from reservoir should be made critically and economically in accordance with the actual irrigation demand at the weir site, so that, undue wastage of water through overflow over the weir can be avoided.

(vi) There may be restriction in filling the reservoir due to other aspects like leakage for which remedial measures may be in progress / likely to be taken up etc. This point may also be considered while deciding rule levels. The concerned SEs are requested to submit the proposal to Govt. for approval from the respective Chief Engineer and Additional Secretary for this restricted filling of reservoir.

1.9.3 In case of the reservoir proposed for restricted filling due to reasons mentioned in Para No. 1.9.2 Above concerned Superintending Engineer are requested to submit proposal to the Government and get it approved before on set of monsoon.

1.9.4 The proposed Rule Levels are tentative and concerned project officers are requested to give their comments/views based on their past experiences of observed storms , the downstream hazards, safe carrying capacity of the downstream channel and other restrictions, if any. The project officers are also requested to review and finalize the Rule Levels for this monsoon based on the inflow data, water requirements for irrigation, water supply and power generation for the year reservoir losses etc. In consultation with C.D.O. and get it approved from the Government.

1.9.5 When the proposed Rule Levels are reached and the position is such that water is to be stored above the rule level, in that case or water is to be released for the purpose other than irrigation before Rule Levels are reached, the concurrence from the concerned Chief Engineer & Addl. Secretary may please be obtained. While deciding the above parameters, following points should be examined critically by the concerned field officers in consultation with respective Chief Engineer & Addl Secretary.

(i) Prevailing overall conditions of the rainfall during the monsoon.

(ii) Storage capacity and safety of dam structure and U/s -D/s Structures, flood cushion available in the reservoir above the rule level of the particular time.

(iii) Efficiency of the existing network of flood forecasting system and flood warning arrangement along with communication system and actual experiences of the same in past to reduce the downstream hazard potential.

1.9.6 When two or more reservoirs are to be operated on the same river basin, gate regulation should be done in such a way that the maximum water can be stored without risk to the safety of upstream and downstream of the dams along with consideration of floods moderation to suit the downstream safe channel carrying capacity such that there is minimum hazarded potential in downstream areas.

1.9.7 Release of water from the dam (outflow) is to be decided by Superintending Engineer, Ukai Circle (Civil), Ukai on consultation of Chief Engineer (S.G) and Additional Secretary.

1.9.8 The details of the Spillway/Weir and the maximum discharge capacity of the Spillway/Weir are also mentioned in the Scheme. The maximum discharge released after the year 1990 from the major project is mentioned in **Annexure-1- G**

1.9.9 The Flood Risk Map of Gujarat, Major & Meduim dams in Gujarat, Flood Prone Villages & River Sections, Flood Prone River Sections, Flood Frequency Values across Dams and gauges in Gujarat and Single Day Extreme Rainfall Reported by Station (1901-1990) given in **Annexure-1- H**

1.10 Hazards Analysis

Owing to its geo-climatic, geological and physical features, Gujarat is vulnerable to all major natural hazards namely, drought, flood, cyclone, earthquake, tsunami, Heat wave, etc. The State is also under constant threat of various human made hazards like that of Industrial (chemical) hazards, fire, transportation accidents, epidemic, accidents, etc.

Gujarat State Disaster Management Authority (GSDMA) developed Gujarat Hazard Risk & Vulnerability Atlas. As per the same, following are the major hazards in the State:

1.10.1 Earthquake

As per Indian Seismic Zone Map, Gujarat region lies in three zones- Zone III, IV and V. Kachchh region (about 300km x 300km) lies in zone V where earthquakes of magnitude 8 can be expected. A belt of about 60-70km width around this zone covering areas of North Saurashtra and areas bordering Eastern part of Kachchh lie in zone IV where intensity VIII can be expected mainly due to earthquakes in Kachchh and some local earthquakes along North Kathiawar Fault in Northern Saurashtra. The rest of Gujarat lies in zone III where intensity VII earthquakes can be expected due to moderate local earthquakes or strong Kachchh earthquakes.

The estimated mean taluka earthquake peak ground acceleration (PGA) zonation for a 100-year return period is presented in the Annexure 3.1. All of Kachchh, almost the entire coastline of northern Saurashtra that adjoins Kachchh and a small area in Patan district fall into the very sever intensity zone over a 100-year return period. The cities of Ahmedabad, Bharuch, Rajkot, and Bhavnagar fall into the severe intensity zone, while Bhuj and Jamnagar fall in the very severe intensity zone over this time frame.

1.10.2 Cyclone

Gujarat falls in the region of tropical cyclone. With the longest coast line of 2341 km in the country, it is highly vulnerable to cyclone and its associated hazards such as floods, storm surges, etc. Most of the cyclones affecting the state are generated in the Arabian

Sea. They move North-East and hit the coast particularly the Southern Kutch and Southern Saurashtra and the Western part of Gujarat.

Two cyclonic storm seasons are experienced in Gujarat: May to June (advancing southwest monsoon) and September to November (retreating monsoon).

Over 120 cyclones originating in the Arabian Sea had passed through Gujarat over a period of 100 years. Annexure 3.2 shows a maximum wind speed class of more than 55 m/sec along the Saurashtra coast, specifically in Junagadh, Porbandar, Jamnagar, Morbi, and Kutch districts, which are exposed to high intensity cyclonic and storm impact.

The 51 to 55 m/sec class extends further inland to cover much of Jamnagar, part of Rajkot, Morbi and Kutch districts. The 48 to 50 m/sec class extends to most of Rajkot, part of Amreli and Jamnagar districts including Jamnagar, Rajkot cities and parts of Kutch. The 45 to 47 m/sec class covers much of Saurashtra and all of Kutch. This is followed by the 40 to 44 m/sec class that gets its swathe from Kutch through northern Saurashtra all the way to the coast of Gulf of Khambhat and southern Gujarat. The rest of the State falls into the 34 to 39 m/sec class.

1.10.3 Drought

Daily temperature of the State ranges from a minimum 13°C to 27°C in January to 27°C to 41°C in the summer during May. The South-West winds mostly bring rain between June to September and approximately 90 to 95% of precipitation is registered in these three months. From the North-West areas to South Gujarat areas, the rainfall varies from 300 mm to 2000 mm per annum. In Gujarat, 60% of rainfall is uncertain, unprecedented and unequal and the regions of Saurashtra, Kutch and North Gujarat face famine every third year. Since 1900, the state has faced scarcity of water and food almost 30 times.

Gujarat is one the chronic drought prone state of India, with an average annual rainfall about mm with more than half of the Talukas of Gujarat receiving rainfall within the range of 200-400 mm.

Substantial portions of the State are arid to semiarid. With large parts of North Gujarat and Saurashtra having no source of alternate irrigation, groundwater exploitation is leading increased threats of droughts. Falling water tables have added stress on crops and water supplies.

1.10.4 Flood

The climatology of Gujarat is influenced by the Arabian Sea in the West and three hill ranges along its Eastern border. A long coastline makes parts of arid Saurashtra and Kutch occasionally experience very high rainfall. These occasional heavy rainstorms are responsible for most of the floods in the State. While the Northern part of the State is mostly arid and semi-arid, the Southern part is humid to sub-humid. Extremes of climate, be it rainfall or temperatures are quite common in this region. All major rivers in the State pass through a wide stretch of the very flat terrain before reaching the sea. These flat lowlands of lower river basins are prone to flooding. Cities like Ahmedabad, Surat and Bharuch are located on the flat alluvial plains of large rivers.

Concentrated runoff resulted by heavy rainfall cause flash floods in the small river basin of Saurashtra and Kutch because of their fairly impervious catchments (rocky or black cotton soils) and steep sloping upper catchments.

The flood prone river sections were identified from settlement level analysis. Flood prone river sections in Saurashtra extend to the upper basins due to the presence of dams which have to resort to emergency discharge during heavy rainstorms. Even small valleys in Saurashtra are used for agriculture. Hence flooding in these zones impacts both residents and settlements.

Annexure 3.5 shows the majority of the area of Gujarat is flood prone, irrespective of the size of the catchment. The flood risk in Saurashtra is lower than that of the South Gujarat plains. The relatively flat plains in the lower basic areas with hilly catchments in upper parts of South Gujarat accentuate flood risks. Few villages in the North Gujarat are flood prone too.

1.10.5 Tsunami

Gujarat is prone to tsunami risk due to its long coastline and probability of occurrence of near and offshore submarine earthquakes in the Arabian Sea. Makran Subduction Zone (MSZ) -South West of Karachi is an active fault area which may cause a high magnitude earthquake under the sea leading to a tsunami.

In past, Kandla coast was hit by a Tsunami of 12 mtrs height in 1945, due to an earthquake in the Makran fault line. Tsunami prone areas in the State include coastal villages of Kutch, Jamnagar, Rajkot, Porbandar, Bhavnagar, Anand, Ahmedabad, Bharuch, Surat, Navsari and Valsad districts.

The Hazard Risk and Vulnerability Atlas prepared by GSDMA shows the estimated inundation based on Probable Maximum Surge (PMS) at highest high tide level in Annexure 3.6.

ANNEXURE - 1(A)

MAXIMUM DISCHARGE CAPACITY AND THE DETAILS OF SPILLWAY OF THE SCHEMES

Sch No.	Name of District and Name of Scheme	Type of Scheme	F.R.L. Meter	Crest Level Meter	Spillway Length Meter	Details of Gates		Max. Discharge (Cumecs)	Top of Dam (M)	Design MWL (M)	Observed MWL till today (M)
						Nos.	Size Meter				
AMRELI											
65.	Khodiyar	Gated	202.68	196.58	102.00	9	9.15 x 6.10	2409	207.57	202.68	202.68
66.	Thebi	Gated	126.00	119.90	136.58	12	9.15 x 6.10	3794	129.30	126.44	126.0
67.	Dhatarwadi	Un Gated	81.23	-	329.00	-	-	4342	88.45	84.70	85.18
68.	Raidy	Gated	50.85	44.75	102.00	9	9.15 x 6.10	2265	54.35	50.85	50.85
69.	Vadia	Gated	130.25	124.15	55.50	5	9.15 x 6.10	1556	133.75	130.25	130.25
70.	Vadi	Gated	134.00	127.90	90.23	8	9.15 x 6.10	2195	136.95	134.00	134.00
71.	Shell-Dedumal	Gated	179.50	173.40	55.50	5	9.15 x 6.10	1408	182.50	180.37	179.50
72.	Munjiasar	Un Gated	62.93	-	366.00	-	-	1184	66.60	64.46	66.29
73.	Sankroli	Un Gated	44.20	-	243.82	-	-	1848	47.23	46.60	46.34
74.	Surajwadi	Un Gated	50.28	-	320.00	-	-	1396	54.26	51.80	51.80
75.	Dhatarwadi-II	Gated	34.41	30.76	651.47	32	18.29 x 3.66	8370	38.50	34.41	34.41
93.	Ghelo – I	Un Gated	166.72	-	213.00	-	-	1190	170.49	168.55	167.81
ARAVALLI											
27.	Watrak	Gated	136.25	128.00	89.00	6	12.50 x 8.23	5669	145.00	140.49	136.40
29.	Mazam	Gated	157.10	151.00	102.00	9	9.15 x 6.10	3313	163.15	158.44	157.13
30.	Hathmati	Un Gated	180.75	-	241.00	-	-	2943	185.36	183.18	181.66
31.	Lank	Gated	111.55	105.45	-	5	9.15 x 6.10	-	113.75	111.55	111.55
34.	Meshwo	Un Gated	214.59	-	62.00	-	-	2067	221.29	219.16	214.95
35.	Waidy	Un Gated	199.20	-	122.00	-	-	1090	204.10	201.10	201.50
BANASKANTHA											
3.	Mukteshwar	Gated	201.65	193.37	104.00	7	12.50 x 8.23	4698	205.60	202.12	201.65
4.	Dantiwada	Gated	184.10	175.91	165.00	11	12.50 x 8.23	7504	187.20	185.06	185.73
					Add. Spillway	14	18.29 x 4.87	7787			
5.	Sipu	Gated	186.43	178.15	180.00	12	12.50 x 8.23	8603	192.00	186.48	186.10
BHARUCH											
7.	Dholi	Un Gated	136.00	-	260.00	-	-	847	141.00	136.00	136.60
9.	Baldeva	Un Gated	141.50	-	198.00	-	-	698	145.70	141.50	142.65
10.	Pigut	Un Gated	139.70	-	125.00	-	-	285	144.85	139.70	140.20
BHAVNAGAR											
76.	Shetrunji	Gated	55.53	54.62	646.00	59	8.84 x 0.91	7080	60.71	57.68	57.27
77.	Rajawal	Gated	56.75	50.65	95.00	8	9.15 x 6.10	4294	62.03	58.49	56.75
80.	Kharo	Gated	54.12	48.02	163.00	14	9.15 x 6.10	3592	57.75	54.25	54.12
81.	Malan	Gated	104.24	102.74	448.00	46	9.14 x 1.52	1334	106.68	104.24	104.24
82.	Ranghola	Gated	62.52	60.98	548.78	47	10.96 x 1.52	2378	64.94	62.83	62.52
84.	Lakhanka	Gated	44.22	38.12	44.00	4	9.15 x 6.10	1182	47.48	44.98	43.55
85.	Hamirpara	Gated	87.80	81.70	32.00	3	9.15 x 6.10	661	90.30	87.80	87.80
86.	Hanol	Gated	90.10	87.05	148.20	13	9.15 x 3.05	1852	93.05	90.10	90.10
88.	Pingli	Gated	51.30	45.20	43.90	4	9.15 x 6.10	1061	53.35	51.30	51.30
90.	Bagad	Un Gated	60.41	-	242.46	-	-	3222	66.78	63.28	61.41
91.	Rojki	Un Gated	99.06	-	314.00	-	-	1094	102.74	100.88	100.00
196.	Jaspara-Mandva	Un gated	40.25	-	142.00	-	-	841	43.75	42.25	37.90

Sch No.	Name of District and Name of Scheme	Type of Scheme	F.R.L. Meter	Crest Level Meter	Spillway Length Meter	Details of Gates		Max. Discharge (Cumecs)	Top of Dam (M)	Design MWL (M)	Observed MWL till today (M)
						Nos.	Size Meter				
BOTAD											
1.	Khambhada	Gated	50.35	46.69	140.00	7	18.29 x 3.66	1817	53.20	50.35	50.35
2.	Utavali (Gunda)	Gated	49.30	45.64	304.19	15	18.29 x 3.66	3862	51.50	49.30	49.30
78.	Kalubhar	Gated	60.36	54.26	182.92	16	9.15 x 6.10	7983	66.40	62.34	64.00
79.	Malpara	Gated	78.10	72.00	90.28	8	9.15 x 6.10	2148	81.10	78.10	78.10
83.	Limbali	Gated	128.10	122.00	136.57	12	9.15 x 6.10	5394	131.45	128.44	128.10
87	Kaniyad	Gated	102.25	99.20	78.69	7	9.15 x 3.05	963	104.75	102.25	102.25
89.	Goma	Un Gated	126.50	-	164.00	-	-	1189	130.61	128.81	126.97
92.	Bhimdad	Un Gated	104.85	-	110.00	-	-	975	109.14	107.31	105.30
182.	Sukhbhadar	Gated	109.20	103.10	236.50	20	9.15x6.10	10705	115.00	110.70	109.20
CHHOTAUDEPUR											
40.	Sukhi	Gated	147.82	139.59	149.66	10	12.50 x 8.23	7894	152.80	148.30	148.15
41.	Rami	Un Gated	196.35	-	220.98	-	-	660	200.31	197.87	197.50
DAHOD DISTRICT											
18.	Patadungri	Un Gated	170.84	170.84	137.00	-	-	878	175.60	172.97	172.71
21.	Machhanala	Un Gated	277.64	-	260.00	-	-	363	283.80	271.16	271.30
22.	Kabutri	Un Gated	186.30	-	104.00	-	-	1232	193.05	189.56	189.35
23.	Wankleshwar - Bhey.	Ungated	223.57	223.57	137.00	-	-	961	227.69	225.24	225.38
24.	Umaria	Un Gated	280.00	280.00	70.00	-	-	2010	285.20	284.24	282.40
25.	Edalwada	Fuse Gate	237.30	235.70	60.00	20	1.60 x 2.85	1033	241.00	238.78	238.70
26.	Kali - II	Un Gated	257.00	257.00	98.50	-	-	95	263.50	250.00	246.60
DEV BHUMI DWARKA											
95.	Sani	Gated	17.25	11.15	192.06	17	9.15x6.10	7019	24.00	18.68	17.25
97.	Ghee	Ungated	40.54	-	107.00	-	-	671	45.65	42.74	41.46
100.	Vartu-I	Ungated	39.01	-	350.52	-	-	1557	42.97	41.15	40.16
104.	Gadhaki	Ungated	30.00	30.00	100.00	Ogee shaped spillway		607	34.00	32.00	30.20
109.	Vartu-II	Gated	39.95	33.85	368.20	32	9.15 x 6.10	10801	44.65	39.95	39.95
115.	Sonmati	Ungated	78.50	78.50	145.00	-	-	1540	83.50	81.04	80.00
117.	Shedhabhadthari	Ungated	32.50	-	274.00	-	-	1093	36.10	34.00	32.85
118.	Veradi	Ungated	85.15	-	175.00	-	-	1390	89.90	85.15	86.05
122.	Sindhani	Ungated	16.35	-	125.00	-	-	1391	21.20	18.42	16.91
123.	Kabarka	Ungated	96.85	96.85	150.00	-	-	917	100.50	96.85	98.35
194.	Veradi-II	Ungated	65.40	65.40	269.00	-	-	1795	65.40	67.50	67.50
195.	Minsar(V)	Ungated	91.80	91.80	136.50	-	-	845	95.80	91.80	92.50
GIR SOMNATH											
124.	Shingoda	Gated	141.58	133.33	90.00	6	12.50 x 8.23	6936	144.08	141.58	141.58
125.	Hiran-II	Gated	71.26	63.03	104.00	7	12.50x8.23	3559	75.13	71.26	71.26
126.	Raval	Gated	148.85	140.60	90.00	6	12.50x8.23	2774	151.855	148.855	148.855
127.	Machhundri	Ungated	109.50	-	350.00	-	-	3591	116.50	109.50	109.50
140.	Hiran-I	Ungated	44.20	-	194.00	-	-	1034	48.16	44.20	44.20
JAMANAGAR											
94.	Und-I	Gated	98.00	91.90	127.44	11	9.15x6.10	15866	105.20	102.92	99.20

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						Nos.	Size Meter				
		(Addl. Spillway)		89.77	91.44	6	12.50x8.23	34538			
96.	Sasoi	Ungated	28.96	28.96	1037.0	-	-	2921	32.30	30.48	30.01
98.	Fulzar-I	Ungated	24.69	24.69	305.00	-	-	1274	28.50	26.51	26.52
99.	Dai-Minsar	Ungated	75.40	75.40	135.00	-	-	1982	82.00	78.61	76.30
101.	Vijarkhi	Ungated	30.48	30.48	304.80	-	-	453	32.30	31.48	30.63
102.	Puna	Ungated	24.38	24.38	135.00	-	-	963	27.43	25.60	25.34
103.	Umiyasagar	Gated	71.05	66.48	217.63	19	9.14 x 4.57	6119	75.95	74.73	71.05
105.	Ruparel	Ungated	48.20	48.20	142.10	Ogee shaped spillway		898	51.85	50.20	48.30
106.	Und-II	Gated	18.25	12.15	623.00	54	9.14x6.10	16450	22.70	19.11	19.11
107.	Kankawati	Gated	30.50	27.75	113.39	10	9.15x2.74	1557	34.80	31.68	31.00
108.	Rangmati	Gated	43.20	37.10	56.00	5	9.15x6.10	1125	46.00	43.20	43.20
110.	Fulzar(KB)	Gated	95.85	89.75	136.55	12	9.15 x 6.10	5456	101.30	91.30	95.85
111.	Aji-IV	Gated	20.40	14.30	658.00	57	9.14 x 6.10	18354	24.90	20.40	19.5
113.	Phophal-II	Ungated	129.33	129.33	110.00	-	-	1220	134.35	132.34	130.10
114.	Sapada	Ungated	32.77	32.77	344.00	-	-	807	35.96	34.13	33.98
116.	Fulzar-II	Ungated	52.12	52.12	277.00	-	-	1076	55.47	53.64	57.62
119.	Wadisang	Ungated	76.50	76.50	371.70	-	-	3204	81.85	79.00	78.50
120.	Rupavati (Lalpur)	Ungated	77.30	77.30	164.00	-	-	653	81.30	78.80	78.55
121.	Und-III	Ungated	110.60	110.60	123.00	-	-	1048	115.10	113.10	110.90
205.	Sasoi-II	Ungated	104.40	104.40	112.20	-	-	640	107.80	106.30	105.40
206.	Wagadia	Ungated	62.05	62.05	207.00			1051	65.30	63.80	-
JUNAGADH											
128.	Uben	Ungated	107.61	107.61	160.00	-	-	1550	114.31	110.98	108.61
129.	Madhuvanti	Ungated	165.19	165.19	183.00	-	-	750	169.46	167.02	166.09
130.	Prempara	Ungated	127.50	127.50	30.00	-	-	130	131.10	129.10	128.00
131.	Hasnapur (W.S.)	Ungated	148.13	148.13	62.00	-	-	488	152.40	150.26	148.85
132.	Ozat-II	Gated	77.50	69.27	378.26	25	12.50 x 8.23	14890	82.00	77.59	77.89
133.	Vrajmi	Gated	94.00	90.95	102.00	9	9.15x3.05	1175	97.86	94.36	94.00
134.	Ambajal	Gated	182.31	176.21	49.00	4	9.15x6.10	1030	184.14	182.31	182.31
135.	Draphad	Gated	124.00	117.90	125.00	11	9.15x6.10	3073	127.65	124.00	124.00
136.	Bantva-Kharo	Gated	16.25	13.20	183.00	16	9.14 x 3.05	1764	19.70	16.25	16.25
137.	Ozat-Weir Sahpur (Verical Gate)	Gated	32.85	29.80	233.40	10	18.00 x 3.50	10581	36.00	35.77	38.00
138.	Ozat-Weir (Vanthli)	Gated	27.50	25.00	202.80	12	9.14 x 3.05 (Vertical)	7170	31.00	28.80	30.15
139.	Mota Gujariya	Ungated	140.02	140.02	150.00	-	-	1320	144.25	142.52	141.50
141.	Jhanjeshri	Ungated	149.96	149.96	137.00	-	-	935	154.68	152.25	151.06
198.	Sabali	Gated	43.75	40.70	125.00	11	9.14 x 3.05 (Vertical)	1159	46.90	43.75	43.75
KACHCHH											
45.	Tapper (W.S))	Gated	40.85	-	159.71	14	9.14 x 4.57	4182	45.04	41.90	40.50

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						Nos.	Size Meter				
46.	Godhatad	Un Gated	23.00	-	55.00	-	-	1641	29.50	27.99	23.75
47.	Sanandro	Un Gated	59.74	-	152.00	-	-	1466	64.31	63.32	59.89
48.	Rudramata	Un Gated	66.44	-	435.00	-	-	6788	71.80	69.88	67.64
49.	Nara	Un Gated	27.43	-	152.00	-	-	1840	34.07	32.54	31.43
50.	Niruna	Un Gated	43.58	-	274.00	-	-	2997	48.46	47.83	45.88
51.	Bhukhi	Un Gated	73.00	-	80.00	-	-	1490	78.30	77.15	73.65
52.	Kankavati	Un Gated	131.67	-	457.20	-	-	1893	135.63	133.50	132.50
53.	Mathal	Un Gated	83.18	-	550.00	-	-	1260	86.50	84.87	84.03
54.	Kaila	Un Gated	79.25	-	190.50	-	-	1752	83.23	81.74	80.46
55.	Suvi	Un Gated	42.67	-	121.92	-	-	2828	46.94	46.37	43.02
56.	Kaswati	Un Gated	51.20	-	175.00	-	-	933.90	54.86	53.75	52.10
57.	Gajod	Un Gated	90.82	-	152.40	-	-	1612.39	94.51	93.72	92.975
58.	Jangadia	Un Gated	38.60	-	70.00	-	-	1447	45.45	42.00	39.90
59.	Fatehgadh	Un Gated	22.70	-	35.00	-	-	714	27.70	25.15	22.95
60.	Berachiya	Un Gated	70.40	-	250.00	-	-	1337	74.90	72.40	71.00
61.	Gajansar	Un Gated	30.00	-	430.00	-	-	1601	36.42	31.89	34.115
62.	Kalaghogha	Un Gated	37.00	-	81.70	-	-	1342	43.50	41.00	39.00
63.	Don	Un Gated	47.75	-	61.00	-	-	1050	55.25	51.75	48.75
64.	Mitti	Un Gated	18.65	-	235.00	-	-	5328	24.50	22.10	19.80
KHEDA											
202.	Varansi	Gated	81.00	76.43	159.68	14	9.14 x 4.57	1503	82.70	81.20	81.10
MAHISAGAR											
12.	Wanakbori	Un Gated	67.23	-	735.00	-	-	46978	67.30	76.50	76.11
17.	Kadana	Gated	127.71	113.72	406.00	27	15.50 x 14.00	49497	131.40	127.71	127.71
	(Additional Spillway)			113.72	113.00						
19.	Bhadar (P)	Gated	123.72	115.52	89.00	6	12.48 x 8.25	5706	130.37	128.35	123.72
MEHSANA											
13.	Dharoi	Gated	189.59	178.92	219.46	12	14.94 x 11.28	19251.5	195.07	190.86	189.59
MORBI											
112.	Demi - III	Gated	25.60	19.50	206.03	18	9.14 x 6.10	5516	28.55	25.60	25.60
150.	Machhu-II	Gated	57.30	49.09	508.18	20	12.50x8.23	26419	63.70	59.20	57.30
		(Addl. Spillway)		51.20		18	9.15x6.10				
158.	Machhu-I	Ungated	135.33	-	488.00	-	-	11522	143.20	139.99	139.96
164.	Demi-II	Gated	48.00	41.90	194.50	17	9.14x6.10	4240	52.80	48.78	48.00
166.	Ghodadharoi	Gated	98.30	92.20	102.00	9	9.15x6.10	3247	102.50	98.90	98.30
172.	Demi-I	Fuse Gate	60.35	59.35	244.00	135	1.80 x 1.00	4044	63.10	61.19	61.25
178.	Bangawadi	Ungated	42.65	41.05	200.00	-	-	2186	47.10	44.20	44.20
189.	Brahmani	Ungated	64.62	-	426.82+ 548.78	-	-	2945	68.60	66.15	67.06
200.	Brahamani-II	Gated	44.50	36.27	271.58	18	12.50 x 8.23	11896	48.20	45.09	43.35
203.	Machhu-III	Gated	28.70	20.47	302.12	20	12.50x8.23	13450	34.02	28.70	28.70
NARMADA											
6	Karjan	Gated	115.25	101.23	172.00	9	15.545 x 14.02	17286	119.70	115.25	115.45
8.	Chopadvav	Fuse Gate	187.40	186.30	70.00	35	1.10 x 1.98	863	192.30	188.80	187.55

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						Nos.	Size Meter				
11.	Kakdi-Amba	Fuse Gate	187.71	186.71	100.00	55	1.0 x 1.80	822	192.21	188.71	187.58
NAVSARI											
43.	Jhuj	Un Gated	167.50	-	97.00	-	-	1554	174.50	171.25	169.00
44.	Kelia	Un Gated	113.40	-	113.00	-	-	1225	118.60	115.79	114.35
PANCHMAHALS											
14.	Panam	Gated	127.41	116.74	182.00	10	14.93 x 11.28	10075	131.50	128.015	128.02
15.	Deo	Gated	89.65	81.40	120.00	8	12.50 x 8.23	4118	93.65	90.15	89.65
16.	Hadaf	Gated	166.20	155.53	89.00	5	14.43 x 10.67	5324	171.63	168.33	166.20
20.	Karad	Fuse Gate	140.08	140.08	107.00	36	1.80 x 1.00	934	143.26	141.70	141.70
PORBANDAR											
142.	Phodarness (W.S)	Ungated	93.57	-	27.00	-	-	204	99.97	93.57	96.01
143.	Khambhala (W.S.)	Ungated	39.63	-	107.00	-	-	344	42.67	39.62	41.14
144.	Sorthi	Ungated	95.50	-	157.00	-	-	1427.16	99.60	98.82	97.80
145.	Amipur	Gated	5..64	3.23	20.00	4	2.44x2.86	139	9.44	6.81	6.34
		Note: Waste weir under Construction									
146.	Kalindri	Ungated	52.23	-	49.4	-	-	595	57.40	54.96	52.53
147.	Advana	Ungated	24.00	-	153.00	-	-	604	27.05	25.5	24.25
199.	Saran	Gated	37.00	33.95	182.00	16	9.14 x 3.05 (Vertical)	1748	39.25	37.00	37.00
204.	Rana Khirasra	Gated	36.75	28.52	119.18	8	12.50x8.23 (Radial)	4213	38.75	37.03	33
RAJKOT											
148.	Bhadar	Gated	107.90	106.07	378.00	29	10.67x1.83	16504	114.20	112.74	110.43
149.	Bhadar - II	Gated	53.10	42.43	405.32	22	14.93x10.67	26380	56.40	53.10	53.10
151.	Aji-III	Gated	53.15	44.92	272.00	18	12.50x8.23	17571	60.00	55.30	54.50
152.	Moj	Gated	72.54	71.02	329.00	27	9.14x1.52	7243	76.50	76.50	73.12
153.	Venu-II	Gated	55.00	48.91	229.00	20	9.15x6.10	9866	60.40	56.91	56.40
154.	Nyari-II	Gated	88.50	82.40	160.00	14	9.15x6.10	4826	92.70	88.50	89.00
155.	Karmal	Gated	169.00	162.90	79.00	7	9.15x6.10	3588	173.20	170.34	169.00
156.	Veri	Gated	142.04	141.12	427.00	75	3.05x0.91	1642	145.58	143.41	144.04
157.	Karnuki	Gated	164.50	161.45	183.00	16	9.14x3.05	2486	167.40	164.50	164.50
159.	Phophal	Ungated	81.75	-	417.00	-	-	10580	87.40	86.44	84.04
160.	Aji-I	Ungated	147.52	-	335.00	-	-	1785	150.81	149.35	148.50
161.	Nyari-I (W.S.)	Ungated	104.50	-	54.00	-	-	396			
162.	Lalpari	Ungated	137.46	-	733.31	-	-	2095	140.75	138.71	139.59
163.	Aji-II	Gated	73.76	67.66	183.00	16	9.15x6.10	5644	78.10	74.38	73.85
165.	Chhaprawadi -II	Gated	98.38	90.15	89.00	6	12.50x8.23	6219	100.82	100.44	98.38
167.	Motisar	Gated	143.00	141.00	150.50	15	9.10x2.00	759	145.70	143.00	143.00
168.	Khodapipar	Gated	55.27	52.22	113.40	10	9.15x3.05	1339	58.52	55.27	55.27
169.	Survo	Gated	99.85	93.75	183.00	16	9.14x6.10	2068	102.80	99.85	99.85
170.	Dondi	Gated	103.72	100.67	101.81	9	9.14x3.05	1354	106.00	103.72	103.72

Sch No.	Name of District and Name of Scheme	Type of Scheme	F.R.L. Meter	Crest Level Meter	Spillway Length Meter	Details of Gates		Max. Discharge (Cumecs)	Top of Dam (M)	Design MWL (M)	Observed MWL till today (M)
						Nos.	Size Meter				
171.	Sodvadar	Ungated	76.70	76.70	100.00	-	-	1183	80.70	79.20	77.30
173.	Gondali	Ungated	45.80	-	350.00	-	-	948	49.39	47.24	45.80
174.	Ghelo-S	Ungated	135.10	-	213.00	-	-	878	138.54	136.62	136.30
175.	Vachhapari	Ungated	43.89	-	183.00	-	-	535	47.40	45.57	44.59
176.	Phardangbeti	Ungated	189.25	-	190.00	-	-	2370	194.40	191.84	189.80
177	Ishwaria	Ungated	157.30	-	211.00	-	-	1377	162.00	159.55	157.90
179.	Kabir Sarovar	Ungated	32.45	32.45	295.00	-	-	2350	36.00	34.54	32.65
181.	Malgadh	Ungated	159.37	-	140.00	-	-	760	163.75	161.25	159.40
SABARKANTHA											
28.	Guhai	Gated	173.00	164.77	89.00	6	12.50 x 8.23	4380	178.07	173.77	173
32.	Javanpura	Gated	91.00	86.43	171.29	15	9.15 x 4.57	3723.73	100.57	94.70	93.00
33.	Harnav – II	Gated	332.00	323.77	43.00	3	12.50 x 8.23	1632	336.85	333.35	332.25
197.	Khedva	Gated	259.70	253.60	55.50	5	9.15 x 6.10	1651	262.00	259.70	258.25
201.	Gorthiya (Mota Chekhala)	Gated	110.43	105.25	101.80	9	9.14 x 5.18	3774	115.50	113.75	110.43
SURAT											
38.	Ver – II	Gated	115.80	109.73	90.22	8	9.15 x 6.10	2155	119.50	116.00	115.80
39.	Lakhigam	Un Gated	74.10	-	25.00	-	-	434	77.10	75.30	75.10
SURENDRANAGAR											
180.	Dhari	Ungated	49.07	-	84.00	-	-	651	53.35	51.52	51.52
183.	Nayka	Gated	101.80	99.36	671.00	34	9.15x2.44	2097	103.65	101.82	101.80
184.	Dholidhaja	Ungated	80.47	-	566.00	-	-	1839	84.02	82.22	80.47
185.	Falku	Gated	107.00	103.00	182.50	16	10.00x4.00	4275	110.35	107.00	107.00
186.	Nimbhani	Gated	134.50	131.45	113.00	10	9.14 x 3.05	1463	137.10	134.50	134.50
187.	Limbdi Bhogavo II	Gated	76.00	69.90	322.00	28	9.15 x 6.10	10530	79.60	76.00	76.00
188.	Vansal	Ungated	100.70	100.70	220.00	-	-	736	105.00	102.50	102.06
190.	Limbi-Bhogavo - I	Ungated	46.02	-	457.17	-	-	1471	49.39	47.56	46.02
191.	Morsal	Ungated	177.00	-	106.00	-	-	1271	181.50	179.50	178.50
192	Saburi	Ungated	129.50	-	255.00	-	-	1446	132.50	131.00	130.00
193.	Triveni Thanga	Ungated	208.00	-	207.00	-	-	1794	211.50	210.00	209.50
TAPI											
36.	Ukai	Gated	105.156	91.135	425.30	22	15.54 x 14.78	46269	111.25	106.98	105.539
36.a	Kakrapar	Ungated	48.77	-	613.38	-	-	1083			
37.	Doswada	Un Gated	123.44	-	210.00	-	-	899	126.52	125.30	124.97
VALSAD											
42.	Damanganga	Gated	79.86	65.83	191.11	10	15.55 x 14.02	22040	85.60	82.40	80.10

Note: There is no important scheme in Ahmedabad, Gandhinagar, Patan, Anand, Dang & Vadodara Districts of WRD, Gujarat.

ANNEXURE-1 (B)

Note: Please refer Flood Telephone Directory of the current year

Sr No	Name of River Gauge Station	Danger level H.F.L. in Meter (Feet)	Full Reservoir Level in Meter (Feet)	Officer in Charge
1	2	3	4	5
[I]	**GUJARAT REGION**			
(A)	**Damanganga Basin**			(1) Executive Engineer, Tapi Division (C.W.C), Surat (2) Superintending Engineer, Damanganga Project Circle, Valsad (Focal Officer).
	Valsad District			
1.	Madhuban Dam	82.40 (270.27)	79.86 (261.94)	Executive Engineer Damanganga Project Dn. No. 1, Madhuban Colony
2.	Madhuban Dam D/S	49.45(162.20)	— (—)	
3.	Vapi (R.G.) (N.H.No. Bridge)	19.20 (62.98)	— (—)	
	Union Territory			
4.	Daman (R.G.)	3.40 (11.159)	— (—)	Collector, Daman Collector, DNH Silvassa
5.	Silvassa (R.G.) (Athal Bridge)	30.00 (98.43)	— (—)	
(B)	**Tapi Basin**			(1) Executive Engineer Tapi Division (C.W.C), Surat (2) Superintending Engineer Surat Irrigation Circle, Surat (Focal Officer).
	Narmada District			
1.	Chopadvav Dam	188.80 (619.44)	187.40 (614.85)	Executive Engineer, Ver - II Project, Division Vyara (Surat),
2.	Kakdiamba Dam	188.71 (619.15)	187.71 (616.53)	
	Tapi District			
3.	Ukai Dam	106.98 (351.00)	105.156(345.00)	Executive Engineer, Ukai Division No.1, Ukai
	Surat District.			
4.	Lakhigam Dam	75.90 (249.02)	74.10 (243.11)	Executive Engineer, Ver - II Project Division, Vyara (Surat District)
5.	Ver - II Dam	116.00 (380.57)	115.80 (379.93)	
6.	Ver - I Dam	64.16 (210.50)	60.96 (200.00)	
	Tapi District.			
7.	Kakrapar Weir	53.66 (176.05)	48.77 (160.00)	Executive Engineer, Surat Canal Division, Surat
8.	Ghala (R.G.)	— (—)	— (—)	Executive Engineer Tapi Division (C.W.C.) Surat
9.	Surat Nehru Bridge (R.G.)	9.50(31.16)	— (—)	

Sr No	Name of River Gauge Station	Danger level H.F.L. in Meter (Feet)	Full Reservoir Level in Meter (Feet)	Officer in Charge
1	2	3	4	5
(C)	**Narmada Basin**			
1.	Executive Engineer Tapi Division, (C.W.C.) Surat.			
2.	Superintending Engineer, N.P.Head Works Circle, New Administrative Block-B, First floor, Kevadia-393151			
3.	Superintending Engineer Vadodara Irrigation Circle, Vadodara. (Focal Officer for Sukhi/Rami)			
	Bharuch & Narmada Districts			
1.	Bharuch Golden Bridge (R.G.)	7.315 (24.00)	— (—)	Executive Engineer Tapi Division (C.W.C.) Surat
2.	Garudeshwar Bridge (R.G.)	31.09 (102.00)	— (—)	
3.	Dholi Dam	137.41 (450.82)	136.00 (446.22)	Executive Engineer Irri. Proj. Dn.No.4, Rajpipala
4.	Karjan Dam	116.10 (380.50)	115.25 (378.13)	Executive Engineer Irrigation Project Dn. No. 4, Rajpipla
	Chhotaudepur District			
5.	Rami Dam	197.87 (649.21)	196.35 (644.22)	Executive Engineer Pipe Line Project Dn.No.1 Chhotaudepur
6.	Sukhi Dam	148.30 (486.57)	147.82 (485.00)	Executive Engineer Irri.Proj.Dn.No.2, Bodeli
7.	Wadhwana	56.39 (185.00)	55.63 (182.50)	Executive Engineer Vadodara Irrigation Division,Vadodara
(D)	**Mahi Basin**			(1) Executive Engineer Mahi Division (C.W.C.) Gandhinagar
				(2) Superintending Engineer Mahi Irrigation Circle, Nadiad (Focal Officer)
	Mahisagar District			
1.	Wanakbori Weir	74.98 (246.00)	67.234 (220.60)	Executive Engineer Nadiad Irrigation Division, Nadiad
2	Kadana Dam	127.71 (419.00) (Danger Level)	127.71 (419.00)	Executive Engineer Kadana Dn. No. 1 Divda Colony
		126.18 (414.07) (Warning Level)		

Sr No	Name of River Gauge Station	Danger level H.F.L. in Meter (Feet)	Full Reservoir Level in Meter (Feet)	Officer in Charge
1	2	3	4	5
	Kheda District			
3.	Varansi dam	81.20(266.34)	81.00 (265.68)	Executive Engineer WatrakProject Canal Dn. Modasa
	Panchmahals District			
4.	Panam Dam	128.00 (420.00)	127.41 (418.00)	Executive Engineer, Panam Project Division, Godhra.
	Vadodara District			
5.	Mahi Weir at Sindhrot	19.50 (63.98) (HFL)		Executive Engineer, Vadodara Irrigation Division,Vadodara
(E)	**Sabarmati Basin**			
1.	Executive Engineer Mahi Division (C.W.C.) Gandhinagar			
2.	Superintending Engineer, Ahmedabad Irrigation Project Circle Ahmedabad, (Focal Officer)			
3.	Superintending Engineer, Himmatnagar Irrigation Project Circle, Himmatnagar (Focal Officer)			
	Ahmedabad District			
1	Subhash Bridge	45.34 (148.76) (Danger Level)	— (—) (R.G.)	Executive Engineer Ahmedabad Irrigation Dn., Ahmedabad
		44.09 (144.65) (Warning Level)		
	Kheda District			
2.	Dakor Bridge(R.G.)	7.05 (23.13)	— (—)	Executive Engineer, Shedhi Irrigation Dn., Nadiad
3.	Kathlal Bridge(R.G.)	6.49 (21.30)	— (—)	
4.	Ladvel Bridge(R.G.)	5.27 (17.30)	— (—)	Executive Engineer, Mahi Division, (C.W.C.) Gandhinagar
5.	Kheda Bridge(R.G.)	6.57 (21.56)	— (—)	
	Mehsana District			
6.	Dharoi Dam	190.86 (626.17) (Danger Level)	189.59 (622.00)	Executive Engineer Dharoi Head Works Division No.1, Dharoi Colony
		187.06 (613.72) (Warning Level)		
7.	Derol Bridge(R.G.)	— (—)	100.23(328.85)	Executive Engineer, Mahi Division, (C.W.C.) Gandhinagar
	Sabarkantha District			
8.	Himmatnagar Weir (R.G.)	--- (—)	134.05(439.82)	Executive Engineer, Mahi Division, (C.W.C.) Gandhinagar
9.	Harnav Weir (R.G.)	— (—)	234.76 (—)	
10.	Ratanpur Bridge	9.63(31.60)	— (—)	

Sr No	Name of River Gauge Station	Danger level H.F.L. in Meter (Feet)	Full Reservoir Level in Meter (Feet)	Officer in Charge
1	2	3	4	5
	(R.G.)			
11.	Raska Weir (R.G.)	38.17(125.20)	— (—)	
12.	Guhai Dam	174.02 (570.78)	173.00(567.44)	Executive Engineer Project Construction Division No.3,Himmatnagar
13	Harnav Stage II Dam	332.25(1090.11)	332.00 (1088.96)	
14.	Khedva Dam	259.70(851.82)	259.70(851.82)	
15.	Javanpur Rech. MI Sch.	94.70 (310.62)	91.00 (298.48)	Executive Engineer Himmatnagar Irrigation Division, Himmatnagar
16.	Gorathiya	113.75(373.21)	110.43 (362.21)	Executive Engineer, Suj. Suf. Spre.Ch. Dn. No. 1, Himmatnagar
	Aravalli District			
17.	Hathmati Dam	183.18 (601.00)	180.75 (593.00)	Executive Engineer Himmatnagar Irrigation Division, Himmatnagar
18.	Mazam Dam	158.44 (519.83)	157.10 (515.29)	Executive Engineer Irrigation Project Division, Modasa Watrak Project Construction Division ,Modasa
19.	Watrak Dam	140.49 (460.95)	136.25 (447.00)	
20.	Meshwo Dam	219.16(718.86)	214.59 (703.86)	
21.	Waidy Dam	201.10 (659.80)	199.20 (653.57)	
22.	Lank Weir (R.G.)	111.55 (365.67)	111.55 (365.67)	
(F)	**Banas Basin**			Executive Engineer Mahi Division (C.W.C.) Gandhinagar
				Superintending Engineer Sujlam Suflam Circle No.2, Kherva (Focal Officer)
	Rajasthan State			
1.	Abu Road (R.G.)	265.00 (869.47)	— (—)	Executive Engineer, Mahi Division, (C.W.C.) Gandhinagar
2.	Swaroopganj (R.G.)	335.35 (1100.28)	— (—)	
	Banaskantha District			
3.	Bhakhudar (R.G.)	163.87(537.66)	— (—)	Executive Engineer Mahi Division (C.W.C.) Gandhinagar
4.	Chitrasani (R.G.)	195.00 (639.80)	— (—)	
5.	Sarotri (R.G.)	192.00(629.95)	— (—)	
6.	Dantiwada Dam	185.06 (607.00) (Danger Level)	184.10(604.00)	Executive Engineer Deesa Irrigation Division, Deesa
7.	Deesa Road Bridge (R.G.)	123.75(406.00)	— (—)	
8.	Sipu Dam	186.48 (611.84)	186.43 (611.68)	Executive Engineer, Sipu Project Dn. Palanpur.
(G)	**Vishwamitry Basin & Deo Basin**			Superintending Engineer, Vadodara Irrigation Circle, Vadodara

Sr No	Name of River Gauge Station	Danger level H.F.L. in Meter (Feet)	Full Reservoir Level in Meter (Feet)	Officer in Charge
1	2	3	4	5
				(Focal Officer)
	Vadodara District			
1.	Ajwa (W.S.) (Gauge)	64.31 (211.00)	— (—)	Municipal Commissioner Vadodara Municipal Corp. Vadodara
2.	Pratappura (Gauge)	69.69 (228.63)	— (—)	
3.	City Bridge (R. G.)	30.57 (100.27)	— (—)	
4.	Bhaniara (Gauge)	— (—)	— (—)	Executive Engineer Vadodara Irrigation Division, Vadodara
5.	Dhanora (Gauge)	62.18 (204.00)	— (—)	
6.	Ghansarvav (Gauge)	34.75 (114.00)	— (—)	
7.	Haripura (Gauge)	65.84 (216.00)	— (—)	
8.	Vadadala (Gauge)	58.52 (191.95)	— (—)	
9.	Shivrajpur (Gauge)	90.15 (295.78)	— (—)	
	Panchmahals District			
9.	Halol (Gau.ge)	— (—)	— (—)	Executive Engineer Vadodara Irrigation Division, Vadodara
10.	Deo Dam	90.15 (295.77)	89.65 (294.14)	Executive Engineer Vadodara Irrigation Division Vadodara
(H)	**Saraswati Basin**			Superintending Engineer Sujlam Suflam Circle No.2, Kherva (Focal Officer)
	Banaskantha District			
1.	Mukteshwar Dam	202.12 (663.11)	201.65 (661.57)	Executive Engineer Sipu Project Dn. Palanpur.
	Patan District			
2.	Saraswati Barrage	85.39 (280.11)	84.40 (277.00)	Executive Engineer, Deesa Irri. Dn., Deesa
(I)	**Bharuch District**			
1.	Baldeva Dam	143.10 (469.49)	141.50 (464.26)	Executive Engineer Irri.Proj.Dn.No.4 Rajpipala
2.	Pigut Dam	141.34 (463.71)	139.70 (458.36)	
(J)	**Panchmahals & Dahod District**			Superintending Engineer, Panam Project Circle, Godhra. (Focal Officer)
1.	Bhadar (P) Dam	128.35 (421.00)	123.72 (406.00)	Executive Engineer,Kadana Dn no 1,Diwada Colony
2.	Hadaf Dam	168.32 (552.09)	166.20 (545.30)	Executive Engineer, Panam Proj. Dn. Godhra
3.	Patadungri Dam	172.97 (567.50)	170.84 (560.50)	Executive Engineer Dahod Irri.Dn., Dahod
4.	Wankleshwar Bhey Dam	225.24 (739.00)	223.57 (733.50)	

Sr No	Name of River Gauge Station	Danger level H.F.L. in Meter (Feet)	Full Reservoir Level in Meter (Feet)	Officer in Charge
1	2	3	4	5
5.	Edalwada Dam	238.78 (783.20)	237.30 (778.58) (With fuse gate)	
6.	Machhanala Dam	281.33 (923.04)	277.64 (910.66)	
7.	Umaria Dam	284.24 (932.31)	280.00 (918.68)	
8.	Kabutri Dam	189.56 (621.75)	186.30 (611.25)	
9.	Kali - II Dam	269.90 (885.54)	257.00 (843.22)	
10.	Karad Dam	141.43 (454.00)	140.08 (459.60) (With fuse gate)	Executive Engineer Panam Irrigation Division, Godhara
11.	Padardi	149.65 (491.00)		Executive Engineer Mahi Dn., G'nagar (CWC)
		Max. Water Level		
12.	Cheklia	230.20 (755.29)		Executive Engineer Mahi Dn., G'nagar (CWC)
		Max. Water Level		
13.	Anas P.S.	160.00 (524.96)		Executive Engineer Mahi Dn., G'nagar (CWC)
		Max. Water Level		
14.	Santroad Weir	150.64 (494.25)	144.50 (474.11)	Executive Engineer Panam Proj. Dn., Godhra
(K)	**Tapi District**			
1.	Doswada Dam	— (—)	123.44 (405.00)	Executive Engineer, Ver - II Project Dn., Vyara (Surat District)
(L)	**Navsari District**			
1.	Kelia Dam	115.79 (379.79)	113.40 (371.85)	Executive Engineer, Ukai Left Bank Canal & Investigation Division no. -2, Valod (Dist. Tapi)
2.	Jhuj Dam	171.25 (561.70)	167.50 (549.40)	
[II]	**KACHCHH REGION**			
	Kachchh District			
1.	Fatehgadh Dam	25.15 (82.49)	22.70 (74.48)	EE, WRI Dn., Bhuj
2.	Gajansar Dam	31.89 (104.60)	30.00 (98.40)	EE,Salinity Control Dn.,Bhuj
3.	Gajod Dam	93.72 (307.40)	90.83 (297.92)	EE, Kachchh Irri Dn., Bhuj
4.	Godhatad Dam	27.99 (91.81)	23.00 (75.46)	EE,Salinity Control Dn.,Bhuj
5.	Kaila Dam	81.74 (268.11)	79.26 (259.97)	EE, Kachchh Irri Dn., Bhuj
6.	Kalaghogha Dam	41.00 (134.48)	37.00 (121.40)	EE, Kachchh Irri Dn., Bhuj
7.	Kankawati Dam	133.50 (437.88)	131.67 (432.01)	EE, Kachchh Irri Const. Dn.,Bhuj
8.	Kaswati Dam	53.75 (176.30)	51.20 (167.99)	EE, Kachchh Irrigation Dn. Bhuj
9.	Nara Dam	32.54 (106.73)	27.43 (90.00)	EE,Salinity Control Dn.,Bhuj
10.	Niruna Dam	47.83 (156.88)	43.58 (142.99)	EE,Salinity Control Dn.,Bhuj
11.	Rudramata Dam	69.88 (229.21)	66.44 (217.99)	EE, Kachchh Irri Dn., Bhuj
12.	Sanandro Dam	63.32 (207.69)	59.74 (196.01)	EE,Salinity Control Dn.,Bhuj
13.	Suvi Dam	46.37 (152.09)	42.67 (140.00)	EE, WRI Dn., Bhuj
14.	Tappar (W.S)Dam	41.90 (137.43)	40.85 (134.00)	EE, Kachchh Irrigation Dn. Bhuj
15.	Bhukhi Dam	77.15 (253.05)	73.00 (239.44)	EE,Salinity Control Dn.,Bhuj
16.	Berachiya Dam	73.99 (241.69)	70.40 (230.98)	EE, Kachchh Irri Const. Dn.,Bhuj

Sr No	Name of River Gauge Station	Danger level H.F.L. in Meter (Feet)	Full Reservoir Level in Meter (Feet)	Officer in Charge
1	2	3	4	5
17.	Don Dam	54.33 (178.20)	47.75 (156.67)	EE, Kachchh Irri Const. Dn.,Bhuj
18.	Jangadia Dam	42.81 (140.42)	38.60 (126.64)	EE, Kachchh Irri Const. Dn.,Bhuj
19.	Mathal Dam	84.87 (278.37)	83.18 (272.83)	EE,Salinity Control Dn.,Bhuj
20.	Mitti Dam	23.53 (77.18)	18.65 (61.17)	EE, Kachchh Irri Const. Dn.,Bhuj
[III]	**SAURASHTRA REGION**			
{A}	**Under Flood Control Cell, Rajkot.**			Superintending Engineer Rajkot Irrigation Circle, Rajkot (Focal Officer)
(1)	**Jamnagar District**			
1.	Dai Minsar Dam	78.61 (257.62)	75.40 (247.39)	Executive Engineer Jamnagar Irrigation Division, Jamanagar.
2.	Fulzar - I Dam	26.52 (87.00)	24.69 (81.00)	
3.	Fulzar - II Dam	53.65 (176.00)	52.12 (171.00)	
4.	Puna Dam	25.60 (84.00)	24.38 (80.00)	
5.	Rangmati Dam	43.20 (141.74)	43.20 (141.74)	
6.	Sapada Dam	34.14 (112.00)	32.77 (107.52)	
7.	Sasoi Dam	30.48 (100.00)	28.96 (95.00)	
8.	Vijarkhi Dam	31.39 (103.00)	30.48 (100.00)	
9.	Kankavati Dam	31.68 (103.91)	30.50 (100.00)	Executive Engineer Jamnagar Irrigation Division, Jamanagar.
10.	Und - I Dam	102.92 (337.57)	98.00 (321.54)	
11.	Rupavati(Lalpur) Dam	78.80 (258.54)	77.30 (253.62)	
12.	Umiyasagar Dam	73.63 (241.58)	71.05 (233.11)	Executive Engineer Und Irrigation. Division. Jamnagar
13.	Ruparel Dam	50.20 (164.66)	48.20 (158.10)	
14.	Ranjit-Sagar(WS) Dam	----- (---)	---- (----)	Municipal Commissioner, Municipal Corporation, Jamnagar
15.	Und - II Dam	19.11 (62.68)	18.25 (59.88)	Executive Engineer Und Irrigation. Division. Jamnagar
16.	Wadisang Dam	79.00 (259.12)	76.50 (250.92)	Executive Engineer Jamnagar Irrigation Division, Jamanagar.
17.	Fulzar(KB) Dam	98.12 (321.83)	95.85 (314.38)	Executive Engineer Und Irrigation. Division. Jamnagar
18.	Und - III Dam	113.10 (371.08)	110.60(362.87)	Executive Engineer Jamnagar Irrigation Division, Jamanagar.
19.	Phophal - II Dam	132.33 (434.19)	129.33 (424.30)	
20.	Aji - IV Dam	20.40 (66.91)	20.40 (66.91)	Executive Engineer Und Irrigation. Division. Jamnagar
21.	Sasoi-II	106.30(348.75)	104.40(342.52)	

Sr No	Name of River Gauge Station	Danger level H.F.L. in Meter (Feet)	Full Reservoir Level in Meter (Feet)	Officer in Charge
1	2	3	4	5
(2)	**Dev Bhumi Dwarka District**			
1.	Ghee Dam	42.73 (140.20)	40.54 (133.00)	Executive Engineer Salinity Control Division, Jamkhambhaliya.
2.	Sonmati Dam	81.04 (265.88)	78.50 (257.56)	
3.	Vartu -I Dam	41.15 (135.00	39.01 (127.98)	
4.	Sani Dam	18.68 (61.27)	17.25 (56.58)	
5.	Sindhani Dam	18.42 (60.41)	16.35 (53.62)	
6.	Shedhabhadthari Dam	34.00 (111.55)	32.50 (106.63)	
7.	Vartu - II Dam	40.55 (133.00)	39.95 (131.04)	
8.	Gadhaki Dam	32.00 (104.96)	30.00 (98.40)	
9.	Veradi -I Dam	87.52 (287.06)	85.15(287.29)	
10.	Kabarka Dam	98.85 (324.33)	96.85 (317.76)	
11.	Veradi-II (W.R.)	67.50 (221.40)	65.40 (214.51)	
12.	Minsar(V) (W.R.)	93.80 (307.66)	91.80 (301.10)	
(3)	**Porbandar District**			
1.	Sorthi Dam	98.82 (324.21)	95.50 (313.32)	Executive Engineer Salinity Control Division, Jamkhambhaliya.
(4)	**Rajkot District**			
1.	Nyari – I (W.S.) Dam	105.75 (346.96)	104.50 (342.88)	Municipal Commissioner, R.M.C. Rajkot
2.	Aji – I Dam	149.35 (490.00)	147.52 (484.00)	Executive Engineer Rajkot Irrigation Division, Rajkot.
3.	Bhadar Dam	112.74 (369.88)	107.90 (354.00)	
4.	Gondali Dam	47.24 (155.00)	45.80 (150.25)	
5.	Kabir–Sarovar Dam (Chhaparwadi-I)	34.52 (113.25)	32.45 (106.46)	
6.	Lalpari Dam	138.71 (455.08)	137.46 (451.00)	
7.	Moj Dam	76.50 (251.00)	72.54 (238.00)	
8.	Phophal Dam	86.44 (283.60)	81.75 (268.23)	
9.	Vachhapari Dam	45.57 (149.50)	43.89 (144.00)	
10.	Veri Dam	143.41 (470.50)	142.04 (466.00)	
11.	Chhaparwadi-II Dam	100.44 (329.44)	98.38 (322.78)	
12.	Ishwaria Dam	159.30 (522.66)	157.30 (516.10)	
13.	Karmal Dam	170.94 (560.68)	169.00 (554.49)	
14.	Motisar Dam	143.00 (469.18)	143.00 (469.18)	
15.	Nyari – II Dam	88.50 (290.28)	88.50 (290.28)	
16.	Bhadar - II Dam	53.10 (174.22)	53.10 (174.22)	
17.	Dondi Dam	103.72 (340.31)	103.72 (340.31)	
18.	Survo Dam	99.85 (327.61)	99.85 (327.61)	
19.	Sodvadar Dam	79.20 (259.86)	76.70 (251.65)	
20.	Venu – II Dam	56.91 (186.71)	55.00 (180.46)	
21.	Aji – II Dam	74.72 (245.14)	73.76 (242.00)	

Sr No	Name of River Gauge Station	Danger level H.F.L. in Meter (Feet)	Full Reservoir Level in Meter (Feet)	Officer in Charge
1	2	3	4	5
22.	Phadangbeti Dam	191.94 (629.76)	189.25 (620.93)	
23.	Aji – III Dam	55.34 (181.56)	53.15 (174.38)	Executive Engineer Rajkot Irrigation Division, Rajkot.
24.	Karnuki Dam	164.50 (539.72)	164.50 (539.72)	
25.	Khodapipar Dam	55.27 (181.34)	55.27 (181.34)	
26.	Ghelo (s) Dam	136.62 (448.11)	135.10 (443.24)	
27.	Malgadh Dam	161.25 (528.90)	159.37 (522.73)	
(5)	**Surendranagar District**			
1.	Dholidhaja Dam	82.22 (269.75)	80.47 (264.00)	Executive Engineer Surendranagar Irrigation Divison Surendranagar
2.	Limdi Bhogovo-I Dam	47.55 (156.00)	46.02 (151.00)	
3.	Nayka Dam	101.80 (334.00)	101.80 (334.00)	
4.	Falku Dam	107.00 (351.06)	107.00 (351.06)	
5.	Morsal Dam	179.50 (588.94)	177.00 (580.74)	
6.	Saburi Dam	131.00 (429.81)	129.50 (424.89)	
7.	Vansal Dam	102.55 (336.36)	100.70 (330.40)	
8.	Nimbhani Dam	134.50 (441.29)	134.50 (441.29)	
9.	Limdi Bhogavo-II Dam	76.00 (249.35)	76.00 (249.35)	
10.	Triveni - Thanga Dam	210.00(688.50)	208.00(682.24)	
11.	Dhari Dam	51.51(169.00)	49.07 (161.00)	
(6)	**Morbi District**			
1.	Bangawadi Dam	44.20 (145.00)	42.65 (139.90)	E.E., Irrigation Dn. Morbi
2.	Demi – I Dam	61.19 (200.755)	60.35 (198.00)	-- do--
3.	Godhadharoi Dam	100.49 (329.60)	98.30 (322.52)	-- do--
4.	Machhu–I Dam	137.46 (451.00)	135.33 (444.00)	-- do--
5.	Machhu – II Dam	59.20 (194.22)	57.30 (187.99)	-- do--
6.	Demi – II Dam	48.78 (160.05)	48.00 (157.49)	-- do--
7.	Brahmani Dam	66.15 (217.028)	64.62 (212.00)	-- do--
8.	Brahmani-II	44.50 (146.00)	44.50(146.00)	-- do--
9.	Machhu - III Dam	28.70 (94.15)	28.70 (94.15)	-- do--
10.	Demi - III Dam	25.60 (83.99)	25.60 (83.99)	-- do--
(7)	**Amreli District**			
1.	Sankroli Dam	46.60 (152.88)	44.20 (145.00)	E.E.R.I.Dn., Rajkot
	SAURASHTRA REGION			
{B}	**Under Flood control Cell, Bhavnagar**			Superintending Engineer Bhavnagar Irrigation Project Circle, Bhavnagar (Focal Officer)
(1)	**Amreli District**			
1.	Dhatarwadi Dam	84.70 (277.81)	81.23 (266.43)	Executive Engineer, Amreli Irrigation
2.	Khodiyar Dam	202.68 (665.00)	202.68 (665.00)	

Sr No	Name of River Gauge Station	Danger level H.F.L. in Meter (Feet)	Full Reservoir Level in Meter (Feet)	Officer in Charge
1	2	3	4	5
3.	Munjiasar Dam	64.46 (211.50)	62.93 (206.50)	Division, Amreli
4.	Vadia Dam	130.25(427.35)	130.25 (427.35)	
5.	Raidy Dam	50.85 (166.78)	50.85 (166.78)	Executive Engineer, Amreli Irrigation Division Amreli
6.	Shell-Dedumal Dam	180.37(591.61)	179.50(588.76)	
7.	Surajwadi Dam	51.80 (169.69)	50.28 (164.91)	
8.	Vadi Dam	134.00 (439.52)	134.00 (439.52)	
9.	Thebi Dam*	126.44 (414.72)	126.00 (414.38)	
10.	Dhatarwadi-II Dam	34.41 (112.89)	34.41 (112.89)	
11.	Ghelo(Itaria) Dam	168.55 (552.84)	166.72 (546.84)	Executive Engineer, Botad irrigation Division, Botad
(2)	**Bhavnagar District**			
1.	Shetrunji Dam	57.66 (189.12)	55.53 (182.13)	Executive Engineer, Bhavnagar Irrigation Division, Bhavnagar
2.	Hamirpara Dam	87.80 (288.07)	87.80 (288.07)	
3.	Kharo Dam	54.25 (177.99)	54.12 (177.57)	
4.	Rajawal Dam	58.49 (191.91)	56.76 (186.23)	
5.	Lakhanka Dam	44.98 (147.58)	44.22 (145.08)	
6.	Bagad Dam	63.28 (207.62)	60.41 (198.21)	Executive Engineer, Bhavnagar Irrigation Project Division, Bhavnagar
7.	Malan Dam	104.25 (342.04)	104.25 (342.04)	
8.	Ranghola Dam	62.83 (206.08)	62.52 (205.06)	
9.	Rojki Dam	100.88 (330.88)	99.08 (325.08)	
10.	Hanol Dam	90.10 (295.52)	90.10 (295.52)	
11.	Pingali Dam	51.30 (168.26)	51.30 (168.26)	
12.	Jaspara-Mandva	42.25 (138.58)	40.25 (132.02)	Executive Engineer, Bhavnagar Irrigation Division, Bhavnagar
(3)	**Botad District**			
1.	Khambhada Dam	50.35 (165.14)	50.35 (165.14)	Executive Engineer, Botad Irrigation Division, Botad
2.	Utavali Dam	49.30 (161.70)	49.30 (161.70)	
3.	Bhimdad Dam	107.31 (352.08)	104.85 (343.90)	
4.	Goma Dam	128.81 (422.63)	126.50 (415.05)	
5.	Kalubhar Dam	62.34 (204.47)	60.36 (198.04)	Executive Engineer, Bhavnagar Irrigation Project Division, Bhavnagar
6.	Malpara Dam	78.10 (256.17)	78.10 (256.17)	Executive Engineer, Botad Irrigation Division, Botad
7.	Kaniyad Dam	102.25(335.38)	102.25 (335.38)	
8.	Sukhbhadar Dam	110.73 (363.20)	109.20 (358.18)	
9.	Limbali Dam	128.44 (421.28)	128.10 (420.17)	
(4)	**Junagadh District**			
1.	Hasnapur (WS) Dam	150.26 (493.00)	148.13 (486.00)	Municipal Commissioner Municipal Corporation, Junagadh
2.	Vrajmi Dam (Salinity)	94.36(309.50)	94.00 (308.32)	Executive Engineer Junagadh Irrigation Division

Sr No	Name of River Gauge Station	Danger level H.F.L. in Meter (Feet)	Full Reservoir Level in Meter (Feet)	Officer in Charge
1	2	3	4	5
				Junagadh
3.	Ambajal Dam	182.31 (598.00)	182.31 (598.00)	Executive Engineer Junagadh Irrigation Division Junagadh
4.	Jhanjeshri Dam	152.25 (499.50)	149.96 (492.00)	- do -
5.	Madhuvanti Dam	167.02 (548.00)	165.19 (542.00)	E. E., Junagadh Irr.Proj Dn.Junagadh
6.	Uben Dam	110.98 (364.12)	107.61 (353.06)	- do -
7.	Dhrafad Dam	124.00 (406.84)	124.00 (406.84)	Executive Engineer Junagadh Irrigation Division Junagadh
8.	Bantwa-Kharo Weir	16.25(53.30)	16.25 (53.30)	E. E., Junagadh Irr.Proj Dn.Junagadh
9.	Ozat-Weir(Shapur)	35.77 (117.32)	32.80 (107.58)	E.E., Junagadh Irr.Proj Dn.Junagadh
10.	Ozat-II Dam	77.59 (254.49)	77.50 (254.28)	E.E., Junagadh Irr.Proj Dn.Junagadh
11.	Ozat-Weir(Vanthli)	28.80 (94.46)	27.50 (90.20)	E.E., Junagadh Irr.Proj Dn.Junagadh
12.	Mota Gujariya	142.52(467.46)	140.02(459.26)	E.E., Junagadh Irr.Proj Dn.Junagadh
13.	Sabali	43.75 (143.54)	43.75 (143.54)	Executive Engineer Junagadh Irrigation Division Junagadh
(5)	**Porbandar District**			
1.	Khambhala (WS) Dam	41.15(135.00)	39.63(130.00)	Superintending Engineer, Public Health Circle, Porbandar.
2.	Phodarness(WS) Dam	96.63(317.04)	93.57 (306.91)	
3.	Amipur Dam	6.81(22.34)	5.64(18.50)	Executive Engineer, Salinity Control Division, Porbandar
4.	Kalindri Dam	54.96 (180.30)	52.23 (171.31)	
5.	Advana Dam	25.50 (83.66)	24.00(78.72)	
6.	Saran	37.00 (121.40)	37.00 (121.40)	
7.	Rana Khirasra(RRP)	37.03(121.49)	36.75(120.55)	
(6)	**Gir Somnath District**			
1.	Hiran – I Dam	46.42 (152.30)	44.20 (145.00)	Executive Engineer Gir Somnath Irrigation Division, Veraval
2.	Hiran – II Dam	71.26 (233.80)	71.26 (233.80)	
3.	Shingoda Dam	141.58 (464.52)	141.58 (464.52)	
4.	Machhundri Dam	112.29 (368.42)	109.50 (359.26)	
5.	Raval Dam	148.855 (488.40)	148.855 (488.40)	

ANNEXURE - 1 (C)
LIST OF IMPORTANT GAUGE STAIONS
List showing the Danger Level and Warning Level in Mt. (Ft)

SR No.	NAME OF GAUGE STATION	DANGER LEVEL		WARNING LEVEL	
		Meter	Feet	Meter	Feet
1	2	3	4	5	6
(1)	**DAMANGANGA BASIN**				
1.	Madhuban Dam Site (Damanganga Dam)	79.86	(261.94)	78.86	(258.66)
2.	Madhuban Dam D/S	49.45	(162.20)	48.30	(158.42)
3.	Daman (Moti Daman-Nani Daman Bridge)	03.40	(11.16)	2.60	(8.53)
4.	Vapi (National High way No.8 Bridge)	19.20	(63.00)	18.20	(59.71)
5.	Silvasa (Athal Bridge)	30.00	(98.43)	29.00	(95.15)
(2)	**TAPI BASIN**				
1.	Ukai	105.15	(344.98)	102.41	(336)
2.	Kakrapar	53.66	(176.05)	53.15	(174.33)
3.	Surat Nehru Bridge	9.50	(31.16)	8.50	(27.88)
(3)	**NARMADA BASIN**				
1.	Garudeshwar	31.09	(102.00)	30.48	(100.00)
2.	Bharuch	7.315	(24.00)	6.705	(22.00)
(4)	**MAHI BASIN**				
1.	Kadana	127.71	(419.00)	126.18	(414.00)
2.	Panam	128.00	(420.00)	126.18	(414.00)
3.	Wanakbori	74.98	(246.00)	71.93	(236.00)
(5)	**SABARMATI BASIN**				
1.	Dharoi	192.24	(630.71)	187.06	(613.72)
2.	Subhash Bridge	45.34	(148.76)	44.09	(144.65)
(6)	**BANAS BASIN**				
1.	Dantiwada	185.06	(607.00)	182.88	(600.00)
2.	Deesa Road Bridge	123.75	(406.00)	122.95	(403.40)

Note: The Danger Level and Warning Level values can be subjected to change by State Govt.

ANNEXURE - 1 (C-1)

LIST OF GAUGE STAIONS FOR INFORMATION

List showing the Danger Level and Warning Level in Mt. (Ft)

SR No.	NAME OF GAUGE STATION	DANGER LEVEL/ HFL		"0" Gauge R.L.	
		Meter	Feet	Meter	Feet
1	2	3	4	5	6
[1] NORTH GUJARAT REGION					
A. SABARMATI RIVER					
1.	Derol Bridge (R. G)	100.23*	328.85	89.00	292.00
2.	Hathmati Weir-Balochpur (R.G.)	146.40	480.34	142.50	467.54
3.	Wasana Bridge (R.G.)	41.75	137.00	38.09	125.00
	"*" Before Const. of Dharoi Dam, **{95.83 mt. (314.42 ft.) After Const. of Dharoi Dam}**				
B. Rupen River (Mehsana)					
1.	At Delwada Site	51.61	169.33	46.26	151.73
C. WATRAK RIVER					
1.	Ratanpur Bridge	44.62	146.40	39.12	128.35
2.	Dabha Bridge	83.20	272.98	71.19	233.57
D. MESHWO RIVER					
1.	Raska Weir	38.17	125.24	35.61	116.85
E. SHEDHI RIVER					
1.	Dakor Bridge	53.51	175.51	45.01	147.63
F. MOHAR RIVER					
1.	Kathlal Bridge	45.09	147.90	36.94	121.16
[2] CENTRAL GUJARAT REGION					
G. PANAM RIVER					
1.	Santroad Bridge	152.02	498.63	143.06	469.24
H. VISHWAMITRI RIVER					
1.	Pilol	104.00	341.12	93.18	305.63
2.	City Bridge	30.57	100.30	22.64	74.28
[3] SOUTH GUJARAT REGION					
I. KARJAN RIVER					
1.	Rajpipla Bridge	30.45	99.90	19.75	64.80
J. ORSANG RIVER					
1.	Bodeli Bridge	92.00	301.76	73.00	239.44
K. PURNA RIVER					
1.	Wankla	57.42	188.34	46.37	152.09
L. Ambika River					
1.	Unai (Vansda)	58.45	191.72	46.45	152.36
2.	Waghai (Ahwa)	105.91	347.49	99.66	327.00
M. AURANGA RIVER					
1.	Bhervi (Chikhali)	42.08	138.02	31.58	103.58

Note: The Danger Level and Warning Level values can be subjected to change by State Govt.

ANNEXURE - 1 (D)

Statement Showing the Tentative Rule Levels of Water Resources Project of Gujarat State for Monsoon -2024

Sch. No.	Name of Scheme	Crest Level in Meter	F.R.L. in Meter	Tentative Rule Levels for Monsoon-2024 as on				
				01/07	01/08	01/09	16/09	01/10
1	2	3	4	5	6	7	8	9
001	Khambhada	46.69	50.35	50.00	50.25	50.35		50.35
002	Utavali (Gunda)	45.64	49.30	49.00	49.30	49.30		49.30
003	Mukteshwar	193.37	201.65	198.00	200.00	200.75		201.65
004	Dantiwada (A) Main Spillway	175.87	184.10	182.00	182.50	183.00		184.10
	(B) Additional Spillway	179.22						
005	Sipu	178.15	186.43	180.00	183.50	185.02		186.24
006	Karjan	101.23	115.25	103.23	107.55	110.50		115.25
013	Dharoi	178.92	189.59	188.06	188.37	188.67		189.28
014	Panam	116.73	127.41	125.00	125.88	127.41		127.41
015	Deo	81.40	89.65	87.50	88.00	88.50		89.65
016	Hadaf	155.53	166.20	164.00	164.50	166.20		166.20
017	Kadana	113.72	127.71	124.50	126.00	126.80		127.71
019	Bhadar (P)	115.52	123.72	121.50	122.50	123.72		123.72
027	Watrak	128.00	136.25	133.50	134.50	136.00		136.25
028	Guhai	164.77	173.00	171.00	172.25	173.00		173.00
029	Mazam	151.00	157.10	155.00	155.50	156.75		157.10
031	Lank	105.45	111.55	107.00	110.00	111.25		111.55
032	Javanpura (Minor Recharge Scheme)	86.43	91.00	Gate open	Gate open	91.00		91.00
033	Harnav-II	323.77	332.00	330.50	331.00	332.00		332.00
036	Ukai	91.135	105.156	97.840	101.498	102.108	103.632	105.156
038	Ver-II	109.73	115.80	111.00	113.00	115.00		115.80

Sch. No.	Name of Scheme	Crest Level in Meter	F.R.L. in Meter	Tentative Rule Levels for Monsoon-2024 as on				
				01/07	01/08	01/09	16/09	01/10
1	2	3	4	5	6	7	8	9
040	Sukhi	139.59	147.82	145.50	146.50	147.32		147.82
042	Damanganga (Madhuban Dam)	65.83	79.86	70.00	72.00	76.00	78.00	79.86
045	Tappar	36.27	40.85	39.00	40.00	40.55		40.85
065	Khodiyar	196.58	202.68	201.01	202.50	202.68		202.68
066	Thebi	119.90	126.00	124.50	124.50	124.50		124.50
068	Raidy	44.75	50.85	50.00	50.65	50.85		50.85
069	Vadiya	124.15	130.25	130.25	130.25	130.25		130.25
070	Vadi	127.90	134.00	133.50	133.7	133.7		133.7
071	Shell-Dedumal	173.40	179.50	178.00	178.50	178.50		178.50
075	Dhatarwadi-II	30.76	34.41	33.50	34.25	34.41		34.41
076	Shetrunji	54.62	55.53	55.25	55.53	55.53		55.53
077	Rajawal	50.65	56.75	56.00	56.50	56.75		56.75
078	Kalubhar	54.26	60.36	58.50	59.00	59.36		59.36
079	Malpara	72.00	78.10	77.80	77.80	78.10		78.10
080	Kharo	48.02	54.12	53.50	53.50	54.12		54.12
081	Malan	102.74	104.25	104.25	104.25	104.25		104.25
082	Ranghola	60.98	62.50	62.50	62.50	62.50		62.50
083	Limbali	122.00	128.10	125.10	126.60	127.60		128.10
084	Lakhanka	38.12	44.22	44.22	44.22	44.22		44.22
085	Hamirpara	81.70	87.80	87.50	87.50	87.80		87.80
086	Hanol	87.05	90.10	89.50	90.10	90.10		90.10
087	Kaniyad	99.20	102.25	102.00	102.25	102.25		102.25
088	Pingli	45.20	51.30	50.70	51.00	51.30		51.30

Sch. No.	Name of Scheme	Crest Level in Meter	F.R.L. in Meter	Tentative Rule Levels for Monsoon-2024 as on				
				01/07	01/08	01/09	16/09	01/10
1	2	3	4	5	6	7	8	9
094	Und-I	91.90 89.77	98.00	97.00	97.75	98.00		98.00
095	Sani	11.15	17.25	NA	NA	NA	NA	NA
103	Umiyasagar	66.48	71.05	69.50	70.00	70.50		71.05
106	Und-II	12.15	18.25	17.75	18.00	18.25		18.25
107	Kankavati	27.75	30.50	30.20	30.50	30.50		30.50
108	Rangmati	37.10	43.20	42.60	42.90	43.20		43.20
109	Vartu-II	33.85	39.95	38.95	39.45	39.95		39.95
110	Fulzar (KB)	89.75	95.85	94.85	95.50	95.75		95.85
111	Aji-IV	14.30	20.40	19.00	19.50	19.50		19.50
112	Demi – III	19.50	25.60	24.60	25.30	25.60		25.60
124	Shingoda	133.33	141.58	139.73	140.23	141.00		141.58
125	Hiran-II	63.03	71.26	70.00	70.75	71.26		71.26
126	Raval	140.60	148.86	146.56	147.56	148.56		148.86
132	Ozat-II	69.27	77.50	76.50	76.75	77.00		77.50
133	Vrajmi R.R.	90.95	94.00	93.00	93.50	94.00		94.00
134	Ambajal	176.21	182.31	179.60	180.50	181.10		182.31
135	Draphad	117.90	124.00	122.50	123.00	123.50		124.00
136	Bantva-Kharo	13.20	16.25	15.75	16.00	16.25		16.25
137	Ozat-Weir (Shahpur)	29.80	32.85	29.80	29.80	29.80		32.50
138	Ozat-Weir (Vanthali)	25.00	27.50	25.00	25.00	27.50		27.50
148	Bhadar	106.07	107.90	107.30	107.60	107.90		107.90
149	Bhadar - II	42.43	53.10	52.00	52.50	53.00		53.10

Sch. No.	Name of Scheme	Crest Level in Meter	F.R.L. in Meter	Tentative Rule Levels for Monsoon-2024 as on				
				01/07	01/08	01/09	16/09	01/10
1	2	3	4	5	6	7	8	9
150	Machchhu-II	Existing Gate 51.20 Additional Gate 49.07	57.30	57.00	57.30	57.30		57.30
151	Aji-III	44.92	53.15	52.55	52.85	53.15		53.15
152	Moj	71.02	72.54	72.54	72.54	72.54		72.54
153	Venu-II	48.91	55.00	54.00	54.50	55.00		55.00
154	Nyari-II	82.40	88.50	87.90	88.20	88.50		88.50
155	Karmal	162.90	169.00	168.70	169.00	169.00		169.00
157	Karnuki	161.45	164.50	163.50	164.00	164.50		164.50
161	Nyari - I	98.40	104.50	103.50	104.00	104.25		104.50
163	Aji - II	67.66	73.76	72.50	72.50	72.50		73.76
164	Demi - II	41.90	48.00	47.70	48.00	48.00		48.00
165	Chhaparwadi-II	90.15	98.38	98.00	98.38	98.38		98.38
166	Ghodadhroi	92.20	98.30	98.00	98.30	98.30		98.30
168	Khodapipar	52.22	55.27	55.20	55.27	55.27		55.27
169	Survo	93.75	99.85	99.00	99.50	99.85		99.85
170	Dondi	100.67	103.72	102.80	102.80	102.80		102.80
182	Sukhbhadar	103.10	109.20	108.20	108.70	109.20		109.20
183	Nyka (Wadhavan Bhogavo-I)	99.36	101.80	101.50	101.50	101.80		101.80
186	Nimbhani	131.45	134.50	134.20	134.50	134.50		134.50
187	Lim-Bhogavo-II	69.90	76.00	74.50	75.50	76.00		76.00
197	Khedva	253.60	259.70	256.00	257.00	257.50		258.25
198	Sabali	40.70	43.75	41.50	42.50	43.25		43.75
199	Saran	33.95	37.00	36.50	36.75	37.00		37.00

Sch. No.	Name of Scheme	Crest Level in Meter	F.R.L. in Meter	Tentative Rule Levels for Monsoon-2024 as on				
				01/07	01/08	01/09	16/09	01/10
1	2	3	4	5	6	7	8	9
200	Brahmani-II	36.27	44.50	43.00	43.00	43.00		43.00
201	Gorathiya Reachrge Scheme	105.25	110.43	105.25	106.25	108.25		110.43
202	Varansi	76.43	81.00	76.43 (Gate open)	79.50	80.00		81.00
203	Machchhu-III	20.47	28.70	27.00	27.00	28.00		28.70
204	Rana Khirasara	28.52	36.75	30.50	33.50	35.00		36.75

ANNEXURE – 1 (E)

Accompaniment to G.O.I. C.W.C's letter No. L/25/86-DSS/509 dated 13th May 1986.

CRITERIA AND GUIDELINES FOR EVACUATING STORAGE RESERVOIR SIZING LOW LEVEL OUTLETS AND INITIAL FILLING OF RESERVOIRS.

General:

All dams should be provided with low level outlets of adequate capacity to lower the reservoir water level to a specified elevation for inspection, maintenance and repairs to control the rate of reservoir pool rise during initial filling and for emergency draw down.

The draw down levels and the evacuation time shall be set forth for each project.

Criteria for evacuating facilities.

For lowering the water level for inspection and repairs when necessary the requirement would be to evacuate a major portion of the reservoir in such time so that after the water level is lowered, sufficient time is available for repairs before the water level rises due to higher inflows. For such a consideration the outlets should be at the lowest possible level and sufficient cater for the anticipated inflows.

Other factors to be taken into account are:

1. To control the rate of reservoir rise during initial filling and if necessary subsequently also.
2. To hold the reservoir at pre-determined levels for stage-wise initial filling.
3. Emergency draw down during initial filling or at a future date when distress conditions are noticed.

The low level outlets should be sized to maintain specific reservoir filling rates and also to hold the reservoir level reasonably constant at specified elevations during initial filling to accomplish a predetermined monitoring programme. The period during which the initial reservoir filling is to be done has to be decided and a detail programme drawn up. Flood routing studies with different frequency floods (lower floods) will have to be done. As such the low level outlets works should have discharge capacity sufficient to maintain reservoir filling rate to a pre-specified programme and to hold the reservoir levels reasonably constant for elevations above fifty percent of the height. Inflows in the reservoir should include a reasonable frequently flood which would be dependent on the anticipated filling period.

The capacity and level of low level outlets for emergency draw down during initial filling or at a future date when distress conditions are noticed has to be evaluated in each individual case separately.

For Structural safely the reduction in height of water which gives relief is important. For very large reservoirs this would mean very large capacity outlets for prompt evacuation. Sizing of outlets works should be accomplished in a systematic way considering the following aspects.

(1) Project release requirements.

(2) Economic benefits that can be derived from using the outlet works in routing the inflow design flood. This study may result in increase in outlet works capacity.
(3) Initial filling required.
(4) Evacuation Criteria:- This study to meet the evacuation criteria may result in further increase in capacity which may turn be beneficial in routing the inflow design flood.
(5) After the above requirements are satisfied a study to take the advantage of the outlets works capacity for diversion requirements during construction and the multistage construction of outlet works is made.

Initial Filling of Reservoirs :

Initial reservoir filling is the first test of a dam to perform its, intended functions. As the sizing of the outlet works to meet the probable outflow requirements during initial filling has to be fixed during designs. The information on the desired rates of pool rise must also be available at the time their design requirements are established.

In order to monitor reservoir performance, the rate of filling should be controlled to the extent feasible to allow in accomplishing a pre-determined monitoring programme. Low level outlets should be located and sized to provide discharge capacity sufficient to maintain the reservoir filling rates specified by the initial filling criteria to hold reservoir levels reasonably constant for elevation above 50 percent of the hydraulic heights of the dam. Inflow into the reservoir should be assumed as the average of the mean monthly inflow in the selected filling period and reasonable frequency flood.

Reservoir filling criteria are established on dam. In general the objective as already stated above is to provide a planned programme with adequate time for monitoring and evaluating performance of the dam and its foundation as the reservoir is being filled for the first time.

The major factors to be considered in establishing initial filling criteria are as under:

(1) Type of dam namely Concrete, Earth and Rockfill.
(2) Geology of the dam foundation and reservoir and land-slide potential along the banks of the reservoir.
(3) Hazard potential
(4) Inflow characteristics controlled or uncontrolled.
(5) Hydrology - flood patterns and seasonal based flows.
(6) Release provisions for projects requirements flood release and emergency evacuation.
(7) Type of instrumentation and provision for monitoring reading and evaluation time needed and response time.
(8) Safe channel capacities down stream of the dam.
(9) Characteristics of reservoir Storage.

Filling rates for concrete dams are much less restricted and are not normally specified for the bottom half of the depth of the reservoir impounded of the dam. Broadly the stage wise filling to be done as under .

The first stage consists of filling the reservoir upto MDDL. This filling can be done without restraint as there is no hazard potential to the public and economic development downstream of the dam. The second stage consists of filling the reservoir from MDDL to the crest of the spillway. The rate of the filling should be controlled and it has to be specified. The third stage consists of filling above the crest of the spillway upto the full reservoir level (FRL) which has also to be conducted in stages.

Concrete Dams

The first stage consists of filling the reservoir upto Minimum Draw Down Level (MDDL). This filling can be done without restraint.

The second stage consists of filling the reservoir from MDDL to the crest of spillway. The reservoir above MDDL should be gradually built up at a rate not exceeding 3 meters per fortnight depending upon the height of the dam and held at the level of crest of spillway in order to assess the behaviour of the structure on the basis of observed data and to take a decision about further storage.

This third stage consists of filling above the crest of the spillway and upto full reservoir level (FRL). Above the crest level of spillway the building upto the reservoir should be restricted to 0.3 meters (1 ft) in 48 hours and the same should be temporarily held at half the height between the crest of spillway and FRL to monitor and assess the behaviour of structure before further filling is resumed. The period for which the reservoir is held at this level will depend on the instrument response time.

In case of concrete dams having high earthen flanks the procedure suggested for earthen dams should be followed.

Earthen Dam :

The first stage consists of filling the reservoir upto MDDL. This filling can be done without restrain.

The second stage consists of filling the reservoir from MDDL to the crest of spillway. In case of earthen and rockfill dam, this stage filling shall be done in two parts.

The reservoir above MDDL should be gradually built at a rate not exceeding 3 meters per fortnight and filling should be temporarily stopped at 50 percent elevation from MDDL to crest of spillway in order to assess the behaviour of the structures on the basis of observed values and to take a decision about further storage.

After a decision is taken to continue the filling further building upto the storage should be done in gradual sub stage of 2 to 3 meters depending upon the height of the dam. Observations of pore pressure cells, uplift pressures, seepage quantum other instrumentation data should be carried out at each stage after allowing a suitable establishing period before going on to the next sub stage of filling.

The third stage consists of filling above the crest of the spillway upto the full reservoir level (FRL).

The rate of reservoir filling crest of spillway should be restricted to 0.3 meters (1 feet) in 48 hours. the reservoir should be temporarily held at half the height between FRL and crest of spillway for sufficient time for monitoring and evaluation

performance of dam also taking into account instrument response time and to take a decision about further storage.

Evacuation Time :

Guidelines on this aspect should generally take into account the assessment of hazard potential and risk potential of the dam. However, in the Indian conditions where population growth in downstream areas is not controllable the hazard potential at the initial stage and its subsequent increase can not be assessed. In most cases, the dams would come under high hazard category.

Similarly risk is very difficult to classify because of many combinations of adverse conditions that may be involved at particular dam site and the type of dam.

Classification is also recommended to be based on the height of dams so far as determination of risk potential is concerned and dams with a height of more than 50 meters are to be considered more important than those of height less than 50 meters.

For evacuating storage reservoirs sizing low-level outlets, three categories have been suggested is given in the table below. These assume a general balance between hazard and risk could be adjusted on the basis of detailed site specific studies.

Evacuation Time (in days):

Sr. No.	Depth of Evacuation (from initial pool level)	Degree of Hazard or risk		
		High	Significant	Low
		(Evacuation time in days)		
1.	25 percent	20	30	50
2.	50 percent	40	50	70
3.	75 percent	80	90	100

The above evacuation periods would generally be within the overall requirement to draw down the reservoir within a period of one to four months allowing sufficient time for carrying out inspection and repairs, before the water level rises due to higher inflows of monsoon.

In some exceptional case it may not be technically possible and economically feasible to provide the required draw down capability to meet the above criteria because of the size of the project (unusually small or large) or because some of special feature. In such a case the criteria regarding draw down level or the evacuation time could be altered to suit the site specific case if the result of studies so indicate.

ANNEXURE - 1 (F)

Hourly Information to be submitted to the concern Chief Engineer & Add. Secretary, Chief Engineer (Central Gujarat) & Add. Secretary & Flood Control Cell, Gandhinagar.

District : - **Date:**
Name of Scheme :-
& Scheme No. :-
Rule Level :-
Full Reservoir Level:-

Date & Time	PWL in Meter	Gate Position		Inflow (Cumecs)	Outflow (Cumecs)	Remarks
		No.	Opening in Mt			
(1)	(2)	(3)	(4)	(5)	(6)	(7)
08.00						
09.00						
10.00						
11.00						
12.00						
13.00						
14.00						
15.00						
16.00						
17.00						
18.00						
19.00						
20.00						
21.00						
22.00						
23.00						
24.00	And Up to 07.00 Hrs. of Next Day.					

Seal and Signature of
Superintending Engineer
Ukai Circle (Civil), Ukai

ANNEXURE - 1 (G)

Maximum Release Made After the Year 1990 in Major Dams of the Gujarat State

Sr. No.	District	Name of Dam	Date	Maximum Flood Discharge in Cumecs
1	Valsad	Damanganga	03-08-2004	17443.00
2	Tapi	Ukai	09-08-2006	25774.00
3	Narmada	Sardar Sarovar	07-09-1994	62296.00
4.	Narmada	Karjan	11-07-2022	5959.65
5	Chhotaudepur	Sukhi	23-08-1990	3510.00
6	Mahisagar	Kadana	12-08-2006	27079.00
7	Panchmahals	Panam	07-09-1994	9590.00
8	Mahisagar	Wanakbori	12-08-2006	32568.00
9	Aravalli	Watrak	07-09-2006	3398.00
10	Mehsana	Dharoi	17-07-1993	8920.00
11	Banaskantha	Dantiwada	24-07-2017	6821.40
12	Rajkot	Bhadar	24-06-2015	6015.23
13	Morbi	Machchhu-II	22-10-2017	6357.63
14	Bhavnagar	Shetrunji	25-06-2015	3681.00
15	Banaskantha	Sipu	24-07-2017	7015.00
16	Aravalli	Hathmati	19-08-2006	365.66
17	Aravalli	Meshwo	20-08-1994	155.02
18	Jamnagar	Und-I	14-07-1994	6900.00
19	Morbi	Machhu-I	22-10-2017	3670.50

ANNEXURE - 1 (H)

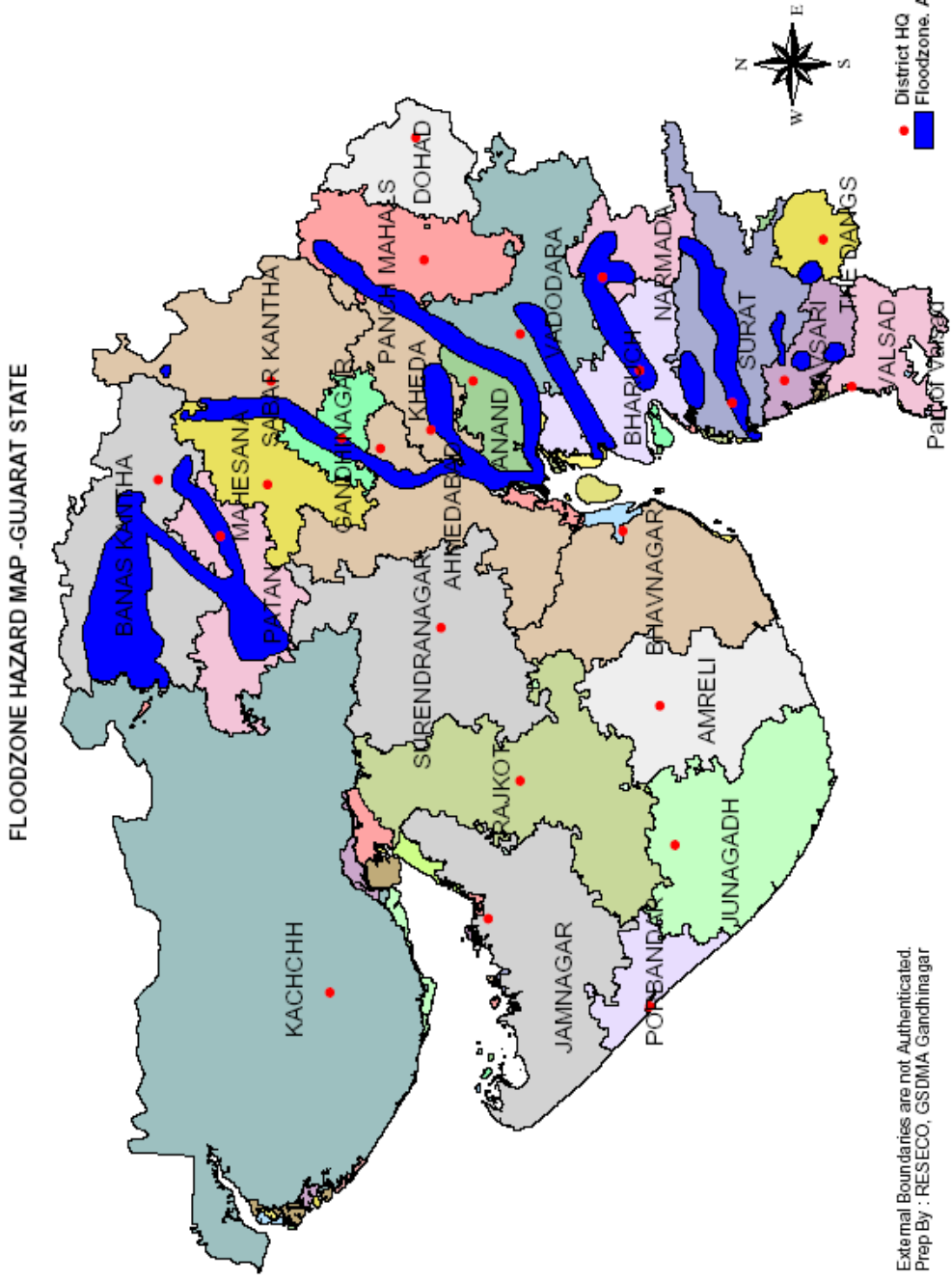
GUJARAT - SINGLE DAY EXTREME RAINFALL REPORTED (1901-1990)		
Station Name	**District**	**Extreme rainfall (mm)**
Dholera	Ahmedabad	448
Amdavad	Ahmedabad	415
Dholka	Ahmedabad	377
Sanand	Ahmedabad	361
Pigalaj	Anand	425
Thasara	Anand	310
Kheda	Anand	258
Anand A.M.	Anand	247
Mahudha	Anand	187
Palanpur	Banaskanta	510
Radhanpur	Banaskanta	418
Tharad	Banaskanta	370
Deesa	Banaskanta	306
Jambusar	Bharuch	572
Bharuch	Bharuch	485
Amod	Bharuch	395
Ankleshvar	Bharuch	335
Ilav	Bharuch	319
Hansot	Bharuch	308
Vagash	Bharuch	284
Palitana	Bhavnagar	508
Bhavnagar	Bhavnagar	373
Gogha	Bhavnagar	335
Mahuva	Bhavnagar	330
Jamnagar A.M.	Jamnagar	447
Dvarda(Dwarka)	Jamnagar	382
Jamnagar	Jamnagar	338
Junagadh A.M.	Junagadh	368
Veraval	Junagadh	301
Anjar	Kutch	501

GUJARAT - SINGLE DAY EXTREME RAINFALL REPORTED (1901-1990)		
Station Name	**District**	**Extreme rainfall (mm)**
Abdasa(Naliya)	Kutch	443
Rapar	Kutch	353
Halol	Panchmahals	485
Zalod	Panchmahals	470
Kalol	Panchmahals	440
Jambughoda	Panchmahals	420
Godhra	Panchmahals	401
Bariya	Panchmahals	337
Lunavada	Panchmahals	308
Vankaner	Rajkot	501
Dhoraji	Rajkot	405
Rajkot	Rajkot	375
Gondal	Rajkot	320
Morbi	Rajkot	244
Jasdan	Rajkot	193
Modasa	Sabarkanta	1026
Prantij	Sabarkanta	782
Himmatnagar	Sabarkanta	511
Idar	Sabarkanta	463
Surat	Surat	445
Mandvi	Surat	397
Olpad	Surat	383
Bardoli	Surat	369
Valod	Surat	334
Dhangandhra	Surendranagar	441
Bajana	Surendranagar	418
Wadhavan	Surendranagar	316
Chhotaudepur	Vadodara	286

Note: This table only presents single day extreme rainfall. These extreme events often last for 2 to 3 days and the total rainfall during this period may be twice to thrice the single day rainfall.
Source: GAU (undated)

Annexure – 1 (H)

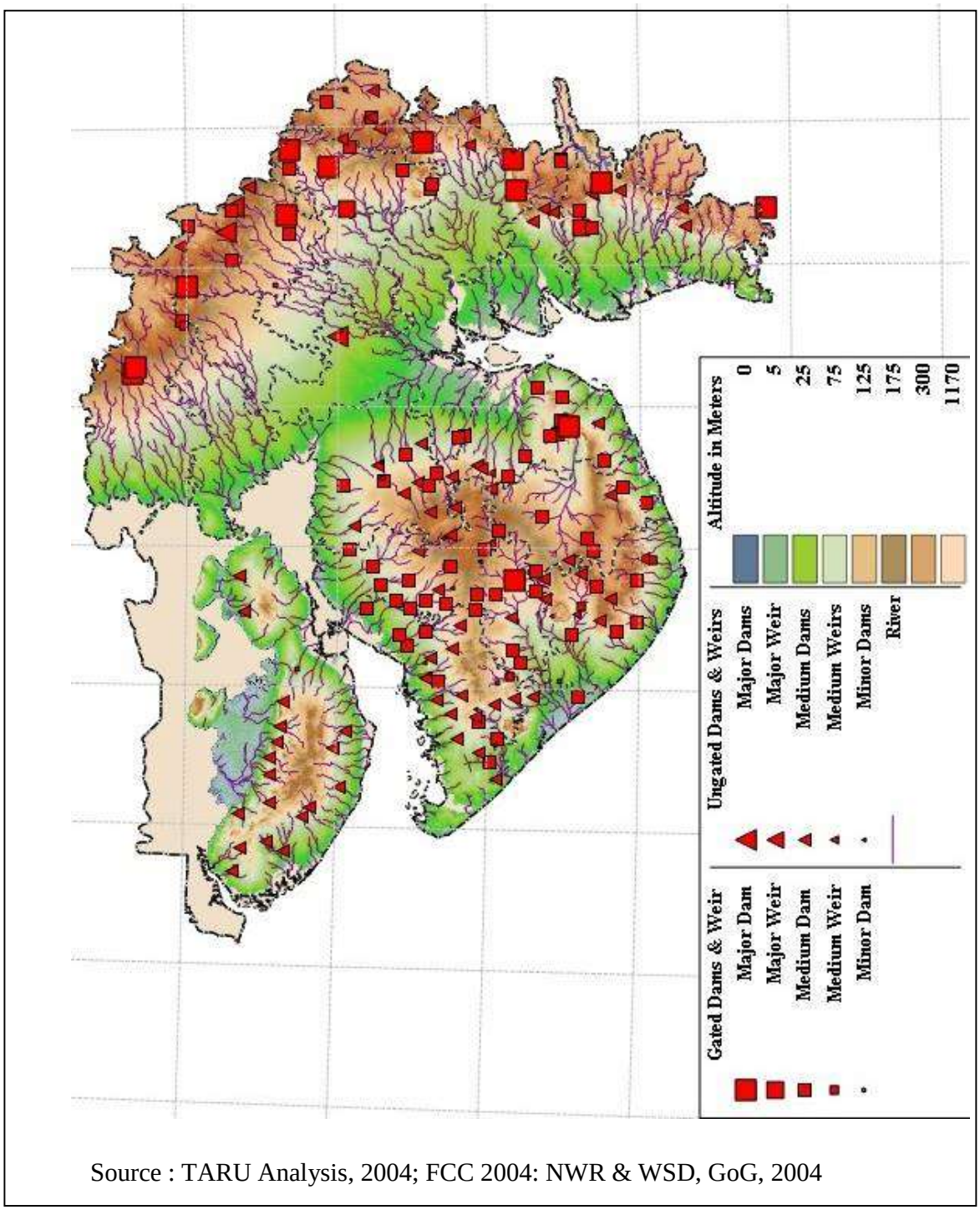
Flood Risk Map of Gujarat (RESECO/GSDMA)



Source: RESCO/GSDMA, 2002

Annexure – 1 (H)

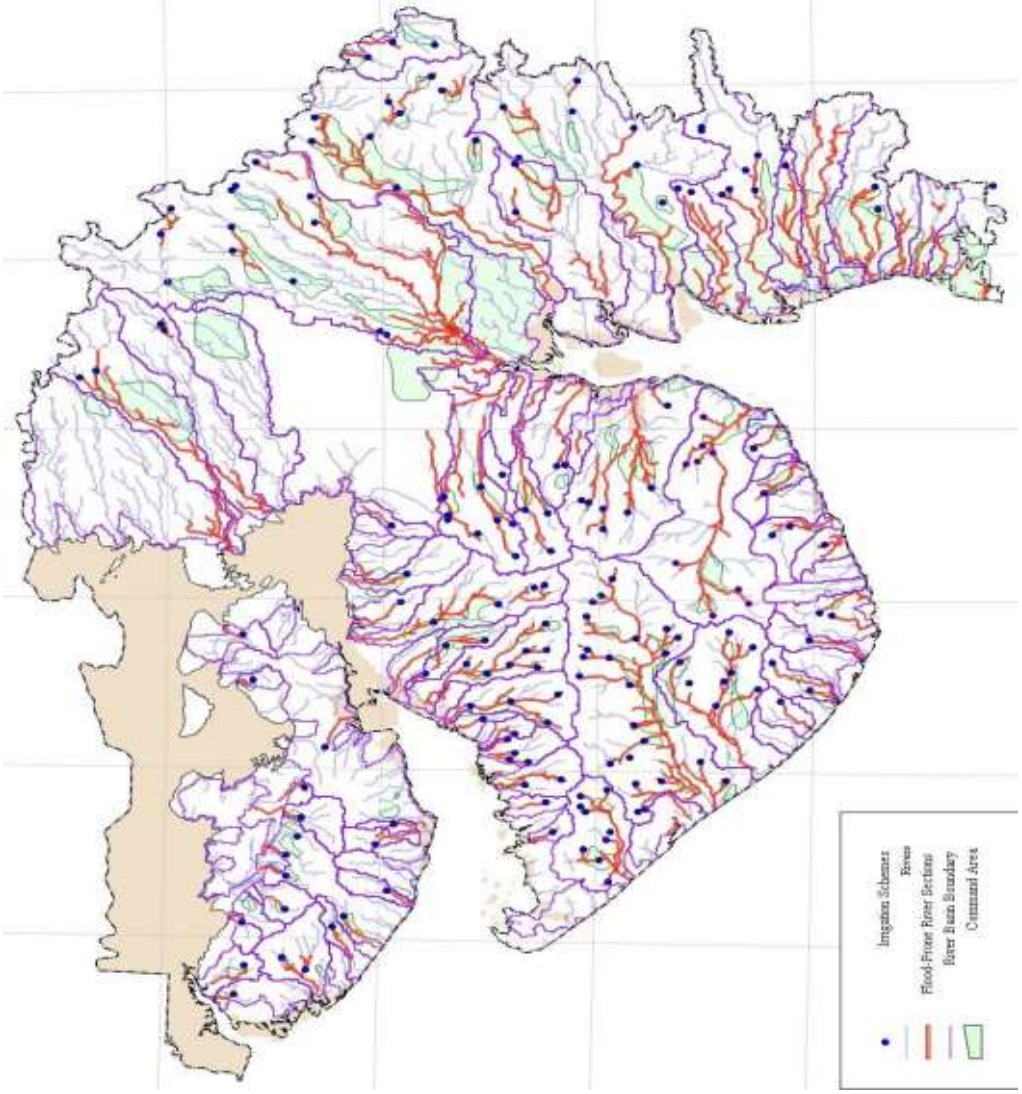
Major and Medium Dams in Gujarat



Source : TARU Analysis, 2004; FCC 2004: NWR & WSD, GoG, 2004

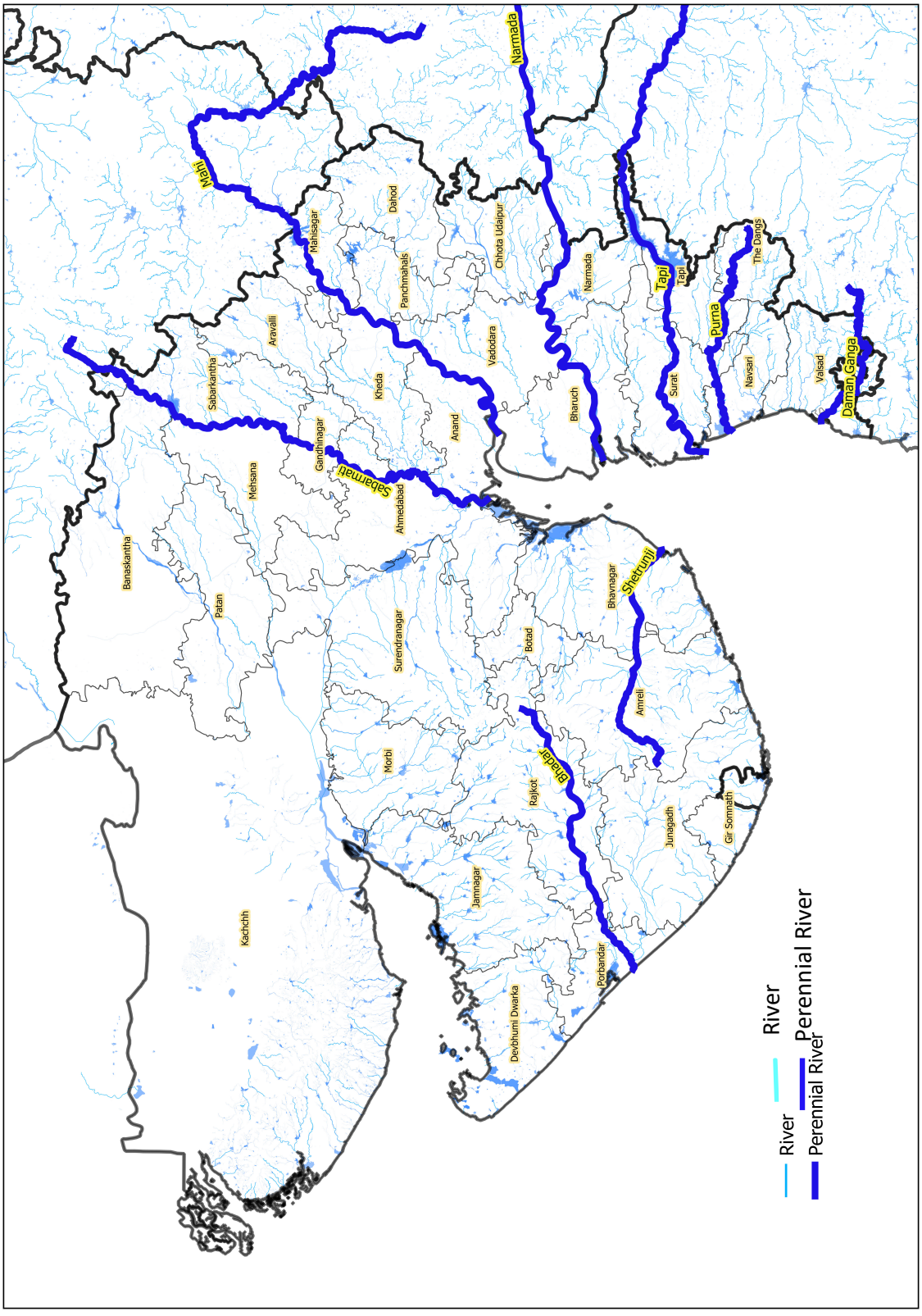
Annexure – 1 (H)

Fig. (7) Flood prone River Sections

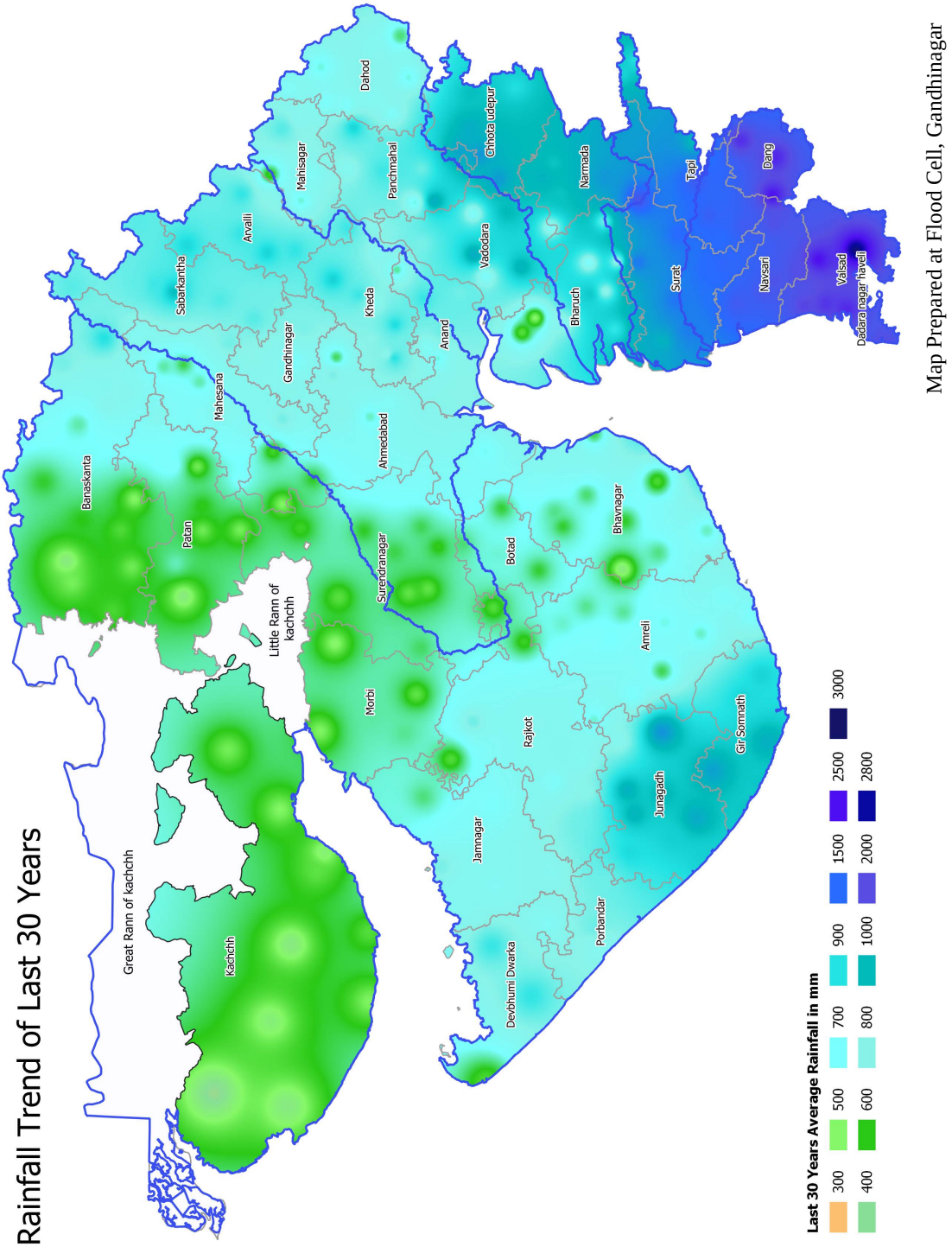


Source : TARU Analysis, 2004; FCC 2004: SRTM, 2004

Rivers of Gujarat

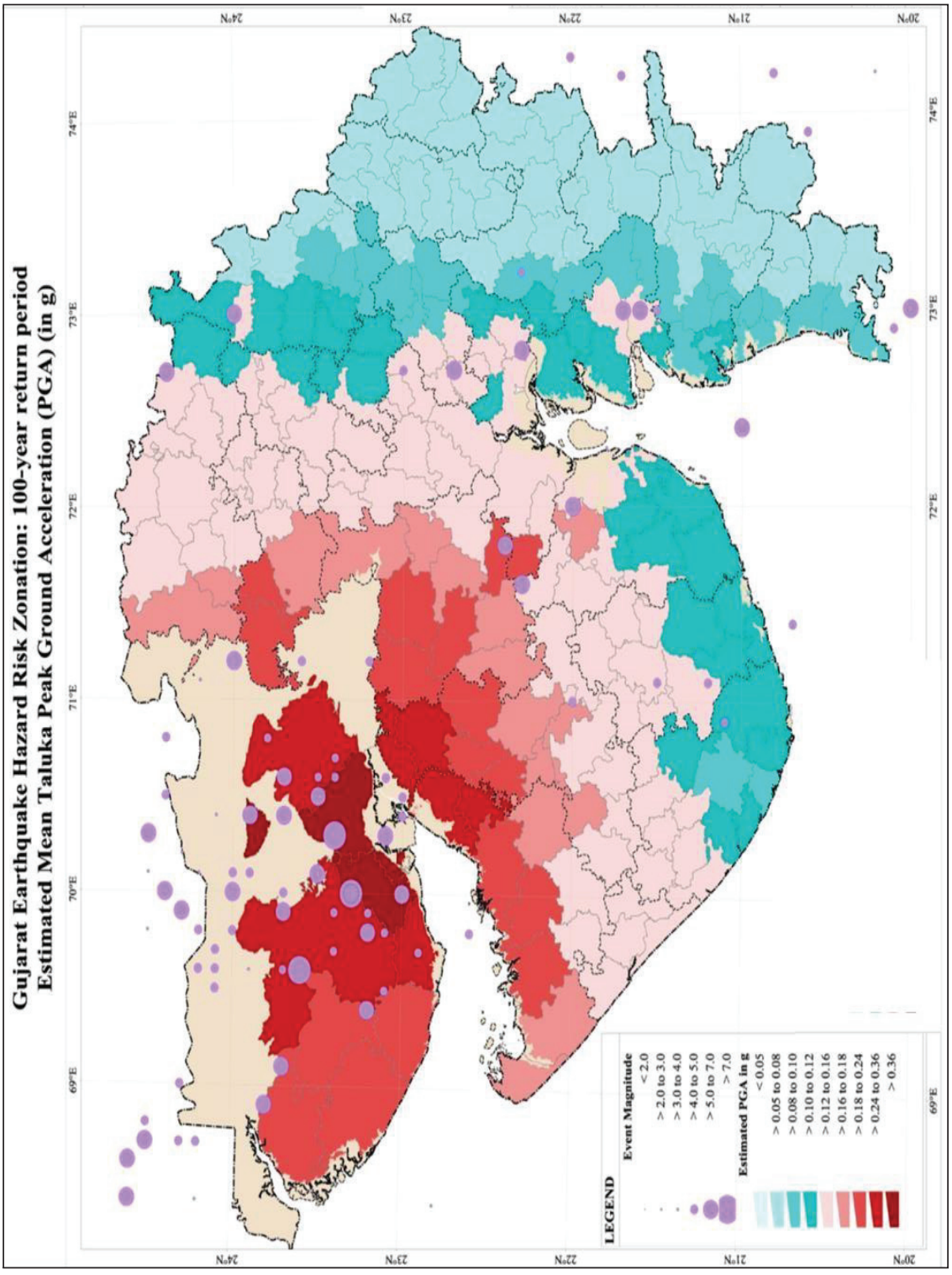


Last 30 Years (1994-2023) Average Rainfall



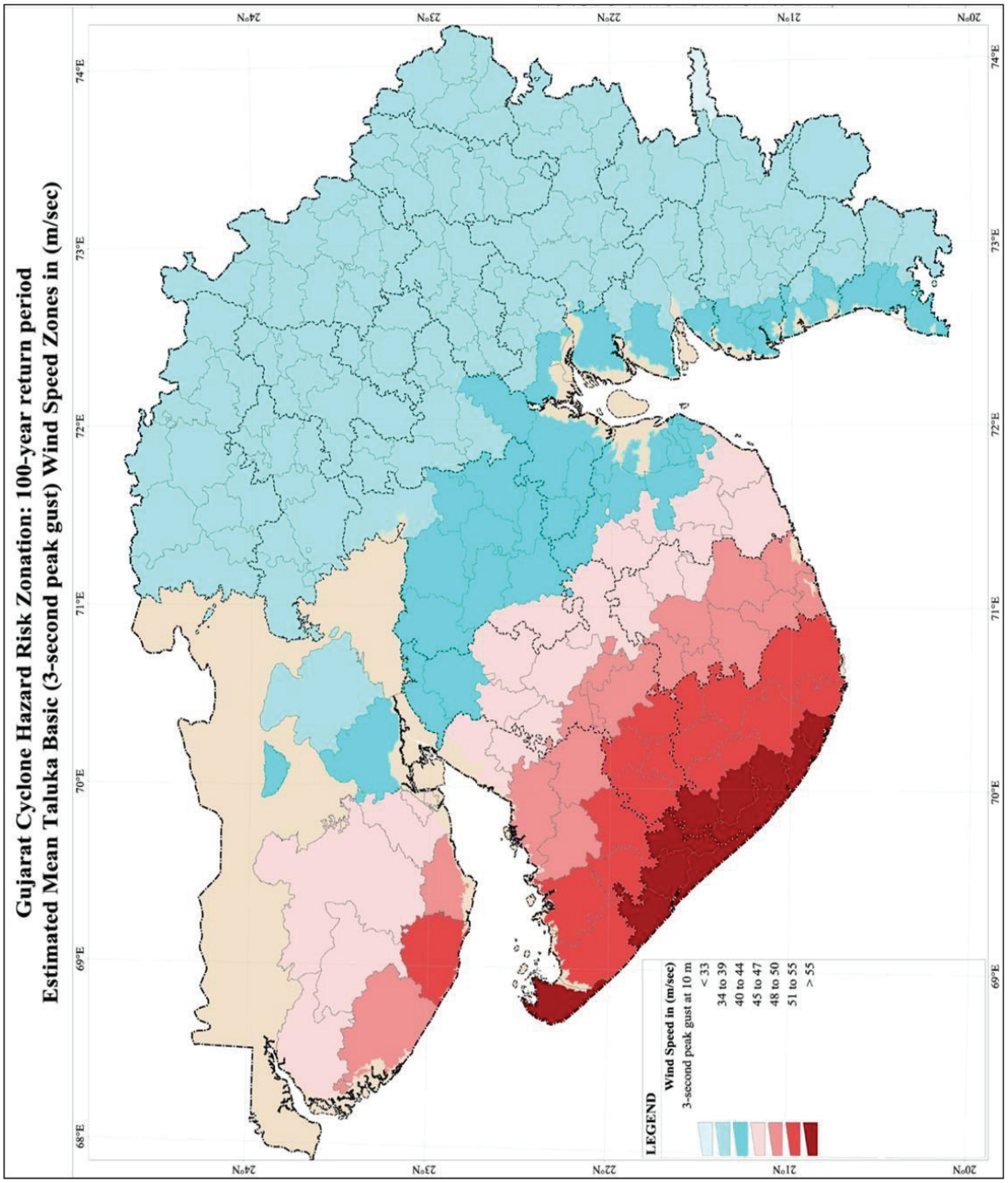
Source: Revenue Department, Government of Gujarat

Annexure 3.1: Gujarat Earthquake Hazard Risk Zonation Map

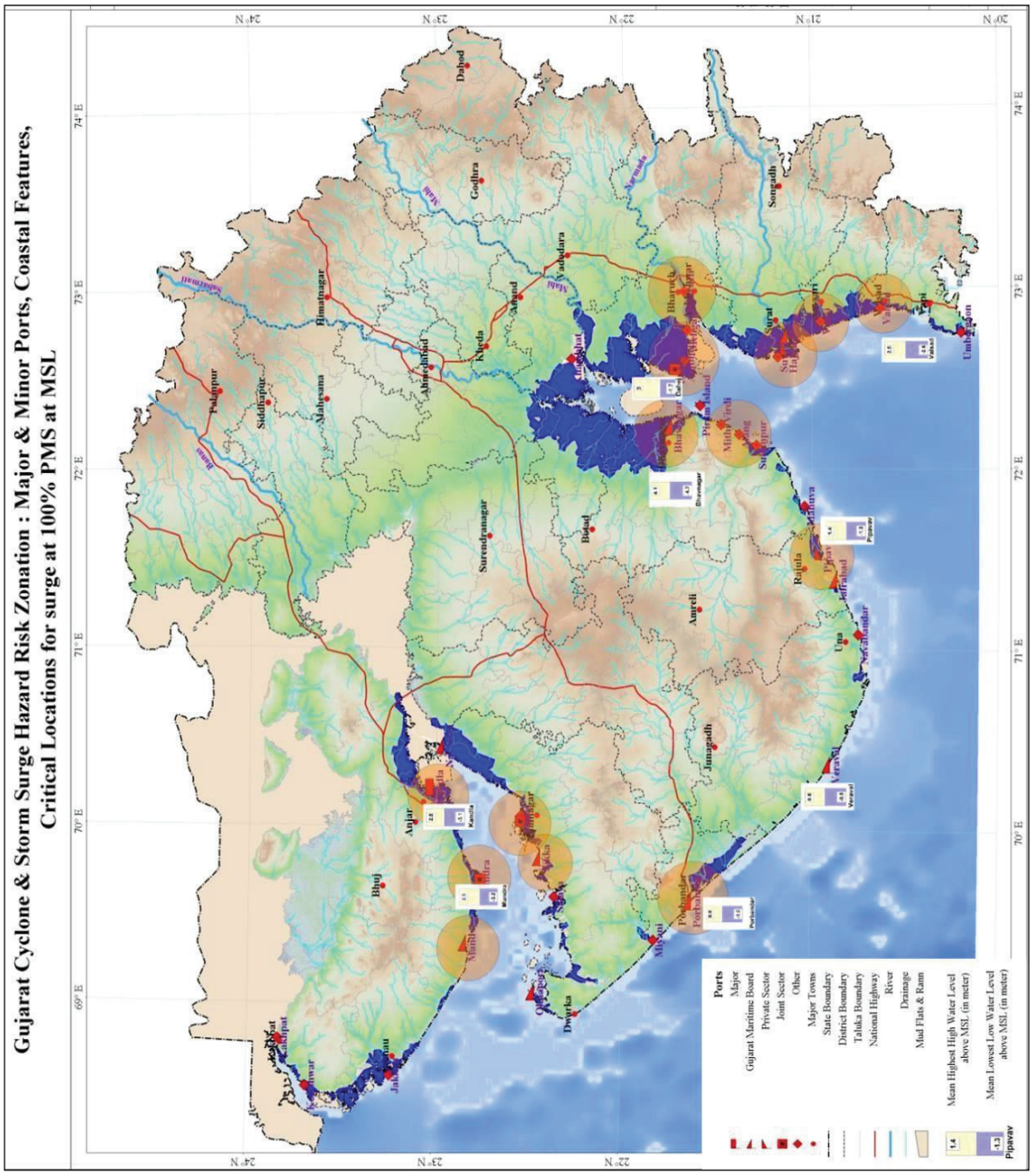


Source: Gujarat Hazard Risk & Vulnerability Atlas (2005)

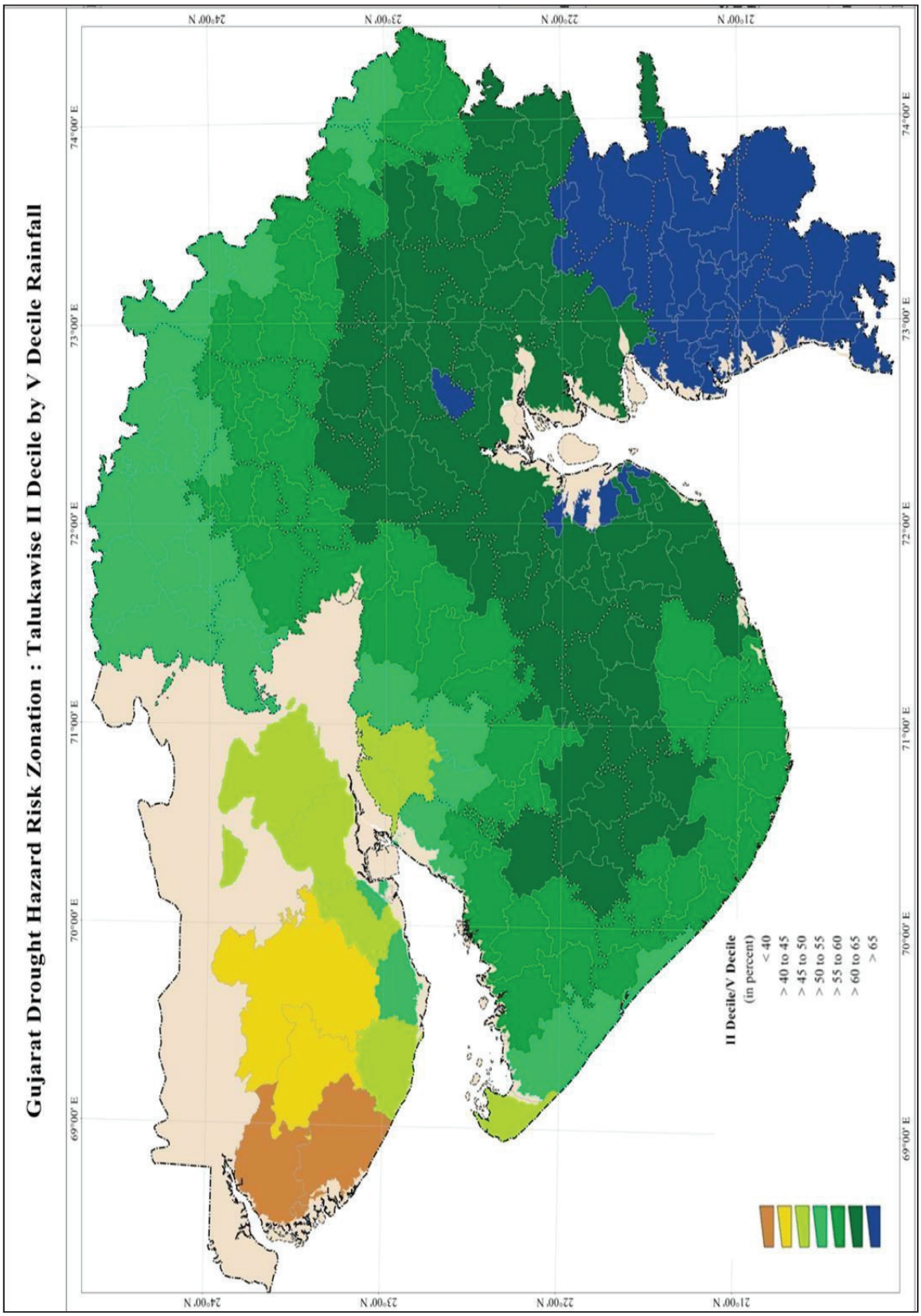
Annexure 3.2: Gujarat Cyclone Hazard Risk Zonation Map



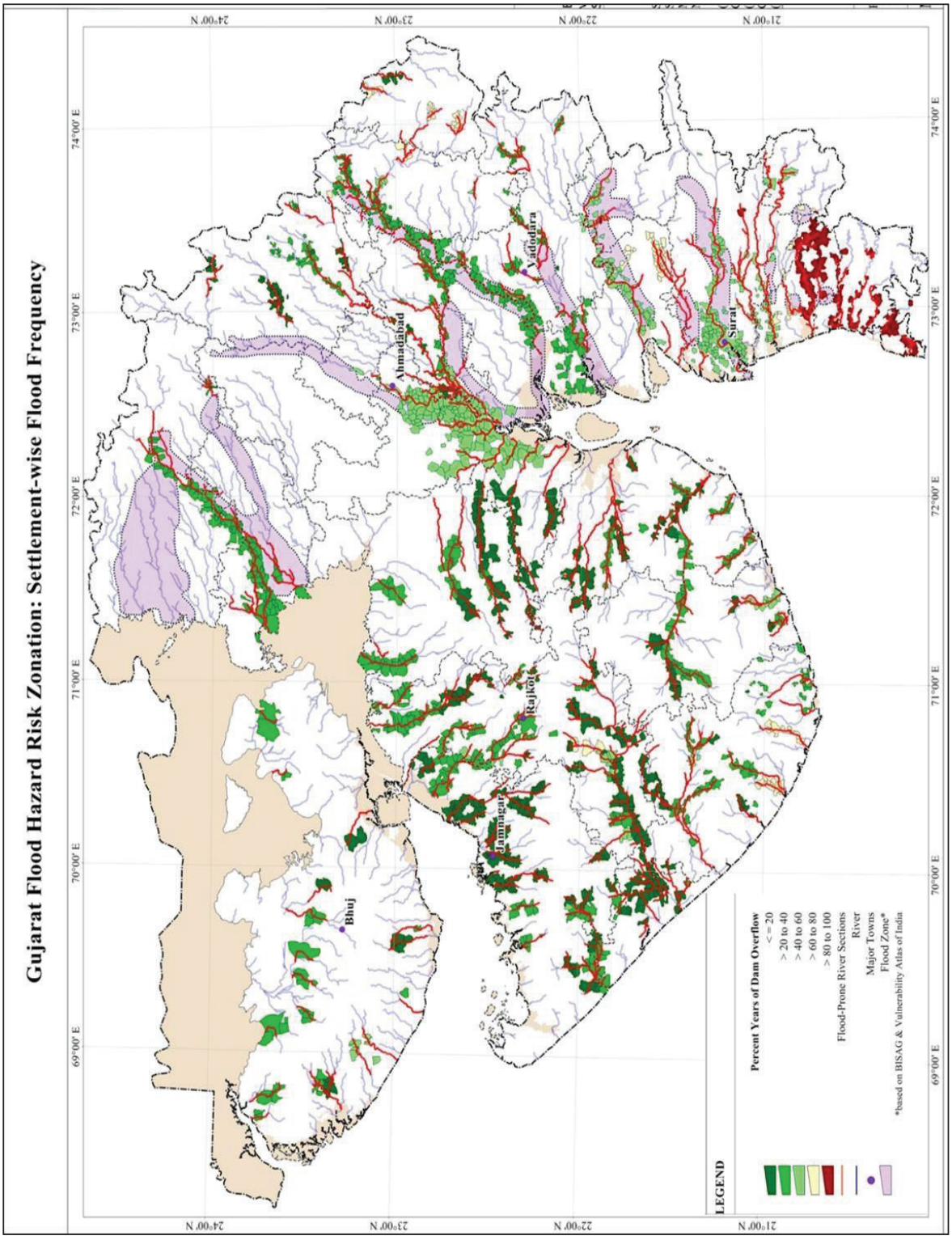
Annexure 3.3: Gujarat Storm Surge Hazard Risk Zonation Map



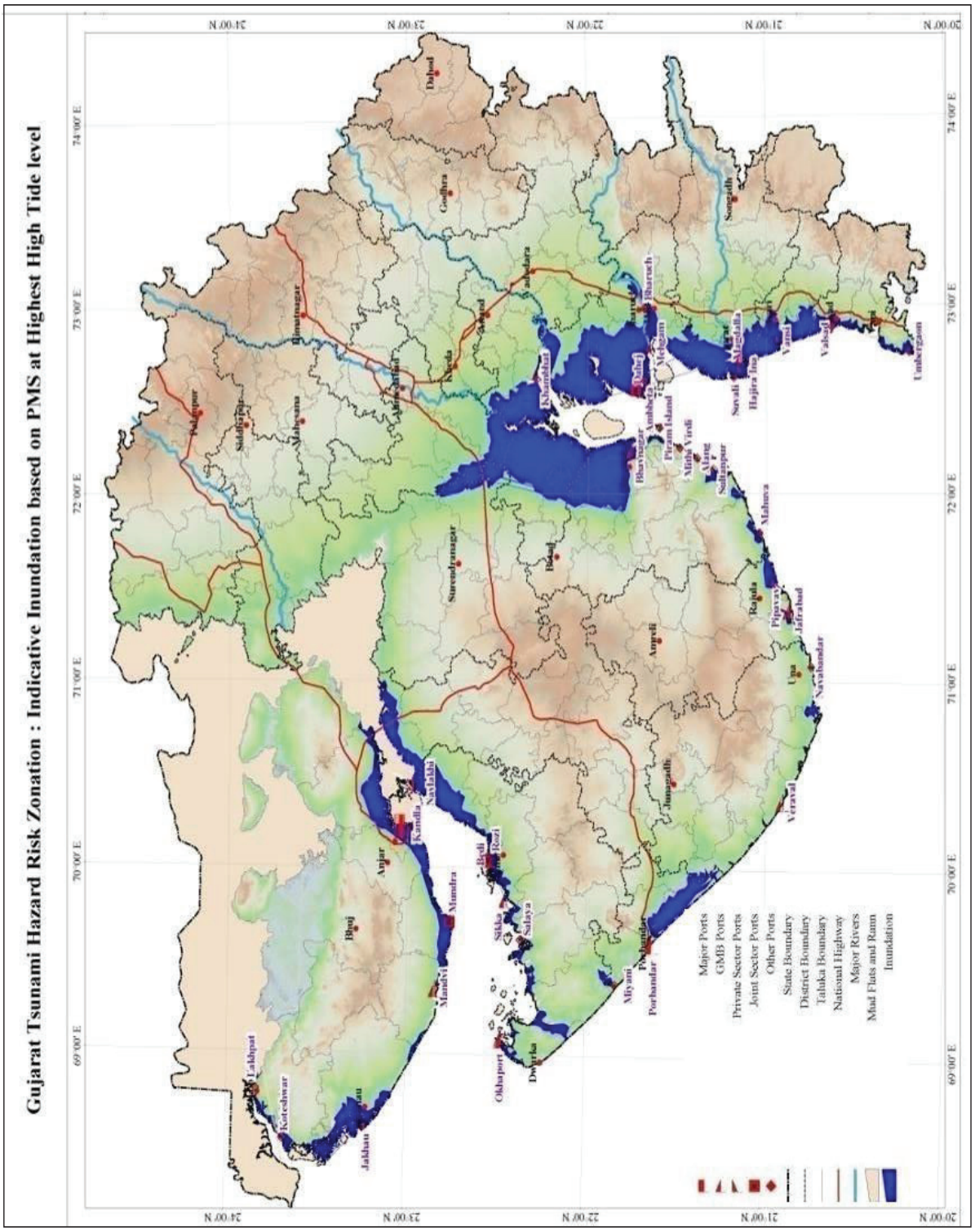
Annexure 3.4 : Gujarat Drought Hazard Risk Zonation Map



Annexure 3.5: Gujarat Flood Hazard Risk Zonation Annexure – 1 (H)



Annexure 3.6: Gujarat Tsunami Hazard Risk Zonation



1.11 Role Matrix: Responsibility Matrix for Various Departments during Monsoon 2024

1.11

Role and Responsibility of Disaster Response Departments

	Sr. No	Stages	Disaster Management Authority / EOC	IMD	CWC	WRD	Revenue Dept. / EOC	Urban/Rural Authority	Roads and Building	Railway Authority	Home Dept.	Energy
	1	Monsoon Period	To arrange regular meeting with all concerned departments during Monsoon Period	Issue of weather bulletin for forecasting rainfall	To coordinate with the neighboring states of Gujarat for rainfall and inflow forecast for inter state rivers. To issue inflow forecast in the reservoir and flood level forecast warning in for city. Warning to be issued to the focal officer of the projects of the basin and concerned officers of WRD.	To coordinate with the concerned Water Resources officers of the neighboring states in the event of Heavy rainfall in the catchment, release of water from the upstream dams along with upstream reservoir position. To plan for operation of reservoir w.r.t. outflow from the reservoir to be decided and to inform concerned Revenue authority by way of Flood warning. Appropriate warning message to be sent to Revenue Dept. and if deemed fit for broadcasting on All India Radio and Doordarshan. Place the Disaster Management Plan on wrd.guj.nic.in/dam for open access.	To take appropriate action for alerting and evacuating the people likely to be affected in accordance with the warning and threat perception along with relief measures. In demanding situation if deemed fit messages for broadcasting on All India Radio and Doordarshan.	To take appropriate action for alerting and evacuating the people likely to be affected in urban areas in accordance with the warning and threat perception.	To take appropriate action for safety of bridge, causeways roads and traffic	To take appropriate action for safety of railway bridge, tracks and rail traffic.	To take appropriate action in consultation with revenue dept.	To take appropriate action for safety of transmission infrastructure for maintain power supply in the affected areas.
	2	Heavy Rainfall		Issue of weather bulletin for forecasting rainfall of various durations Issue of Special Bulletins	To coordinate with the neighboring states of Gujarat for rainfall and inflow forecast for inter state rivers. To issue inflow forecast in the reservoir and flood level forecast warning in for city. Warning to be issued to the focal officer of the projects of the basin and concerned officers of WRD,	Dam authority monitors the dam situation during monsoon. When any unusual condition or incident is noticed the information / emergency level is communicated to the disaster management authorities responsive actions to save the dam and minimize impact to life, property and the environment. CWC guidelines Emergency Action Plan for dams (CDSO_GUD_DS_01_v2.0) in this regard may be referred for more details.	To take appropriate action for alerting and evacuating the people likely to be affected in accordance with the warning and threat perception along with relief measures. In demanding situation if deemed fit messages for broadcasting on All India Radio and Doordarshan. Alert Central Assistance agencies on need basis.	As above and be prepared for responding to likely Flooding situation	As above	As above	As above	As above and be prepared for responding to likely Flooding situation
	3	**Reservoir Storage position**										
		a. **Storage more than 70% and unto 80% (Warning Stage)**		-	-	To inform concerned District Administration falling in the downstream likely flood affected village / town in writing for the position of reservoir. Clearly mention the Storage percentage and Warning stage on the Departmental website wrd.guj.nic.in/dam Open Access Reports.	Warning message to Collectors for awareness of the affected people	Warning message to Municipal Commissioners for awareness of the affected people				
		b. **Storage more than 80% and unto 90% (Alert Stage)**		-	-		Alert message to collectors for awareness of the affected people	Alert message to Municipal Commissioners for awareness of the affected people				
		c. **Storage more than 90% (High Alert)**		-	-		High Alert message to collectors for awareness of the affected people	High Alert message to Municipal Commissioners for awareness of the affected people				
		d. **Release of Flood Water from the Reservoir**				Issue the Flood warning before release of water from the reservoir to revenue authority / police dept. concerned with downstream affected areas / village / town by the Focal Officer of the Project / Basin in standard proforma stipulated in Disaster Management Plan stating likely affect villages / towns, quantum and time for release of water, warning signal etc. **Concerned Executive Engineer of the dam shall inform on the appropriate decision to the Focal officer of the river basin. The Focal officer in turn shall intimate to the District Collector and the Flood Control Cell (WRD) Gandhinagar.** **The details of focal officer for the respective basins are provided in the Disaster Management Plan.**	To take appropriate action for alerting and evacuating the people likely to be affected in accordance with the warning and threat perception. In case of natural calamities and grave emergencies liaison with Air force authority, Military authority for their assistance	To take appropriate action for alerting and evacuating the people likely to be affected in urban areas in accordance with the warning and threat perception.	To take appropriate action for safety of bridge, causeway roads and traffic	To keep constant watch over the situation and mobiles teams.	To take appropriate action in consultation with revenue dept.	To take appropriate action for safety of transmission infrastructure for maintaining power supply in the affected areas.
	4	**Main Rivers (Damanganga, Tapi, Narmada, Mahi, Sabarmati and Banas) Flowing at danger level**			To coordinate with the neighboring states of Gujarat for rainfall and inflow forecast for inter state rivers. To issue inflow forecast in the reservoir and flood level forecast warning in for city. Warning to be issued to the focal officer of the projects of the basin and concerned officers of WRD.	To inform concerned District Administration / Police dept. falling in the riverine areas with the details of location of the Gauge site. Appropriate warning message to be sent to Revenue Dept. and if deemed fit for broadcasting on All India Radio and Doordarshan. **Concerned Executive Engineer of the dam shall inform on the appropriate decision to the Focal officer of the river basin. The Focal officer in turn shall intimate to the District Collector and the Flood Control Cell (WRD) Gandhinagar.** **The details of focal officer for the respective basins are provided in the Disaster Management Plan.**	To take appropriate action for awareness, alerting the people likely to be affected in accordance with the threat perception.	To take appropriate action for awareness, alerting the people likely to be affected in accordance with the threat perception.	To take appropriate action for safety of bridge, causeway, roads and traffic	To take appropriate action for safety of railway bridge, tracks and rail traffic.	To take appropriate action in consultation with revenue dept.	

Role and Responsibility of Disaster Response Departments

	Sr. No	Stages		Disaster Management Authority / EOC	IMD	CWC	WRD	Revenue Dept. / EOC	Urban/Rural Authority	Roads and Building	Railway Authority	Home Dept.	Energy
	5	**Dam Failure**		**To keep constant watch over the situation and send Rapid action force or Air force as per necessity in the flooded areas of evacuation of the affected people.**			In the event of breach in the embankment, heavy uncontrolled leakages from spillway / gates - concerned revenue authorities / district administration be informed immediately with likely affected areas. Dam authority should immediately inform the Focal Officer and Senior WRD officials too. Appropriate warning message to be sent to Revenue Dept. and if deemed fit for broadcasting on All India Radio and Doordarshan. **Concerned Executive Engineer of the dam shall inform on the appropriate decision to the Focal officer of the river basin. The Focal officer in turn shall intimate to the District Collector and the Flood Control Cell (WRD) Gandhinagar.** **The details of focal officer for the respective basins are provided in the Disaster Management Plan.**	To take appropriate action for awareness, alerting the people likely to be affected in accordance with the threat perception.	To take appropriate action for awareness, alerting the people likely to be affected in accordance with the threat perception.	To take appropriate action for safety of bridge, causeway, roads and traffic	To take appropriate action for safety of railway bridge, tracks and rail traffic.	To take appropriate action in consultation with revenue dept.	To take appropriate action for safety of transmission infrastructure for maintaining power supply in the affected areas.
	6	**Disaster Preparedness for Flood**		To finalize and review Disaster Management Plan for each Department	To issue weather bulletin	To issue inflow forecast for reservoirs / level forecast for cities for six rivers.	To implement model action plan as per Annex 3 A	To implement model action plan as per Annex 3 A of WRD Disaster Management Plan 2021. Refer the District Disaster Management Plan of respective districts.	To implement model action plan as per Annex 3 A of WRD Disaster Management Plan 2021. Refer the District Disaster Management Plan of respective districts.	To implement model action plan as per Annex 3 A of WRD Disaster Management Plan 2021. Refer the District Disaster Management Plan of respective districts.		To implement model action plan as per Annex 3 A of WRD Disaster Management Plan 2021. Refer the District Disaster Management Plan of respective districts.	To implement model action plan as per Annex 3 A of WRD Disaster Management Plan 2021. Refer the District Disaster Management Plan of respective districts.
				Warning			Inform Revenue Dept. - Taluka level, District level and State Level intimation						
				Alert			Inform Revenue Dept. - Taluka level, District level and State Level intimation	Preparatory actions - Logistics readiness				Appropriate actions as per their protocol and Revenue Dept. instructions	
				High Alert			Inform Revenue Dept. - Taluka level, District level and State Level intimation- details like Release of Water to be made, likely villages to be affected by concerned Focal / Sub focal Officer.	Public intimation, inter-departmental co-ordination				Appropriate actions as per their protocol and Revenue Dept. instructions	
				Ready to Shift			Inform Revenue Dept., (Taluka level, District level and State Level intimation.						
				Post Damage			Appropriate actions w.r.t Damage Control, Relief of Dam / Irrigation Infrastructure	Relief, Rescue, Rehabilitation related actions	Relief, Rescue, Rehabilitation related actions	Damage Control, Repairs	Damage Control, Repairs	Rescue, Relief, Security related actions	Damage Control, Repairs
Levels of Incidence													
Dam				To arrange emergency meeting with all line Department and intimate situation to all concerned. Maintain constant touch with Air force, Army and Navy.	Provide information about probable rainfall in the area which may be affected due to emergency situation of the dam.	Provide flood forecast and probable levels in the river.	Dam authority/operator keeps monitoring the dam situation continuously during monsoon. When any unusual condition or incident is noticed the information regarding emergency level is communicated to the disaster management authorities and will act to save the dam and minimize impact to life, property and the environment. CWC guidelines in this regard may be referred for more details. Follow Rule levels as per Annexure 1 c (page 34) and Circular 2 clause 17 (p74) for filling of dams	To take appropriate action for alerting and evacuating the people likely to be affected in accordance with the warning and threat perception. In case of natural calamities and grave emergencies liaison with air force authority, Military authority for their assistance	To take appropriate action for alerting and evacuating the people likely to be affected in urban areas in accordance with the warning and threat perception.	To take appropriate action for safety of bridge, causeway roads and traffic	To keep constant watch over the situation and mobilize teams.	To take appropriate action in consultation with revenue dept.	To take appropriate action for safety of transmission infrastructure for maintain power supply in the affected areas.
River / Canal / Drains							WRD Authorities act as per Chapter 4 , (Maintenance of Flood Embankments, p81) and Annexure 4-A (p82) covering maintenance of Flood Embankments. (In event of Drain Overflow or Breaches in banks - **Concerned Executive Engineer shall act as Focal Officer and Dy. Ex Eng. as sub focal Officer**)						
		Mild	Small Breaches in Canal, Small disturbance in Earthen Bunds, Slopes and Pitching	**Warning**			Timely repairs,		To take appropriate action for awareness, Alerting and the people likely to be affected in accordance with the threat perception.				
			Canal / Drain Inundation Inundation in 1 Village				Timely repairs						

Role and Responsibility of Disaster Response Departments

	Sr. No	Stages		Disaster Management Authority / EOC	IMD	CWC	WRD	Revenue Dept. / EOC	Urban/Rural Authority	Roads and Building	Railway Authority	Home Dept.	Energy
		Medium					Inform Revenue Dept., (Taluka level, District level and State Level intimation Project / Scheme Executive Engineer to take appropriate actions	Public intimation, inter-departmental co-ordination, Relief as deemed fit	To take appropriate action for awareness, alerting and the people likely to be affected in accordance with the threat perception.	Ensure accessibility to the Village Gamtal	To take appropriate action for safety of railway bridge, tracks and rail traffic.	To take appropriate action in consultation with revenue dept.	To take appropriate action for safety of transmission infrastructure.
			Heavy Inundation More than 1 Village				Inform Revenue Dept., (Taluka level, District level and State Level intimation. Mechanical Unit Fighter Squad to alerted	Assessment and Relief coordination	To take appropriate action for awareness, alerting and the people likely to be affected in accordance with the threat perception.	Ensure accessibility to the Village Gamtal	To take appropriate action for safety of railway bridge, tracks and rail traffic.	To take appropriate action in consultation with revenue dept.	To take appropriate action for safety of transmission infrastructure.
	Riverine Flooding						Inform Revenue Dept., (Taluka level, District level and State Level intimation). Mechanical Unit Fighter Squad to alerted	Assessment and Relief coordination	To take appropriate action for awareness, alerting and the people likely to be affected in accordance with the threat perception.	Ensure accessibility to the Village Gamtal	To take appropriate action for safety of railway bridge, tracks and rail traffic.	To take appropriate action in consultation with revenue dept.	To take appropriate action for safety of transmission infrastructure.
		Major	Major	**Cracks, Failures**			Inform Revenue Dept., (Taluka level, District level and State Level intimation). Central Designs Organisation Visit and Problem Solving by CDO and Field Officers	Assessment and Relief coordination	To take appropriate action for awareness, alerting and the people likely to be affected in accordance with the threat perception.	Ensure accessibility to the Village Gamtal	To take appropriate action for safety of railway bridge, tracks and rail traffic.	To take appropriate action in consultation with revenue dept.	To take appropriate action for safety of transmission infrastructure.
				Heavy Leakages			Inform Revenue Dept., (Taluka level, District level and State Level intimation.) Central Designs Organisation Visit and Problem Solving by CDO/ Mechanical Wing and Field Officers	Assessment and Relief coordination	To take appropriate action for awareness, alerting and the people likely to be affected in accordance with the threat perception.	Ensure accessibility to the Village Gamtal	To take appropriate action for safety of railway bridge, tracks and rail traffic.	To take appropriate action in consultation with revenue dept.	To take appropriate action for safety of transmission infrastructure.
				Mechanical Gate Problems			Inform Revenue Dept., (Taluka level, District level and State Level intimation.) Central Designs Organisation Visit and Problem Solving by Design Mechanical Wing and Field Officers	Assessment and Relief coordination	To take appropriate action for awareness, alerting and the people likely to be affected in accordance with the threat perception.	Ensure accessibility to the Village Gamtal	To take appropriate action for safety of railway bridge, tracks and rail traffic.	To take appropriate action in consultation with revenue dept.	To take appropriate action for safety of transmission infrastructure.
	Coordination with Adjoining State					Coordinate with Water Resources Department, Forecasting and Monitoring data Sharing mechanism in place.	Coordinate with Central Water Commission Forecasting and Monitoring mechanism in place.	Coordinate response with various agencies					
						Intimation to State Emergency Operations and Concerned Disaster officers of adjoining States.	Intimation to State Emergency Operations and Concerned Disaster officers of adjoining States.						
	Relief Measures						**WRD Dept. takes up relief measures for its Irrigation infrastructure. WRD Circle offices shall regularly send report of the Flood Damages WRD infrastructure to Central Flood Cell, Gandhinagar**	**Revenue dept. shall Coordinate efforts by various departments and various departmental Control rooms shall manage gather information of flood damage and response.**					
	7	**Pre Monsoon and non monsoon activities**		Capaity Building	Issue of warning and capacity building.strengthning early warning mechanism	Coordination meeting and strengthning early warning mechanism	Preventive mentanance, Pre-monsoon inspections and actions ensure in safety. Guidelines implementation. Rever/Drainage, Water bodies free of encroachments	Training and coordination Public awarness and capacity building	Formalization of byelaws guidelines and implimentation mechanism Drainage implimentation Rain water harvesting Implementation of guidelines plastic/debrease free rivers/drainages/canals & gutter lines	Capacity building Ensure implimentation and guidelines Ensure safety of public infrastucture	Capacity building	Capacity building	Capacity building

FLOOD WARNING NNOUNCEMENT THROUGH PRASHAR BHARATI

2

2.0 FLOOD WARNING ANNOUNCEMENT THROUGH AKASHWANI / DOORDARSHAN

2.1 The Chief Engineer (Central Gujarat) & Addl. Secretary to Government of Gujarat, Narmada, Water Resources, Water Supply & Kalpasar Department, Sachivalaya, Gandhinagar, Collector of concerned District and Appropriate Authorities (Focal Officers) of rivers in Gujarat or the officers authorized on their behalf are empowered to send flood warning message to be broadcasted over the AKASHWANI and DOORDARSHAN as and when necessary. The messages will be sent to the nearest Station Director or Duty Officer, by immediate means and also be confirmed in writing as per Annexure 2-A, 2-B, and 2-C respectively.

2.2 The messages should be written clearly and readable while conveying to AIR and or DOORDARSHAN. Name of the officer should also be conveyed along with telephone No. of the Control Room. Any message given to AIR and DOORDARSHAN should also simultaneously be conveyed to Flood Control Cell, State Water Data Centre Building, Sector-8, and Gandhinagar.

2.3 In the case of emergency the announcement on Radio / T.V. shall be made every fifteen minutes. Telephone number of the officer of AKASHWANI, Ahmedabad / Rajkot / Vadodara / Bhuj / Godhra / Surat centers and DOORDARSHAN KENDRA are given in Flood Telephone Directory of the current year

TABLE - 2.3

Sr No	Duty Officers and Staion Directors	Telephone Nos. Office Residence.
1.	Station Director, Akashwani, Ahmedabad.	Note :- Please refer Flood Telephone Directory of the current year.
2.	Director, Doordarshan Kendra, Ahmedabad	
3.	Director, Doordarshan Kendra, Rajkot.	
4.	Station Director, Akashwani, Vadodara.	
5.	Station Director, Akashwani, Rajkot.	
6.	Station Director, Akashwani, Bhuj.	
7.	Station Director, Akashwani, Godhra.	
8.	Assistant Station Director, Surat.	
9.	Assistant Station Director, Ahwa.	
10.	Duty Officer, Akashwani, Ahmedabad.	
12.	Duty Officer, Akashwani, Vadodara.	
13.	Duty Officer, Akashwani, Rajkot.	
14.	Duty Officer, Akashwani, Bhuj.	

ANNEXURE - 2 -A

The Akashwani / Door Darshan shall arrange to announce the Messages.

પુર ચે-નવણી અંગે અધિક્ષક ઇજનેર શ્રી, ..., -નરફથી જણાવવામા આવે છે કે -નારીખ ..... ના રોજ ..... નદીમાં પુર ચઢી રહયા છે. અને લગભગ .... કલાકે પુર..... .....ઉંચાઇ એ પહોંચશે, આથી નીચે જણાવેલ ગામના લોકોને સ્થળાં-નર કરવા માટે ચેતવણી આપવામા આવે છે.

અનુ.નંબર	ગામનુ નામ	તાલુકો	જીલ્લો

ANNEXURE - 2 - B

પ્રતિ,
કેન્દ્ર નિયામક શ્રી,
ફરજ પરના અધિકારી શ્રી, આકાશવાણી / દુરદર્શન,
અમદાવાદ / વડોદરા / રાજકોટ / ભુજ / ગોધરા / સુરત / આહવા

વિષય :- આકાશવાણી / દુરદર્શન ઉપર પુર અંગેના સંદેશા પ્રસારિત કરવા બાબત

અનુસંધાન :- તારીખ ..... ના ..... નદીના આવેલ પુર અંગે આપશ્રીને ફોન ઉપર આપેલ સદેશો.

મે. સાહેબ,

જય ભારત સાથે જણાવવાનુ કે આપશ્રીને, ફોન ઉપર પૂર અંગે ચેતવણી માટેના .... ના સંદેશાના અનુસંધાનમાં જણાવવાનુ કે તારીખ ..... ના રોજ ..... નદીમાં ..... કલાકે પાણીની સપાટી વધતી હોવાથી નીચે જણાવેલ સંદેશો પ્રસારિત કરવા વિનંતી કરવામાં આવે છે / આવી હતી તેને અનુમતી આપવાના હેતુસર સંદેશાની નકલ આ પત્ર દવારા જાણ કરવામા આવે છે.
ગામોના નામો અને વિગતો નીચે પ્રમાણે હતી :

અનુ.નંબર	**ગામનુ નામ**	તાલુકો	**જીલ્લો**
૧.	૨.	૩.	૪.

આપનો વિશ્વાસુ,

ક્ષેત્રિય અધિકારી અને અધિક્ષક ઇજનેર

ANNEXURE - 2 – C

જાવક નંબર. .....,
નાયબ કાર્યપાલક ઇજનેરશ્રીની કચેરી,
પુર નિયંત્રણ એકમ,
સ્ટેટ વોટર ડેટા સેન્ટર,
સેકટર - ૮, ચ-૨, ગાંધીનગર.
તારીખ : -

પ્રતિ,
..... ,
..... ,
.....

રાજયના પુર નિયંત્રણ એકમની યાદી જણાવે છે કે આજ રોજ રાજયમાં આવેલ કુલ ૨૦૬ જળાશયોની નોંધનીય માહિતી નીચે મુજબ છે.

૧. આજે સવારે ૮.૦૦ કલાકે પુરા થ-ના છેલ્લા ૨૪.૦૦ કલાકમાં નીચે જણાવેલ જુદા જુદા જિલ્લાઓના જળાશયોનાં ઉપરવાસ માં ભારે વરસાદ નોંધાયેલ છે.

અનુ.નંબર	જળાશયનુ નામ	**જીલ્લો**	છેલ્લા ૨૪ કલાક દરમ્યાન થયેલો વરસાદ (મી.મી.માં)

(પાછળ)

(૨) રાજયના કુલ ૨૦૬ જળાશયો પૈકી જુદા જુદા જિલ્લાઓના નીચે દર્શાવેલ જળાશયોના ઉપરવાસમાં થયેલા વરસાદને કારણે પાણીની આવક વધ-ાં નીચે મુજબ નોંધપાત્ર પાણીનો પ્રવાહ છોડવામાં આવી રહયો છે.

અનુ.નંબર	જળાશયનુ નામ	જીલ્લો	છોડવામાં આવેલ મહતમ પ્રવાહઘન ફુટ પ્રતિ સેકંડે	સમય	રીમાર્કસ
૧.	૨.	૩.	૪.	૫.	૬.
૧.					
૨.					
૩.					
૪.					

(૩) રાજયના જે જળાશયોમાંથી ઉપરવાસના વધુ વરસાદને કારણે છોડવામા આવ-ા પાણીના લીધે નીચે વાસના ગામડાઓને મુલ્કી સ--ાઓને ચે-વણી આપવા જણાવેલ છે. -ેવા જળાશયોની જીલ્લાવાર માહિતી નીચે મુજબ છે.

અનુ.નંબર	જળાશયનુ નામ	જીલ્લો	રીમાર્કસ
૧.			
૨.			
૩.			

(૪) રાજયમાં આવેલ મુખ્ય નદીઓની ભયજનક સપાટી નીચે મુજબ છે. અને ને નદીઓની હાલની સપાટી નીચે મુજબ છે.

અનુ.નંબર	નદીઓનુ નામ	ગેજસાઇટ નુ સ્થળ	ભયજનકસપાટી ફુટમા	હાલની સપાટી ફુટમાં	રીમાર્કસ
૧.	દમણગંગા	સિલ્વાસા	૯૮.૪૩		
		વાપી	૬૩.૦૦		
૨.	તાપી	સુરત(નહેરૂબ્રિજ)	૩૧.૧૬		
૩.	નર્મદા	ગરૂડેશ્વર	૧૦૨.૦૦		
		ભરૂચ	૨૪.૦૦		
૪.	મહી	વણાંકબોરી	૨૪૬.૦૦		
૫.	સાબરમતી	સુભાષબ્રિજ	૧૪૮.૭૬		
૬.	બનાસ	ડીસા રોડ બ્રિજ	૪૦૬.૦૦		

સહી /-
ક્ષેત્રિય અધિકારી અને અધિક્ષક ઇજનેર

DISASTER PREPAREDNESS FOR FLOOD

3

3.0 DISASTER PREPAREDNESS FOR FLOOD.

3.1 Well before the onset of the monsoon, Revenue Department convenes a meeting with all the departments and agencies including those of Government of India concerned with rescue, relief and public awareness, under the Chairmanship of Chief Secretary of the state, wherein the detailed contingent plan specifying and delineating the role to be played by various departments during calamity period, pre calamity period and post calamity period is drawn. The checklist for the same is appended vide Annexure 3-A.

ANNEXURE - 3 A

MODEL ACTION PLAN FOR DISASTER PREPAREDNESS (FOR FLOOD)

(A) At The State Level

1. Is there a separate operation control center ?

Is it equipped with a number of telephones, wireless sets, etc. ? Are there arrangements to run it round the clock ?

Whether roster of duty is kept ready to put into operation such a control center at short notice ?

2. Have flood prone blocks, talukas, tehsils been identified ?

3. Have steps been taken to see that all such Block/Talukas/Tehsils can be reached over telephone/wireless sets in the event of flood ?

4. Where are the flood warning signals received ?

Are they attended to immediately ?

5. Are stores of immediate breach / leakage control and relief articles , heavy duty pump sets (for draining)?

6. Has the operation of reservoirs been coordinated for providing flood operation ? Have the reservoir engineers been asked to be in continuous touch with the district authorities before releasing water likely to inundate village etc. ?

(B) For District and Sub-Divisional Officers :

1. Have you identified the flood prone blocks, talukas, tehsils and villages ?

2. Is there clear division of responsibility for dam / river water flood management among the officers and the staff ?

3. Is there an operation control center? Is there a roster of duties to run it round the clock?

4. Is a log book maintained to keep data about rise of flood waters at regular intervals of the rivers in the State ?

5. How is the flood warning communicated ?

6. Are the flood prone blocks ready for quick repairs ? viz. Sand bag for repairs of flood protection embankment are kept ready ?

7. Have the villages water logged for a long time been identified ?

8. **MOBILISATION OF EQUIPMENT FOR FLOOD FIGHTING UNITS FOR MONSOON.**

Government of Gujarat, Narmada, Water Resources Water Supply & Kalpasar Department has set up flood fighting units along with accessories, equipment's & staff for mobilization during the monsoon period from 10th June to 15th October @ following places as per **Annexure – 3 B**

The List of Dewatering Pumps allotted to the District Collectors / District Development Officer and Irrigation Mechanical Dn. of NWRWS & Kalpasar Dept. are also compiled in Annexure. 3 B. The operation, maintenance and repairing of the pumps under District Collector shall be done by the District Panchayat.

ANNEXURE – 3 B

Proposed distribution of the equipment planned for the Flood Fighting Units for the Monsoon 2024

		IMC-1, Vadodara			IMC-2 Ahmedabad			
Sr. No	Location of unit	Ukai Work shop	Gotri Work shop	Nadiad Section	Wasna Barrage Ah'bad	Dharoi	Nyari-II Dam Rajkot	Rudramata Dam site Bhuj-kutch
	Name of Dn under whom the unit will work	Irr.Mech Dn No-2 Ukai	Irr.Mech Dn No-1 Vadodara	Irr.Mech Dn No-1 Vadodara	Irr.Mech Dn No-4 Ah'bad	Irr.Mech Dn No-5 Ah'bad	Irr.Mech Dn No-6 Rajkot	Irr.Mech Dn No-6 Rajkot
1	Hyd. Excavator	2	2	-	1	1	2	1
2	Bharat Dozer.50T	2	2	-	1	1	1	1
3	Heavy Dozer BD-65	-	-	-	-	-	-	-
4	Trailor	2	1	-	1	1	2	1
5	Tipper	4	4	-	3	3	4	4
6	Diesel Engine driven dewatering pump with Accessories	13(6.5 H.P) 1(38 H.P) Truck Mounted	8(6.5 H.P.) 1(38 H.P) Truck Mounted	7(6.5 H.P.) 1(38 H.P) Truck Mounted	8(6.5 H.P.) 1(38 H.P) Truck Mounted	5(6.5 H.P.) 1(38 H.P) Truck Mounted	4(6.5H.P.) 1(38 H.P) Truck Mounted	4(6.5 H.P.) 1(38 H.P) Truck Mounted
7	Elect.Submersible Dewatering Pump with Floating Platform.	4(10 H.P.) 1(20 H.P.)	4(10 H.P.) 2(20 H.P.)	4(10 H.P.) 2(20 H.P.)	4(10 H.P.) 2(20 H.P.)	4(10 H.P.) 2(20 H.P.)	4(10 H.P.) 2(20 H.P.)	-

Pump sets mentioned in above allotment is distributed by following mechanical divisions of NWRWS&K Dept. as per following table.

Sr No	Name of Division	Capacity of Pump	Allotted Quantity	Stand by Quantity	Total available Quantity
1	Irri. Mech. Dn. No.-6 Rajkot	6.5 H.P.(D) 10 H.P. (E) 20 H.P. (E)	8 4 2	7	21 Nos
2	Irri. Mech. Dn. No.-4 A'bad	6.5 H.P.(D) 10 H.P. (E) 20 H.P. (E)	8 4 2	2	16 Nos
3	Irri. Mech. Dn. No.-5 A'bad	6.5 H.P.(D) 10 H.P. (E) 20 H.P. (E)	5 4 2	0	11 Nos
4	Irri. Mech. Dn. No.-1 Vadodara	6.5 H.P.(D) 10 H.P. (E) 20 H.P. (E)	15 8 4	0	27 Nos.
5	Irri. Mech. Dn. No.-2 Ukai	6.5 H.P.(D) 10 H.P. (E) 20 H.P. (E)	13 4 1	0	18 Nos.
6	Truck Mounted	38 H.P.(TM)	4+3 Nos.	---	4+3 Nos.
	Total No of Pump				100 Nos.

Note: - (D) Diesel (E) Electrical (TM) Truck Mounted

Various Important Circulars Issued to Appropriate Authorities to Take Precautionary Measures under Flood warning Arrangements

ચોમાસુ - ૨૦૨૪ પરિપત્ર-૧

ચોમાસા દરમ્યાન તથા અન્ય કુદરતી આપદા અંગે પુર નિયંત્રણ એકમો, બંધો, વાયરલેસ સ્ટેશનોની ગોઠવણી અને સેટેલાઇટ ફોનના ઉપયોગ બાબત

નર્મદા, જળ સંપત્તિ, પાણી પુરવઠા અને કલ્પસર વિભાગ, ગુજરાત સરકાર,

સચિવાલય, ગાંધીનગર

પરિપત્ર નં. ૧: એફડબલ્યુએ/૨૦૨૦/૧૧૨૭/જ-૧

તારીખ: ૧૬-૦૧-૨૦૨૪

વિષય: સને ૨૦૨૪ ચોમાસા અગાઉ સાવચેતીનાં પગલા, વાયરલેસ સ્ટેશન, નુક્શાનીની વિગતો

આમુખ:

ચોમાસા અને વાવાઝોડા જેવી કુદરતી આપદા સમયે પૂર્ણ નિયંત્રણ કક્ષ તથા જરૂરી સંદેશ વ્યવહારની ગોઠવણી બાબત વિચારણા હેઠળ હતી. જે અંગે નીચે મુજબ કાર્યવાહી થવા નક્કી કરવામાં આવેલ છે.

સુચના:

(૧) વર્ષ ૨૦૨૪ ચોમાસા દરમ્યાન રાજ્યના ગાંધીનગર, અમદાવાદ, રાજકોટ, ભાવનગર, ભુજ, વિસનગર, હિંમતનગર, નડિયાદ, વડોદરા, ઉકાઈ, વલસાડ અને સુરત ખાતેના પૂર નિયંત્રણ એકમો તારીખ: ૦૧-૦૬-૨૦૨૪ થી તા. ૩૦-૧૧-૨૦૨૪ સુધી કાર્યરત રાખવાના રહેશે.

(૨) રાજ્યના ગૃહ વિભાગ સાથે સંપર્કમાં રહી જરૂરી જગ્યાએ વાયરલેસ સ્ટેશનો પણ ૨૪ કલાક કાર્યરત કરવાના રહેશે. તેમજ નક્કી કરેલ સ્થળોએ વાયરલેસની સુવિધા ચાલુ રહે તેની ચકાસણી/ કાર્યવાહી નિયમીત રીતે કરવાની રહેશે.

(૩) પૂરનિયંત્રણ એકમોમાં હોટલાઇનની સુવિધા પુરી પાડવામાં આવે છે, જે હોટલાઇન ૦૧/૦૬/૨૦૨૪ થી ૩૦/૧૧/૨૦૨૪ સુધી અવિરતપણે કામ કરે તેની ચકાસણી કરવી, જો બંધ જણાય તો તાત્કાલિક ચાલુ કરાવવાની સ્થાયી સુચના આપવી.

(૪) જે બંધો પર સેટેલાઇટ ફોનની સુવિધા આપવામાં આવેલ છે. તે બંધો પર સેટેલાઇટ ફોનનો તાકિદના સમયે ઉપયોગ થઈ શકે તે બાબતે જરૂરી સુચનાઓ ક્ષેત્રીય અધિકારીને આપવાની રહેશે.

(૫) પુર નિયંત્રણ એકમોમાં જરૂરી કોમ્પ્યુટર, પ્રિન્ટર વગેરે ઉપકરણો સુચારૂ રીતે કાર્ય કરે તે સુનિશ્ચિત કરવાનું રહેશે. તેમજ જરૂરી સ્ટેશનરી અને ડેટા કનેકટવીટી ની ઉપલબ્ધતા રહે તે રીતે આયોજન કરવાનું રહેશે.

(૬) જળ સંપત્તિ વિભાગ દ્વારા અગત્યના બંધો દ્વારા છોડવામાં આવતા પાણીના જથ્થા અંગેની માહિતી સંબધિત પુર એકમના ફરજ પરના અધિકારીશ્રીઓ દ્વારા ઓન લાઇન એન્ટ્રી કરવામાં આવે તે અંગે જરુરી કાળજી નોડલ અધિકારીશ્રીઓ, ફોકલ અધિકારીશ્રીઓ અને યોજનાઓના સંબધિત અધિક્ષક ઇજનેરશ્રીઓ દ્વારા સમયાંતરે ચકાસણી કરવાની રહેશે.

(૭) વેબસાઈટ wrd.guj.nic.in/dam માં તા. ૦૧-૦૪-૨૦૨૪ સુધીમાં સંબધિત અધિકારીશ્રીઓએ માહિતી જોઇ શકે તે માટે જરૂરી કાર્યવાહી (login ID, તાલીમ ઈત્યાદી) પુર નિયંત્રણ એકમ ગાંધીનગરએ, NIC ના પરામર્શમાં રહી કરવાની રહેશે.

(૮) વેબસાઈટ wrd.guj.nic.in/dam પર રૂલ લેવલ અંગેની માહિતી મધ્યસ્થ આલેખન તંત્ર દ્વારા નિભાવવાની રહેશે.

(૯) વધુમાં ૨૦૨૪ ચોમાસામાં સિંચાઈ યોજનાઓને જ્યારે પણ પૂરથી નુકશાન થાય તો તે નુકશાનની વિગતો નુકશાન થયાના ચોવીસ કલાકની અંદર નિયત નમૂનામાં તૈયાર કરી સંબંધિત અધીક્ષક ઈજનેરશ્રીએ, સંબંધીત મુખ્ય ઈજનેર અને અધિક સચિવશ્રીને તથા ગાંધીનગર ખાતે મધ્યસ્થ પૂર નિયંત્રણ એકમને પહોંચી જાય તે રીતે અચૂક મોકલી આપવી વધુમાં થયેલ નુકસાન વેબસાઈટ wrd.guj.nic.in/dam પર SDRF ૨૦૧૫ની ગાઈડલાઈન અનુસાર નુકસાનની વિગતો તેમજ અંદાજીત રકમની એન્ટ્રી કરવાની રહેશે. તેમજ નુકશાનની વીગતો SDRFની ગાઈડલાઈન મુજબ મળવાપાત્ર તાત્કાલીક સહાય વગેરેની માહિતી મધ્યસ્થ પુર નિયંત્રણ એકમ તેમજ સબંધિત મુ.ઈ અને અ.સ.શ્રી ને મોકલી આપવાની રહેશે.વધુમાં અસ્કયામતની માહિતી નિભાવવી અને તેને નિયમિત અધ્યતન કરવાથી આપત્તિથી થયેલ નુકશાનના આંકલનના અહેવાલમાં એકસુત્રતા જળવાય અને વહિવટી સરળતા રહે.

(૧૦) Flood Prone Area Map દરેક ફોકલ અધિકારીશ્રીએ નિભાવવના રહેશે તેમજ નક્શાઓ (બેઝિન/યોજના માટેના) wrd.guj.nic.in/dam વેબસાઈટ પર તેની ચકાસણી કરી જરૂરી સુધારા માર્ચ-૩૧ પહેલા મધ્યસ્થ પૂર નિયંત્રણ એકમને જણાવવાના રહેશે.

(એસ. જી. પંડ્યા)

ખાસ ફરજ પરના અધિકારી (સિં.યો.)

નર્મદા જળ સંપત્તિ પાણી પુરવઠા અને કલ્પસર વિભાગ

ચોમાસુ-૨૦૨૪ પરિપત્ર-૨

પૂરની પરિસ્થિતિમાં પૂર નિયંત્રણ કામો, દરિયાઈ ધોવાણ અટકાવવાના કામો, ડ્રેનેજના કામો તથા સિંચાઈ બાંધકામો જેવા કે મોટી, મધ્યમ અને નાની સિંચાઈ યોજનાઓ વિગેરેની સલામતીના પગલાં અંગે

નર્મદા, જળ સંપત્તિ, પાણી પુરવઠા અને કલ્પસર વિભાગ, ગુજરાત સરકાર, સચિવાલય, ગાંધીનગર

પરિપત્ર નં. ૨: એફડબલ્યુએ/૨૦૨૦/૧૧૨૭/જ-૧

તારીખ: ૧૬-૦૧-૨૦૨૪

વિષય: સને ૨૦૨૪ ચોમાસા અગાઉ પુર અંગેની સાવચેતીના પગલા લેવા અંગે નિરીક્ષણની કામગીરી બાબત

આમુખ:

પ્રતિ વર્ષે પૂરની પરિસ્થિતિમાં પૂર નિયંત્રણ કામો, દરિયાઈ ધોવાણ અટકાવવાના કામો, ડ્રેનેજના કામો તથા સિંચાઈ બાંધકામો જેવા કે મોટી, મધ્યમ અને નાની સિંચાઈ યોજનાઓ વિગેરેની સલામતીના પગલાં સમયસર લેવાના રહે છે. જે અંગે નીચે મુજબ કાર્યવાહી થવા નક્કી કરવામાં આવેલ છે.

સુચના:

(૧) સરકારશ્રીના સ્થાયી હુકમોનુસાર રાજ્યની મોટી, મધ્યમ કે નાની સિંચાઈ યોજનાઓ, પૂર નિયંત્રણ યોજનાઓ, કાંસ યોજનાઓ, દરિયાઈ ધોવાણ અટકાવવાના કામોનું ચોમાસા પહેલાં નિરીક્ષણ કરી ચેકલીસ્ટમાં વિગતો ભરી સક્ષમ કક્ષાએ રજુ કરવી. ભારે વરસાદ કે પૂરથી કામોને નુકશાન ન થાય તે માટે મરામત કરાવી/કરી લેવી જરૂરી છે. આ હુકમો અન્વયે ચોમાસા પહેલા નિરીક્ષણના મોકલાવાના પ્રમાણપત્રો મે માસના અંત પહેલા સરકારશ્રીમાં અચૂક સાદર કરવાના રહેશે. આ નિરીક્ષણ દરમિયાન આવરી લેવાયેલ તમામ મુદ્દાઓ અને તેની સ્પષ્ટતા નોંધ સામેલ કરવી.

(૨) દરેક યોજનાના સ્થળ સુધી પહોંચવાનો એપ્રોચ રોડ તૈયાર હોવો જરૂરી છે. ક્ષેત્રીય અધિકારીશ્રી દ્વારા આગામી ચોમાસા પહેલાની ચકાસણી કરી ચકાસણી કર્યા તારીખ સાથેનો જરૂરી અહેવાલ રજુ કરવો.

(૩) સિંચાઈ બંધોમાં આવતા પૂરના પાણીના નિયંત્રણ માટે છલતી ઉપરના દરવાજાની કામગીરીની ચકાસણી ચોમાસા અગાઉ તથા ચોમાસા દરમિયાન સમયાંતરે કરાવી/કરી લેવાની રહેશે.

(૪) ભારે વરસાદ અને પૂર વખતે અગત્યના સંદેશાઓની આપ લે માટે વપરાતા સંદેશા વ્યવહારના સાધનો કાર્યાન્વિત રહે તેની ખાતરી કરી લેવાની રહેશે જેથી કટોકટીના સમયે સંદેશા વ્યવહાર ખોરંભે ન પડે.

(૫) સિંચાઈના કામો ઉપર સલામતિના ભાગ રૂપે ડીઝાસ્ટર મેનેજમેન્ટ-૨૦૨૪માં દર્શાવ્યા મુજબનો માલસામાન રાખવો જરૂરી છે. આ અંગે પૂર્વ તૈયારી કરાવી લેવાની રહેશે.

(૬) સિંચાઈના કામો ઉપર સલામતિના પ્રશ્ન અંગે જો તાંત્રિક માર્ગદર્શનની જરૂર પડે તો સંબંધિત મુખ્ય ઈજનેર અને અધિક સચિવશ્રી, બંધ સુરક્ષા તંત્ર, ગુજરાત ઈજનેરી સંશોધન સંસ્થા, વડોદરા અને મધ્યસ્થ આલેખન તંત્ર, ગાંધીનગરના સંપર્કમાં રહી કાર્યવાહી કરવાની રહેશે.

(૭) પૂર અથવા ભારે વરસાદના સમયે સલામતી માટે જરૂરી મશીનરી મેળવવા અધીક્ષક ઈજનેરશ્રી સિંચાઈ યાંત્રિક વર્તુળ નં.૧, વડોદરા અને અધિક્ષક ઈજનેરશ્રી, સિંચાઈ યાંત્રિક વર્તુળ નં.૨, અમદાવાદનો સંપર્ક સાધી કામગીરી ઝડપી થાય તેમ કાર્યવાહી કરવાની રહેશે તેમજ આ અંગે અગાઉથી આયોજન પુર્ણ કરી તથા તેની જાણ દરેકને યાંત્રિક વર્તુળો મારફત કરવાની રહેશે.

(૮) અનુભવોના આધારે દરેક વિભાગીય કચેરીઓએ મશીનરી, વિવિધ સેવાઓ તથા તાત્કાલીક મરામત માટે જરૂરી આઈટમો, મટીરીયલ તથા કામગીરીના વાર્ષિક / અર્ધ વાર્ષિક ભાવો યુનિટ રેટ થકી અગ્રતાના ધોરણે મંગાવી મંજુર કરી રાખવાના રહેશે.

(૯) મહત્વની યોજનાઓના Hourly Reservoir Data ની વિગતો નિયમિત ધોરણે તેમજ Heavy Rainfall તબક્કે પણ ક્ષેત્રિય કચેરી દ્વારા NIC ના પોર્ટલ પર અપલોડ કરવાની રહેશે. (અમલકર્તા: તમામ Regional Flood Cell)

(૧૦) ભારે વરસાદ દરમ્યાન અને તાકીદની પરિસ્થિતીએ પ્રિ-મોનસુન ઇન્સ્પેકશન રીપોર્ટ ઓનલાઇન જોવા માટેની વ્યવસ્થા (અમલકર્તા: ગાંધીનગર પૂર નિયંત્રણ એકમ) તથા તેના ઉપયોગ માટે તમામ Regional Flood Cell તથા સંબંધિત ફોકલ ઓફિસર અને નોડલ ઓફિસર તેમના યુઝર આઇ.ડી. કેન્દ્રીય પુર નિયંત્રણ એકમને તા. ૧૦/૦૫/૨૦૨૪ પહેલા મોકલી આપવાના રહેશે. (અમલકર્તા: તમામ Regional Flood Cell)

(૧૧) Regional Flood Cell ખાતે જે-તે શીફ્ટ માટે નોડલ ઓફિસરના હુકમો ક્ષેત્રિય સ્તરેથી લગત વર્તુળ કચેરી દ્વારા કરવાના રહેશે. જેથી ગાંધીનગર ખાતેના પૂર નિયંત્રણ એકમ ખાતેથી જે-તે શીફ્ટ ઈન્ચાર્જ, આવશયક વિગત મેળવવા માટે સરળતાથી સંપર્ક કરીને વિગતો મેળવી શકે. (અમલકર્તા: તમામ Regional Flood Cell)

(૧૨) પૂરના સમયે કામની સલામતી અને પૂર ચેતવણીની વ્યવસ્થા અંગે કરવાની થતી વિવિધ કામગીરીનું આયોજન કરી જુદી જુદી કક્ષાએ જવાબદારી નિયત કરવી અને જરૂર પડે, જિલ્લા કલેકટરશ્રીના/તેમજ અન્ય લગતના સંપર્કમાં રહી જરૂરી પગલાં લેવાના રહેશે.

(૧૩) કોઈપણ યોજનાને કે સંલગ્ન વિસ્તારને પૂરથી નુકશાન થવાના અથવા થયાના સમાચાર દૈનિક પત્ર/ટેલિવિઝનમાં આવે ત્યારે અધિક્ષક ઈજનરશ્રીએ ખરેખર પરિસ્થિતિનો અભ્યાસ કરી જરૂરી સ્પષ્ટીકરણ પ્રેસ નોંધ દ્વારા બહાર પાડવું તથા તેની જાણ સંબંધિત મુખ્ય ઈજનેરશ્રી અને અધિક સચિવશ્રી તેમજ ગાંધીનગર ખાતેના ફ્લડ કંટ્રોલ સેલને કરવાની રહેશે.

(૧૪) રાજ્ય સરકાર તરફથી દરેક વર્ષે ચોમાસાની શરૂઆતમાં ડીઝાસ્ટર મેનેજમેન્ટ પ્લાન બહાર પાડવામાં આવે છે. જેમાં પૂર ચેતવણી અને પૂર સલામતી અંગે લેવાના જરૂરી પગલાં અંગે વિગતવાર સુચનાઓ આપવામાં આવતી હોય છે. ક્ષેત્રીય અધિકારીશ્રીઓએ આ સુચનાઓને ચુસ્તપણે અમલ કરવાનો રહેશે.

(૧૫) દરવાજાવાળા સિંચાઈના બંધોમાંથી છોડવામાં આવનાર પૂરનાં પાણી તેમજ દરવાજા વગરના સિંચાઈના બંધોમાંથી છલતી ઉપરથી પસાર થનાર પૂરના પાણીની જાણ જે તે મહેસુલી તેમજ પોલીસ અધિકારીશ્રીઓ તથા અન્ય સંબંધિત અધિકારીશ્રીઓને અગાઉથી અવશ્ય કરવી. જેથી તકેદારીના પગલાં તેઓ મારફતે સમયસર લઈ શકાય. આ અંગેની માહીતી wrd.guj.nic.in/wms માં સંબંધીત પુરનિયંત્રણ એકમ/યોજનાના અધિકારી દ્વારા સમયસર એન્ટ્રી કરવાની રહેશે. દરવાજાના તેમજ દરવાજા વગરના બંધોમાંથી છોડવામાં આવેલ/પસાર થયેલા પૂરના પાણીનો સમય અને પ્રવાહ તથા તેની મહેસુલી અને પોલીસ અધિકારીશ્રીઓને કરેલી જાણની સમયની વિગતોની નોંધ રજીસ્ટરમાં રાખવી અને ફ્લડ કંટ્રોલ સેલ ગાંધીનગરને પણ તેની નકલ સંકલન અર્થે મોકલી આપવાની રહેશે.

(૧૬)ક્ષેત્રીય અધિકારીશ્રીઓ તરફથી ફ્લડ સેલ ગાંધીનગરને સિંચાઈના બંધોમાંથી છોડવામાં આવેલ પૂરના પ્રવાહની વિગતો જથ્થામાં (ક્યુસેકસ) તેમજ છલતી ઉપરથી પસાર થયેલા પાણીની ઉંચાઈ સાથે વિગતો આપવાની રહેશે.

(૧૭) રૂલ લેવલ કરતા વધારે પાણી ભરવા અંગે જળાશયમાં ઉપલબ્ધ જથ્થો, ઉપરવાસ તથા હેઠવાસની પરિસ્થિતી અને નજીકની આગાહી વગેરે બાબતો ધ્યાને લઇ ચાલુ ચોમાસા દરમ્યાન રૂલ લેવલ કરતા વધુ પાણી ભરવા યોગ્ય જણાય તો સંબંધિત મુખ્ય ઇજનેરશ્રીની પૂર્વ મંજૂરી મેળવી લઈ મંજૂર થયેલ સપાટી સુધી જળાશયમાં પાણી ભરવાની કાર્યવાહી કરવાની રહેશે.

(૧૮) નેશનલ ડીઝાસ્ટર મેનેજમેન્ટ ઓથોરીટી (NDMA) ભારત સરકારની એનેક્ષર-૧માં આવેલ સુચનાઓ ધ્યાને લઈ જરૂરી કાર્યવાહી કરવાની રહેશે.

(૧૯) બંધોમાં સંગ્રહાયેલ જથ્થો, પાણીનાં લેવલ, છોડવામાં આવી રહેલ પાણીની વિગતો, અને વરસાદની માહીતી નીયમીત wrd.nic.in/dam પર થવા સારૂં Regional Flood Cell અને

સબંધીત યોજનાના અધીકારીશ્રીઓને આ અંગેની તાલીમ/વર્કશોપ વાલ્મી સંસ્થા મારફતે મધ્યસ્થ પુર નિયંત્રણ એકમે ૧૦/૦૫/૨૦૨૪ પહેલા પુર્ણ કરવાનો રહેશે.

(૨૦)કોરોના સંદર્ભે વખતો-વખતની ગાઇડલાઇન મુજબ જરૂરી એવા લેવાના સાવચેતીના પગલાં લેવાના રહેશે. રોસ્ટર ડયુટી સ્ટાફને જાહેર પરિવહનની સુવિધા ઉપલબ્ધ ન હોય તો તેમજ અન્ય સંજોગોમાં જરૂર જણાયે ફલડ સેલને યાંત્રિક વિભાગ દ્વારા અલાયદું વાહન ફાળવવાનું રહેશે. (અમલકર્તા: ગાંધીનગર પૂર નિયંત્રણ એકમ તથા યાંત્રિક વિભાગ)

(એસ. જી. પંડ્યા)
ખાસ ફરજ પરના અધિકારી (સિં.યો.)
નર્મદા જળ સંપત્તિ પાણી પુરવઠા અને કલ્પસર વિભાગ

ANNEXURE-I

Important Points of Guidelines Published by NDMA to be followed by field offices

<table>
<tr><th>Sr. No.</th><th>Points of Guidelines</th></tr>
<tr><td>A</td><td>To be followed in the event of dam failure/sudden release of water.</td></tr>
<tr><td>1.</td><td>Install such scientific and technical instruments which are invented or adopted for the purpose of ensuring the safety of the dam and life and property of the people d/s. The inhabitant's d/s should be made aware of the highest flood level and evacuation plan.</td></tr>
<tr><td>2.</td><td>Mock drill for mitigation measures be carried out from time to time to keep the staff and d/s inhabitants prepared for any eventuality.</td></tr>
<tr><td>3.</td><td>Project authority shall ensure identification of vulnerable stretches along discharge route and ensure proper fencing to stop access to the riverbank.</td></tr>
<tr><td>4.</td><td>Powerful siren/hooters to be installed at audible locations to give prior warning to people in the vicinity of dam site and river bank before release of water.</td></tr>
<tr><td>5.</td><td>The danger sign board/hoardings to be erected along the vulnerable stretches carrying message of warning in order to prohibit access of people to the river bank.</td></tr>
<tr><td>6.</td><td>The project authority complies with the norms for observance of a standard drill to be necessary taken before release/discharge of water from the reservoir.</td></tr>
<tr><td>B.</td><td>Devising a well defined, adequate and reliable advance alarm system before release of water.</td></tr>
<tr><td>1.</td><td>Pre warning system consisting of hooters/sirens of high capacity with distinct sound audible up to a minimum distance of one Km. installed in series upto vulnerable stretches and connected through a network of well protected cable/optical fiber using modern technology, operable from the control room of Barrage/Dam/even power house with recording mechanism in the system to minimize the human error to the extent possible, needs to be updated/incorporated.</td></tr>
<tr><td>2.</td><td>The sirens should be capable of operation both on AC and DC supply available in the control Room to avoid malfunctioning in case of power failure, if any.</td></tr>
<tr><td>3.</td><td>Simultaneously, a mobile van equipped with public address system essentially needs to be alerted to give prior warning along identified vulnerable stretches for evacuation of humans/animals from the river bank before release of water.</td></tr>
<tr><td>4.</td><td>The Alarm/Siren for various emerging situations shall be blown as per the following schedule:
<table>
<tr><th>Sr.No.</th><th>Type of Emergency</th><th>Duration</th></tr>
<tr><td>1</td><td>Normal dam/power house complex operation</td><td>Continuous 1 (one) minute</td></tr>
<tr><td>2</td><td>In case of fire</td><td>10 Sec on, 5 Sec off, 5 times</td></tr>
<tr><td>3</td><td>Emergency situations/flood release</td><td>20 Sec on, 5 Sec off, 5 times</td></tr>
<tr><td>4</td><td>Clear</td><td>Continuous on for 3 minutes only once.</td></tr>
</table></td></tr>
<tr><td>5.</td><td>For public awareness in respect of pre warning sirens/hooters and its frequency etc., the notice board highlighting pre warning system procedure should be installed at appropriate places and public in large be made aware by mock drills from time to time.</td></tr>
</table>

ચોમાસુ-૨૦૨૪ પરિપત્ર-૩

ચોમાસા અને કુદરતી આપતા દરમ્યાન પૂર ચેતવણીની માહિતી મહેસુલ, પંચાયત તથા પોલીસ વિભાગના અધિકારીઓને આપવા બાબત.

નર્મદા, જળ સંપત્તિ, પાણી પુરવઠા અને કલ્પસર વિભાગ, ગુજરાત સરકાર, સચિવાલય,ગાંધીનગર

પરિપત્ર નં. ૩: એફડબલ્યુએ/૨૦૨૦/૧૧૨૭/જ-૧

તારીખ: ૧૬-૦૧-૨૦૨૪

વિષય: ચોમાસા દરમ્યાન પુર ચેતવણીની માહિતી મહેસુલ, પંચાયત તથા પોલીસ વિભાગના અધિકારીઓને આપવા બાબત

ચોમાસા દરમ્યાન વિભાગના જળાશયોમાંથી પાણી છોડવામાં આવે તે પહેલા પૂર ચેતવણીના ભાગ રૂપે તે અંગેની માહિતી મહેસુલ, પંચાયત અને પોલીસ વિભાગના સંબંધિત અધિકારીઓને આપવા અંગેની સ્થાયી સુચનાઓ છે.

વિભાગના ક્ષેત્રીય અધિકારીઓ દ્વારા આપવામાં આવતી આ માહિતી સબંધિત અધિકારીશ્રીઓને સમયસર પહોંચે જેથી એમના દ્વારા રાહતની કામગીરી હાથ ધરી શકાય. આ અનુસંધાને સંબંધિત કચેરી દ્વારા પૂર અંગેની કોઈપણ માહિતી જ્યારે અન્ય કચેરીને આપવામાં આવે ત્યારે નીચે પ્રમાણે કાર્યવાહી કરવા વિનંતી છે.

(ક) માહિતીનાં સંદેશા નંબર આપવો અને રજીસ્ટરમાં તે અંગેની નોંધ કરવી.
(ખ) સંદેશો પાઠવનાર વ્યક્તિનું નામ હોદ્દો, સદર રજીસ્ટરમાં લખવા.
(ગ) સંદેશો લેનાર કચેરીનું નામ અને લેનાર વ્યક્તિના હોદ્દા સહિત નામ અચૂક લખવું.
(ઘ) સંદેશો પાઠવ્યાની તારીખ અને સમય અચૂક લખવા.
(ચ) પૂર ચેતવણીના ભાગરૂપે આપવાના થતા સંદેશાઓ વિના વિલંબે આપવાના રહેશે.
(છ) ચોમાસા/કુદરતી આપદા સમયે આપવાના થતા અગત્યનાં સંદેશાઓ ઈ-મેઈલ/ફેક્ષ ઉપરાંત wrd.guj.nic.in/dams વેબસાઈટમાંથી મોકલી શકાય તે અંગે જરુરી કાર્યવાહી મધ્યસ્થ પુર નિયંત્રણ એકમ અને N.I.C ના પરામર્શ માં રહી વખતો વખત અધ્યતન કરવાનું રહેશે.

ઉપરોક્ત કાર્યવાહીનો ચુસ્તપણે અમલ થાય તે જોવા વિનંતી છે.

(એસ. જી. પંડ્યા)
ખાસ ફરજ પરના અધિકારી (સિં.યો.)
નર્મદા જળ સંપત્તિ પાણી પુરવઠા અને કલ્પસર વિભાગ

ચોમાસુ-૨૦૨૪ પરિપત્ર-૪

જળાશયોમાંથી પાણી છોડતાં જળાશયની પરિસ્થિતિથી જીલ્લા વહીવટી તંત્રને માહિતગાર (હાઈ એલર્ટ, એલર્ટ અને વોર્નિંગ) કરવા અંગે

નર્મદા, જળ સંપત્તિ, પાણી પુરવઠા અને કલ્પસર વિભાગ, ગુજરાત સરકાર, સચિવાલય,ગાંધીનગર

પરિપત્ર નં. ૩: એફડબલ્યુએ/ ૨૦૨૦/૧૧૨૭/જ-૧

તારીખ: ૧૬-૦૧-૨૦૨૪

વિષય: જળાશયોમાંથી પાણી છોડતાં જળાશયની પરિસ્થિતિથી જીલ્લા વહીવટી તંત્રને માહિતગાર (હાઈ એલર્ટ , એલર્ટ અને વોર્નિંગ) કરવા અંગે

આમુખ:

જે તે જળાશયમાંથી પાણી છોડવાની પરિસ્થિતિ ઉભી થાય ત્યારે પૂર નિયંત્રણ અંતર્ગત મહેસૂલ વિભાગ દ્વારા યોગ્ય કાર્યવાહી માટેનો પુરતો સમય મળે તે માટે અધિકારીશ્રીઓને તેઓની શિફ્ટ ડ્યુટી દરમ્યાન નીચે મુજબની કામગીરી અચૂક કરવા અને તે અંગે રજિસ્ટરમાં નોંધ કરવા સુચના આપવામાં આવે છે.

સુચના:-

(૧) ડેમના જળાશયમાં જ્યારે સ્ટોરેજ ૭૦ ટકાથી વધારે (Warning Stage) ભરાય ત્યારે, સ્ટોરેજના ૮૦ ટકાથી વધારે (Alert Stage) ભરાય ત્યારે તથા ૯૦ ટકાથી વધારે (High Alert Stage) ભરાય ત્યારે પ્રાદેશિક પૂર નિયંત્રણ એકમે જીલ્લા વહીવટી તંત્રને તેમજ તેને સંલગ્ન વહીવટી તંત્રને લેખિતમાં તે સમયની સ્થિતિ સહિત જાણ કરવાની રહેશે.

(૨) ઉપરોક્ત સંદેશાઓની નોંધ પ્રાદેશિક પુર નિયંત્રણ એકમના મેસેજ રજીસ્ટરમાં તે સમયના શીફ્ટ ઈન્ચાર્જ અધિકારીના નામ, હોદ્દા, સમય, તારીખ, સાથે વિગતે કરવાનો રહેશે સાથે સાથે આ અંગેની જાણ તે જ સમયે ગાંધીનગર સ્થિત મધ્યસ્થ પૂર નિયંત્રણ એકમને ફેક્સ/E-mail થી અચૂક કરવાની રહેશે.

ઉપર આપવામાં આવેલા સુચનાનો યોગ્યતે અમલ કરવાનો રહેશે અને આ કાર્યવાહી ઉપર જે તે પ્રાદેશિક પૂર નિયંત્રણ એકમના શીફ્ટ ઇંચાર્જ અધિકારીશ્રીએ યોગ્ય દેખરેખ રાખવાની રહેશે.

(એસ. જી. પંડ્યા)
ખાસ ફરજ પરના અધિકારી (સિં.યો.)
નર્મદા જળ સંપત્તિ પાણી પુરવઠા અને કલ્પસર વિભાગ

4.0 MAINTENANCE OF FLOOD EMBANKMENTS

4.1 Proper maintenance of embankments is extremely important as breaches in these can be disastrous and can cause even greater damage than the inundation by the floods from rivers where no embankments are provided. Very careful maintenance of the embankment is necessary during high waters. Frequent inspections and constant attendance by all concerned is essential particularly in case of new embankments or dangerous section of old embankments. The establishment required for proper upkeep and maintenance of an embankment will vary according to its importance as also the behavior and discharge of the river.

Patrolling:-

Patrolling should commence as soon as water comes against an embankment and should continue until water finally leaves the embankment. When the river is in floods, the embankment requires close and constant watching and unremitting supervision both by day and night by adequate trained staff.

Wave-Wash:-

During the bad storms erosive wave action takes place which sometimes erodes/washes the soil on slope of earth embankment resulting into wave-wash. Short grass and small thick bushes like pilchi, lai etc. growing on the embankment is good protection against erosion and wave-wash.

Leaks:-

Water coming out through the body of embankment in any form such as seepage through cracks or piping action may be termed as leak. Rodents and other borrowing animals make holes, cavities and tunnels through and under an embankment. These are a source of danger as very often these causes leaks and excessive seepage and even serious breaches during flood periods.

Breaches:-

Failure of a section of earth embankment due to over-topping causes breach of section. Successive and heavy rains cause very often severe erosion of unprotected slopes and render the section unsafe. This may result in disastrous breaches. In case of such emergencies the top and sides of particularly weak and dangerous sections of freshly made up earth should be protected by materials sand bags etc.

The materials required during monsoon period to meet the situation is given vide **Annexure: 4A**

ANNEXURE - 4-A

(Materials Required During Monsoon Period)

Materials required during monsoon period should be provided in ample quantity as experience shows them to be necessary. Particular care should be taken that there is an adequate quantity of the required materials distributed with carefully forethought so as to be readily available everywhere, particularly at dangerous sites. The quantity of materials required depends on importance or dangerousness of the embankment line and the distances of the embankment from the nearest stations at which there can be purchased. Adequate provision should be made at the discretion of the Superintending Engineer of the Circle Office. The following scale of materials prescribed for one Circle, is an indication of the relative quantities of the different kinds of materials usually required during monsoon period.

1. Patrolling

(i)	Lamps Hurricane	1 For every 2 Labours. 1 For every Work Assist/Karkoon. 1 For every A.E/A.A.E./Overseer. And 20% of the Total for Spare.
(ii)	Wicks	9 Nos. per Lamp.
(iii)	Globes	1 No. spare for each Lamp.
(iv)	Burners and Caps	Spare for 1/3 No of Lamp.
(v)	Torches	1 No. for Executive Engineer. 1 No. for Dy. Executive Engineer. 1 For every A.E/A.A.E./Overseer. And 2 Nos. for Spare.
(vi)	Cells	1 Fill and Two Spare sets.
(vii)	Petromax Lamps.	At dangerous places as necessary; each lamp with 2 spare Globes, 2 Nozzles, 2 Washers, 2 Wire Gauzes, 2 Needles and 6 Mantles.(3/4 of the members should be 300 C.P. and 1/4th 200 C.P.
(viii)	Fuel for Lighting	Firewood/Fuel To be collected by labour establishment.
(ix)	Kerosene & Oil	1 Tin per hurricane Lanterns (Excluding Spare) And 2 Tins for Petromax lamp per season.
(x)	Match Boxes	One Dozen per Lamp per season.
(xi)	Spirit	1 Bottle per petromax lamp per Season
(xii)	Funnels	½ Dozen per Work Assistant / Karkoon
(xiii)	Oil Extractors/Caps	¼ Dozen per Work Assistant / Karkoon
(xiv)	Spirit Cane	1 per Petromax.

2. Wave – Wash

(i) Lai fascines or any other mattress made up of split bamboos or "pilchi" or any other locally available materials. Material for providing light longitudinal Groynes sewed with compactly woven pilchi or split bamboos etc.

(ii) Munj rope of lengths to be provided with fascines 11 Kg/Km.

3. Leaks

(i)	Gunny Bags	(a)	Where High Flood Depth is less than 1.80 Mt and the embankment is generally safe then 65 Bags per Kilometer.
		(b)	Where High Flood Depth is greater than 1.80Mt. or the embankment is known to give trouble of leaks then 130 Bags per Kilometer.
(ii)	Stakes	65 to 130 Stakes per Kilometer.	
(iii)	Baskets	1 Basket of Toot per labour or 1 Basket of lai per Labour. And One Spare.	
(iv)	Sutli	450 gms. Per 100 Bags.	
(v)	Needles	½ Dozen with each Work Assistant.	
(vi)	Sand	Collection of 1.80 to 3.60 Cu.Mt.Per every Kilometer for Dangerous Lengths.	

4. Breaches

Provision for materials required should be made for one or more small breach length each 76 Mt. long depending upon the embankment.

Materials for protecting ends of one breach and constructing one 76 m. long, 4 rows are as under

(i)	Big stakes or Sal Ballies.	Every 1.50 Mt. apart with 100% spare.
(ii)	Split Sal Ballies or Bamboos.	For Horizontal bracing of Vertical ballies - 3.0 Mt. long each for the entire length.
(iii)	Split Sal Ballies or Bamboos	For Cross bracing of vertical ballies – 3.0 Mt. long One for each vertical ballies.
(iv)	Mattresses of split bamboos or "Pilchi" or other locally available material.	For sufficient length.
(v)	Brushwood of local material	For sufficient length.
(vi)	Stakes	0.45 Mt. center long each row of frame.
(vii)	Munj Rope	Enough quantity

(viii)	Coir Rope	Enough quantity
(ix)	Gunny Bags	2500 Nos. for every A.E/A.A.E./Overseer.
(x)	Sutli	450 gms. Per 100 Nos. Bags.
(xi)	Needles	1 No. per 100 Nos. Bags.
(xii)	Baskets	500 Nos. per Ordinary Sub Division, and 1000 Nos. for Sub Divisions with dangerous Embankments.

5.0 WIRELESS STATIONS

5.1 The flood warning arrangements consists of collection of rainfall, gauge, discharge and other hydro meteorological data through Wireless Station, located in the river basin, by the Executive Engineer, (C.W.C), Tapti Division, Surat & Executive Engineer (C.W.C) Mahi Division, Gandhinagar, Appropriate Authorities (Focal Officers). Based on these data, these authorities will formulate the flood forecast and prepare "Flood Warning" and communicate the same to the concerned officers of Narmada, Water Resources, Water Supply and Kalpasar Department, Revenue and Police Departments of the State for taking necessary precautionary measures in respect of alerting and evacuating the people of the area likely to be affected if required. The areas and villages affected by the various basins are shown in the annexures of respective river basins, by the Executive Engineer, Mahi and Tapi Divisions, (C.W.C) and the State Government for collecting gauge and storm data etc.

5.2 The basin wise wireless stations mentioned below will be established by the C.W.C and State during the monsoon.

TABLE - (5.2)

Sr. No.	Basin/District	No. of Wireless Stations to be Established			
		By C.W.C		By State	Total
		Out of State	Within State	Within State	
1	2	3	4	5	6
1.	Damanganga Basin	7	3	2	12
2.	Tapi Basin	15	2	6	23
3.	Narmada Basin	13	4	9	26
4.	Mahi Basin	6	5	7	18
5.	Sabarmati Basin	1	12	28	41
6.	Banas Basin	3	6	3	12
7.	Vishwamitri & Deo Basin	-	-	13	13
8.	Saraswati Basin	-	-	3	3
9.	Valsad District	-	-	1	1
10.	Navsari District	-	-	3	3
11.	Tapi District	-	-	2	2
12.	Surat District	-	-	11	11
13.	Bharuch District	-	-	2	2
14.	Panchmahals District	-	-	4	4
15	Dahod District	-	-	8	8
16.	Rajkot District	-	-	30	30
17.	Morbi District	-	-	11	11
18.	Jamnagar District	-	-	23	23
19.	Dev Bhumi Dwarka	-	-	12	12

Sr. No.	Basin/District	No. of Wireless Stations to be Established			
		By C.W.C		By State	Total
		Out of State	Within State	Within State	
1	2	3	4	5	6
20.	Surendranagar District	-	-	11	11
21.	Bhavnagar District	-	-	17	17
22.	Amreli District.	-	-	12	12
23.	Botad District	-	-	10	10
24.	Junagadh District	-	-	16	16
25.	Gir Somnath District	-	-	8	8
26.	Porbandar District	-	-	9	9
27.	Kachchh District	-	-	20	20
28.	Mahisagar Dist.		-	1	1
29.	Ahmedabad City	-	-	1	1
30.	Panchayat Circles.	-	-	13	13
	Total	45	32	296	373

5.3 List of Wireless stations to be installed during monsoon by State Government

Sr. No.	Name of Basin/District	Name of wireless Station		Name of wireless Station	
1	Damanganga Basin	Madhuban (Dam Site)	(D.P.C)		
		Madhuban Colony	(D.P. C.)		
2.	Tapi Basin	Ukai	(UCC)	Chopadvav	(UCC)
		Vyara Ver - II	(UCC)	Kakdi Amba	(UCC)
		Ukai Dam Site	(UCC)		
		Lakhigam	(UCC)		
3.	Narmada Basin	Bodeli (Dn.Office)	(VIC)	Zoz	(VIC)
		Karjan	(VIC)	Sukhi (Dam Site)	(VIC)
		Dholi	(VIC)	Wadhwana	(VIC)
		Fulwadi	(VIC)		
		Ghantoli	(VIC)		
		Rami (Dam Site)	(VIC)		
4.	Mahi Basin	Nadiad	(MIC)	Diwada Colony	(PPC)
		Kadana	(PPC) HR Gate SSSC	Sant Road Weir.	(PPC)
		Panam	(PPC)	Additional Spill Way Kadana	(PPC)
		Wanakbori	(MIC)		
5.	Sabarmati Basin	H'nagar	(HIPC-S.K.)	Badoli	(HIPC-S.K)
		Hathmati	(HIPC-S.K.)	Modasa	(HIPC-S.K.)

Sr. No.	Name of Basin/District	Name of wireless Station		Name of wireless Station	
		Meshwo	(HIPC-S.K.)	Idargadh (Repeater)	(HIPC-S.K.)
		Mazam	(HIPC-S.K.)	Ahmedabad	(AIPC-A)
		Harnav.II	(HIPC-S.K.)	Dharoi	(SSC-2-MEH)
		Guhai	(HIPC-S.K.)	Karol	(HIPC-S.K.)
		Waidy	(HIPC-S.K.)	Dakor Rd. Brdg.	(MIC)
		Watrak	(HIPC-S.K.)	Kathlal Rd. Brdg.	(MIC)
		Mahudi	(HIPC-Meh)	Wasna Barrage	(AIPC-A)
		Deradungari	(HIPC-SK)	Ratanpur Bridge	(CWC-Kh)
		Meghraj	(HIPC-S.K)	Kheda Road Bridge.	(CWC-Kh)
		Kherva	(SSC-2-MEH)	Lank	(HIPC-S.K.)
		Jawanpura	(HIPC-S.K.)	Gorathiya Mota Chekhala	(AIPC-A)
		Khedva	(HIPC-S.K.)	Varansi	(HIPC-S.K.)
6.	Banas Basin	Dantiwada	(SSC 2)		
		Bakudar-Sipu	(SSC 2)		
		Bhilda	(SSC 2)		
7.	Vishwamitri & Deo Basin	Vadodara	(VIC Office)		
		Vadodara (Muni.Corpn.)	(VMC)	Pilol	(VIC)
		Ajwa Tank	(VMC)	Shivrajpur	(VIC)
		Pratap pura	(VMC)	Deo Dam Site	(VIC)
		Ghansarvav	(VIC)	Rameshra Colony	(VIC)
		Dhanora Tank	(VIC)	Bhaniara	(VIC)
		Halol	(VIC)	Pavagadh Repeater	(VIC)
8.	Saraswati Basin	Palanpur	(SSC 2)		
		Mukteshwar	(SSC 2)		
		Saraswati Barrage	(SSC 2)		
9.	Valsad Dist.	Valsad	(DPC)		
10.	Navsari Dist.	Kelia	(UCC)	Khergam	(UCC)
		Jhuj	(UCC)		
11.	Tapi Dist.	Doswada	(UCC)	Sonagadh flood repeater	(UCC)
12.	Surat Dist.	Surat	(SIC)	Kosamba	(SIC)
		Anaval	(UCC)	Bardoli	(SIC)
		Tadkeshwar	(SIC)	Mahuva	(SIC)
		Kathor	(SIC)	Valod	(UCC)
		Amali dam-ver	(UCC)	Kakarapar	(UCC)
		Umara Gam (Ambica River), Mahuva			
13.	Bharuch Dist.	Baldeva	(VIC)		

Sr. No.	Name of Basin/District	Name of wireless Station		Name of wireless Station	
		Pigut	(VIC)		
14.	Panchamahals Dist.	Godhra	(PPC)	Karad	(PPC)
		Hadaf	(PPC)	Kabutari	
15.	Dahod District	Machchhanla	(PPC)	Umaria	(PPC)
		Edalwada	(PPC)	Wankleshwar	(PPC)
		Patadungri	(PPC)	Bandibar	(PPC)
		Kali - II	(PPC)	Repeater Bariya	
16.	Rajkot Dist.	Rajkot	(RIC)	Vachhapari	(RIC)
		Nyari – I	(RMC)	Lalpari	(RIC)
		Nyari – II	(RIC)	Ishwaria	(RIC)
		Bhadar	(RIC)	Karmal	(RIC)
		Dhari	(RIC)	Veri	(RIC)
		Chhaparwadi – II	(RIC)	Motisar	(RIC)
		Kabir-Sarovar	(RIC)	Dondi	(RIC)
		Phophal	(RIC)	Survo	(RIC)
		Aji-III	(RIC)	Khodapipar	(RIC)
		Phadangbeti	(RIC)	Bhadar - II	(RIC)
		Moj	(RIC)	Sodvadar	(RIC)
		Venu-II	(RIC)	Karnuki	(RIC)
		Aji – I	(RIC)	Ghelo Somnath	(RIC)
		Aji-II	(RIC)	Malgadh	(RIC)
		Gondali	(RIC)	Sankroli	(RIC)
17.	Morbi Dist	Machhu – I	(RIC)	Brahmani	(RIC)
		Machhu – II	(RIC)	Brahamani-II	(RIC)
		Machhu-III	(RIC)	Ghodadharoi	(RIC)
		Demi – I	(RIC)	Bangawadi	(RIC)
		Demi – II	(RIC)	Demi – III	(RIC)
		Flood Control(Morbi)	(RIC)		
18.	Jamnagar Dist	Jamnagar (Jl. Dn.)	(RIPC)	Ranjit – Sagar	(JMC)
		Sasoi	(RIPC)	Dia Minsar	(RIPC)
		Fulzar – I	(RIPC)	Und – I	(RIPC)
		Fulzar – II	(RIPC)	Und – II	(RIPC)
		Sapada	(RIPC)	Kankavati	(RIPC)
		Puna	(RIPC)	Wadisang	(RIPC)
		Vijarkhi	(RIPC)	Aji-IV	(RIPC)
		Rupavati	(RIPC)	Und-III	(RIPC)
		Fulzer (K.B)	(RIPC)	Ruparel	(RIPC)
		Phophal-II	(RIPC)	Umiyasagar	(RIPC)

Sr. No.	Name of Basin/District	Name of wireless Station		Name of wireless Station	
		Rangamati	(RIPC)	Sasoi-II	(RIPC)
		Wagadiya	(RIPC)		
19.	Dev Bhumi Dwarka Dist	Vartu – I	(SIPC)	Ghee	(SIPC)
		Vartu – II	(SIPC)	Sani	(SIPC)
		Shedhabhadthari	(SIPC)	Sonmati	(SIPC)
		Sindhani	(SIPC)	Minsar V	(SIPC)
		Kabarka	(SIPC)	Verdi – I	(SIPC)
		Verdi – II	(SIPC)		
		Gadhki	(SIPC)		
20.	Surendranagar Dist.	Wadhwan Bhogavo – I	(RIC)	Vansal	(RIC)
		Wadhwan Bhogavo-II	(RIC)	Morshal	(RIC)
		Falku	(RIC)	Limdi Bhogavo	(RIC)
		Triveni Thanga	(RIC)	Saburi	(RIC)
		Limdi Bhogavo–II	(RIC)	Nimbhani	(RIC)
		Flood Control	(RIC)		
21.	Bhavnagar Dist.	B'nagar	(BIPC)	Ranghola	(BIPC)
		Rajawal	(BIPC)	Jaspar-Mandva	(BIPC)
		Bagad	(BIPC)	Kharo	(BIPC)
		Shetrunji	(BIPC)	Palitana	(BIPC)
		Shetrunji Fringe	(BIPC)	Hanol	(BIPC)
		Rojki	(BIPC)	Pingali	(BIPC)
		Malan	(BIPC)	Hastagiri Repeater	(BIPC)
		Lakhanka	(BIPC)	Mahuva	(BIPC)
		Hamirpura	(BIPC)		
22.	Amreli Dist.	Amreli (A.I.S. Dn.)	(BIPC)	Vadia	(BIPC)
		Khodiar--	(BIPC)	Thebi	(BIPC)
		Munjiasar	(BIPC)	Surajwadi	(BIPC)
		Dhatarwadi - I	(BIPC)	Vadi	(BIPC)
		Dhatarwadi - II	(BIPC)	Ghelo-I	(BIPC)
		Shell-Dedumal	(BIPC)		
		Raidy	(BIPC)		
23.	Botad	Goma	(BIPC)	Limbali	(BIPC)
		Malpura	(BIPC)	Botad	(BIPC)
		Kalubhar	(BIPC)		
		Bhimdad	(BIPC)		
		Kaniyad	(BIPC)		
		Khambhada	(BIPC)		
		Utavali (Gunda)	(BIPC)		

Sr. No.	Name of Basin/District	Name of wireless Station		Name of wireless Station	
		Sukhbhadar	(BIPC)		
24.	Junagadh Dist.	Hasanapur	(RIPC)	Disaster Control	
		Madhuvanti	(RIPC)	Junagadh Ir. Dn.	(RIPC)
		Ambajal	(RIPC)	Jhanjheshri	(RIPC)
		Uben	(RIPC)	Drafad	(RIPC)
		Vrajami	(RIPC)	Girnar Repeater	(RIPC)
		Bantva-Kharo	(RIPC)	Ozat-II	(RIPC)
		Ozat-Weir Sahpur	(RIPC)	Mota Gujaraia	(RIPC)
		Ozat Weir (Vanthli)	(RIPC)	Sabali	(RIPC)
25.	Gir Somnath	Raval	(SIPC)	Machhundri	(SIPC)
		Hiran – I	(SIPC)	Hiran – II	(SIPC)
		Singoda	(SIPC)	Una Irr.Sub Dn.	(SIPC)
		Kodinar Irri.Sub.Dn.	(SIPC)	Gir Somnath Irr. Dn.	(SIPC)
26.	Porbandar Dist.	Phodarness	(SIPC)	Amipur	(SIPC)
		Khambhala	(SIPC)	Salinity Control Dn., Potrbandar	(SIPC)
		Sorthi	(SIPC)	Advana	(SIPC)
		Kalindri	(SIPC)	Saran	(SIPC)
		Rana Khirasra	(SIPC)		
27.	Kachchh Dist.	Bhuj	(KIC)	Nara	(KIC)
		Kalaghogha	(KIC)	Rudramata	(KIC)
		Niruna	(KIC)	Kasvati	(KIC)
		Godhatad	(KIC)	Tappar	(KIC)
		Suvi	(KIC)	Bhukhi	(KIC)
		Gajod	(KIC)	Berachia	(KIC)
		Kaila	(KIC)	Don	(KIC)
		Sanandro	(KIC)	Mathal	(KIC)
		Fategadh	(KIC)	Jangadia	(KIC)
		Kankavati	(KIC)	Mitti	(KIC)
28.	Mahisagar Dist.	Bhadar	(PPC)		
29.	Ahmedabad City	Sanskar Kendra, Paldi	(AMC)		

5.4 In case of flood emergency the facilities of Police Wireless /Home Guard Network shall also be utilised.

5.5 As a part of Flood Warning Arrangement, the Narmada, Water Resources , Water Supply and Kalpasar Department, Sachivalaya, Gandhinagar has decided to install the V.H.F. sets on various minor irrigation projects coming under the following Panchayat Circles. The details of Minor Irrigation projects are appended vide Table No. 5.6 and details on map vide Annexure 5.6-A.

(A) Gandhinagar Panchayat Irrigation Circle, Gandhinagar

(B) Rajkot Panchayat Irrigation Circle, Rajkot

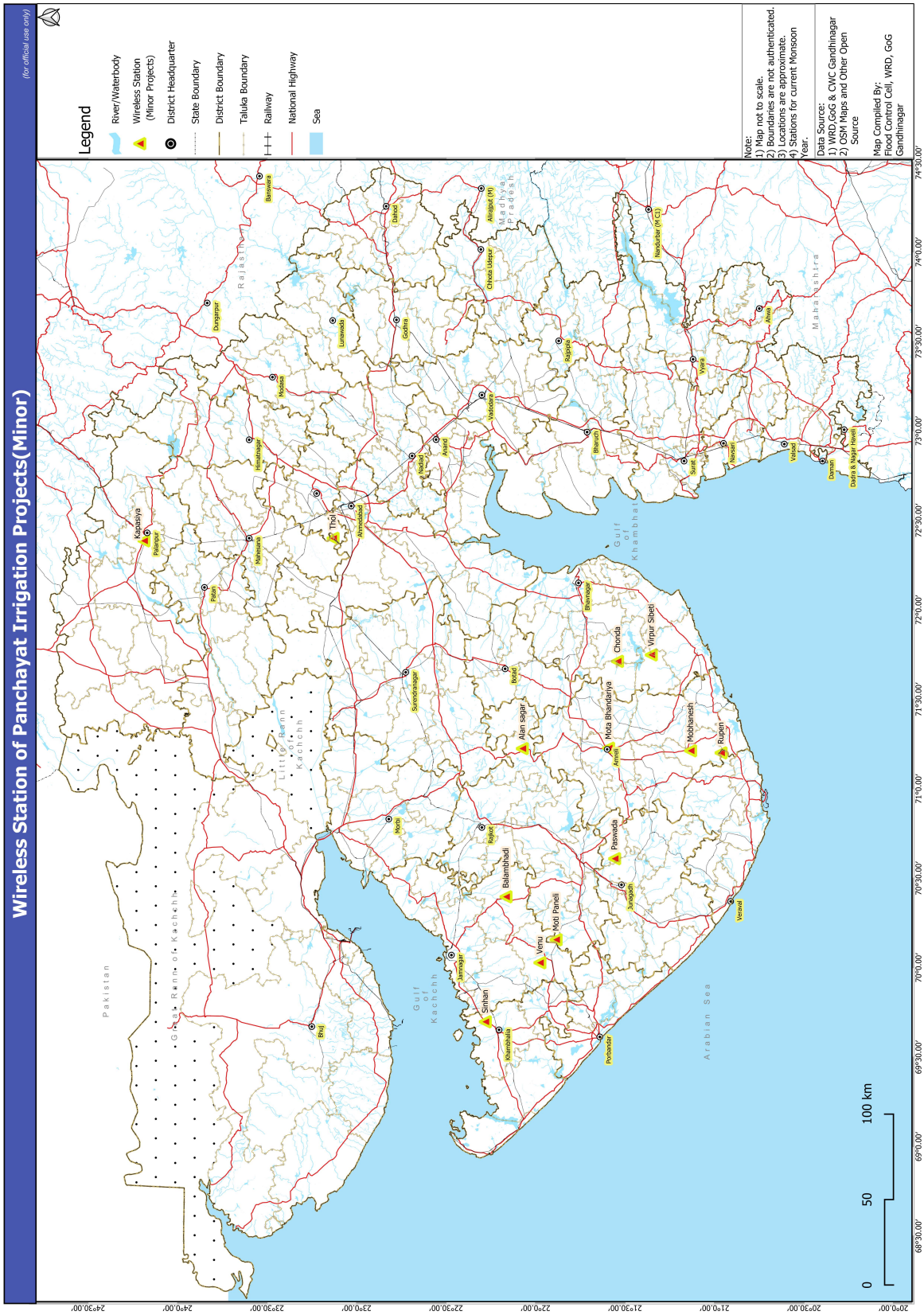
(C) Vadodara Panchayat Irrigation Circle, Vadodara

(A)	S.E.GPIC G'nagar	Nos.	(B)	S.E. RPIC, Rajkot	Nos.
1.	Gandhinagar	[-]	1.	Amreli	[2]
2.	Mehsana.	[1]	2.	Bhavnagar	[2]
3.	Ahmedabad.	[-]	3.	Botad	[-]
4.	Kheda.	[-]	4.	D.B.Dwarka	[1]
5.	Sabarkantha.	[-]	5.	Gir Somnath	[1]
6.	Patan	[-]	6.	Jamnagar.	[2]
7.	Anand	[-]	7.	Junagadh	[1]
8.	Banaskantha	[1]	8.	Morbi	[-]
9.	Aravalli	[-]	9.	Porbandar	[-]
			10.	Rajkot	[2]
			11.	Surendranagar	[-]
(C)	S.E.VPIC Vadodara	Nos.	(D)	S.E. KIC, Bhuj-Kachchh	Nos.
1.	Vadodara.	[-]	1.	Kachchh	[-]
2.	Bharuch	[-]			
3.	Surat	[-]			
4.	Valsad	[-]			
5.	Dangs.	[-]			
6.	Panchmahal	[-]			
7.	Dahod	[-]			
8.	Navsari	[-]			
9.	Narmada	[-]			

5.6 Wireless system at the following important places of Minor Irrigation Projects shown in Table 5.6 are suggested by The Chief Engineer (Panchayat) and Add. Secretary Sachivalaya Gandhinagar for flood Situation and its communication to higher authorities.

TABLE - 5.6

Sr. No.	Name of Minor Irrigation Schemes	Taluka	District	In Charge Focal Officer
1	2	3	4	5
1.	Mobhanesh	Khambha	Amreli	S.E., R.P.I.C. Rajkot
2.	Mota Bhandariya	Amreli	Amreli	S.E., R.P.I.C. Rajkot
3.	Virpur Sibeti	Palitana	Bhavnagar	S.E., R.P.I.C. Rajkot
4.	Chonda	Palitana	Bhavnagar	S.E., R.P.I.C. Rajkot
5.	Venu	Jamjodhpur	Jamnagar	S.E., R.P.I.C. Rajkot
6.	Sinhan	Khambhalia	D.B.Dwarka	S.E., R.P.I.C. Rajkot
7.	Balambhadi	Kalavad	Jamnagar	S.E., R.P.I.C. Rajkot
8.	Paswada	Bhesan	Junagadh	S.E., R.P.I.C. Rajkot
9.	Rupen	Gir Gadhada	Gir Somnath	S.E., R.P.I.C. Rajkot
10.	Moti Paneli	Upleta	Rajkot	S.E. R.P.I.C. Rajkot
11.	Alan Sagar	Jasdan	Rajkot	S.E. R.P.I.C. Rajkot
12.	Thol	Kadi	Mehsana	S.E.G.P.I.C. Gandhinagar
13.	Kapasiya	Palanpur	Banaskantha	S.E.G.P.I.C. Gandhinagar



Annexure 5.6-A

DAMANGANGA BASIN

6

6.0 DAMANGANGA BASIN:

6.1 The flood forecasting for Damanganga Basin is being looked after by Superintending Engineer, Hydrological Observation circle, Gandhinagar through his Executive Engineer, Tapti Division (C.W.C.) at Surat. He has established various wireless stations at locations upstream and downstream of Madhuban Dam to obtain the details about rainfall and discharge in the Damanganga Basin. The gauge and rainfall data are being communicated, through wireless stations located at various stations on the main river as well as on tributary.

6.2 Name of villages/dams where wireless stations are located to report rainfall and gauge discharge are as under :

A. C.W.C's Wireless Stations

(1)	Ozerkheda	Maharashtra
(2)	Harsul (Rainfall only)	Maharashtra
(3)	Mokheda (Rainfall only)	Maharashtra
(4)	Dhandode (Rainfall only)	Maharashtra
(5)	Silvassa	Union Territory
(6)	Solachar	Union Territory
(7)	Daman	Union Territory
(8)	Madhuban Dam Site	Gujarat State
(9)	Vapi	Gujarat State
(10)	Nani Palsan	Gujarat State

B. State's Wireless Stations.

(1)	Madhuban Dam (Dam Site)	Gujarat State
(2)	Madhuban Dam (Colony)	Gujarat State
(3)	Valsad (D.P.C.)	Gujarat State

6.3 The list of villages affected at various levels is appended vide Annexure 6-A, Annexure 6-B and basin plan showing the location of wireless stations is appended on Annexure 6-C. The warning and danger levels are fixed with respect to Pati site which is 0.3 kilometer down stream of Madhuban Dam.

TABLE - 6.4

Note :- Please Refer Flood Telephone Directory of the current year for telephone nos.

Name of the Officer with Telephone Nos.	Observation to be made by the Officer	Officer to whom the messages to be sent.
(1)	(2)	(3)
(A) Executive Engineer Tapti Division (C.W.C), Surat	The inflow forecast of 50,000 Cusecs (1500 Cumecs) for MADHUBAN (Damanganga) Dam to be conveyed to the Officer in Column No. 3 at Sr. No (a) & (g).	(a) Superintending Engineer Damanganga Project Circle, Valsad (b) Collector, Valsad. (c) District Superintendent of Police, Valsad. (d) Collector, DNH, Silvassa. (e) Executive Engineer Public Works Department Daman. (f) Collector, Daman. (g) Flood Cell, Gandhinagar.
	Flood level forecast for VAPI to be conveyed to the officers at Sr. No. (a), (b), (f) & (g) in Column No. 3 when Gauge levels are about to cross Warning Level, i.e., 18.20 M. and Danger Level, i.e. 19.20 M.	
	Flood Level forecast for DAMAN to be conveyed to the officers in Column No.3 mentioned @ Sr. No. (a) (b) (d) (f) and (g) when Gauge level is about to cross Warning Level i.e., 2.60 M and Danger Level i.e., 3.40 M.	
(B) Superintending Engineer Damanganga Project Circle, Valsad	The Flood Level Forecast for VAPI and DAMAN to be conveyed to the officers in column No. 3 mentioned @ Sr. No.(b), (c), (d), (e), (f) and (g) when Gauge level is about to cross Warning and Danger Level.	

6.5. Statement showing the time lag for various stations from origin to the end of river basin as under.

Sr. No.	Name of Site	Type of Site	State	Catchment Area in Sq. Kms.	Distance from Origin in Kms.	Danger Level in Meters	Time Lag in Hours
1	2	3	4	5	6	7	8
1.	Dhandore	W,R	Maha.				
2.	Harshul	W,R.	Maha.	Only Rainfall Recording			
3.	Mokheda	W,R	Maha	Stations			8.10
4.	Ozerkheda	W,G,D,R	Maha.	640	75	-	8.10
5.	Nani-Palsan	W,G,D,R	Gujarat	764	60	-	5
6.	Madhuban Dam	W,G,R,I	Gujarat	1800	83	82.40	3.4
7.	Solachar	W,G,R	UT (DNH)	1948	45	-	3.4
8.	Silvasa	W,G,R	UT (DNH)	266	108	30	2
9.	Vapi	W,G,R,F	Gujarat	2227	116	19.20	1
10.	Daman	W,G,R	UT(Daman)	2318	131	3.40	0

Note : W = Wireless D = Discharge F = Flood Level Forecast
G = Gauge R = Rainfall I = Inflow Forecast

6.6 <u>Appropriate Authority</u> (Focal Officer)

The Superintending Engineer
Damanganga Project Circle,
Damanganga Bhavan,
Valsad.

Note :
Please refer Flood Telephone Directory of the current year for telephone nos.

ANNEXURE - 6 (A)

List of villages likely to be affected by floods in **Damanganga River** on the basis of Gauges & Discharge at Pati Site 0.30 Km.D/s of **Madhuban Dam**.

Sr. No.	KAPARADA TALUKA	Sr. No.	VAPI TALUKA	Sr. No.	UMARGAON TALUKA
	(1)		(2)		(3)
			VALSAD DISTRICT		
1.	Meghaval	1.	Lavachha	1.	Kachigam
		2.	Dungara	2.	Borigam
		3.	Chandor	3.	Mohangam
		4.	Namdha	4.	Jamburi
		5.	Kunta	5.	Achchhari
		6.	Chanod	6.	Valvada

UNION TERRITORY of D and N. H. and Daman

Sr. No.	DADRA, NAGAR AND HAVELI	Sr. No.	DAMAN
	(1)		(2)
		NANI DAMAN	
1.	Karad	1.	Nani Daman
2.	Rakholi	2.	Verkund
3.	Kudacha	3.	Kharivad
4.	Samarvarni	4.	Kudaiya Machhiwad
5.	Masat	5.	Kachigam
6.	Athal Bridge		
7.	Amli	**MOTI DAMAN**	
8.	Pati	6.	Moti Daman
9.	Chinch Pada	7.	Singa Falia
10.	Vasona	8.	Ambavad
11.	Dapada	9.	Zari
12.	Piparia	10.	Patlara
13.	Tighra		
14.	Vaghdhara		

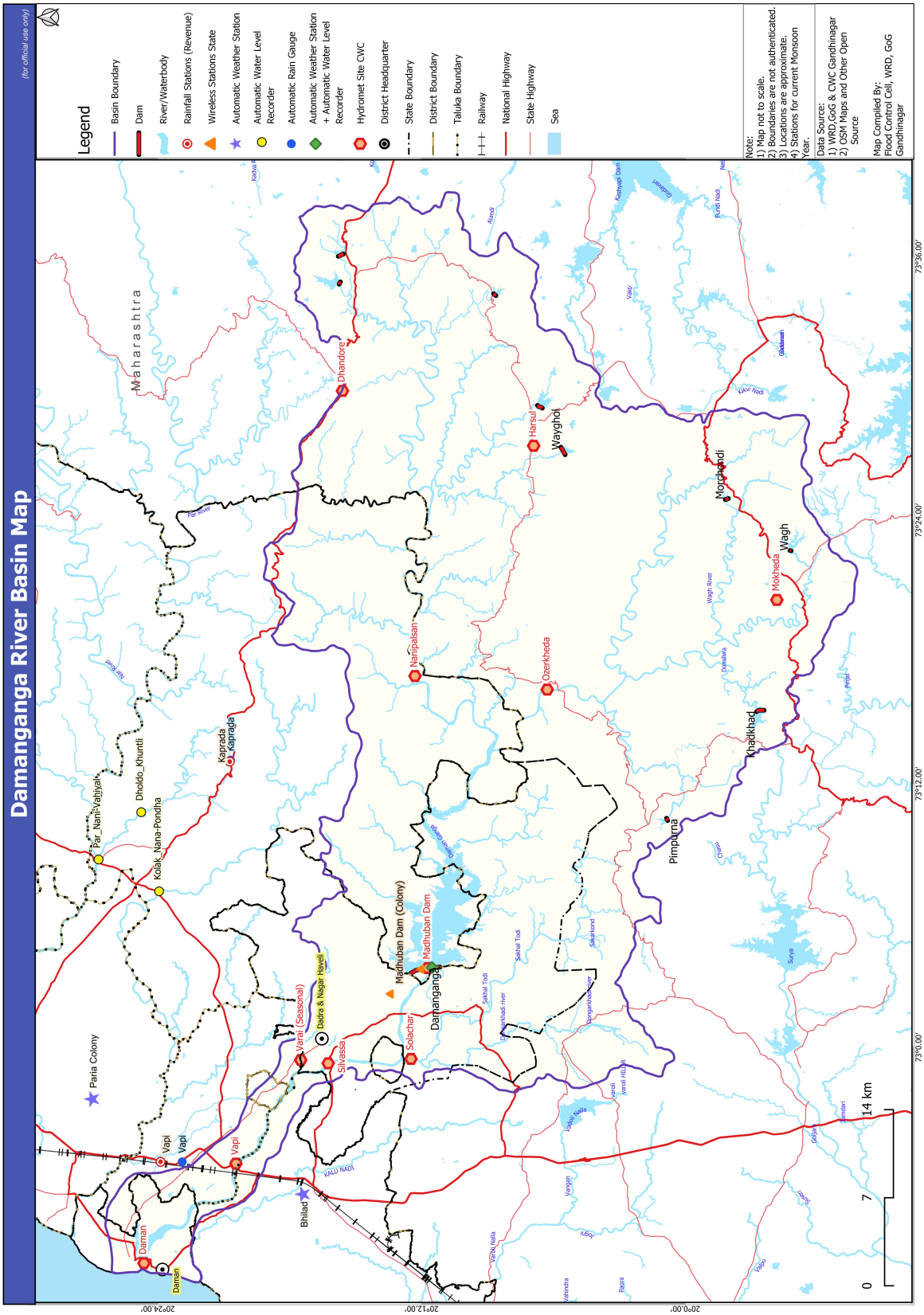
Note: Refer Annexure 6-C for the villages likely to be affected by floods at different Water Levels.

ANNEXURE - 6 (B)

List of villages likely to be affected by floods in **Damanganga River** on the basis of Gauges & Discharge at D/s of **Madhuban Dam.**

Sr. No.	Discharge at D/S of Dam in (Cus/Cum)	Gauge Level at D/S of Dam		Name of District Taluka	Signal for Village at Sr. No.		
		In Feet	In Meter		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
NOTE :- **1 WHITE SIGNALS** : ALERT **2 BLUE SIGNALS** : READY FOR EVACUATION **3 RED SIGNALS** : IMMEDIATE EVACUATION							
(1)	250000	157.27	47.95	**Valsad**			
	————			1. Kaparada	1	—	—
	7079.14			2. Vapi	1 to 6	—	—
				3. Umargaon	1 to 6	—	—
				Union Territory			
				4. Dadra, Nagar & Haveli.	1 to 14	—	---
				5. Daman	1 to 10	—	—
(2)	300000	159.40	48.60	**Valsad**			
	————			1. Kaparada	—	1	—
	8494.97			2. Vapi	—	1 to 6	—
				3. Umargaon	—	1 to 6	—
				Union Territory			
				4. Dadra, Nagar & Haveli	—	1 to 14	—
				5. Daman	—	1 to 10	—
(3)	350000	162.2	49.45	**Valsad**			
	————			1. Kaparada	—	—	1
	9910.80			2. Vapi	—	—	1 to 6
				3. Umargaon	—	—	1 to 6
				Union Territory			
				4. Dadra, Nagar & Haveli.	—	—	1 to 14
				5. Daman	—	—	1 to 10

Note:-Refer Annexure 6-B for the villages likely to be affected by floods at different Water Levels.


Damanganga River Basin Map
(for official use only)
Legend
Basin Boundary
Dam
River/Waterbody
Rainfall Stations (Revenue)
Wireless Stations State
Automatic Weather Station
Automatic Water Level Recorder
Automatic Rain Gauge
Automatic Weather Station + Automatic Water Level Recorder
Hydromet Site CWC
District Headquarter
State Boundary
District Boundary
Taluka Boundary
Railway
National Highway
State Highway
Sea
Note:
1) Map not to scale.
2) Boundaries are not authenticated.
3) Locations are approximate.
4) Stations for current Monsoon Year.
Data Source:
1) WRD,GoG & CWC Gandhinagar
2) OSM Maps and Other Open Source
Map Compiled By:
Flood Control Cell, WRD, GoG Gandhinagar
Maharashtra
Dhandore
Harsul
Waygholi
Morchondi
Wagh
Mokheda
Ozerkheda
Nanipalsan
Khadkhadi
Pimpalma
Kaprada
Dholdo_Khuntli
Par_Nani-Vahiyal
Kolak_Nana-Pondha
Madhuban Dam (Colony)
Madhuban Dam
Damanganga
Solachar
Silvassa
Vapi
Bhilad
Daman
Paria Colony
14 km
0
7
20°24.00'
20°12.00'
20°0.00'
73°36.00'
73°24.00'
73°12.00'
73°0.00'

Annexure 6-C

TAPI BASIN

7

7.0 TAPI BASIN:

7.1 The flood forecasting for Tapi basin is looked after by Superintendent Engineer, Hydrological Observation Circle, Gandhinagar through Executive Engineer, Tapi Division (C.W.C) at Surat, who has established various wireless stations at locations upstream of Surat to obtain the details about rainfall and discharge in the river. The gauge and rainfall data are being communicated through wireless stations located on the main river as well as on tributaries.

7.2 Name of villages/dams where Wireless Stations are located to report rainfall and gauge discharge are as under:

A. C.W.C's / Wireless and other communication system Stations.

1.	Teska	Madhya Pradesh.
2.	Dedtalai	Madhya Pradesh.
3.	Nawtha	Madhya Pradesh.
4.	Burhanpur	Madhya Pradesh.
5.	Hathnur	Maharashtra
6.	Chikhaldara	Maharashtra
7.	Lakhpuri	Maharashtra
8.	Gopalkheda	Maharashtra
9.	Kurankheda	Maharashtra
10.	Akola	Maharashtra
11.	Lohara	Maharashtra
12.	Duskheda	Maharashtra
13.	Yerli	Maharashtra
14.	Shelgaon	Maharashtra
15.	Talaswada	Maharashtra
16.	Bhusaval	Maharashtra
17.	Pimpri	Maharashtra
18.	Girna Dam	Maharashtra
19.	Saygaon	Maharashtra
20.	Vankhed	Maharashtra
21.	Dahigaon Weir	Maharashtra
22.	Narne	Maharashtra
23.	Savkheda	Maharashtra
24.	Dhupeshwar	Maharashtra
25.	Morane	Maharashtra
26.	Sirpur	Maharashtra
27.	Gidhade	Maharashtra
28.	Sindkheda	Maharashtra
29.	Balsana	Maharashtra
30.	Sarangkheda	Maharashtra
31.	Prakasha	Maharashtra
32.	Velda	Gujarat
33.	Chandapur (Uchhal)	Gujarat

34.	Sagbara	Gujarat
35.	Ukai	Gujarat
36.	Kakrapar	Gujarat
37.	Gavachi (Ver)	Gujarat
38.	Ghala	Gujarat
39.	Kathore	Gujarat
40.	Surat (Seasonal)	Gujarat
41.	Nandurbar	Maharashtra
42.	Nizampur	Maharashtra
43.	Khetia	Madhya Pradesh
44.	Chiklod	Maharashtra
45.	Bambrul	Maharashtra

B. State's Wireless Stations and other communication system Stations.

1.	Ukai	Gujarat State
2.	Ver-II	Gujarat State
3.	Lakhigam	Gujarat State
4.	Chopadvav	Gujarat State
5.	Kakdi Amba	Gujarat State
6.	Ukai Dam Site	Gujarat State
7.	Rumkitalav	Gujarat State
8.	Borda	Gujarat State
9.	Kukarmunda	Gujarat State
10.	Naranpur	Gujarat State
11.	Nizar	Gujarat State
12.	Uchchhal	Gujarat State
13	Jhamkhadi	Gujarat State

7.3 Map of the river basin showing the wireless stations together with gauge discharge and rain gauge stations and time lag statement is appended vide Annexure : 7-D.

7.4 Ukai Reservoir is located at Ukai on River Tapi which is moderating the flood on Tapi River.

7.5 Due to remoteness of Ukai head works and poor reliability of the telephone system during heavy rains and floods, it may not be possible for the Superintending Engineer Ukai (Civil) Circle, Ukai to communicate the flood message to the State Flood Control Cell, Gandhinagar. The Executive Engineer, Tapti Division (C.W.C) Surat shall therefore help to pass on such information to Flood Control Cell, Gandhinagar.

7.6 For flood control operation of Ukai Dam using forecast supplied by the Central Water Commission, the project authorities of Ukai Dam i.e. Superintending Engineer, Ukai (Civil) Circle, Ukai and Focal Officer of the Tapi Basin i.e. Superintending Engineer, Surat Irrigation Circle, Surat are advised to thoroughly refer the guidelines contained in the newly adopted Manual on Flood Control Operation of Ukai Dam issued vide, Govt. Resolution No. - PRCH-1097-4605-(120) Part-3-K dated 4.8.2000 and part

modified operation policy vide Govt. letter No.Ukai/2006(23)/Part-I-J Dtd.11.06.2008.

The Executive Engineer, Tapi Division, CWC, Surat will start issuing inflow forecast for Ukai Dam for a flood of peak discharge of 1000 cumec and above irrespective of Water Level of reservoir. 12-Hourly regular inflow forecast will be issued by him based on the hydro-meteorological data of base station Gidhade and Ukai. These forecast will be monitored regularly and revised (if required) after 6 hours based on hydro-meteorological data of Sarankheda and Surat. In addition to 12-hours regular forecast and 6 hourly revised forecasts, advisory warning for expected high flood for Ukai Dam would also be issued when the reservoir level is above 100.59 m (330.00 ft.)

For issue of flood forecasts and advance warning, the CWC has now defined following three situations viz. Normal, High Alert and Emergency.

7.6.1 Normal Situation.

The flood situation is considered as Normal when:

(i) Water Level in Ukai Reservoir is less than 102.41 m (336.00 ft.)

(ii) (a) Average daily rainfall recorded at 0830 IST at 7(Seven) key rain gauge stations in Upper Tapi Catchment up to Hathnur is less than 65mm and

(b) Average daily rainfall recorded at 0830IST at all 15 (fifteen) key rain gauge stations up to Ukai is less than 50mm

The flood forecast will be issued starting from June 01 to October 31 in the format shown in "Form-N" of the Manual whenever inflow in to Ukai reservoir is expected more than 1000 cumec.

7.6.2. High Alert Situation

High Alert situation is implied when condition (i) and any one of the conditions (ii) (a) & (ii) (b) mentioned in 7.6.1. Are violated. In this situation, the High Alert Warning shall be issued in the format as shown in “Form-H", of the Manual.

7.6.3 Emergency Situation

An emergency situation is said to have been created when the Ukai Reservoir Water Level is above 102.41 m (336.00 ft) and

(i) Combined Estimated discharged at Burhanpur and Yerli river gauging sites is above 14000 Cumecs or

(ii) Average daily rainfall in lower Tapi between Hathnur to Ukai (8 rain gauge station) is above 65mm or

(iii) The situation when there is failure of forecasting system.

In this situation, Emergency Situation Warning shall be issued in the format shown in "Form-E" of the manual depending upon the availability of data in Upper Tapi Basin with Forecasting Agency.

The CWC will issue these forecasts to the Superintending Engineer, Ukai (Civil) Circle, Ukai, Focal Officer i.e. Superintending Engineer, Surat Irrigation Circle, Surat and Flood Control Cell, Gandhinagar well in advance.

On receipt of the forecasts from CWC, the project authorities have to fill all information in “Form-FBRO" given in the manual to decide the releases to be made from the dam if necessary, and act accordingly.

7.7 In the early period of monsoon, to maintain the reservoir level at stipulated rule level, it may become necessary to release the excess water at once in case of flood developing upstream of Gidhade. The basic policy that is stipulated in the Manual Under a “Normal Flood Situation" is to restrict the outflow from the Ukai Dam to 5.0 Lakh cusec (about 14,000 cumec) and maintain the reservoir at the rule level.

In this case, the authorities downstream of the Ukai Dam should be in readiness with all the necessary arrangements made, to receive a flood up to 5.0 Lakh cusec (about 14,000 cumec) any time during the flood season, for which prior warning of 3 hours will be issued before first release of water from the dam. For subsequent release, downstream authority shall be kept informed before such release.

7.8 In case, when it is necessary to release discharge more than 5.0 Lakh cusec (about 14,000 cumec) from the Ukai Dam, the prior warning for higher discharges will be issued as mentioned below.

(i) 6.0 Lakh cusec (16,660 cumec) from Ukai Dam* -3 hrs. + Travel time

(ii) 8.0 Lakh cusec (22,655 cumec) from Ukai Dam* -6 hrs. + Travel time

(iii) 10.0 Lakh cusec -9 hrs. + Travel time*

(* - The approximate estimated travel time from Ukai Dam to Hope Bridge, Surat is 6.00 hrs.)

The collector, Surat has to make all necessary arrangements to make the downstream river channel clear up to danger level i.e. R.L. 9.50 m (31.16 ft) and the people may be shifted from the river banks so as not to hamper the flood routing operation from Ukai Dam for a release of 4.0 Lakh cusec about (11,300 cumec) and above.

7.9 The villages affected by floods in Tapi River are given in Annexure :7-B while to the details of various villages affected at different levels of various villages affected at different levels of Kakrapar Weir are mentioned in Annexure : 7-C.

7.10 Action to be taken by the Executive Engineer, Tapti Division, (C.W.C) Surat and other officers.

TABLE (7.10)

Note: - Please refer Flood Telephone Directory of the current year for contact nos.

Name of the Officer with Telephone Nos.	Observation to be made by the Officer	Officer to whom the messages to be sent.
(1)	(2)	(3)
(A) Executive Engineer Tapti Division (C.W.C), Surat	The Flood Level forecast of NEHRU BRIDGE, Surat shall be conveyed to the Officer in Column No. 3 at Sr.No. (a), (b), (c) and (e) The inflow forecast of 1000 Cumecs or more coming into Ukai Dam shall be conveyed to the officers at Sr. No. (a),(b), (c) & (e) in Column No. 3	(a) Superintending Engineer, Surat Irrigation, Circle, Surat. (b) Superintending Engineer, Ukai (Civil) Circle, Ukai (c) Collector, Surat. (d) District Superintendent of Police, Surat (e) Municipal Commissioner, Surat (f) Police Commissioner, Surat (g) Port Officer, Magadalla, Port, Surat (h) O.N.G.C. (Village Bhatpur), (i) Station Director, Chief Superintendent, Control Room, Kakarpar Atomic Power Plant Vyara & Surat.
(B) Superintending Engineer, Ukai (Civil) Circle, Ukai	The Officer will intimate the Out Flow of Ukai Dam to the officers as shown in Column No.3 Below at Sr. No. (a) To (d) along with (c) and (e) in Col. No. : - 3 of Sr. No. :- (A) above	(a) Executive Engineer, Tapi Division (C.W.C), Surat. (b) Superintending Engineer Surat Irrigation Circle, Surat. (c) Port Officer, Magadalla Port, Surat. (Through Flood Cell, Surat) (d) Executive Engineer, Surat Canal Division, Surat (e) O.N.G.C. Village Bhatpur. (f) Station Director, Chief Superintendent of Control Room, Kakrapar Atomic Power Plant, Vyara-Surat.
(C) Executive Engineer, Surat Canal Dn., Surat	The officer will arrange to intimate the levels of Kakarpar to the Superintending Engineer, Surat Irrigation Circle, Surat, and to the Officers at Sr. No. (a),(b),(c),(e),(f) in Column No.3 of Sr. No. (B), above along with (c) and (e) in Col. No. :- 3 of Sr. No. :- (A) above	(a) Executive Engineer, Tapi Division (CWC), Surat

Annexure-A Time lag along Stations

7.11 Statement showing the Time lag for various stations from origin to the end of river basin is as under:

Sr. No.	Name of Site	Type of Site	State	Catchment Area in Sq. Kms.	Distance from Origin in Kms.	Danger Level in Meters	Time Lag in Hours
1	2	3	4	5	6	7	8
1.	Teska	WGR	M. P.	1486	74	–	–
2.	Dedtalai	WGDR	M. P.	6660	200	–	44
3.	Nawtha	GDR	M. P.	– –	–	–	
4.	Burhanpur	WGDSQR	M. P.	8487	241	220.90	36-37
5.	Hathnur	WGR	Maha.	29430	290	214.00	32
6.	Chikhaldara	WR	Maha.	–	–	–	–
7.	Lakhpuri	WGR	Maha.	3560	–	–	–
8.	Gopalkheda	WGDSQR	Maha.	9500	–	–	45
9.	Kurankheda	GDR	Maha.	42720	605	–	–
10.	Akola	GR	Maha.	34140	615	–	–
11.	Luhara	GDR	Maha.	–	128	–	–
12.	Duskheda	GR	Maha.	775.07	43.363	234.90	–
13.	Yerli	WGDSR	Maha.	16517	223	–	37-38
14.	Shelgaon	R	Maha.	–	–	–	–
15.	Talaswada	GR	Maha.	–	–	–	–
16.	Bhusaval	WGR	Maha.	32478	306	185.32	31
17.	Pimpri	GDR	Maha.	–	–	–	–
18.	Girna Dam	WGR	Maha.	4729	110	398.069	–
19.	Saygaon	GDR	Maha.	911.93	65.106	344.123	–
20.	Vankhed	GDR	Maha.	18330.75	370	–	–
21.	Dahigaon Weir	WGDR	Maha.	8599	222	230.150	–
22.	Narne	GR	Maha.	537.395	61.214	153.140	–
23.	Savkheda	WGR	Maha.	48136	408	–	–
24.	Dhupeshwar	GDR	Maha.	–	–	–	–
25.	Morane	WGDR	Maha.	1933	95	–	22-24
26.	Sirpur	GDR	Maha.	700.74	39.39	149.000	
27.	Gidhade	WGDR	Maha.	54750	420	–	18
28.	Sindkheda	GDR	Maha.	1080.45	88.602	156.000	
29.	Balsana	GR	Maha.	342.73	35.44	200.350	–
30.	Sarangkheda	WGDSQR	Maha.	58400	488	–	–
31.	Prakasha	GDR	Maha.	1091	150	117	–
32.	Velda	GR	Gujarat	–	–	–	
33.	Chandapur (Uchhal)	GR	Gujarat	412.698	36	–	–
34.	Sagbara	R	Gujarat	– –	–		
35.	Ukai	WGRF	Gujarat	62225	595	105.15	8
36.	Kakrapar	GR	Gujarat	62826	624	53.66	7-8
37.	Gavachi (Ver)	GDR	Gujarat	365	40	–	–
38.	Ghala	WGDR	Gujarat	63325	640	–	–

Sr. No.	Name of Site	Type of Site	State	Catchment Area in Sq. Kms.	Distance from Origin in Kms.	Danger Level in Meters	Time Lag in Hours
1	2	3	4	5	6	7	8
39.	Kathore	GR	Gujarat	–	–	–	–
40.	Surat (Seasonal)	GR	Gujarat	63973	708	9.50	0
41.	Nandurbar	R	Maha.	–	–	–	–
42.	Nizampur	R	Maha.	–	–	–	–
43.	Khetia	R	M. P.	–	–	–	–
44.	Chiklod	R	Maha.	–	–	–	–
45.	Bambrul	GD	Maha.	–	–	–	–

Note :	W = Wireless	D = Discharge	F = Flood
	G = Gauge	R = Rainfall	S = Silt
	Q = Water Quality		

7.12 Appropriate Authority (Focal Officer.)

The Superintending Engineer,
Surat Irrigation Circle,
Near M.T.B. College
Athwa Lines, Surat

Note:-
Please refer Flood Telephone Directory of the current year for Telephone Nos.

ANNEXURE - 7-(B)

List of villages likely to be affected by floods in **Tapi River** on the basis of Gauge & Discharge at **Kakrapar Weir site,** Surat.

SURAT DISTRICT

SR. NO.	CHORASI TALUKA	SR. NO.	BARDOLI TALUKA	SR. NO.	KATARAGAM TALUKA	SR. NO.	MAJURA TALUKA
	1		**3**		**5**		**8**
1	Bhatha	1	Haripura	1	Athwa	1	Abhava
2	Bhatalai	2	Kadod	2	Dabholi	2	Althan
3	Bhatpor	3	Khravasa	3	Kataragam	3	Bamaroli
4	Bhesan	4	Miyawadi	4	Siganpore	4	Barthana vesu
5	Damka	5	Movachchi	5	Tunki	5	Bhatar
6	Icchapor	6	Nasura	6	Ved	6	Bhimpore
7	Kavas	7	Rayam			7	Bhimrad
8	Limla	8	Samthan	**SR. NO.**	**PUNA TALUKA**	8	Dumas
9	Malgama	9	Sankri		**6**	9	Gaviyar
10	Mora	10	Uchcharel	1.	Fulpada	10	Khajod
11	Saniya	11	Umrakh	2.	Kapodara	11	Khatodara
12	Saroli	12	Vadhvaniya	3.	Karanj	12	Magdhalla
13	Sunvali	13	Zarimora	4.	Magob	13	Majura
14	Vansa			5.	Nanavaracha	14	Piplod
				6.	Navagam	15	Rundh
SR. NO.	**PALSANA TALUKA**	**SR. NO.**	**ADAJAN TALUKA**	7.	Puna	16	Sarasana
	2		**4**	8.	Sarthana	17	Sultanbad
1	Amalsadi	1	Adajan	9.	Simada	18	Umara
2	Baleshwar	2	Amroli	10.	Kumbariya	19	Vadod
3	Bhutpor	3	Chaparabhatha			20	Vanta
4	Dhamdod	4	Jahangirpura	**SR. NO.**	**UDHNA TALUKA**	21	Vesu
5	Ena	5	Kosad		**7**		
6	Gangpor	6	Motavarachaa	1.	Anjana	**SR. NO.**	**MANGROL TALUKA**
7	Isroli	7	Pal	2.	Limbayat		**9**
8	Jolva	8	Palanpor	3.	Pandesara	1	Vadi
9	Kadodara	9	Pisad	4.	Parvat	2	Limodara
10	Kanav	10	Rander	5.	Udhana	3	Varoli
11	Kareli	11	Utran			4	Kosamba
12	Malekpor	12	Variyav				
13	Palsana	13	Bharthana(Kosad)				
14	Pisad						
15	Sanki						
16	Siyod						
17	Soyani						
18	Tundi						

SR. NO.	MANDAVI TALUKA	SR. NO.	KAMREJ TALUKA	SR. NO.	KAMREJ TALUKA	SR. NO.	OLPAD TALUKA
	10		**11**		**11 continue**		**12**
1	Andhatri	1	Abrama	42	Sevani	1	Sayan
2	Baudhan	2	Ankhakhol	43	Sekhpur	2	Vasvari
3	Birama	3	Alura	44	Simadi	3	Atodara
4	Gavachi	4	Amboli	45	Tharoli	4	Asnad
5	Godavadi	5	Antroli	46	Timba	5	Sarol
6	Jankhla	6	Dhoranapardi	47	Umbel	6	Gothan
7	Kakvada	7	Bhada	48	Valak	7	Jothan
8	Kakdapar	8	Bherav	49	Valan	8	Umra
9	Kamlapor	9	Dhatava	50	Vasda rundhi	9	Sivan
10	Kevadiya	10	Dungar	51	Vav	10	Delad
11	Khanjroli	11	Choryasi	52	Velanja	11	Segwa
12	Kharoli	12	Delad	53	Vihan	12	Madhar
13	Khedpur	13	Derod	54	Kosmadi	13	Karamala
14	Kosadi	14	Dungra			14	Ariana
15	Mandvi	15	Ghala			15	Sonsak
16	Mori-cher	16	Ghaludi			16	Balkas
17	Nandpor	17	Haldharu			17	Gola
18	Nanicher	18	Jior			18	Kosam
19	Naren	19	Jokha			19	Mahamadpur
20	Patna	20	Kamrej			20	Earthan
21	Piparia	21	Karjan			21	Selut
22	Rajvad	22	Kathodara			22	Ambheta
23	Rataniya	23	Kathor			23	Kunkani
24	Rosvad	24	Khanpur			24	Veluk
25	Rupan	25	Kholeshwer			25	Pinjrat
26	Tarsadabar	26	Kholvad			26	Olpad
27	Umarasadi	27	Koli-Barthana			27	Asnabad
28	Un	28	Kosmada			28	Barbodhan
29	Vadod	29	Laskana			29	Paria
30	Vaghnera	30	Machchi			30	Vadod
31	Vankla	31	Makna			31	Sandhiar
32	Vareli	32	Morthana			32	Sithana
33	Vareth	33	Nansad			33	Masama
34	Varethi	34	Navagam			34	Andhi
35	Varjakhan	35	Navi-pardi			35	Kalipur
36	Vegi	36	Netrang			36	Isanpur
37	Virpor	37	Pali			37	Dihen
38	Vaghecha	38	Parab			38	Achharan
39	Nogama	39	Pasodara			39	Kanaj
40	Pardi	40	Sampura			40	Saroli
41	Pipalvada	41	Segva			41	Talad

SR. NO.	OLPAD TALUKA	SR. NO.	TAPI-VYARA TALUKA
	12 continue		**13**
42	Sherdi	1	Kanja
43	Orma	2	Bed kuva
44	Bhandut	3	Kalavyara
45	Kaslakhrud	4	Unchamala
46	Kachhol		
47	Tena	**SR. NO.**	**SURAT-CITY TALUKA**
48	Kasla		14
49	Saras	1	Surat city
50	Vadila		
51	Hathisa		
52	Bhat gam		
53	Sarsana		
54	Sondla Mitha		
55	Morthan		
56	Takarma		
57	Kanbhai		
58	Obhala		
59	Bharunda		
60	Lavachha		
61	Admor		
62	Kudiyana		
63	Kuwad		
64	Kapasi		
65	Kunbhari		
66	Naghoi		
67	Kobra-Pardi		
68	Kachhab		
69	Delasa		
70	Sondlakhara		
71	Mirzapor		
72	Mindhi		
73	Morbhagva		
74	Syadla		

Note: Refer Annexure 7-C for the villages likely to be affected by floods at different Water levels.

ANNEXURE - 7 (C)

List of villages likely to be affected by floods in **Tapi River** on the basis of Gauge & Discharge at **Kakrapar Weir Site**, Surat.

Sr. No.	Discharge at Kakrapar Weir in (Cus/Cum)	Gauge Level at Kakrapar Weir		Name of District Taluka	Signal for Village at Sr. No.		
		In Feet	In Meter		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
NOTE :- 1 **WHITE SIGNALS** : ALERT 2 **BLUE SIGNALS** : READY FOR EVACUATION 3 **RED SIGNALS** : IMMEDIATE EVACUATION							
(1)	3,91,100	174.40	53.15	**Surat**			
	———			1. Majura	2,4,9,12,18	—	—
	11,074			2. Puna	5	—	—
				3. Surat City	1	—	—
				4. Katargam	5,6,4	—	—
				5. Adajan	10	—	—
(2)	4,40,400	175.50	53.40	**Surat**			
	————			1. Majura	3,5,7,8,11, 16,13,21,14	2,4,9,12, 18	—
	12,740			2. Puna	1,9,3,10	5	—
				3. Surat City	—	1	—
				4. Katargam	1,2,3	5,6,4	—
				5. Adajan	1,4,5,8,12	10	—
				6. Udhna	1,4,5	—	—
				7. Palsana	4	—	—
				8. Choryasi	7,1	—	—
(3)	4,60,640	176.05	53.66	**Surat**			
	————		——	1. Majura	15	3,5,7,8,11,16, 13,21,14	2,4,9,12,18 5
	13,044			2. Puna	6,7	1,9,3,10	1
				3. Surat City	—	—	5,6,4
				4. Katargam	—	1 to 3	10
				5. Adajan	—	1,4,5,8,12	—
				6. Udhna	—	1,4,5	—
				7. Palsana	—	4	—
				8. Choryasi	12,6	7,1	
(4)	5,20,375	177.25	54.04	**Surat**			
	14,735			1. Majura	—	15	3,5,7,8,11, 16,13,21,14
				2. Puna	—	6,7	1,9,3,10
				3. Katargam	—	—	1 to 3
				4. Adajan	13,3	—	1,4,5,8,12
				5. Udhna	—	—	1,4,5
				6. Palsana	—	—	4
				7. Choryasi	9,8,4,3	6,12	7,1
				8. Mandvi	8	—	—
				9. Kamrej	4,8,20,25, 26,29	—	—

Sr. No.	Discharge at Kakrapar Weir in (Cus/Cum)	Gauge Level at Kakrapar Weir		Name of District Taluka	Signal for Village at Sr. No.		
		In Feet	In Meter		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
(5)	5,80,740	178.50	54.42	**Surat**			
	————			1. Choryasi	—	9,8,4,3	6,12
	16,444			2.Adajan	—	13,3	—
				3. Puna	8	—	6,7
				4. Majura	—	—	15
				5.Vyara(Tapi)	1	—	—
				6.Olpad	1 to 25	—	—
				7.Bardoli	4	—	—
				8.Mandvi	7,13,15,16,20,38,40,41	8	—
				9.Kamrej	46,11,5,45,7,48,2	4,8,20,25,26,29	—
(6)	6,90,370	180.50	55.03	**Surat**			
	————			1. Kamrej	54	46,11,5,45,7 48,2	4,8,20,25,26,29
	19.449						
				2. Mandavi	—	7,3,15,16,20	8
				3. Olpad	26 to 36	1 to 25	—
				4. Bardoli	—	4	—
				5.Vyara (Tapi)	—	1	—
				6.Majura	20	—	—
				7.Adajan	2,6,11	—	13,3
				8.Choryasi	10	—	9,4,8,3
				9.Puna	—	8	—
(7)	7,60,150	181.75	55.41	**Surat**			
	————			1. Olpad	37 to 43	26,36	1 to 25
	21,524			2. Vyara(Tapi)	—	—	1
				3. Majura	—	20	—
				4. Adajan	—	2,6,11	—
				5.Choryasi	—	10	—
				6.Bardoli	2,10	—	4
				7.Mandvi	23,27,32,9,33,22,12,28,37,31	—	15,13,20,1,6,7
				8.Kamrej	18,21,8,4,35,1,13,15,6,14,9,30,33,40	54	4,8,2,46,11,5,45,7

Sr. No.	Discharge at Kakrapar Weir in (Cus/Cum)	Gauge Level at Kakrapar Weir		Name of District Taluka	Signal for Village at Sr. No.		
		In Feet	In Meter		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
				9.Vyara (Tapi)	—	—	1
				10.Puna	—	—	8
(8)	8,90,760	184.00	56.10	**Surat**			
	————			1.Olpad	44 to 59	37 to 43	26 to 36
	25,223			2.Bardoli	6	2,10	
				3.Kamrej	16,28,34,39, 46	1,4,6,8,9,13,1 4,15,18,21,30, 33,35,40	54
				4.Mangrol	1,2	—	—
				5.Vyara (Tapi)	3	—	—
				6.Mandvi	5,11,14,24,3 0,34	23,27,32,9, 33,22,12,28,3 7,31	—
				7.Majura	1,2,4	—	20
				8.Adajan	—	—	2,6,11
				9.Choryasi	14,2,5,10, 13	—	10
				10. Udhna	3	—	—
(9)	9,50,950	185.00	56.40	**Surat**			
	————			1.Mandavi	29,39,10,36, 19,12,17,1	24,11,14,5, 30,34	23,27,32,9, 33,22, 12,28,37,3 1
	26,927			2.Bardoli	1	6	2,10
				3.Kamrej	—	16,39,34,46,2 8	18,21,8,4,3 5,1,13, 15,6,14,9,3 0,33,40
				4.Olpad	61 to 69	44 to 59	37 to 43
				5.Mangrol	—	1,2	—
				6. Vyara(Tapi)	—	3	—
				7.Choryasi	—	14,2,5,10,13	—
				8.Udhna	2,4,11	3	—
				9.Majura	—	1,2,4	—
(10)	10,00,000	185.70	56.40	**Surat**			
	————			1.Mandavi	26,35	29,39,10,36,1 9,12,17,1	24,11,14,5, 30,34
	28,317			2.Bardoli	12,13	1	6
				3.Kamrej	23,22,27,36	—	16,39,34,4 6,28
				4.Olpad	70 to 75	61 to 69	44 to 59

Sr. No.	Discharge at Kakrapar Weir in (Cus/Cum)	Gauge Level at Kakrapar Weir		Name of District Taluka	Signal for Village at Sr. No.		
		In Feet	In Meter		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
				5.Vyara (Tapi)	2,4	—	3
				6. Choryasi	—	—	14,2,5,10,13
				7.Udhna	3	2,4,11	3
				8.Majura	1,10,2,16,	—	4,2,1
				9.Puna	4	—	—
				10.Mangrol	4	—	—
(11)	11,00,000	187.20	57.05	**Surat**			
	————			1.Mandavi	—	26,35	29,39,10,36,19,12,17,1
	31,148			2.Bardoli	—	12,13	1
				3.Kamrej	—	23,22,27,36	—
				4.Olpad	—	70 to 75	61 to 69
				5.Vyara (Tapi)	—	2,4	—
				6. Udhna	—	3	2,4,11
				7.Majura	—	1,10,2,16	—
				8.Puna	—	4	—
				9.Mangrol	—	4	—
(12)	12,00,000	188.70	57.51	**Surat**			
	————			1.Mandavi	—	—	26,35
	33,980			2.Bardoli	—	—	12,13
				3.Kamrej	—	—	22,23,27,36
				4.Olpad	—	—	70 to 75
				5.Vyara (Tapi)	—	—	2,4
				6. Udhna	—	—	3
				7.Majura	—	—	1,10,2,16
				8.Puna	—	—	4
				9.Mangrol	—	—	1

Note: Refer Annexure 7-B for the villages likely to be affected by floods at different Water Levels.

ANNEXURE - 7 (D)
DRAIN NETWORK OF TAPI BASIN

Sr.No	Name of River / tributary	Bank	Elevation of source above m.s.l [m]	Length [K.m]	Catchment area [K.m^2]	% of total area
1	2	3	4	5	6	7
1	Tapi	Main Steam	752	724	22522	34.57
2	Gomai	Right	600	58	1148	1.76
3	Arunavati	Right	450	53	935	1.44
4	Buray	Left	600	64	1419	2.18
5	Panjhra	Left	600	138	3257	5.00
6	Bori	Left	600	130	2580	3.96
7	Aner	Right	600	94	1702	2.61
8	Girna	Left	900	260	10061	15.44
9	Waghur	Left	751	96	2592	3.98
10	Purna	Left	900	274	18929	29.06
			TOTAL	1896	65145	100

ANNEXURE - 7 (E)
EXISTING Water Resources Project IN TAPI BASIN

Sr. No	Name of Project	River	Status	*Capacity [MCM]*		*Utilisation*
				Gross	Live	
1	Chandora tank	Tapi	Medium	18.20	16.482	Irrigation
2	Sonkhedi tank	Local Nala	Medium	5.456	4.595	Irrigation
3	Girna Project	Girna	Medium	608.45	523.55	Irrigation
4	Manyad	Manyad	Medium	53.950	40.27	Irrigation
5	Bori	Bori	Medium	40.310	25.15	Irrigation
6	Hathnur	Tapi	Medium	388.00	255.0	Irrigation
7	Waghur	Waghur	Major	325.287	248.548	Irrigation & Hydro-power generation
8	Suki	Suki	Medium	50.160	39.85	Irrigation
9	Abhora	Boked Nalla	Medium	7.440	6.020	Irrigation
10	Bokar Bari	Bokar Bari Nalla	Medium	7.090	6.540	Irrigation
11	Agnawati	Agnawati	Medium	3.740	2.760	Irrigation
12	Tondapur	Khadki Nalla	Medium	6.304	4.636	Irrigation
13	Aner Project	Aner	Medium	103.23	56.380	Irrigation
14	Karwand Project	Arunawati	Medium	33.840	31.150	Irrigation
15	Panjhra Project	Panjhra	Medium	43.410	35.630	Irrigation
16	Malangaon	Kan	Medium	13.020	11.350	Irrigation
17	Kanholi	Khanholi	Medium	11.79	8.450	Irrigation
18	Burai	Burai	Medium	21.330	14.210	Irrigation
19	Arunawati	Arunawati	Medium	27.780	14.970	Irrigation
20	Rangwali	Rangwali	Medium	15.020	12.890	Irrigation
21	Nagasakya	Panzar	Medium	15.620	11.240	Irrigation
22	Haran Bari	Mousam	Medium	34.780	---	Irrigation

23	Ukai	Tapi	Major	8510	7092	Power & irrigation
24	Kakrapar	Tapi	Medium	Diversion	N.A	Irrigation
25	Ver-I	Ver	Medium	38.6	37.41	Irrigation
26	Lakhigav	Dhakni	Medium	4.9	4.61	Irrigation
27	Sulwade	Tapi	Medium	65.071	64.942	Irrigation
28	Saragkheda	Tapi	Medium	92.19	91.82	Irrigation

DETAILS OF C. W. C. OFFICES IN THE CATCHMENT OF UKAI DAM

1 SURAT

Executive Engineer
Tapi Division,
Central Water Commission,
Opp. Kshetrapal Health Center
Sagarampura,
SURAT
Ph.No. 0261-2478569

2 BHUSAWAL

Sub Divisional Engineer
Upper Tapi Sub Division
CWC,Opp. Yawal naka
Bhusawal,
Dist. Jalgaon
MAHARASHTRA
Ph.No.02582-222913

3 DHULIA

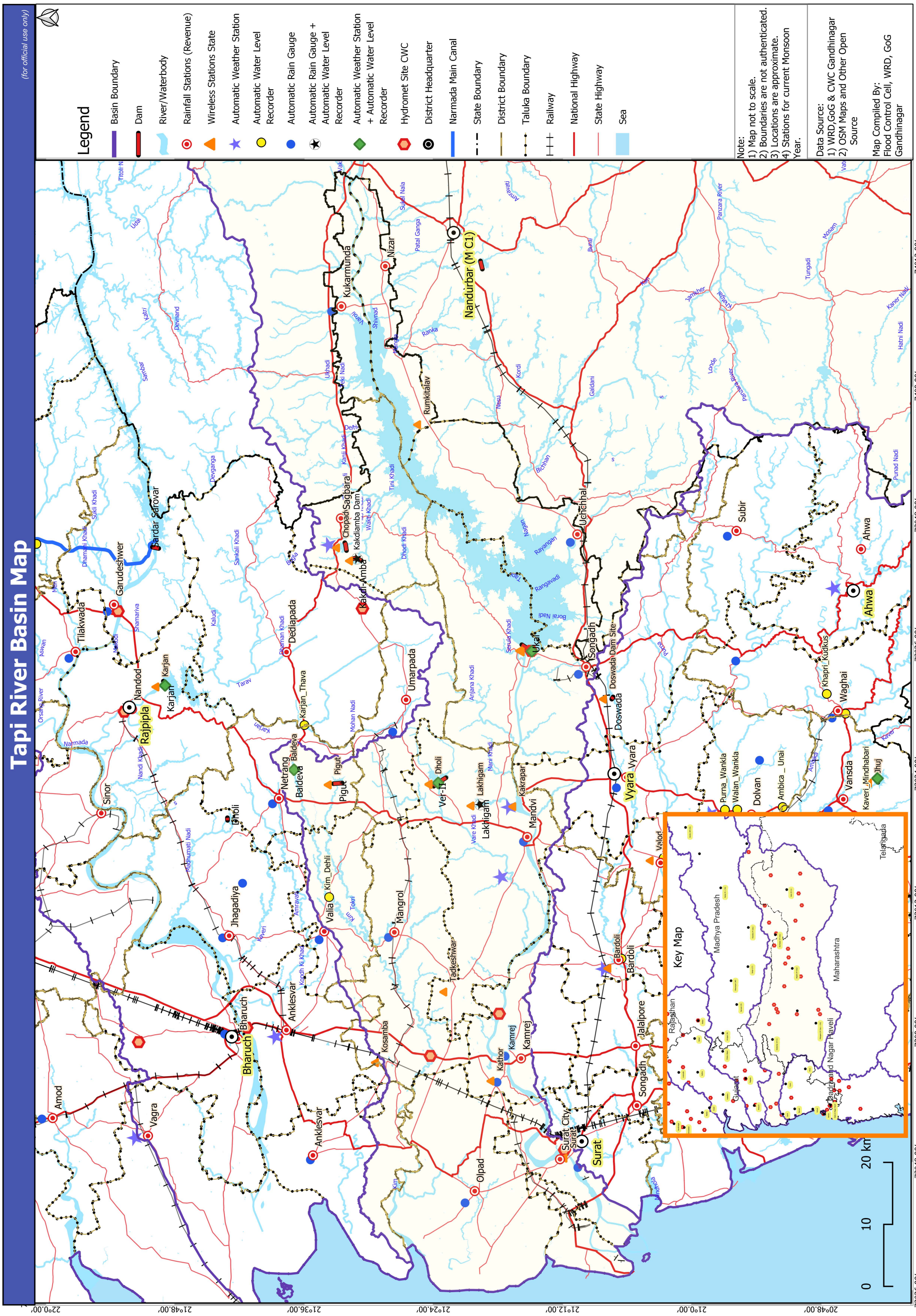
Sub Divisional Engineer
Middle Tapi Sub Division
CWC,Near Vidya Vardhani College
Sakri Road, Dhulia
Ph.No.02562-276147 M - 09420663145

4 SURAT

Sub Divisional Engineer
Lower Tapi Sub Division
CWC, Opp. Kshetrapal Health Center
Sagarampura,
SURAT
Ph.No. 0261-2478569 M - 9717262760

5 HATHNUR

Sub Divisional Engineer
Upper Tapi Sub Division
CWC, Opp. Yawalnaka
Bhushwal,
Dist. Jalgaon
MAHARASHTRA
Ph.No. 02582 – 222913


Tapi River Basin Map
(for official use only)
Legend
Basin Boundary
Dam
River/Waterbody
Rainfall Stations (Revenue)
Wireless Stations State
Automatic Weather Station
Automatic Water Level Recorder
Automatic Rain Gauge
Automatic Rain Gauge + Automatic Water Level Recorder
Automatic Weather Station + Automatic Water Level Recorder
Hydromet Site CWC
District Headquarter
Narmada Main Canal
State Boundary
District Boundary
Taluka Boundary
Railway
National Highway
State Highway
Sea
Note:
1) Map not to scale.
2) Boundaries are not authenticated.
3) Locations are approximate.
4) Stations for current Monsoon Year.
Data Source:
1) WRD,GoG & CWC Gandhinagar
2) OSM Maps and Other Open Source
Map Compiled By:
Flood Control Cell, WRD, GoG Gandhinagar
Key Map
Madhya Pradesh
Maharashtra
Gujarat
0
10
20 km
Surat
Bharuch
Rajpipla
Vyara
Ahwa
Nandurbar (M C1)
Ukai
Kakrapar
Bardoli
Songadh
Mandvi
Olpad
Kamrej
Ankleshwar
Valia
Nizar
Kukarmunda
Sagbara
Dediapada
Umarpada
Waghai
Subir
Uchchhal
Doswada
Vansda
Jhagadiya
Nandod
Garudeshwar
Tilakwada
Sardar Sarovar
Sinor
Amod
Vagra
Jalalpore

Annexure 7-D

NARMADA BASIN
(A.RAMI SUB BASIN, B.SUKHI SUB BASIN, C.KARJAN SUB BASIN)

8

8.0 NARMADA BASIN:

8.1.1 The flood forecasting system for Narmada Basin is being looked after by Superintending Engineer, Hydrological Observation Circle, Gandhinagar through his Executive Engineer, Tapti Division (C.W.C.) at Surat. The Executive Engineer, Narmada Division, Bhopal is entrusted and looked after the all wireless set in Madhya Pradesh (i.e. Sr. No. 1 to 13 in para 8.1.2). He has established various wireless stations at locations from where he can obtain the details about rainfall and discharges in the river. The gauge and rainfall data are being communicated, through wireless stations located on the main river as well as on tributaries. The responsibility of Flood Level Forecast of Mandla and Hosangabad, Bhopal w.e.f. monsoon - 2000. The Flood Forecast of Garudeshwar and Bharuch is still with Tapi Dn., Surat. As such, Tapi Division is collecting hydro-meteorological data from Garudeshwar to Bharuch only. Narmada Division, Bhopal is collecting hydro-meteorological data upstrime of Sardar Sarovar Dam.

8.1.2 Name of villages/dams where wireless stations are located to report rainfall and gauge discharges are as under:

A. C.W.C's Wireless Stations

1.	Manot	Madhya Pradesh
2.	Mawai	Madhya Pradesh
3.	Mohegaon	Madhya Pradesh
4.	Dindori	Madhya Pradesh
5.	Mukki	Madhya Pradesh
6.	Mandla	Madhya Pradesh
7.	Barmanghat	Madhya Pradesh
8.	Tawa Upstream/Downstream	Madhya Pradesh
9.	Panchmari	Madhya Pradesh
10.	Narmadapuram	Madhya Pradesh
11.	Morttakka	Madhya Pradesh
12.	Bargi Dam	Madhya Pradesh
13.	Sandiya	Madhya Pradesh
14.	Indra Sagar Dam	Madhya Pradesh
15.	Omkareshwar Dam	Madhya Pradesh
16.	Mandaleshwar	Madhya Pradesh
17.	Sardar Sarovar Dam	Gujarat State
18.	Garudeshwar	Gujarat State
19.	Rajpipla	Gujarat State
20.	Bodeli	Gujarat State
21.	Bharuch	Gujarat State

B. State's Wireless Stations.

1.	Karjan	Gujarat State
2.	Dholi	Gujarat State
3.	Fulwadi	Gujarat State
4.	Ghantoli Tal. Dediapada	Gujarat State

8.1.3 The plan of the river basin showing the wireless stations established together with gauge discharge and rain gauge stations and time lag statement is also appended vide **Annexure : 8-C-1 & 8-C-1.**

8.1.4 The list of villages with District and Taluka affected by floods of Narmada River are given vide Annexure : 8 (A-1) and list of villages affected at various levels at Garudeshwar and Bharuch are given in Annexure 8 (B-1.1) and 8 (B-1.2).

Flood forecasting of Karnali village is being done on the basis of the water level at Garudeshwar gauge site. Danger level of Karnali is 34.14 m (112 ft). Therefore, Garudeshwar water level reaches 34.14 m (i.e 112 ft), the water level will start entering into the village Karnali.

The runoff time from Narmada dam site to village Karnali will be approximately 2.5 hours and 1.5 hours from Garudeshwar.

8.1.5 The Executive Engineer, Tapti Division,(C.W.C.) Surat will inform Research Officer, Narmada Project Laboratory Division, Kevadia Colony about the release of discharge of 1.0 Lacs Cusecs(2832 Cumecs)and more from Tawa Dam (Madhya Pradesh) who in turn will inform the focal officer of Narmada Basin.

8.1.6 Action to be taken by the Executive Engineer, Tapti Division, (C.W.C.), Surat and other Officers.

TABLE - (8.1.6)

Note :- Please refer Flood Telephone Directory of the current year for telephone

Name of the Officer with Telephone Nos.	**Observation to be made by the Officer**	**Officer to whom the messages to be sent.**
(1)	**(2)**	**(3)**
Executive Engineer Tapti Division (C.W.C), Surat.	The Flood Level forecast of GARUDESHWAR & BHARUCH (Golden Bridge) shall be conveyed to the Officers in Column No. 3 (a) (c) to (e) (h) (i) & (l)	(a) Superintending Engineer, N.P.Head Works Circle New Administrative Block-B First floor, Kevadia-393151 (b) Executive Engineer N.P.Dam Division No.2 New Administrative Block-B, Second floor, Kevadia-393151. (c) Collector, Bharuch. (d) Collector, Narmada (e) Collector, Vadodara. (f) District Superintendent of Police, (i) Bharuch. (ii) Narmada (g) District Superintendent of Police (Rural), Vadodara. (h) The Research Officer, Narmada Project Laboratory Division, Kevadia Colony. (i) Flood Cell, "Narmada Bhavan" Vadodara.
Executive Engineer, Irrigation Project Division No.4, Rajpipla. (Incharge of Karjan Dam)	Communication about Rainfall, Water Level Waste Weir Overflow at 6.00 AM. or every hour as required through Wireless	(j) Superintending Engineer, Vadodara Irrigation Circle, Vadodara (k) Executive Engineer Tapti Division, (C.W.C)

Name of the Officer with Telephone Nos.	Observation to be made by the Officer	Officer to whom the messages to be sent.
(1)	(2)	(3)
	/Telephone to the Officers in Column No.3 at Sr. No. (a) (c) (d) (j) (k) & (l) (b)	(l) Flood Cell, Gandhinagar.
Executive Engineer N.P.Dam Division No.2 New Administrative Block-B, Kevadia-393151.	The Flood Level forecast of Orsang river shall be conveyed to officers in Column no.3 at Sr.no.(a), (d),(e),(f),(g) & (i)	
Dy. Executive Engineer Dholi Irri, Scheme, Rajpardi.	Communication about inflow/outflow, Flood rese-rvoir water level, rainfall etc. shall be conveyed to the Officers in Col. No. 3 @ Sr. No. (c) (d) (j) & (k)	

8.1.7 Statement showing the Time lag for various stations from origin to the end of river basin is as under. (From Site to Bharuch)

Sr. No.	Name of Site	Type of Site	State	Catchment Area in Sq. Kms.	Distance from Origin in Kms.	Danger Level in Meters	Time Lag in Hours
1	2	3	4	5	6	7	8
1.	MAWAI	W.R	M.P.	Only Rainfall recording stations			
2	DINDORI	W,G,D,R	M.P.	2292	97.00	—	90
3	MUKKI	W,G,R	M.P.	968	84.00	—	90
4	MANOT	W,G,D,R, S,Q	M.P.	4667	265.00	—	81
5	MOHEGAON	W,G,D,R, S,Q	M.P.	4090	160.00	—	82
6	MANDLA	W,G,D,R,F	M.P.	13000	296.00	437.80	78
7	BURMANGHAT	W,G,D,R S,Q	M.P.	26453	526.00	323.03	52
8	1. TAWA U/s	W,G,R	M.P	6060	126	—	36-37
	2. TAWA D/s	W,G,R,	M.P.	6060	126	—	36-37
9	HOSHANGABAD	W,G,D,R, F,S,Q	M.P.	44548	676	293.83	30
10	PANCHMARI	W,R	M.P.	Only Rainfall recording stations			
11	INDIRA SAGAR PROJECT	G	M.P.	61642	851.00	262.13 (FRL)	20
12	OMKARESHWAR PROJECT	G	M.P.	64880	893.00	196.60 (FRL)	16
13	MORTAKKA	W,G,D,R,S	M.P.	N.A.	908.00	162.75	15
14	BARWANI	W,G,D,R S,Q	M.P.	77674	1064.00	123.28	07
15	Dam Site	G	Gujarat	88000	1168.00	121.92 (CREST LEVEL)	0
16	GARUDESHWAR	W,G,D,R, F,S,Q	Gujarat	89345	1188.40	31.09	-1*

Sr. No.	Name of Site	Type of Site	State	Catchment Area in Sq. Kms.	Distance from Origin in Kms.	Danger Level in Meters	Time Lag in Hours
1	2	3	4	5	6	7	8
17	RAJPIPLA	W,G,R	Gujarat	1440	70	26.80	-(6-8)*
18	BODELI	W,G,R	Gujarat	2300	85	80.06	-(6-8)*
19	BHARUCH	W,G,R,F	Gujarat	98796	1271.00	7.31	-7*

Note: ***(1) W = Wireless D = Discharge F = Flood G = Gauge R = Rainfall S = Silt***
Q = Water Quality.
*(2) For calculating the Time Lag period considering the Dam Site (Sardar Sarovar) as (0) base.

8.1.8. Appropriate Authority (Focal Officer)

(A) Superintending Engineer
N.P.Head Works Circle,
New Administrative Block-B
First floor, Kevadia-393151

(B) For Dholi Irrigation Scheme
Superintending Engineer
Vadodara Irrigation Circle, Vadodara

Note:-
Please refer Flood Telephone Directory of the current year for Telephone Nos.

8.2 A - RAMI BASIN (Sub basin of Narmada River)

8.2.1 The river Rami is tributary of river Narmada reaching in through Heran and Orsang rivers.

8.2.2. Names of places where wireless stations are located to report rainfall gauge & discharge are as under:

1. Bodeli (Office of the Executive Engineer,
   Irrigation Project Division No.2, Bodeli)
2. Rami Dam site (near Khandibara village)
3. Vadodara (Vadodara Irrigation Circle, Vadodara)

8.2.3. Basin plan showing all the wireless stations established to gather with the rain gauge, water levels, discharges observation sites are given in Annexure 8-C-1.

8.2.4. The list of villages affected by the floods in river Rami at various stages at different levels is appended vide Annexure 8-A-2 & 8-B-2.

8.2.5 Action to be taken by various concerned officers.

TABLE – (8.2.5)

Note: Please refer Flood Telephone Directory of the current year for telephone nos.

Name of the Officer with Telephone Nos.	Observation to be made by the Officer	Officer to whom the messages to be sent.
(1)	(2)	(3)
Dy Executive Engineer (In charge of RAMI Dam) Under Rami Dam site Wireless Station	**Communication about Rain** fall, Water Level, Waste weir Over flow at 6.00 A.M. or every hour as required through Wireless / Telephone to be conveyed to the Officer in Column No. 3 at Sr. No. (b).	a) **Executive Engineer** Pipe Line Project Division No.1, Chhotaudepur
Bodeli Wireless Station under Executive Engineer Irrigation Project Division No.2, Bodeli	Communication about Rain fall, Water Level, Waste Weir Overflow at 6.00 A.M or Every one hour as required through Wireless/Telephone to the officers in column No.3 at Sr. No. (a) to (e)	b) Superintending Engineer Vadodara Irrigation Circle Vadodara c) Dy. Executive Engineer, Vadodara Irrigation Sub-Division, Vadodara i.e., Control Room. d) Executive Engineer Tapti Division (C.W.C), Surat. e) Superintending Engineer Designs. , N.P. (Dam & Power House) Circle, Vadodara.

8.2.6. **<u>Appropriate Authority</u> (Focal Officer)**

Superintending Engineer
Vadodara Irrigation Circle
Kothi Building, Vadodara

Note:-
Please refer Flood
Telephone Directory of the
current year for Telephone Nos.

8.3 B - SUKHI BASIN (Sub Basin of Narmada River)

8.3.1 The Sukhi River is tributary of Orsang river which is a tributary of Narmada river.

8.3.2 The flood forecasting for Sukhi river is being looked after by Superintending Engineer, Vadodara Irrigation Circle, Vadodara. Various wireless stations are established at suitable locations from where discharge and gauge data including rainfall data are obtained by Focal Officer.

8.3.3 Names of places of Wireless Stations installed in the basin are as under:

(1) Bodeli (Office of the Executive Engineer, Irrigation Project Division No. 2, Bodeli).

(2) Zoz

(3) Sukhi Dam Site.

(4) Wadhwana

(5) Vadodara (Office of the S.E, Vadodara Irrigation Circle, Vadodara).

8.3.4 Basin plan showing all the wireless stations established to gather with the rain gauge, water levels, discharges observation sites are given in Annexure: 8-C-1

8.3.5 The list of villages affected by the floods in river Sukhi at various stages at different levels is appended vide Annexure 8-A-3 & Annexure 8-B-3.

Action to be taken by various concerned officers.

TABLE – (8.3.5)

Note : Please refer Flood Telephone Directory of the current year for telephone

Name of the Officer with Telephone Nos.	Observation to be made by the Officer	Officer to whom the messages to be sent.
(1)	(2)	(3)
Zoz Wireless Station (under the control of Deputy Executive Engineer, Irrigation Project Sub Dn No. 10, Bodeli)	Communication about Rain fall, in up stream area to be submitted to the Dam site through wireless.	a) Dy. Executive Engineer Irrigation Project Sub-Division No.10, Bodeli (Incharge of Wireless Station at SUKHI Dam Site) (Dungarwant-Control Cabin)
SUKHI Dam Site Wireless Station (near village Dungarwant) under the control of Deputy Executive Engineer, Irrigation Project Sub-Dn. No. 10, Bodeli	Messages about Rain fall Spillway discharges of reservoir, Water level and messages received from Zoz Wireless Stations of up stream catchment area, information regarding Gauging Data Rainfall and Discharge etc. at 6.00 A.M. or every hour as required will be conveyed to the officers mentioned in Column No.3 at Sr. No. (a) to (d) (through Bodeli Wireless Station)	b) Dy. Executive Engineer Irrigation Project Sub Division No. 10, Bodeli c) Executive Engineer Irrigation Project Division No. 2, Bodeli (Admn. Block) d) Mamlatdar Pavi-Jetpur Taluka District, Vadodara. e) Superint. Engineer Vadodara Irrigation Circle, Vadodara
Bodeli Wireless Station in the Office of the Executive Engineer Irrigation Project Division No. 2 Bodeli.	Communication as above & other messages pertaining to floods to be conveyed to the officers mentioned in Column No. 3 at Sr. No. (e) to (h)	f) Superintending Engineer N.P.Head Works Circle New Administrative Block-B, Kevadia-393151. g) Executive Engineer, Tapti Division, (C.W.C), Surat, h) Collector, Bharuch.

8.3.6 **<u>Appropriate Authority</u> (Focal Officer)**

Superintending Engineer
Vadodara Irrigation Circle,
Kothi Building, Vadodara

Note:-
Please refer Flood Telephone Directory of the current year for Telephone Nos.

8.4 C - KARJAN BASIN: (SUB- BASIN OF NARMDA RIVER)

8.4.1 Karjan Dam is located on Karjan River near village Jitgadh. Karjan River is a tributary of Narmada River.

8.4.2 The flood forecasting for the Karjan River is being looked after by Superintending Engineer, Vadodara Irrigation Circle, and Vadodara.

8.4.3 Names of places of Wireless Stations installed in the basin are as under:

(1) Karjan Dam site

(2) Fulwadi

(3) Ghantoli

8.4.4 Basin plan showing all the wireless stations established is as per Annexure: 8-C-2

8.4.5 The list of villages affected by released from Karjan Dam on basis of Gauge & Discharge at Rajpipla Bridge, on river Karjan near Rajpipla is shown vide annexure: 8-A-4 & 8-B-4.

8.4.6 Action to be taken by various concerned officers.

TABLE - (8.4.6)

Note : Please refer Flood Telephone Directory of the current year for contact nos.

Name of the Officer with Telephone Nos.	**Observation to be made by the Officer**	**Officer to whom the messages to be sent.**
(1)	**(2)**	**(3)**
(A) Deputy Executive Engineer, Irrigation Project Sub-Division No. 27, Rajpipla	Communication about Inflow, Outflfow, Reservoir Water Level shall be conveyed to the officer at Sr. No.(a) to (h) of Column No.3	a) Superintending Engineer Vadodara Irrigation Circle Vadodara b) Executive Engineer Irrigation Project **Division No. 4** Rajpipla c) Superintending Engineer N.P.Head Works Circle New Admini. Block-B, 1st floor,Kevadia-393151 d) Executive Engineer Tapti Division (CWC), Surat e) Collect, Bharuch f) District Superintendent of Police, Bharuch Dist. g) Collector : Narmada h) Dist. Superintendent of Police, Narmada
8.4.7 Appropriate Authority (Focal Officer) Superintending Engineer Vadodara Irrigation Circle, Vadodara		**Note:-** Please refer Flood Telephone Directory of the current year for Telephone Nos.

ANNEXURE – 8 (A-1)

List of villages likely to be affected by floods in **Narmada River** on the basis of Gauge of **Garudeshwar & Bharuch sites.**

SR. NO.	BHARUCH TALUKA	SR. NO.	ANKLESHWAR TALUKA	SR. NO.	JHAGADIA TALUKA	SR. NO.	NANDOD TALUKA
	1		2		3		4

BHARUCH DISTRICT

1.	Bharuch City
2.	Dashan Bet
3	Kabirvad Bet
4	Shuklatirth
5.	Kelod
6.	Tavara Bet
7	Nikora
8.	Dashan
9.	Jhanor
10.	Mangaleswar
11.	Sindhot
12.	Vadava
13.	Karjan
14.	Jhadeshwar

1.	Khalpiya
2.	Sarfuddin
3.	Juna Kansia
4.	Juna Chhapara
5.	Koyali-Dhanturiya
6.	Taria Bawli
7.	Juna Haripura
8.	Borbhatha (Bet)
9.	Juna Borbhatha
10.	Ankleshwar
11.	Sakkarpora
12.	Pungam
13.	Divi
14.	Diva
15.	Sajod

BHARUCH DISTRICT

1	Hansot

NARMADA DISTRICT

1.	Ore
2.	Patar
3.	Juni Tarasali
4.	Juna Tothidra
5	Juna Pora
6.	Indor
7.	Juni Jarasad
8.	Mota Vasana
9.	Nana Vasana
10.	Bhalod
11.	Limodara
12.	Vadhavana
13.	Velugam
14.	Vanakpor
15.	Panetha
16.	Kakalpur
17.	Sarsad
18.	Uchedia
19.	Krushnapuri

1.	Sisodra
2	Bhadam
3.	Mangrol
4.	Guvar
5.	Rampura
6.	Rajpipla
7.	Ori
8.	Navapura
9.	Dhamnacha
10.	Dhanpor
11.	Bhacharwada
12.	Hajarpara
13.	Saherav
14.	Varachha
15.	Sanjaroli
16.	Akteshwar
17.	Surajvad
18.	Ghambhipura
19.	Poicha
20.	Garudeshwar
21	Gora
22	Rundh
23	Vansla

VADODARA DISTRICT

KARJAN TALUKA

1.	Pura
2	Alampura
3.	Lilaipura
4.	Nani Koral
5.	Moti Koral
6.	Juna Sayar

DHABOI TALUKA

1.	Chandod
2.	Karmali
3	Nanderia

SINOR TALUKA

1.	Madhi Devasthan
2.	Ansuya Temple
3	Malsar
4.	Barkal

TILAKWADA TALUKA OF NARMADA DIST.

1.	Vasan
2.	Vadia
3.	Virpur
4.	Renghan

Note: (1) Refer Annexures 8(C-1.1) & 8 (C-1.2) for villages to be affected at different Water Levels.

ANNEXURE – 8 (B-1.1)

Statement showing villages affected by floods of **Narmada River** on the basis of Gauge Level at **Garudeshwar Gauge Site**.

Sr. No.	Gauge Level at Garudeshwar		Name of District Taluka	Signal for Village at Sr. No.		
	In Feet	In Meter		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7
NOTE :- 1 **WHITE SIGNALS** : ALERT 2 **BLUE SIGNALS** : READY FOR EVACUATION 3 **RED SIGNALS** : IMMEDIATE EVACUATION						
1.	100.00	30.48	**Vadodara** ——— 2. Dabhoi	1	—	—
2.	101.00	30.78	**Vadodara** ——— 2. Dabhoi	—	1	—
3.	102.00	31.09	**Vadodara** ——— 2. Dabhoi	—	—	1
4.	103.00	31.39	**Narmada** ——— 4. Nandod	1	—	—
5.	104.00	31.70	**Narmada** ——— 4. Nandod	—	1	—
6.	105.00	32.00	**Vadodara** ——— 3. Sinor **Narmada** ——— 4. Nandod	1 —	— —	— 1
7.	106.00	32.31	**Vadodara** ——— 3. Sinor	—	1	—
8.	107.00	32.61	**Vadodara** ——— 3. Sinor	—	—	1
9	108.00	32.92	**Narmada** ——— 4. Nandod	2&3	—	—

Sr. No.	Gauge Level at Garudeshwar		Name of District Taluka	Signal for Village at Sr. No.		
	In Feet	In Meter		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7
10.	109.00	33.22	**Narmada**			
			4. Nandod	—	2 & 3	—
11.	110.00	33.53	**Narmada**			
			4. Nandod	**—**	**—**	**2 & 3**
12.	111.00	33.83	**Vadodara**			
			3. Sinor	2	—	—
			Narmada			
			4. Nandod	4 to 6	—	—
13.	112.00	34.14	**Vadodara**			
			2. Dabhoi	2	—	—
			3. Sinor	3	2	—
			Narmada			
			4. Nandod	—	4 to 6	—
14.	113.00	34.44	**Vadodara**			
			2. Dabhoi	—	2	—
			3. Sinor	—	3	2
			Narmada			
			4. Nandod	—	—	4 to 6
15.	114.00	34.75	**Vadodara**			
			2. Dabhoi	—	—	2
			3. Sinor	—	—	3
			Narmada			
			4. Nandod	7	—	—
16.	115.00	35.05	**Narmada**			
			4. Nandod	—	7	—

Sr. No.	Gauge Level at Garudeshwar		Name of District Taluka	Signal for Village at Sr. No.		
	In Feet	In Meter		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7
17.	116.00	35.36	**Narmada** ———— 4. Nandod	—	—	7
18.	117.00	35.66	**Narmada** ———— 4. Nandod	8 to 10	—	—
19.	118.00	35.96	**Vadodara** ———— 2. Dabhoi	3	—	—
			Narmada ———— 4. Nandod	—	8 to 10	—
20	119.00	36.27	**Vadodara** ———— 2. Dabhoi	—	3	—
			Narmada ———— 4. Nandod	—	—	8 to 10
21	120.00	36.57	**Vadodara** ———— 2. Dabhoi	—	—	3
			Narmada ———— 4. Nandod	11 to 12	—	—
22	121.00	36.88	**Narmada** ———— 4. Nandod	13	11 to 12	—
23.	122.00	37.18	**Narmada** ———— 4. Nandod	—	13	11 to 12
24.	123.00	37.49	**Narmada** ———— 4. Nandod	—	—	13
25.	125.00	38.10	**Narmada** ———— 4. Nandod	14 to 15	—	—

Sr. No.	Gauge Level at Garudeshwar		Name of District Taluka	Signal for Village at Sr. No.		
	In Feet	In Meter		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7
26	126.00	38.40	**Narmada** ——— 4. Nandod	—	14 to 15	—
27.	127.00	38.71	**Narmada** ——— 4. Tilakwada	1	—	—
			Narmada ——— 4. Nandod	—	—	14 to 15
28.	128.00	39.01	**Narmada** ——— 4. Tilakwada	—	1	—
			Narmada ——— 4. Nandod	16	—	—
29.	129.00	39.32	**Narmada** ——— 4.Tilakwada	—	—	1
			Narmada ——— 4. Nandod	—	16	—
30.	130.00	39.62	**Narmada** ——— 4.Tilakwada	2 to 3	—	—
			Narmada 4. Nandod	—	—	16
31.	131.00	39.93	**Narmada** 4. Tilakwada	—	2 to 3	—
			Narmada ——— 4. Nandod	17	—	—
32.	132.00	40.23	**Narmada** ——— 4. Tilakwada	4	—	2 to 3
			Narmada ——— 4. Nandod	18 to 22	17	—

Sr. No.	Gauge Level at Garudeshwar		Name of District Taluka	Signal for Village at Sr. No.		
	In Feet	In Meter		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7
33.	133.00	40.54	**Narmada**			
			4.Tilakwada	5	4	—
			Narmada			
			4. Nandod	—	18 to 22	17
34.	134.00	40.84	**Vadodara**			
			3. Sinor	4	—	—
			Narmada			
			4.Tilakwada	—	5	4
			Narmada			
			4. Nandod	—	—	18 to 22
35.	135.00	41.15	**Vadodara**			
			3. Sinor	—	4	—
			Narmada			
			4.Tilakwada	—	—	5
			Narmada			
			4. Nandod	23	—	—
36.	136.00	41.45	**Vadodara**			
			3.Sinor	—	—	4
			Narmada			
			4. Nandod	—	23	—
37.	137.00	41.76	**Narmada**			
			4.Nandod	—	—	23

Note: Refer Annexure - 8-(B-1) for the names of villages mentioned in column Nos. 5 to 7

ANNEXURE - 8 (B-1.2)

Statement showing villages affected by floods of **Narmada River** on the basis of Gauge Level at Golden **Bridge Site, Bharuch**.

Sr. No.	Gauge Level at Golden Bridge		Name of District Taluka	Signal for Village at Sr. No.		
	In Feet	In Meter		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7
NOTE :- **1 WHITE SIGNALS** : ALERT **2 BLUE SIGNALS** : READY FOR EVACUATION **3 RED SIGNALS** : IMMEDIATE EVACUATION						
1.	22.00	6.71	**Bharuch** ————			
			1. Bharuch	1	—	—
			2. Ankleshwar	1 to 2	—	—
2.	23.00	7.01	**Bharuch** ————			
			1. Bharuch	—	1	—
			2. Ankleshwar	—	1 to 2	—
3.	24.00	7.31	**Bharuch** ————			
			1. Bharuch	—	—	1
			2. Ankleshwar	—	—	1 to 2
4.	25.00	7.62	**Bharuch** ————			
			2. Ankleshwar	3	—	—
5.	26.00	7.92	**Bharuch** ————			
			1. Bharuch	2 to 3	—	—
			2. Ankleshwar	4 to 6	3	—
6.	27.00	8.23	**Bharuch** ————			
			1. Bharuch	—	2 to 3	—
			2. Ankleshwar	—	4 to 6	3
7.	28.00	8.53	**Bharuch** ————			
			1. Bharuch	—	—	2 to 3
			2. Ankleshwar	—	—	4 to 6
			3. Jhagadia	1 to 5	—	—
8.	29.00	8.84	**Bharuch** ————			
			1. Bharuch	4 to 5	—	—
			2. Ankleshwar	7	—	—
			3. Jhagadia	—	1 to 5	—

Sr. No.	Gauge Level at Golden Bridge		Name of District Taluka	Signal for Village at Sr. No.		
	In Feet	In Meter		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7
9.	30.00	9.14	**Bharuch**			
			1. Bharuch	6	4 to 5	—
			2. Ankleshwar	8 to 9	7	—
			3. Jhagadia	6 to 8	—	1 to 5
10.	31.00	9.45	**Bharuch**			
			1. Bharuch	—	6	4 to 5
			2. Ankleshwar	—	8 to 9	7
			3. Jhagadia	—	6 to 8	—
			Vadodara			
			1. Karjan	1	—	—
11.	32.00	9.75	**Bharuch**			
			1. Bharuch	—	—	6
			2. Ankleshwar	10	—	8 to 9
			3. Jhagadia	9	—	6 to 8
			Vadodara			
			1. Karjan	—	1	—
12.	33.00	10.06	**Bharuch**			
			2. Ankleshwar	11 to 14	10	—
			3. Jhagadia	—	9	—
			Vadodara			
			1. Karjan	—	—	1
13.	34.00	10.36	**Bharuch**			
			2. Ankleshwar	—	11 to 14	10
			3. Jhagadia	—	—	9
			Vadodara			
			1. Karjan	2	—	—
14.	35.00	10.67	**Bharuch**			
			2. Ankleshwar	—	—	11 to 14
			3. Jhagadia	10 to 11	—	—
			5. Hansot	1	—	—

Sr. No.	Gauge Level at Golden Bridge		Name of District Taluka	Signal for Village at Sr. No.		
	In Feet	In Meter		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7
			Vadodara			
			1. Karjan	—	2	—
15.	36.00	10.97	**Bharuch**			
			3. Jhagadia	—	10 to 11	—
			5. Hansot	—	1	—
			Vadodara			
			1. Karjan	3	—	2
16.	37.00	11.28	**Bharuch**			
			1. Bharuch	7 to 8	—	—
			2. Ankleshwar	—	—	—
			3. Jhagadia	12	—	10 to 11
			5. Hansot	—	—	1
			Vadodara			
			1. Karjan	—	3	—
17.	38.00	11.58	**Bharuch**			
			1. Bharuch	9 & 10	7 to 8	—
			3. Jhagadia	13	12	—
			Vadodara			
			1. Karjan	—	—	3
18.	39.00	11.89	**Bharuch**			
			1. Bharuch	11	9 & 10	7to 8
			3. Jhagadia	—	13	12
19.	40.00	12.19	**Bharuch**			
			1. Bharuch	12	11	9 & 10
			2. Ankleshwar	15	—	—
			3. Jhagadia	14 to 17	—	13

Sr. No.	Gauge Level at Golden Bridge		Name of District Taluka	Signal for Village at Sr. No.		
	In Feet	In Meter		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7
			Vadodara			
			1. Karjan	4 to 5	—	—
20.	41.00	12.50	**Bharuch**			
			1. Bharuch	—	12	11
			2. Ankleshwar	—	15	—
			3. Jhagadia	18 to 19	14 to 17	—
			Vadodara			
			1. Karjan	—	4 to 5	—
21.	42.00	12.80	**Bharuch**			
			1. Bharuch	—	—	12
			2. Ankleshwar	—	—	15
			3. Jhagadia	—	18 to 19	14 to 17
			Vadodara			
			1. Karjan	6	—	4 to 5
22.	43.00	13.11	**Bharuch**			
			1. Bharuch	13	—	—
			3. Jhagadia	—	—	18 to 19
			Vadodara			
			1. Karjan	—	6	—
23.	44.00	13.41	**Bharuch**			
			1. Bharuch	14	13	—
			Vadodara			
			1. Karjan	—	—	6
24.	45.00	13.72	**Bharuch**			
			1. Bharuch	—	14	13
25.	46.00	14.02	**Bharuch**			
			1. Bharuch	—	—	14

Note:-Refer Annexure - 8 - (B-1) for the names of villages mentioned in column Nos. 5 to 7.

ANNEXURE - 8 (A-2)

List of villages likely to be affected by floods in **Rami River** on the basis of Gauge of **Rami Dam Spillway.**

CHHOTAUDEPUR DISTRICT

Sr.No.	KAWANT TALUKA	Sr.No.	KAWANT TALUKA
1.	Zalawant	5.	Vijli
2.	Devadh	6.	Mota Wanta
3.	Chiliyavant	7.	Khandibara
4.	Deri	8.	Moti Sankal

Note: (1) Refer Annexures 8 (B-2) for villages to be affected at different Water Levels.

ANNEXURE - 8 (B-2)

List of villages likely to be affected by floods in **Rami River** on the basis of Gauge of **Rami Dam & Discharge over weir.**

Sr. No.	Gauge Level at Rami Dam & Disc. Over Waste Weir		Name of District Taluka	Signal for Village at Sr. No.		
	Mt. CUM	Ft. CUS		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7
NOTE :- **1 WHITE SIGNALS** : ALERT **2 BLUE SIGNALS** : READY FOR EVACUATION **3 RED SIGNALS** : IMMEDIATE EVACUATION						
1.	196.30	644.06	**Chhotaudepur**			
	—	—	1.Kawant	1 to 8	—	—
2.	196.50	644.72	**Chhotaudepur**			
	18.71	660.76	1. Kawant	—	1 to 8	—
3.	196.90	646.03	**Chhotaudepur**			
	131.37	4639.29	1. Kawant	—	—	1 to 8

Note: - Refer Annexure 8 (B-2) for the names of villages mentioned in Column Nos. 5 to 7.

ANNEXURE - 8 (A-3)

List of villages likely to be affected by floods in **Sukhi River** on the basis of **Sukhi Dam Spillway**

CHHOTAUDEPUR DISTRICT

Sr. No.	PAVI JETPUR (JABUGAM) TALUKA	Sr. No.	PAVI JETPUR (JABUGAM) TALUKA
1.	Moti bej	12.	Sithol
2.	Amadra	13.	Dungarwant
3.	Waghwa	14.	Khandia
4.	Kikawada	15.	Koliyari
5.	Hood	16.	Lodhan
6.	Vadesia	17.	Gambhirpura
7.	Moti Rasli	18.	Gutanvad
8.	Ghutia	19.	Palia
9.	Nani bej	20.	Sajod
10.	Thalki	21.	Sihod
11.	Nani Rasli		

Note: (1) Refer Annexures 8 (B-3) for villages to be affected at different releases from Sukhi Dam.

ANNEXURE - 8 (B-3)

List of villages likely to be affected by floods in Sukhi River on the basis of Gauge of Sukhi Dam Spillway.

Sr. No.	Discharge Released from Spillway		Name of District Taluka	Signal for Village at Sr. No.		
	CUMECS	CUSECS		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7
NOTE :- **1 WHITE SIGNALS** : ALERT **2 BLUE SIGNALS** : READY FOR EVACUATION **3 RED SIGNALS** : IMMEDIATE EVACUATION						
1.			**Chhotaudepur**			
	1133	40,000	1. Pavi Jetpur	1 to 3	—	—
2.			**Chhotaudepur**			
	1700	60,000	1. Pavi Jetpur	4 to 7	1 to 3	—
3.			**Chhotaudepur**			
	2267	80,000	1. Pavi Jetpur	8 to 12	4 to 7	1 to 3
4.			**Chhotaudepur**			
	2834	1,00,000	1. Pavi Jetpur	13 to 16	8 to 12	4 to 7

Sr. No.	Discharge Released from Spillway		Name of District Taluka	Signal for Village at Sr. No.		
	CUMECS	CUSECS		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7
5.			**Chhotaudepur**			
	3401	1,20,000	1. Pavi Jetpur	17 to 21	13 to 16	8 to 12
6.			**Chhotaudepur**			
	3968	1,40,000	1. Pavi Jetpur	—	17 to 21	13 to 16
7.			**Chhotaudepur**			
	4535	1,60,000	1. Pavi Jetpur	—	—	17 to 21

Note: Refer Annexure 8 (B-3) for the names of villages mentioned in Column Nos. 5 to 7.

ANNEXURE - 8 (A-4)

Statement showing the villages affected by floods in **Karjan River** on the basis of Gauge of **Rajpipla Bridge** near **Rajpipla.**

Sr.No.	NANDOD TALUKA

NARMADA DISTRICT

1. Rajpipla
2. Bhadam
3. Bhacharwada
4. Hazarpura
5. Dhanpor
6. Dhamnacha

Note: (1) Refer Annexures 8 (B-4) for villages to be affected at different Water Levels.

ANNEXURE – 8 (A-5)

Statement showing the villages affected by Floods in **MADHUMATI RIVER**, tributary of Narmada River on the basis of overflow from **Dholi Irrigation Scheme.**

Sr.No.	Name of Taluka	Name of District	Name of Affected Villages
1.	Jhagadia	Bharuch	1. Dholi 2. Rajalwada 3. Mota Sorva 4. Rajpardi 5. Bilwada 6. Kantol 7. Sarsa 8. Kapat 9. Vanakpor

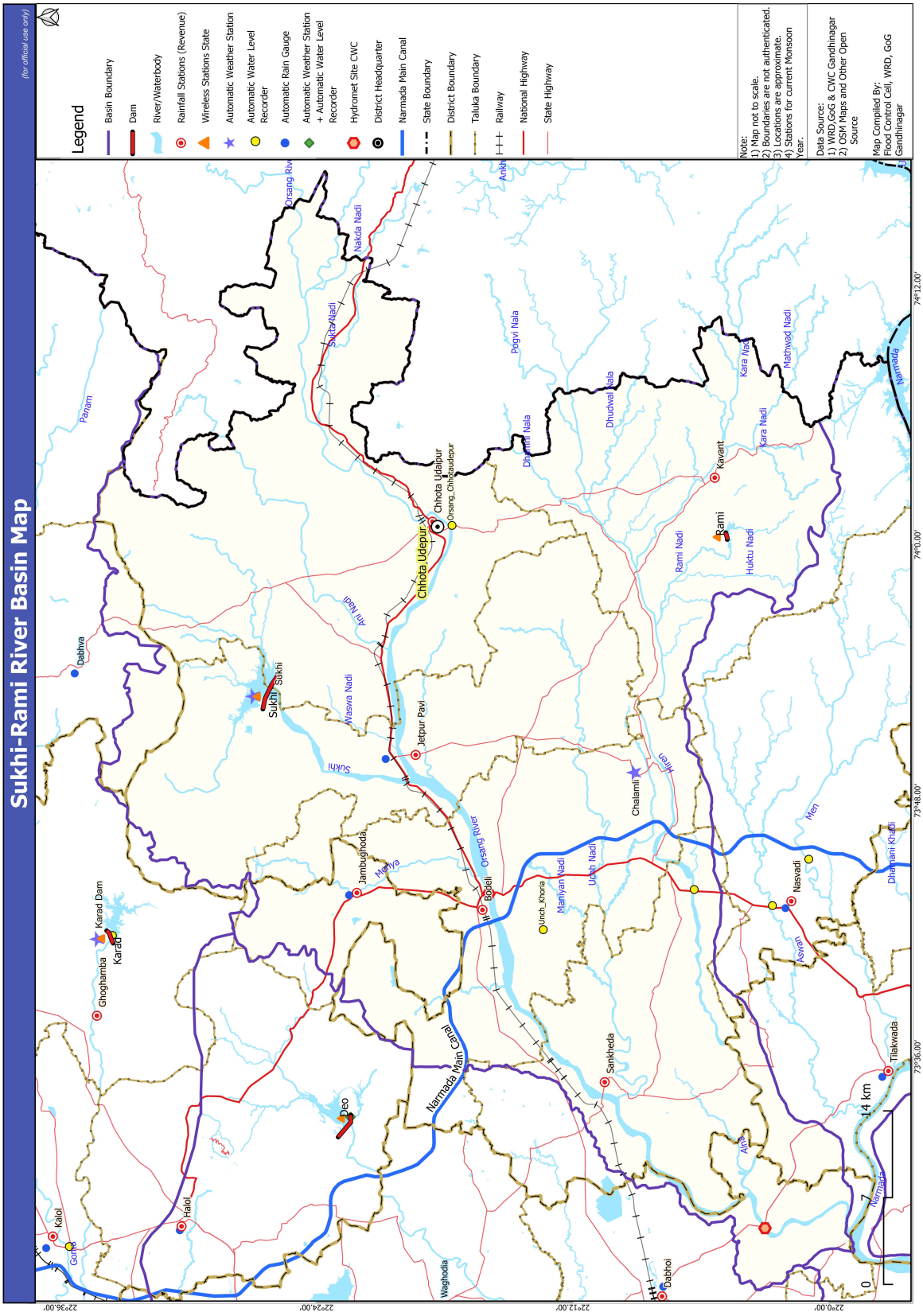
ANNEXURE - 8 (B - 4)

Statement showing villages affected due to flood/discharge in **KARJAN RIVER** on the basis of Gauge Station situated at **Rajpipla Bridge**.

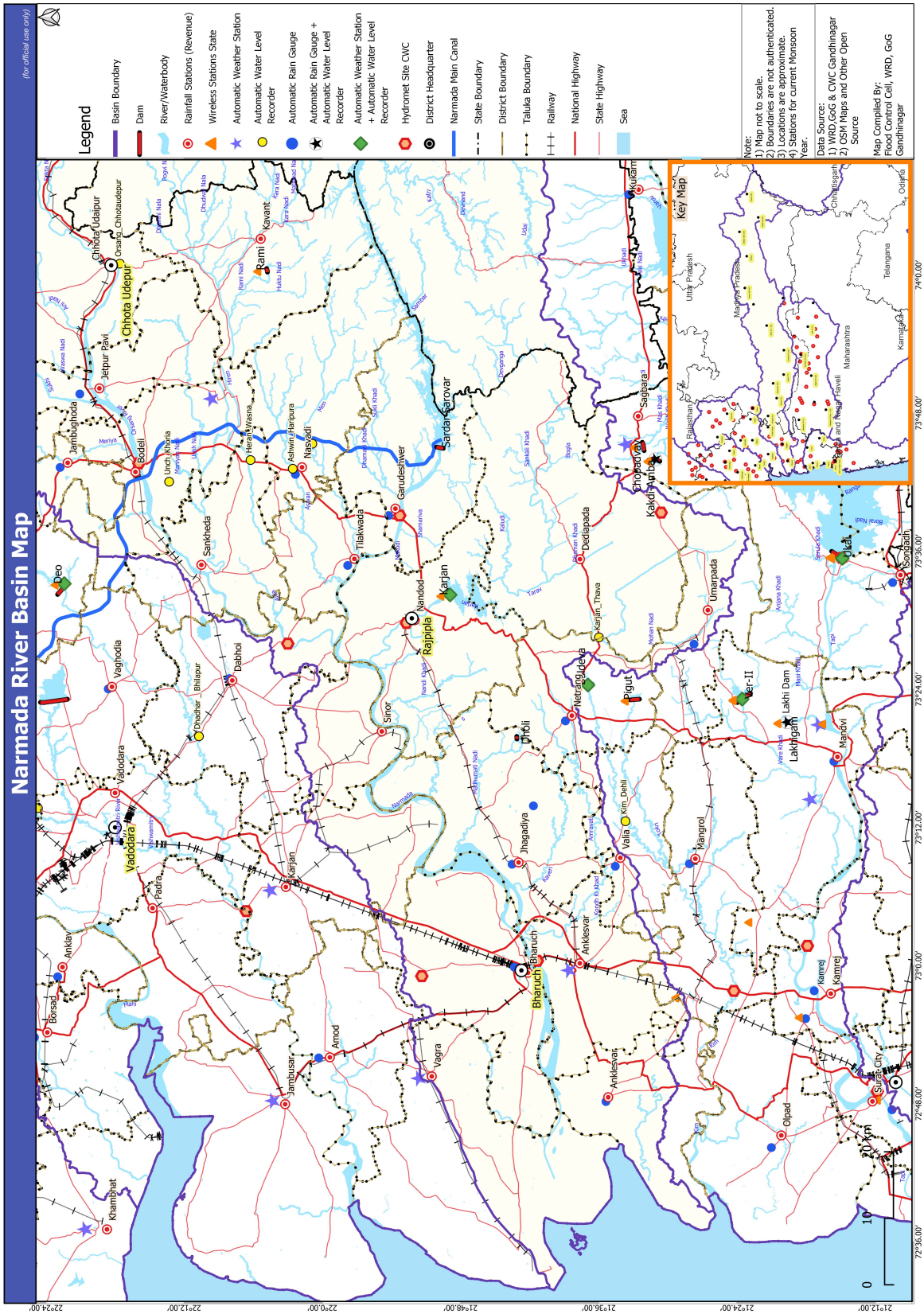
Sr. No.	Discharge Released from Karjan Dam (Cusecs)	Gauge Level at Rajpipla Bridge		Name of District Taluka	Signals for Villages at Sr. No.		
		In Feet	In Meter		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
NOTE :- **1 WHITE SIGNALS** : ALERT **2 BLUE SIGNALS** : READY FOR EVACUATION **3 RED SIGNALS** : IMMEDIATE EVACUATION							
1.	100000	85.14	25.96	**Narmada** 1. Nandod	1	—	—
2.	106000	85.60	26.10	**Narmada** 1. Nandod	—	1	—
3.	118000	86.60	26.40	**Narmada** 1. Nandod	—	—	1
4.	142000	88.63	27.02	**Narmada** 1. Nandod	2	—	—
5.	148000	89.08	27.16	**Narmada** 1. Nandod	—	2	—
6.	150000	89.24	27.20	**Narmada** 1. Nandod	—	—	2
7.	196000	92.33	28.15	**Narmada** 1. Nandod	3	—	—
8.	204000	92.82	28.30	**Narmada** 1. Nandod	—	3	—
9.	216000	93.51	28.51	**Narmada** 1. Nandod	—	—	3
10.	260000	98.97	29.26	**Narmada** 1. Nandod	4	—	—

Sr. No.	Discharge Released from Karjan Dam (Cusecs)	Gauge Level at Rajpipla Bridge		Name of District Taluka	Signals for Villages at Sr. No.		
		In Feet	In Meter		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
11.	267000	96.39	29.39	**Narmada** 1. Nandod	—	4	—
12.	278000	96.98	29.57	**Narmada** 1. Nandod	—	—	4
13.	424000	104.43	31.84	**Narmada** 1. Nandod 5 to 6	—	—	
14.	437000	105.03	32.02	**Narmada** 1. Nandod	—	5 to 6	—
15.	451000	105.71	32.23	**Narmada** 1. Nandod	—	5 to 6	—

Note: - Refer Annexure 8-B-4 for the villages likely to be affected by floods at different Water Levels.



Annexure 8-C-1



Annexure 8-C-2

9.0 MAHI BASIN

9.1 As stated earlier, the flood forecasting system for Mahi River Basin is being looked after by the Officer of Executive Engineer, Mahi Division (C.W.C.), Gandhinagar under the control of The Superintending Engineer, Hydrological Observation Circle, and Gandhinagar. He has established various Wireless Stations at locations from where he can obtain the details about rainfall and discharges in the river. The gauge and rainfall data are being communicated, through Wireless Stations located at various stations on the main river as well as on the tributaries.

9.2 Name of villages/dams where Wireless Stations are located to report rainfall and gauge discharges are as under:

A. C.W.C's Wireless Stations.

1.	Paderdibadi	Rajasthan State
2.	Mahi Dam (Bajaj Sagar Dam)	Rajasthan State
3.	Dhariawad	Rajasthan State
4.	Anas Dam Site	Rajasthan State
5.	Som Kamla Amba Dam	Rajasthan State
6.	Mataji	Madhya Pradesh State
7.	Diwada Colony(Kadana Dam)	Gujarat State
8.	Panam Dam	Gujarat State
9.	Wanakbori Weir	Gujarat State
10.	Chakaliya	Gujarat State
11.	Khanpur	Gujarat State

B. State's Wireless Stations.

1.	Nadiad	Gujarat State
2.	Kadana Dam	Gujarat State
3.	Panam Dam	Gujarat State
4.	Wanakbori Weir (Mahisagar)	Gujarat State
5.	Diwada Colony	Gujarat State
6.	Sant Road Weir	Gujarat State
7.	Addition Spillway (Kadana)	Gujarat State

9.3. Statement showing the villages affected at various signals at different levels in Mahi river enclosed vide Annexure 9-A and 9-B respectively and for Panam river is appended in Annexure 9-A-1 & 9-B-1 respectively.

9.4 Basin Map showing all the wireless stations established including gauge, discharges and rain gauge station and time-lag statement, is appended vide Annexure 9-C.

9.5 Kadana reservoir is located on Mahi River at Kadana in Gujarat State, which is moderating the flood in Mahi River. There are other dams viz. Mahi dam (Bajaj Sagar) and Anas dam site (on upper catchment) situated in Rajasthan State on Mahi

River and Anas River, which is a tributary of Mahi River. There is Panam dam on Panam river, which is a tributary of Mahi river meeting on the downstream of Kadana dam and situated in Gujarat State. Panam reservoir on this river also helps in moderating the floods in Mahi River.

9.6 Action to be taken by the Executive Engineer, Mahi Division (C.W.C.), Gandhinagar i.e.

1. Formulation and dissemination of Flood Forecast of Kadana Dam and

Wanakbori Weir.

2. Sharing of hourly observed Gauge, estimated discharge and rainfall data of site Paderdibadi and Anas PH-II, as per data dissemination schedule (0000, 0300,0600,0800,1000,1200,1500,1800, 2100 hrs).

TABLE - 9.6

Note: - Please refer Flood Telephone Directory of the current year for contact Nos.

Name of Office	**Observation to be made by the Officer**	**Officer to whom the messages to be sent.**	
(1)	**(2)**	**(3)**	
(A) Executive Engineer Mahi Division, CWC, Gandhinagar	The Flood inflow forecast of Kadana dam, Wanakbori Weir shall be conveyed to the Officer in Column No. 3 Sr. No. (a),(b), (c),(e), & (s) Whenever it is likely to cross warning level	(a)	Superintending Engineer, Mahi Irrigation Circle Nadiad.
		(b)	Superintending Engineer Panam Project Circle Godhra.
	Hourly rainfall Data of Kadana Dam and Wanakbori weir may be conveyed to the officers at Sr. No. (a), (b), (c), (e) & (s) for deciding the inflow from Kadana reservoir.	(c)	Superintending Engineer Panam Project Circle Godhra.
		(d)	Executive Engineer, Kadana Div. No. 1, Diwda Colony
(B) Superintending Engineer Mahi Irrigation Circle, Nadiad.	Any Flood Forecast received from above (A) regarding the crossing of warning level at Wanakbori should be conveyed to officer at Sr. No. (b) to (u) except (p)	(e)	Executive Engineer, Nadiad Irrigation Division, Nadiad
		(f)	Collector, Panchmahals Dist., Godhra
		(g)	Collector Vadodara Dist., Vadodara
(C) Executive Engineer Panam Project Division, Godhra	Daily Information regarding Water Level in U/s & D/s of Panam Dam, Water released through Sluice or Spillway from Panam Dam to be conveyed to the Officer in Column	(h)	Collector, Kheda, Dist., Kheda
		(i)	Collector, Anand, Dist., Anand

Name of Office	Observation to be made by the Officer	Officer to whom the messages to be sent.	
(1)	(2)	(3)	
	No. 3 at Sr. No. (a) to (e), (l) &(m)	(j)	Dist. Superintendent of Police Panchmahals District, Godhra
		(k)	Collector, Dhaod Dist., Dahod
(D) Executive Engineer Kadana Div. No. 1 Diwda Colony	Outflow from Kadana Reservoir to be conveyed to the Officers in Column No. 3 at Sr. No. (a) to (c), (l) (m)& (n)	(l)	Dist. Superintendent of Police Dist. Dahod
		(m)	Dist. Superintendent of Police Kheda
	The Inflow forecast of 1 Las Cusecs (2832 Cumecs) or more coming in to KADANA Dam shall be conveyed to the Officers in Column No. 3 at Sr. No. (a),(b) & (s)	(n)	Dist. Superintendent of Police Anand
		(o)	Dist. Superintendent of Police Vadodara(Rural)
		(p)	Executive Engineer, Mahi Dn. (C.W.C.) Gandhinagar
		(q)	Flood Cell, Godhra
		(r)	Executive Engineer Panam Project Division Godhra
		(s)	Flood Control Cell Gandhinagar
		(t)	Collector, Mahisagar Dist. Lunawada
		(u)	Dist. Sup. of Police, Mahisagar Dist. Lunawada

9.7 Statement showing the time lag for various stations from origin to the end of river basin are as under:

Sr. No.	NAME OF SITE	TYPE OF SITE	STATE	CATCH-MENT AREA (In Sq. Kms)	DISTANCE FROM ORIGIN (In Kms)	DANGER LEVEL (In Meter)	TIME LAG (In Hours)
1	2	3	4	5	6	7	9
1	BANSWADA	W,R,F,D	Rajasthan	1540	215.60	—	13-27
2	KADANA	W,R,F,D	Gujarat	25520	337.00	127.71	9-18
3	WANAKBORI	W,D,G,R,F	Gujarat	30665	411.00	74.98	5-10
4	MAHI BRIDGE AT VASAD	W	Gujarat	31080	434.40	—	0

NOTE: W = Wireless D = Discharge F = Flood G = Gauge R = Rainfall

9.8 **<u>Appropriate Authority</u> (Focal Officer)**
The Superintending Engineer
Mahi Irrigation Circle,
Sarkari Vasahat, Mission Road, Nadiad

Note:-
Please refer Flood Telephone Directory of the current year for Telephone Nos.

ANNEXURE – 9 (A)

List of Villages likely to be affected by floods in Mahi River on the basis of gauge of **Wankbori Weir.**

VADODARA DISTRICT							
Sr. No.	**PADRA TALUKA (1)**	**Sr. No.**	**SAVLI TALUKA (2)**	**Sr. No.**	**SAVLI TALUKA (2)-Contd.**	**Sr. No.**	**VADODARA TALUKA (3)**
1.	Tithor	1.	Khandi	15.	Amarapura	1.	Singrot
2.	Pavda	2.	Chavda na	16.	Varsada	2.	Phajalpur
3.	Sultanpur		Muvada	17.	Mewalipura	3.	Dodka
4.	Mohamadpur	3.	Bamana	18.	Nani Mamoli	4.	Rayka
5.	Kharera		Muvada	19.	Savli	5.	Angadh
6.	Dabka	4.	Jambugoral	20.	Shibora	6.	Sherikh
7.	Chokarai	5.	Gulabpura	21.	Muval	7.	Nandesari
8.	Jaspur	6.	Vankaner	22.	Vaghra	8.	Amliara
9.	Umraya	7.	Jalampur	23.	Desaipura	9.	Adalpura
10.	Mujpura	8.	Vaghpura	24.	Levaliapura		
11.	Konta	9.	Kanoda	25.	Mianagar		
12.	Ekalbara	10.	Poicha	26.	Bandipura		
		11.	Parthampura	27.	Jesangpura		
		12.	Paicha (Rania)	28.	Bandipura		
		13.	Intwad		na Muvada		
		14.	Wanoti Nani				

ANAND DIST.				KHEDA DIST.			
BORSAD TALUKA		**ANKLAV TALUKA**		**River Mahi**		**River Shedhi**	
1	Gajna	1	Chamara	**THASRA TALUKA**		**THASRA TALUKA**	
2	Salol	2	Bamangam	1	Kotariya	1	Thasara
3	Kankupura	3	Umeta	2	Rania	2	Pipalwada
4	Nani Sherdi	4	Khadol (Umeta)	3	Bhadrasa	3	Goraj
5	Kothia Khad	5	Sankhyad	4	Chitlav	4	Aurangpura
6	Dhevan	6	Kanvadi	5	Akalacha	5	Rasulpura
7	Badalpur	7	Amrol	**GALTESHWAR TAL.**		6	Wantoi/Wanoti
8	Valvod	8	Bhanupur	1	Vanoda	7	Ekalvally
		9	Ashrama	2	Mahi Itadi	8	Dakor
ANAND TALUKA		10	Nava Khal	3	Kuni	9	Rakhial
		11	Bhetasi Vanto	4	Galteshwar	10	Jakhed
1	Khanpur	12	Gambhira	5	Pali	11	Simlaj
2	Kheda			6	Singol	12	Vinjol
3	Anklavadi					13	Khijalpur Vanta
4	Rajupura					14	Khijalpura Talpad
						15	Malai
UMRETH TALUKA						**GALTESHWAR TAL.**	
						1	Manpur
1	Pratapura					2	Padal
2	Khorwad					3	Jargal
						4	Dabhali
						5	Mithana Muvada
						6	Dabhasar

MAHISAGAR DIST.		MAHISAGAR DIST.		PANCHMAHAL DIST.		MAHISAGAR DIST.	
Sr. No.	**LUNAVADA TALUKA (1)**	**Sr. No.**	**LUNAVADA TALUKA (cont.) (2)**	**Sr. No.**	**SHAHERA TALUKA (3)**	**Sr. No.**	**KADANA TALUKA (4)**
1.	Thana Savli	39.	Hadod	1.	Kharoli	1.	Vagadia na
2.	Rabadia	40.	Kanesav	2.	Bilitha		Andhari
3.	Vanka	41.	Kohan	3.	Hadkimata na	2.	Charan -ni-
4.	Gajoandri	42.	Meghwada		Muvada		Muvada
5.	Tintoi	43.	Simlia	4.	Ramadi	3.	Chopad-devi
6.	Mudava Dekh	44.	Sada	5.	Bhimthal	4.	Mal
7.	Virapara na	45.	Chantiyada	6.	Navi Bordi	5.	Baluji na
	Muvada	46.	Rajgadah	7.	Nathuri na		Muvada
8.	Kanisher	47.	Nana Vadadala		Muvada	6.	Nana-Rajanpur
	Muvada	48.	Handana	8.	Valavpura	7.	Mota- Rajanpur
9.	Madhana		Muvada	9.	Poyda	8.	Diwada
10.	Bhanara	49.	Hindolia	10.	Vadi	9.	Kadana
11.	Limbodra	50.	Golana Palla	11.	Bordi	10.	Thakor na
12.	Pattan	51.	Taktaji na Palla	12.	Vahaka		Nadhra
13.	Kakachia	52.	Kakana			11.	Dadhalia
14.	Ladval		Bhesavada			12.	Kharawada
15.	Kharol	53.	Semara na	**SR**	**GODHRA**	13.	Tantroli
16.	Fatepura		Muvada	**NO.**	**TALUKA**	14.	Padamji na
17.	Kothampalla	54.	Chandapur				Muvada
18.	Guvalia	55.	Gadhanpur	1.	Nadisar	15.	Ghodiar
19.	Chaerangam	56.	Paji na Muvada	2.	Kabaria	16.	Agarwada
20.	Agarwada.	57.	Mahudia	3.	Juni Dhari	17.	Vagh-Dungari
21.	Dalvaisavli	58.	Vaghji Baria	4.	Nani Dhari	18.	Machhi na
22.	Champli		Muvada		Nadhara	19.	Deda-wada
23.	Kachoti na	59.	Zarakhwada	5.	Gothda	20.	Anup-pur
	Muvada	60.	Chopda	6.	Timba	21.	Khatwa
24.	Juna Karva	61	Chanasar			22.	Ladu-Damor na
25.	Pania	62.	Ambali na				Vanta
26.	Dholi		Muvada			23.	Munpur
27.	Merai	63.	Mota Dokawa			24.	Antalwada
28.	Sadhakpur	64.	Nani Charel			25.	Math (zNear Mal)
29.	Kidiya	65.	Moti Charel				
30.	Khemalpur	66.	Damanwad			26.	Velanvada
31.	Zer	67.	Verama			27.	Dodia
32.	Bhuvabar	68.	Dokelav			**SR.**	**KHANPUR**
33.	Naroda	69.	Vanata			**NO.**	**TALUKA**
34.	Ghoghawada	70.	Moti Ghoda			1.	Dolaria
35.	Panam Palla	71.	Dokalina			2.	Nana Khanpur
36.	Valinatah		Muvada			3.	Raheman
37.	Chuva na	72	Salawada			4.	Mena
	Muvada	73.	Aritha			5.	Bamroda
38.	Kidia	74.	Kotla			6.	Sanpadia
						7.	Patapur
						8.	Dolatpur
						9.	Zara

Note: - Refer Annexure 9 (B) for villages to be affected at different water levels.

Annexure - 9 (A-1)

Statement showing affected due to floods in **Panam River** through releases discharged from **Panam Dam** till conflict Point of **Mahi River**

Sr. No.	Name of Taluka	Name of Villages			
1	2	3			
PANCHMAHALS DISTRICT					
1.	Shahera	1.	Ramji-ni-nal	4.	Mor
		2.	Khotha	5.	Baluji-na Muvada
		3.	Undara		
MAHISAGAR DISTRICT					
2.	Santrampur	1.	Amaliyat	3.	Nana Salia
		2.	Jotanjiya	4.	Rajbari
3.	Lunawada	1.	Chopada	10.	Jamapagina
		2.	Verama		Muvada
		3.	Nathuji-na Muvada	11.	Chansar
		4.	Nava Muvada	12.	Undara
		5.	Gantav	13.	Kenabariya-na-muvada
		6.	Motigora	14.	Lunavada
		7.	Dokelav	15.	Jesingpur
		8.	Panampalla	16.	Medjio-na-Muvada
		9.	Amali-Muvada	17	Dokaliya-na-Muvada
				18.	Nanicharel.
4.	Khanpur	1.	Pandarada		

Note: Refer Annexure-**9-(B-1)** for villages to be affected at different discharges.

Annexure - 9 (B)

Statement showing villages affected by floods of Mahi River on the basis of discharge released from Upstream Dams of Wanakbori Weir

Sr. No.	Discharge at D/S of Dam in (Cus/Cum)	Gauge Level at D/S of Dam		Name of District Taluka	Signal for Village at Sr. No.		
		In Meter	In Feet		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
NOTE :- 1 **WHITE SIGNALS** : ALERT 2 **BLUE SIGNALS** : READY FOR EVACUATION 3 **RED SIGNALS** : IMMEDIATE EVACUATION							
1	325000 9202.88	71.93	236.00	**Vadodara**			
				Padra	1 to 10	--	--
				Anand			
				Anklav	1 to 5	--	--
2	435000 12317.71	72.54	238.00	**Mahisagar**			
				Lunawada	1 to 5	--	--
				Panchmahal			
				Shahera	1 to 10	--	--
				Vadodara			
				Savli	1 to 15	--	--
				Vadodara	1 to 5	--	--
				Anand			
				Borsad	1 to 5	--	--
				Anand	1 to 4	--	--
				Umreth	1 to 2	--	--
3	450000 12742.46	73.15	240.00	**Mahisagar**			
				Lunawada	6 to 74	--	--
				Kadana	1 to 27	--	--
				Khanpur	1 to 9	--	--
				Panchmahal			
				Shahera	11 to12	--	--
				Kheda			
				Thasra	1 to 2	--	--
				Galteshwar	1 to 2	--	--
				Anand			
				Anklav	6 to 9	--	--
				Vadodara			

Sr. No.	Discharge at D/S of Dam in (Cus/Cum)	Gauge Level at D/S of Dam		Name of District Taluka	Signal for Village at Sr. No.		
		In Meter	In Feet		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
				Padra	11 to12	--	--
				Vadodara	6 to 9	--	---
4	710000 20104.77	73.76	242.00	**Mahisagar**			
				Lunawada	--	1 to 5	--
				Panchmahal			
				Shahera	--	1 to 10	--
				Godhra	1 to 5	--	--
5	745000 21095.85	74.07	243.00	**Vadodara**			
				Padra	--	1 to 10	--
				Savli	16 to 28	1 to 8	---
6	865000 24493.84	74.67	245.00	**Vadodara**			
				Savli	--	9 to 12	--
				Vadodara	--	1 to 5	--
				Padra	--	11 to 12	--
				Anand			
				Anklav	10 to 12	1 to 5	--
				Borsad	6 to 8	--	--
				Umreth	--	1 to 2	--
7	900000 25484.92	74.98	246.00	**Mahisagar**			
				Lunawada	--	6 to 74	--
				Kadana	--	1 to 27	--
				Khanpur	--	1 to 9	--
				Panchmahal			
				Shahera	--	11 to 12	--
				Godhra	6	--	--
				Vadodara			
				Padra	--	--	1 to 10
8	1000000 28316.57	75.44	247.50	**Vadodara**			
				Savli	--	13 to 15	--
				Vadodara	--	6 to 9	--
				Kheda			
				Thasra	3 to 5	1 to 2	--

Sr. No.	Discharge at D/S of Dam in (Cus/Cum)	Gauge Level at D/S of Dam		Name of District Taluka	Signal for Village at Sr. No.		
		In Meter	In Feet		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
				Galteshwar	3 to 6	1 to 2	--
				Anand			
				Anand	--	1 to 4	--
				Umreth	--	1 to 2	--
				Borsad	--	1 to 5	--
				Anklav	--	6 to 9	--
9	1142000 32337.53	75.90	249.00	**Mahisagar**			
				Lunawada	--	--	1 to 5
				Panchmahal			
				Shahera	--	--	1 to 10
				Godhra	--	6	--
				Anand			
				Anklav	--	--	1 to 5
				Anand	--	1 to 4	--
10	1210000 34263.06	76.20	250.00	**Vadodara**			
				Padra	--	--	11 to 12
				Savli	--	16 to 28	1 to 15
				Vadodara	--	6 to 9	1 to 5
				Kheda			
				Thasra	--	3 to 5	1 to 2
				Galteshwar	--	3 to 6	1 to 2
				Mahisagar			
				Lunawada	--	--	6 to 74
				Kadana	--	--	1 to 27
				Khanpur	--	--	1 to 9
				Panchmahal			
				Shahera	--	--	11 to 12
				Godhra	--	1 to 5	--
				Anand			
				Borsad	--	6 to 8	1 to 5
				Anklav	--	10 to 12	6 to 9
				Umreth	--	--	1 to 2
				Anand	--	--	1 to 4
11	1227000	76.28	250.25	**Panchmahal**			

Sr. No.	Discharge at D/S of Dam in (Cus/Cum)	Gauge Level at D/S of Dam		Name of District Taluka	Signal for Village at Sr. No.		
		In Meter	In Feet		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
	34744.44			Godhra	--	--	1 to 5
				Vadodara			
				Savli	--	--	16 to 28
				Vadodara	--	--	6 to 9
				Kheda			
				Thasra	--	--	3 to 5
				Galteshwar	--	--	3 to 6
				Anand			
				Anklav	--	--	10 to 12
				Borsad	--	--	6 to 8
12	1265000 35820.47	76.45	250.80	**Panchmahal**			
				Godhra	--	--	6

Note: Refer **Annexure 9-B** for the villages likely to be affected by floods at different Water Levels.

ANNEXURE – 9(B-1)

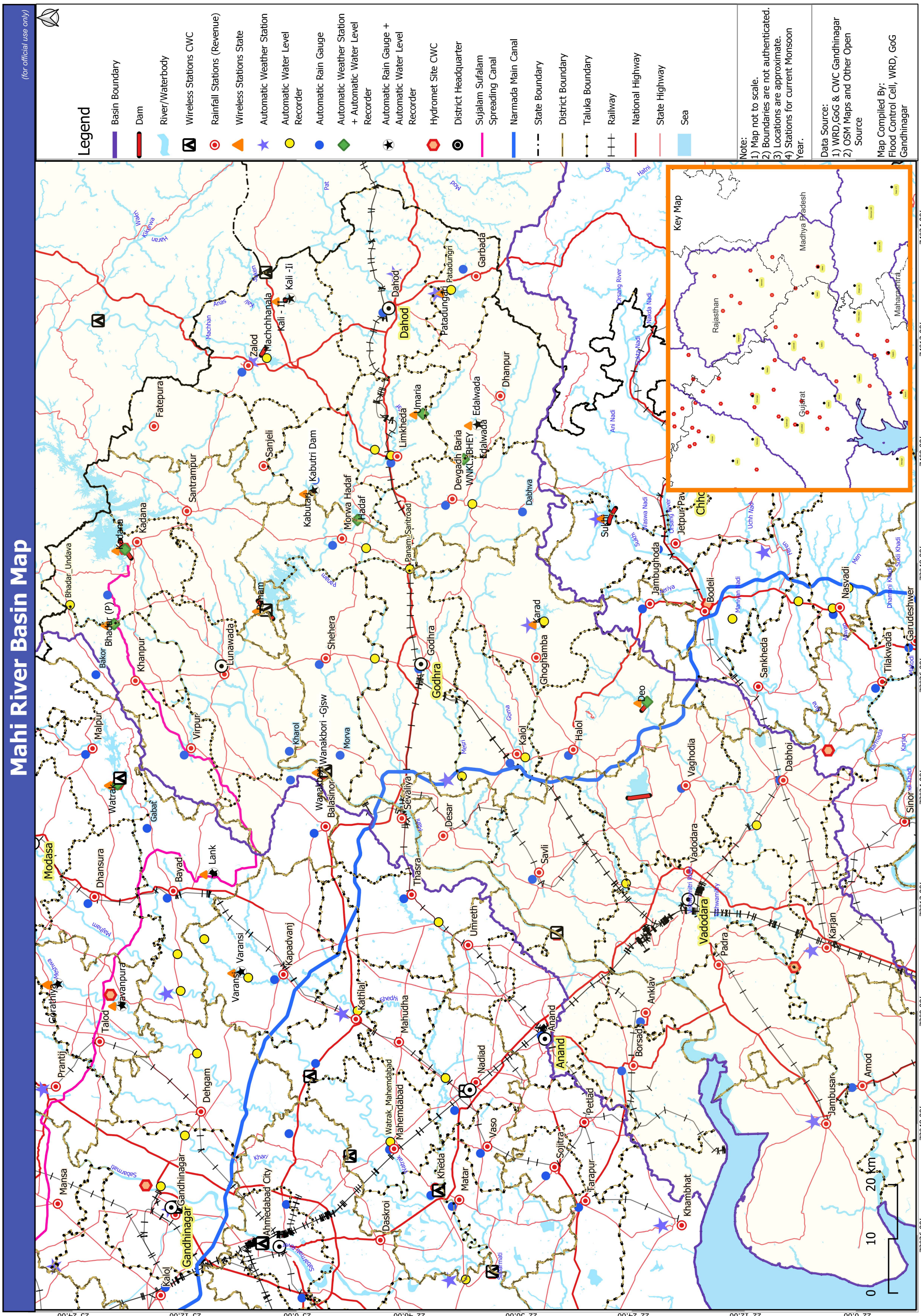
Statement showing villages affected due to floods in **PANAM RIVER** through release made from **PANAM Dam till conflict Point of MAHI RIVER**

Sr. No.	Discharge Release from Panam Dam in (Cus/Cum)	Name of District Taluka	Signal for Village at Sr. No.		
			White Signal	Blue Signal	Red Signal
1	2	3	4	5	6
1.	150000	**Panchmahal**			
	4227	1. Shahera	1	—	—
2.	280000	**Panchmahal**			
	7929	1. Shahera	2 to 5	1	—
		Mahisagar			
		1. Santrampur	1 to 4	—	—
		2. Lunawada	1 to 19	—	—
		3. Khanpur	1	—	—
3.	350000	**Panchmahal**			
	9911	1. Shahera	—	2 to 5	1
		Mahisagar			
		1. Santrampur	—	1 to 4	—
		2. Lunavada	—	1 to 19	—
		3. Khanpur	—	1	—
4.	393000	**Panchmahal**			
	11128	1. Shahera	—	—	2 to 5
		Mahisagar			
		1. Santrampur	—	—	1 to 4
		2. Lunavada	—	—	1 to 19
		3. Khanpur	—	—	1

Refer **Annexure - 9(B-1)** for the villages likely to be affected by floods at different discharges.

LIST OF EXISTING PROJECTS IN MAHI BASIN

Sl. No.	Name of Project	River	Storage Capacity (Mm^3)		Purpose	Cost in Rs. In Crores.
			Gross	Live		
	Rajsthan State					
1	Mahi Bajaj Sagar	Mahi	2180	1712	Multi	397.06
2	Jakham	Jakham	141.9	131.6	Irrigation	60.250
3	Jaisamand	Gomti	414.6	296.1	Irrigation/ Water Supply	---
4	Nagalia Weir	Jakham	---	---	Irrigation	---
5	Karmai Weir	Karnmai	---	---	Irrigation	---
6	SomKamala Weir	Som	126.06	125.83	Irrigation	---
	Gujarat State					
7	Kadana	Mahi	1249.30	958.00	Multi	101.86
8	Panam	Panam	578.185	552.966	Irrigation Flood Control	59.895
9	Machhan nalla	Machhan	37.91	29.16	Irrigation	11.775
10	Wanakbori Weir	Mahi	41.884	36.224	Irrigation	46.534
11	Hadaf	Hadaf	22.08	17.27	Irrigation	16.534
12	Kabutary	Kabutary	9.58	8.07	Irrigation	4.782
13	Bhadar	Bhadar	46.72	40.06	Irrigation	27.376
14	Umaria	Hadaf	13.53	11.67	Irrigation	4.699
15	Edalwada	Naleshvar	14.08	13.28	Irrigation	2.636
16	Karad	Karad	42.38	40.08	Irrigation	0.56


Mahi River Basin Map
(for official use only)
Legend
Basin Boundary
Dam
River/Waterbody
Wireless Stations CWC
Rainfall Stations (Revenue)
Wireless Stations State
Automatic Weather Station
Automatic Water Level Recorder
Automatic Rain Gauge
Automatic Weather Station + Automatic Water Level Recorder
Automatic Rain Gauge + Automatic Water Level Recorder
Hydromet Site CWC
District Headquarter
Sujalam Sufalam Spreading Canal
Narmada Main Canal
State Boundary
District Boundary
Taluka Boundary
Railway
National Highway
State Highway
Sea
Note:
1) Map not to scale.
2) Boundaries are not authenticated.
3) Locations are approximate.
4) Stations for current Monsoon Year.
Data Source:
1) WRD,GoG & CWC Gandhinagar
2) OSM Maps and Other Open Source
Map Compiled By:
Flood Control Cell, WRD, GoG Gandhinagar
Key Map
Rajasthan
Madhya Pradesh
Gujarat
Maharashtra
0
10
20 Km

Annexure 9-C

10.0 SABARMATI BASIN

10.1 The flood forecasting for Sabarmati Basin is being looked after by Superintending Engineer, Hydrological Observation Circle, Gandhinagar through his Executive Engineer, Mahi Division (C.W.C.) at Gandhinagar. He has established various wireless stations at locations upstream and downstream of Dharoi Dam to obtain the details about rainfall and discharge in the Sabarmati Basin. The gauge and rainfall data are being communicated, through wireless stations located at various stations on the main river as well as on tributaries.

10.2 Name of villages/dams where wireless stations are located to report rainfall and gauge discharge are as under:

A. C.W.C's Wireless Stations

1.	Sai Dam	Rajasthan State
2.	Jotasan at River Wakal	Gujarat State
3.	Harnav Weir	Gujarat State
4.	Kheroj Bridge	Gujarat State
5.	Hathmati Weir	Gujarat State
6.	Dharoi Dam	Gujarat State
7.	Derol Bridge	Gujarat State
8.	Ahmedabad [Subhash Bridge]	Gujarat State
9.	Ratanpur	Gujarat State
10.	Raska Weir	Gujarat State
11.	Kheda Town	Gujarat State
12.	Watrak Dam	Gujarat State
13.	Wautha	Gujarat State

B. State's Wireless Stations.

1.	S.E.,H.I.P.C., H'nagar	(HIPC)	Gujarat State
2.	Hathmati Dam	(HIPC)	Gujarat State
3.	Meshwo Dam	(HIPC)	Gujarat State
4.	Mazam Dam	(HIPC)	Gujarat State
5.	Harnav Dam	(HIPC)	Gujarat State
6.	Guhai Dam	(HIPC)	Gujarat State
7.	Waidy Dam	(HIPC)	Gujarat State
8.	Watrak	(HIPC)	Gujarat State
9.	Badoli	(HIPC)	Gujarat State
10.	Karol	(HIPC)	Gujarat State
11.	Mahudi	(HIPC)	Gujarat State
12.	Ahmedabad	(AIPC)	Gujarat State
13.	Wasana Barrage	(AIPC)	Gujarat State

14.	Dakor Road Bridge	(MIC)	Gujarat State
15.	Kathlal Road Bridge	(MIC)	Gujarat State
16.	Dharoi	(SSC.2)	Gujarat State
17.	Ratanpur Road Bridge	(CWC)	Gujarat State
18.	Kheda Road Bridge	(CWC)	Gujarat State
19.	Kherva	(SSC-2)	Gujarat State
20.	Jawanpura	(HIPC)	Gujarat State
21.	Deradungari	(HIPC)	Gujarat State
22.	Meghraj	(HIPC)	Gujarat State
23.	Modasa	(HIPC)	Gujarat State
24.	Idargadh (Repeater)	(HIPC)	Gujarat State
25.	Lank	(HIPC)	Gujarat State
26.	Khedva	(HIPC)	Gujarat State
27.	Gorathiya Mota Chekhala	(AIPC)	Gujarat State
28.	Varansi	(HIPC)	Gujarat State

10.3 Statement showing the names of affected villages of basin and areas of Ahmedabad city at various signaling stages at different levels are enclosed vide **Annexure 10-A-1 and 10-B-1.1 to10-B-1.4**

10.4 Basin Map showing the locations of wireless stations established together with gauge discharge and rain gauge stations and time-lag statement is appended vide **Annexure 10-C**.

10.5 Dharoi Reservoir located about 165 Kms upstream of Ahmedabad City on River Sabarmati.

10.6 The Executive Engineer, Mahi Division,(C.W.C.) Gandhinagar, calculates the inflow in Dharoi reservoir based on the rainfall and discharge data of the upstream stations and reports to **the Superintending Engineer, Sujlam Suflam Circle No.2, Mehsana (Kherva) and Superintending Engineer, Ahmedabad Irrigation Project Circle, Ahmedabad and Executive Engineer, Dharoi Head Works Division, Dharoi.** CWC will also convey the gauge data, estimated discharge data, hourly rainfall and weather report of Dharoi, kheroj and kotra as per data transmission schedule All the data from June 1st to October 31st can be conveyed to the officers of project circle through email or WhatsApp as per data transmission schedule (0000,0300,0600,0800,1000,1200,1500,1800,2100 hrs.). The inflow forecast for Dharoi Dam is to be issued when discharge is of the order of **20,000 Cusecs/567 Cumecs or above is expected to come in reservoir at any time.**

10.7 Inflow data as well as gauge and discharge data observed at Subhash Bridge in Ahmedabad are necessary for deciding the operation of Dharoi spillway gates as well as Wasna Barrage gates during floods. The release from Dharoi are to be finalized by the Executive Engineer, Dharoi Head Works Division, Dharoi and Mahi Division (C.W.C.), Gandhinagar, in case of normal floods. However, in case of high floods of

more than 2.00 lacs Cusecs (5664 Cumecs) the operation of gates and quantum of outflow is to be decided by Executive Engineer, Dharoi Head Works Division in consultation with the Executive Engineer Mahi Division (C.W.C.), Gandhinagar and Superintending Engineer, Sujlam Suflam Circle No.2, Mehsana (Kherva) and Focal Officer, i.e. Superintending Engineer, Ahmedabad Irrigation Project Circle, Ahmedabad.

10.8 There are some huts in the bed of river Sabarmati which are affected by the level of even at 5' to 6' at Subhash Bridge. It is not practicable to forecast the gauge of 5' at Subhash Bridge by Executive Engineer. Hence before monsoon Municipal Authorities as well as Executive Engineer, A.I. Division, Ahmedabad, will issue notices in newspapers for evacuation of such huts.

10.9 Action to be taken by the Executive Engineer, Mahi Division (C.W.C), Gandhinagar

1. Formulation and Dissemination of Flood Forecast of Dharoi Dam and Subhash Bridge.

2. Sharing of hourly observed gauge, estimated discharge and rainfall data of site Kheroj, kotra (Jotasan) and Kheda as per data dissemination schedule (0000,0300,0800,1000,1200,1500,1800,2100 hrs)

3. (a) Support Executive Engineer, Dharoi Head Works Division, Dharoi in finalizing releases from Dharoi Dam in case of normal floods.

(b)Support Executive Engineer, Dharoi Head Works Division, Dharoi, Superintending Engineer Sujalam Suflam Circle No. 2, Mehsana(Kherva) and focal officer, i.e. Superintending Engineer Ahmedabad Irrigation Project Circle, Ahmedabad, in deciding operation of gates and quantum of outflow from Dharoi Dam, in case of high floods of more than 2.0lacs Cusecs(5664 Cumecs).

TABLE - (10.9)

Note: - Please refer Flood Telephone Directory of the current year for telephone nos.

Name of the Officer with Telephone Nos.	**Observation to be made by the Officer**	**Officer to whom the messages to be sent.**
(1)	**(2)**	**(3)**
(A) Executive Engineer Mahi Division (C.W.C.),Gandhinagar	The Inflow forecast for 20000 Cusecs for DHAROI Dam is to be conveyed to the officer at Sr.No. (a) (b) (d) & (s) in Column No.3. The Flood Level forecast of SUBHASH BRIDGE, Ahmedabad. As per Annexure - 10-C-1-1 is to be conveyed to the Officers in Column No.3.at Sr.No.(a),(c)and (s) Only G & D Data of KHEDA TOWN for the Villages	a) Superintending Engineer Ahmedabad Irrigation Project Circle, Ahmedabad. b) Superintending Engineer Sujlam Suflam Circle No.2, Mehsana (Kherva). c) Executive Engineer, Ahmedabad Irrigation Division, Ahmedabad. d) Executive Engineer, Dharoi Head works Dn. No.1, Dharoi Colony e) Police Commissioner of KHEDA

	covered under Annexure 10-C-1.2 to 10-C-1.4 & 10-C-1.7 is to be conveyed to the Officers in Column No.3 at Sr.No. (a) (c) & (s)	f)	Municipal Commissioner, Ahmedabad.
		g)	Dy. Muni. Commissioner, Ahmedabad.
		h)	Collector, Ahmedabad.
		i)	Area Superintend. (W.R) Ahmedabad.
		j)	Commandant Home Guard, Ahmedabad.
		k)	Collector, Kheda, District Kheda.
(B)			
Executive Engineer, Dharoi Head Works Dn. No.1, Dharoi Colony.	Release made from Dharoi reservoir is to be conveyed to the officer in column No.3 at Sr.No. (a) to (c), (h) & (o) to (r) & (s) (t) (u)	l)	District Superintend of Police, Kheda, Nadiad
		m)	Mamlatdar, Dholka.
		n)	Dy. Executive Engineer, Sanand Irrigation Sub Dn. Sanand.
(C)			
Executive Engineer, Shedhi Irrigation Dn., Nadiad	Gauge levels of SHEDHI River at Dakor and MOHAR River at Kathlal will be conveyed to the officer in Column No.3 at Sr.No.(a) & (c) (k) & (l), (r) & (s)	o)	Collector, Sabarkantha District, Himmatnagar.
		p)	Collector, Mehsana District, Mehsana.
		q)	Collector, Gandhinagar District, Gandhinagar.
		r)	Executive Engineer Mahi Division (C.W.C.),Gandhinagar
		s)	Flood Control Cell, Gandhinagar.
		t)	Executive Engineer, Irri. Project Dn., Modasa
		u)	Mamlatdar, Satlasana

10.10 Statement showing the Time lag for various stations from origin to the end of river basin as under.

Sr. No.	Name of Site	Type of Site	State	Catchment Area in (Sq. Kms.)	Distance from Origin in (Kms.)	Danger Level in (Meters)	Time Lag in (Hours)
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1	DHAROI	W,G,D,R,F	Gujarat	5475.00	163.00	190.86	8 to 11
2	DEROL	W,R,G,D	Gujarat	6724.00	221.00	-----	5 to 11
3	SUBHASH BRIDGE	G,D,F	Gujarat	10674.00	311.00	45.34	7 to 11

NOTE: W=Wireless D=Discharge F=Flood G=Gauge R=Rainfall

10.11 **<u>Appropriate Authority</u> (Focal Officer)**

Superintending Engineer
Ahmedabad Irrigation Project Circle,
A-Block, 9th Floor, M.S.Building, Vastrapur,
Ahmedabad-52.

Note:-
Please refer Flood Telephone Directory of the Current year for telephone nos.

10.12 RIVERS OF SABARKANTHA DISTRICT (EXCEPT RIVER SABARMATI)

10.12.1 Floods are being experienced in the rivers in Sabarkantha district during heavy rains viz.**(1) Watrak, (2) Meshwo, (3) Hathmati, (4) Guhai, (5) Harnav, (6) Waidy, and (7) Mazam. For dams of Sabarkantha District (except Dharoi Reservoir), the Superintending Engineer, Himmatnagar Irrigation Project Circle, Himmatnagar is the Focal Officer.** The Executive Engineer, H.I. Division, Himmatnagar is now under the control of S.E.H.I.P.C., Himmatnagar , so, the project under H.I.Dn.Himmatnagar are under control of S.E. H.I.P.C. Himmatnagar (The Focal Officer of Sabarkantha Project except Sabarmati Project.)

10.12.2 The flood warning for the village shown in Annexure 10-A-2 to 10-A-7 & 10-B-1.3 to 10-B-1.10 will be issued by S.E.H.I.P.C., Himmatnagar to revenue authorities for taking necessary action for alerting and evacuating the people likely to be affected by release of water from following dams.

1. Meshwo Dam
2. Mazam Dam
3. Watrak Dam
4. Harnav - II Dam
5. Hathmati Weir
6. Hathmati Dam
7. Guhai Dam
8. Waidy
9. Jawanpura Barrage
10. Lank

10.12.3 The locations of Wireless Stations in Sabarkantha district are as under

1.	S.E.,H.I.P.C., H'Nagar	Gujarat State	2.	Harnav Dam	Gujarat State
3	Guhai Dam	Gujarat State	4.	Badoli	Gujarat State
5	Idargadh (Repeater)	Gujarat State	6.	Karol	Gujarat State
7.	Jawanpura	Gujarat State	8.	Khedva	Gujarat State
9	Gorathiya	Gujarat State	10.	Varansi	Gujarat State

The locations of Wireless Stations in Aravalli district are as under

1	Hatmathi Dam	Gujarat State	2.	Meshwo Dam	Gujarat State
3	Mazam Dam	Gujarat State	4.	Waidy Dam	Gujarat State
5	Watrak	Gujarat State	6.	Mahudi	Gujarat State
7.	Modasa	Gujarat State	8	Deradungari	Gujarat State
9.	Meghraj	Gujarat State	10	Ratanpur Road Bridge	Gujarat State
11	Lank	Gujarat State			

Note: The above Wireless Stations are shown in para 10.2 and 10.3 but they are to be looked after by Superintending Engineer, Himmatnagar Irrigation Project Circle, Himmatnagar.

10.12.4 Action to be taken by various officers:

TABLE - (10.12.4)

Note:-Please refer Flood Telephone Directory of the current year for telephone nos.

Name of the Officer with Telephone Nos.	Observation to be made by the Officer	Officer to whom the messages to be sent.
(1)	(2)	(3)
(A) Deputy Executive Engineer (In charge of MAZAM & MESHWO Dam site Wireless station) Modasa Irri. Sub Dn. Modasa	Collection & communication of data regarding Rainfall, Reservoir Water Level, releases from dam @ 6.00 AM or hourly if required through Wireless station on telephone to the Officer in column No.3 at Sr.No.(a),(c) (h) & (j)	a) Superintending Engineer Himmatnagar Irrigation Project Circle, Himmatnagar b) Superintending Engineer Ahmedabad Irrigation Project Circle, Ahmedabad.
Executive Engineer Irrigation Project Division, Modasa.	Data received from Dam site & flood forecast if any will be communicated to the officer in column No.3 at Sr.No. (a), (b), (g), (h), to (t)	c) Executive Engineer Irrigation Project Division, Modasa. d) Executive Engineer Himatngar Irrigation Division, Himmatnagar
(B) Deputy Executive Engineer (In charge of WATRAK dam) Dam Site Wireless Station (Anior) Modasa Irri. Sub Dn.1 Bhempoda	Collection & communication of data regarding Rainfall, Reservoir Water Level, releases from dam at 6.00 AM or hourly if required through Wireless Station on telephone to the Officer in column No.3 at Sr.No.(c) (h) and (i).	e) Executive Engineer Project Construction Division No.3, Himmatnagar. f) Executive Engineer Ahmedabad Irrigation Division, Ahmedabad. g) Executive Engineer, Himmatnagar Irrigation Division, Himmatnagar. h) Executive Engineer, Dharoi Head Works Division No.1, Dharoi.
Executive Engineer Irrigation Project Division, Modasa.	Data received from Dam site to formulate flood level forecast of KHEDA TOWN for villages covered in Annexure 10-C-1.2 to 10-C-1.4 & 10-C-1.7 will be Communicated to the Officer in column no.3 at Sr.No.(a) (b),(f),(h), (j),to(t)	i) Flood Cell, Himmatnagar j) Flood Cell, Gandhinagar. k) Collector, Ahmedabad. i) Collector, Sabarkantha m) Collector, Kheda District, Kheda

Name of the Officer with Telephone Nos.	Observation to be made by the Officer	Officer to whom the messages to be sent.
(1)	(2)	(3)
(C) Deputy Executive Engineer (In charge of GUHAI dam) Guhai Sub Division No.5 Himmatnagar Dam site Wireless station (Jamla)	Collection & Communication of data regarding Rainfall, Reservoir Water Level, Live storage releases from dam @ 6.00 AM or hourly if required through Wireless station on telephone to the Officer in Column No.3 at Sr.No. (e) & (i).	n) District Superintendent of Police, Sabarkantha Himmatnagar. o) District Superintendent of Police, Kheda (North) District, Kheda. p) Chief Area Manager(W.R) Ahmedabad.
Executive Engineer Project construction Division No.1, Himmatnagar.	Data received from Dam site & flood forecast if any will be communicated to the officer in column no.3 at Sr. No. (a), (b), (e) to (h), (j) (l) to (n) & (s), (t)	q) District Superintendent of Police, Ahmedabad (Rural)Ahmedabad. r) Mamlatdar, Dholka. s) Executive Engineer Mahi Division (C.W.C), Gandhinagar.
(D) Deputy Executive Engineer (In-charge of HARNAV dam) Harnav Sub Division No.2,Vijaynagar.	Collection & communication of data regarding Rainfall, Reservoir Water Level, Live storage releases from dam @ 6.00 AM or hourly if required through Wireless station on telephone to the Officer in column No.3 at Sr.No.(e) &(i)	t) Collector, Anand (u) Mamlatdar, Kapadwanj
Executive Engineer Project construction Division No.3, Himmatnagar.	Data received from Dam site to formulate flood level forecast of KHEDA TOWN for villages covered in Annexure 10-B-1.2 to 10-B-1.4 & 10-B-1.7 will be communicated to the officer in column no.3 at Sr.No.(a).	
(E) Deputy Executive Engineer (In charge of Hathmati & Indrasi dam) Himmatnagar Irri. Sub.Dn. Himmatnagar	Collection & communication of data regarding Rainfall, Reservoir Water Level, releases from dam @ 6.00 AM or hourly if required through Wireless station on telephone to the Officer in column No.3 at Sr.No.(g) & (i)	

Name of the Officer with Telephone Nos.	Observation to be made by the Officer	Officer to whom the messages to be sent.
(1)	(2)	(3)
Executive Engineer Himmatnagar Irrigation Division, Himmatnagar.	Data received from Dam site & flood forecast if any will be communicated to the officer in column No.3 at Sr.No. (a), (b), (e), (f), (h) to (o), (s)	
(F) Deputy Executive Engineer (In charge of Waidy dam) Mazam Reha. Sub. Dn. Megharaj	Collection & communication of data regarding Rainfall, Reservoir Water Level, releases from dam at 6.00 AM or hourly if required through Wireless Station on telephone to the Officer in column No.3 at Sr.No.(g) and (i).	
Executive Engineer Irrigation Project Division, Modasa.	Data received from Dam site & flood forecast for villages covered in Annex. 10B-1.1,10-B-1.3 to 10.B-1.5, 10-B-1.8 to 10.B.1.10,10-A. 2, 10-A-6,10-A-7. will be commu-nicated to the officer in Col.3 at Sr. No.(a),(b),(e),(f),(h),(j), (k),(i) to (s)	
(G) Deputy Executive Engineer (In charge of Jawanpura Barrage) Guhai Sub. Dn.No-4 Himmatnagar	Collection & communication of data regarding Rainfall, Reservoir Water Level, releases from dam at 6.00 AM or hourly if required through Wireless Station on telephone to the Officer in column No.3 at Sr.No.(d), (e) and (i), t	
(H) Deputy Executive Engineer (In charge of Lank) Watrak Canal Sub. Dn. 9 Bayad	Collection & communication of data regarding Rainfall, Reservoir Water Level, releases from dam at 6.00 AM or hourly if required through Wireless Station on telephone to the Officer in column No.3 at Sr.No.(a)to (g), (h) & (i)	
(I) Deputy Executive Engineer (In charge of Khedva) Guhai Canal Sub. Dn. 1 Khedbrahma	Collection & communication of data regarding Rainfall, Reservoir Water Level, releases from dam at 6.00 AM or hourly if required through Wireless Station on telephone to the Officer in column No.3 at Sr.No.(a),(d),(e), (i),(j) & (l)	
(J) Deputy Executive Engineer (In charge of Varansi dam) Watrak Canal Sub. Dn.13 Bayad	Collection & communication of data regarding Rainfall, Reservoir Water Level, releases from dam at 6.00 AM or hourly if required through Wireless Station on telephone to the Officer in column No.3 at Sr.No.(a),(d),(e), (i),(m),(o) & (u)	

10.11.6 Appropriate Authority (Focal Officer)

(A) For Sabarkantha District and Aravalli District

(Except Sabarmati River)
Superintending Engineer
Himmatnagar Irrigation Project Circle
Sinchai Bhavan, Himmatnagar

Note:-
Please refer Flood Telephone Directory of the current year for telephone nos.

ANNEXURE - 10 (A-1)

White signal is to be issued by S.E. A.I.P.C. when discharge released from Subhash Bridge is more than 86,597 Cusecs in Rivers Sabarmati and intimation should be given to S.E.,SWDC & concerned Revenue Authorities.

GANDHINAGAR DISTRICT

SR. No.	GANDHINAGAR TALUKA	SR. No.	MANASA TALUKA	SR. No.	KALOL TALUKA
1	Valad	1	Khadat	1	Aluva
2	Raysan	2	Mahudi		
3	Randesan	3	Anodia		
4	Bhat	4	Dodipal		
5	Koba	5	Lakroda		
6	Pethapur	6	Varsoda		
7	Palaj	7	Gunma		
8	Sahpur	8	Ambod		
9	Ratanpur	9	Amarpura(Gra)		
10	Lekawada	10	Delwada		
11	Nava Dharampur				
12	Sadara				
13	Dholakuwa				
14	Indroda				
15	Borij				
16	Pimpalaj				
17	Pidharda				

ANNEXURE - 10 (A-1).Contd.....

List of villages likely to be affected by floods In Rivers Sabarmati, Watrak, Shedhi.

AHMEDABAD DISTRICT.

SR. No.	CITY TALUKA
1	Paldi
2	Old Vadaj
3	New Vadaj
4	Giaspur
5	Ellisbridge Police Station Area
6	Jamalpur
7	Raikhad
8	Kochrab
9	Subhas Bridge Area
10	Pirana
11	Piplaj
12	Gopalpur
13	Shahvadi
14	Kama Hotel Area
15	Sabarmati Power House
16	Sarkhej
17	Dudheshwer
18	Madhupura
19	Shahpur Area

SR. No.	DHANDHUKA TALUKA
1	Dholera
2	Vithal Bandar
3	Kum
4	Gogha
5	Kadipur
6	Kasindra
7	Ambali
8	Kama Talav
9	Ganeshpura
10	Navagam
11	Valinda
12	Pipali
13	Pachchham
14	Ratanpur
15	Kamibala
16	Fedra
17	Behrampura
18	Anandpur

SR. No.	DASKROI TALUKA
1	Laxmipura
2	Lambha
3	Kunod
4	Giramtha
5	Ode
6	Naz
7	Paldi- Kankrej
8	Miroli
9	Nava Pura
10	Dharoda-Mahijada
11	Visal pur
12	Vasai
13	Wanzar
14	Bhat
15	Fatewadi
16	Kasindra
17	Bakrol
18	Tihmba

SR. No.	BAVALA TALUKA
1	Devthal
2	Dumali
3	Kavitha
4	Memar
5	Kavala
6	Ranesar
7	Siyal
8	Bagodara
9	Rohika

SR. No.	SANAND TALUKA
1	Matoda
2	Savi
3	Palvada
4	Tajpur
5	Moraiya
6	Wasana
7	Jivanpura
8	Sanathal(Chacharwadi)
9	Lodarial
10	Changodar
11	Zamp
12	Kalol
13	Moti Devti
14	Modasar

SR. No.	DHOLKA TALUKA
1	Ambaliyara
2	Chandisar
3	Jalalpur Vajifa
4	Khatripur
5	Rajpur
6	Saroda
7	Sathal
8	Ambethi
9	Andhari
10	Pisawada
11	Sahij
12	Varna
13	Vataman
14	Bharatwada
15	chaloda
16	Dadusar
17	Dholi
18	Ganesar
19	Ganol
20	Girand
21	Ingoli
22	Kaliapura
23	Kauka
24	Kharanti
25	Lolia
26	Mafalipur
27	Moti-Boru
28	Nani-Boru
29	Mujpur Para
30	Nesda
31	Paladi
32	Simej
33	Trasad
34	Vautha
35	Kelia-Wasana
36	Virdi
37	Virpur

SR. No.	DHOLKA TALUKA (3.. Contd.....)
38	Bhavanpara
39	Badarkha
40	Diman
41	Dhulajipara
42	Kodariapara
43	Mandalpara
44	Jakhda
45	Anandpara
46	Vejalka
47	Arnej
48	Juwaraj
49	Koth
50	Rupgadh
51	Kariyana
52	Godhneswar
53	Kalia
54	Ambareli
55	Kadipur
56	Begva
57	Rampur
58	Raipur
59	Ranoda
60	Deliya
61	Jundal
62	Rupavati
63	Shekhadi
64	Dhanwada
65	Utelia
66	Saragwada
67	Gandi
68	Samani
69	Dholka
70	Lothal
71	Bhumali
72	Sarandi
73	Walthera
74	Lana

ANNEXURE - 10 (A-1).Contd.....

List of villages likely to be affected by floods In Rivers Sabarmati, Watrak, Shedhi.

KHEDA DISTRICT.

SR. No.	MATAR TALUKA	SR. No.	NADIAD TALUKA	SR. No.	KHEDA TALUKA	SR. No.	KAPADVANJ TALUKA
1	Rasikpura	1	Vina	1	Nani - Kaloli	1	Vaghari
2	Varsang	2	Navagam	2	Moti - Kaloli	2	Pathavat
3	Baroda	3	Valla	3	Radhu		
4	Asmali	4	Aljada	4	Pathapura		
5	Pabla	5	Nana - Vagana	5	Kathwada		
6	Sokhad	6	Erendipura	6	Naika		
7	Rathanpur	7	Bilodra	7	Dharoda		
8	Matar	8	Munjipura	8	Navagam		
9	Hayjrabad	9	Vadai	9	Chitrasar		
10	Pipariar	10	Andhari Ambali	10	Chalindra		
11	Kosiya			11	Vasana-Buzarag		
12	Agovi			12	Hariyala		
13	Mahela			13	Samadralat		
				14	Kheda		
				15	Khumanvad		
				16	Kheda Camp		

SR. No.	THASRA TALUKA	SR. No.	MEHMDAVAD TALUKA	SR. No.	MAHUDHA TALUKA	SR. No.	KATHLAL TALUKA
1	Bharthar	1	Gadhav	1	Undra	1	Chelavat
2	Golaj	2	Bara Muvada	2	Herenj	2	Chhipal
3	Vinzol	3	Ghodali	3	Alina	3	Bharkunda
4	Zakhed	4	Mankuva				
5	Pilol	5	Godhaj (Gedbai)				
6	Simlaj	6	Adika				
7	Vaso	7	Vancol Soda				
8	Dadad	8	Vamali				
9	Mitha-na-Muvada	9	Khambhli				
10	Dabhali	10	Varsola				
11	Jargal	11	Iyava				
12	Vanthrauh						
13	Pipalwada						
14	Dhhudi						
15	Vanoti						
16	Rasulpura						
17	Ekively						
18	Masra						
19	khijalpur Talpad						
20	Khijalpur Vant						

ANAND DISTRICT.

SR No.	TARAPUR TALUKA	SR. No.	KHAMBHAT TALUKA
1	Galiana	1	Golana
2	Rinza	2	Pandad
3	Khada		
4	Milarampur		
5	Chitravada		
6	Dughari		
7	Nabhoi		
8	Mota-Kalodra		
9	Fatehpur		
10	Pachegam		
11	Kasbara		

ARAVALLI DISTRICT

SR No.	BAYAD TALUKA	SR. No.	DHANSURA TALUKA	SR. No.	MALPUR TALUKA
1	Dolpur	1.	Barnoli	1.	Khalipur
2	Nana Lalpur	2.	Chhevadiya na Muvada	2.	Narshinh Khant na Muvada
3	Mota Lalpur	3.	Sageyani Rayan	3.	Jalam Khant na Muvada
4	Gopalpur	4.	Khadol		
5	Hematral na Muvada				
6	Motipur				
7	Ranechi				
8	Dahegamda				
9	Nani Simlaj				
10	Moti Simlaj				

SABARKANTHA DISTRICT

SR. No.	TALOD TALUKA
1	Takar
2	Motachkhla
3	Varvada
4	Mohanpur

Note:-

(1) Paldi means the law lying area between Banks of River Sabarmati and Road from Paldi Bus Stand to Wasna.

(2) Refer Annexures 10 (B-1.1) to 10 (B-1.8) for villages to be affected at different Water Levels.

ANNEXURE - 10-B-1.1 (Warning to be issued by S.E.AIPC, AHMEDABAD)

Statement showing villages affected by floods of **Sabarmati River** on the basis of discharge/ gauge available at **Subhash Bridge** gauge site.

Sr. No.	Discharge from Dharoi Dam (Cus/Cum)	Gauge Level at Subhash Bridge Ft./Mt.	Gauge in Ft. Mt.	Name of District Taluka	Signal for Village at Sr. No.		
					White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
NOTE :- **1 WHITE SIGNALS** : ALERT **2 BLUE SIGNALS** : READY FOR EVACUATION **3 RED SIGNALS** : IMMEDIATE EVACUATION							
1.	86597	144.65	10.00	**AHMEDABAD**			
	2452.08	44.09	3.01	1. City	1 to 5	—	—
				2. Dholka	1 to 7	—	—
				KHEDA			
				1. Matar	1 to 3	—	—
				2. Kheda	1 to 5	—	—
				ANAND			
				1. Tarapur	—-	—-	—-
				2. Khambhat	1	—-	—-
2.	116892	146.79	12.00	**AHMEDABAD**			
	3309.91	44.74	3.66	1. City	6 to 9	1 to 5	—
				2. Dholka	8 to 12	1 to 7	—
				KHEDA			
				1. Matar	4 to 13	1 to 3	—-
				2. Kheda	6 to 12	1 to 5	—-
				ANAND			
				1. Tarapur	1 to 11	—-	—-
				2. Khambhat	2	1	—-
3.	145000	148.76	14.00	**AHMEDABAD**			
	4105.90	45.34	4.27	1. City	10 to 12	6 to 9	1 to 5
				2. Dascroi	1 to 18	—-	—-
				3. Dholka	13 to 43	8 to 12	1 to 7
				6. Bavla	1 to 7	—-	—-

Sr. No.	Discharge from Dharoi Dam (Cus/Cum)	Gauge Level at Subhash Bridge Ft./Mt.	Gauge in Ft. Mt.	Name of District Taluka	Signal for Village at Sr. No.		
					White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
				KHEDA			
				1. Matar	—	4 to 13	1 to 3
				2. Kheda	—	6 to 12	1 to 5
				ANAND			
				1. Tarapur	—-	1 to 11	—-
				2. Khambhat	—-	2	1
4.	173300	150.78	16.00	**AHMEDABAD**			
	4907.26	45.95	4.87	1. City	13 to 19	10 to 12	6 to 9
				2. Dascroi	—	1 to 18	—
				3. Dholka	—	13 to 43	8 to 12
				4. Dhandhuka	1 to 18	—-	—-
				5. Sanand	1 to 14	—-	—-
				6. Bavla	—-	1 to 7	—-
				KHEDA			
				1. Matar	—	4 to 13	1 to 3
				2. Kheda	—	6 to 12	1 to 5
				ANAND			
				1. Tarapur	—-	—-	1 to 11
				2. Khambhat	—-	—-	2
5.	203300	152.75	18.00	**AHMEDABAD**			
	5756.76	46.56	5.49	1. City	—	13 to 19	10 to 12
				2. Dascroi	—	—	1 to 18
				3. Dholka	43 to 74	—	13 to 43
				4. Dhandhuka	—	1 to 18	—
				5. Sanand	—	1 to 14	—
				6. Bavla	8 to 9	—-	—-
				KHEDA			
				1. Matar	—	—	4 to 13
				2. Kheda	—	—	6 to 12
				ANAND			
				1. Tarapur	—	—	1 to 11
				2. Khambhat	—	—	2

Sr. No.	Discharge from Dharoi Dam (Cus/Cum)	Gauge Level at Subhash Bridge Ft./Mt.	Gauge in Ft. Mt.	Name of District Taluka	Signal for Village at Sr. No.		
					White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
6.	230000	154.75	20.00	**AHMEDABAD**			
	6512.81	47.17	6.10	1. City	—	—	13 to 19
				3. Dholka	—	43 to 74	—
				4. Dhandhuka	—	—	1 to 18
				5. Sanand	—	—	1 to 14
				6. Bavla	—	8 to 9	—
7.	260000	156.75	22.00	**AHMEDABAD**			
	7362.31	47.78	6.71	3. Dholka	—	—	43 to 74
				6. Bavla	—	—	8 to 9

Note: - (1) Zero Gauge of Subhash Bridge is 134.75 ft. i.e. 41.08 M.
(2) Refer **Annexure 10-A-1** for affected villages mentioned in Column Nos 6 to 8 in this Annexure.
(3) Extrapolated Probable discharges, to be observed annually & amended Accordingly.

ANNEXURE - 10-B-1.2 (Warning to be issued by S.E., MIC, NADIAD)

Statement showing villages affected by floods of **Mohar River** on the basis of discharge/gauge available at downstream of **Kathlal Bridge.**

Sr. No.	Discharge in River Mohar (Cum/Cus)	Gauge Level at Kathlal Bridge Ft./Mt.	Gauge in Mt. Ft.	Name of District Taluka	Signal for Village at Sr. No.		
					White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
1.	NA	NA	5.70	**KHEDA**			
	NA	NA	18.70	2. Nadiad	1 to 10	—	—
				6. Mahemdabad	1	—	—
				7. Mahudha	1 to 2	—	—
2.	NA	NA	6.10	**KHEDA**			
	NA	NA	20.01	2. Nadiad	—	1 to 10	—
				6. Mahemdabad	—	1	—
				7. Mahudha	—	1 to 2	—
3.	NA	NA	6.50	**KHEDA**			
	NA	NA	21.33	2. Nadiad	—	—	1 to 10
				6. Mahemdabad	—	—	1
				7. Mahudha	—-	—-	1 to 2

Note: (1) Refer **Annexure 10-B-1** for affected villages mentioned in Column Nos 1 to 8 in this Annexure.

(2) Zero Gauge of Kathlal Bridge is **36.94 Meter**.

ANNEXURE - 10-B-1.3 (Warning to be issued by S.E.HIPC, Himmatnagar)

Statement showing villages affected by floods of **Watrak River** on the basis of discharge/gauge available at **D/s of Ratanpur-Gadvel Road.**

Sr. No.	Discharge in River Watrak (Cum/Cus)	Gauge Level at Ratanpur Gadval Road	Gauge in Mt. Ft.	Name of District Taluka	Signal for Village at Sr. No.		
					White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
1.	NA	NA	4.50	**KHEDA**			
	NA	NA	14.76	1. Matar	1 to 5	—	—
				2. Kheda	1 to 10	—-	—-
				4. Kapadwanj	1 to 2	—	—
				5. Mahemdabad	2 to 6	—	—
				8. Kathlal	1 to 3	—-	—-
2.	NA	NA	4.90	**KHEDA**			
	NA	NA	16.07	1.Matar	—	1 to 5	—
				2. Kheda	—-	1 to 10	—-
				4.Kapadwanj	—	1 to 2	—
				5.Mahemdabad	—	2 to 6	—
				8. Kathlal	—-	1 to 3	—-
3.	NA	NA	5.50	**KHEDA**			
	NA	NA	18.04	1. Matar	—	—	1 to 5
				2. Kheda	—-	—-	1 to 10
				4. Kapadwanj	—	—	1 to 2
				5. Mahemdabad	—	—	2 to 6
				8. Kathlal	—-	—-	1 to 3

Note: (1) Refer **Annexure 10-A-1** for affected villages mentioned Column Nos 6 to 8 in This Annexure.

(2) Zero Gauge of Ratanpur Gadwal Bridge is **39.12 Meter.**

ANNEXURE - 10-B-1.4 (Warning to be issued by SE, HIPC, Himmatnagar)

Statement showing villages affected by floods of **Watrak River** on the basis of discharge/gauge available at **Kheda Road Bridge on N.H. 8**.

Sr. No.	Discharge in River Watrak (Cum/Cus)	Gauge Level at Kheda Road Bridge on NH-8	Gauge in Mt. Ft.	Name of District Taluka	Signal for Village at Sr. No.		
					White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
1.	NA	NA	4.50	**KHEDA**			
	NA	NA	14.76	1. Matar	7 to 13	—	—
				2. Kheda	11 to 12	—	—
2.	NA	NA	5.50	**KHEDA**			
	NA	NA	18.04	1. Matar	—	7 to 13	—
				2. Kheda	—	11 to 12	—
3.	NA	NA	6.50	**KHEDA**			
	NA	NA	21.32	1. Matar	—	—	6 to 13

Note: (1) Refer **Annexure 10-A-1** for affected villages mentioned in Column Nos 6 to 8 in this Annexure.

(2) Zero Gauge of **Kheda Bridge on N.H.No.8 is 19.75 Meter.**

ANNEXURE - 10-B-1.5 (Warning to be issued by S.E, HIPC, H'NAGAR)

Statement showing villages affected by floods of **Watrak River** on the basis of discharge released & gauge available at **Dabha Bridge.**

Sr. No.	Discharge Released from Watrak (Cum/Cus)	Gauge Level at Dabha Road Bridge Mt./ Ft.	Gauge in Mt./ Ft.	Name of District Taluka	Signal for Village at Sr. No.		
					White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
NOTE :- **1 WHITE SIGNALS** : ALERT **2 BLUE SIGNALS** : READY FOR EVACUATION **3 RED SIGNALS** : IMMEDIATE EVACUATION							
1.	2000	78.53	7.34	**Aravalli.**			
	70630	287.67	24.07	Bayad	—	—	—
2.	2300	79.81	8.58	**Aravalli.**			
	81224.50	261.87	29.52	Bayad	1,9,10	—	—

Sr. No.	Discharge Released from Watrak (Cum/Cus)	Gauge Level at Dabha Road Bridge Mt./ Ft.	Gauge in Mt./ Ft.	Name of District Taluka	Signal for Village at Sr. No.		
					White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
3.	2450	80.20	9.00	**Aravalli**			
	86521.75	263.12	29.52	Dhansura	1	—	—
				Bayad	—	1,9,10	—
4.	2500	80.31	9.12	**Aravalli**			
	88287.50	263.51	29.91	Dhansura	—	1	—
				Bayad	2	—	1,9,10
5.	3000	80.91	9.72	**Aravalli**			
	105945	265.48	31.88	Dhansura	—	—	1
				Bayad	3,4	2	1,9,10
6.	3500	81.41	10.22	**Aravalli**			
	123602.50	267.12	33.52	Dhansura	—	—	1
				Bayad	5	3,4	1,9,2,10
				Malpur	1&2	—	—
7.	4000	81.81	10.62	**Aravalli**			
	141260	268.43	34.83	Dhansura	4	—	1
				Bayad	6	5	1,2,3,4,9,10
				Malpur	—	1&2	—
8.	4500	82.16	10.95	**Aravalli**			
	158917.50	269.58	35.94	Dhansura	—	4	1
				Bayad	—	6	1,2,3,4,5,9,10
				Malpur	—	—	1&2
9.	5000	82.46	11.26	**Aravalli**			
	176575	270.56	36.96	Dhansura	2	—	1,4
				Bayad	7,8	—	1,2,3,4,5,6,9,10
				Malpur	—	—	1&2
10.	5500	82.71	11.51	**Aravalli**			
	194232.50	271.38	37.78	Dhansura	—	2	1,4
				Bayad	—	7,8	1,2,3,4,5,6,9,10
				Malpur	—	—	1&2
11.	6000	82.91	11.72	**Aravalli**			
	211890	272.04	38.44	Dhansura	—	3	1,2,4
				Bayad	—	—	1 to10
				Malpur	3	—	1&2

Sr. No.	Discharge Released from Watrak (Cum/Cus)	Gauge Level at Dabha Road Bridge Mt./ Ft.	Gauge in Mt. Ft.	Name of District Taluka	Signal for Village at Sr. No.		
					White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
12.	6500	83.06	11.87	**Aravalli**			
	229547.5	272.53	38.93	Dhansura	—	3	1,2,4
				Bayad	—	—	1 to 10
				Malpur	—	3	1&2
13.	7000	83.06	11.87	**Aravalli**			
	247205	273.02	39.42	Dhansura	—	—	1 to 4
				Bayad	—	—	1 to10
				Malpur	—	—	1 to 3

Note: - Refer **Annexure 10-A-1** with Addendum for affected villages mentioned in Col.5 to 7 in this Annexure.

ANNEXURE - 10-B-1.6 (Warning to be issued by S.E, MIC, NADIAD)

Statement showing villages affected by floods of **Shedhi River** on the basis of discharge/gauge available at **D/s of Dakor Road Bridge.**

Sr. No.	Discharge in River Shedhi (Cum/Cus)	Gauge Level at Dakor Road Bridge	Gauge in Mt. Ft.	Name of District Taluka	Signal for Village at Sr. No.		
					White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
1.	NA	NA	6.80	**KHEDA**			
	NA	NA	22.30	3. Kheda	13 to 16	—	—
				2. Nadiad.	9 to 10	—	—
				6. Mahemdabad	1 to 5	—	—
				5. Thasra	1 to 6	—	—
				8. Kathalal	3	—	—
2.	NA	NA	7.13	**KHEDA**			
	NA	NA	23.38	3. Kheda	—	13 to 16	—
				2. Nadiad.	—	9 to 10	—
				6. Mahemdabad	—	1 to 5	—
				5.Thasra	7 to 20	1 to 6	—
				8. Kathalal	—	3	—
3.	NA	NA	7.50	**KHEDA**			
	NA	NA	24.60	3. Kheda	—	—	13 to 16
				2. Nadiad.	—	—	9 to 10
				6. Mahemdabad	—	—	1 to 5
				5.Thasra	—	7 to 20	1 to 6
				8. Kathalal	—	—	3

Sr. No.	Discharge in River Shedhi (Cum/Cus)	Gauge Level at Dakor Road Bridge	Gauge in Mt. Ft.	Name of District Taluka	Signal for Village at Sr. No.		
					White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
4.	NA	NA	8.00	**KHEDA**			
	NA	NA	26.25	6. Thasra	—	—	7 to 20

Note: - (1) Refer **Annexure 10-A-1** for affected villages mentioned in Column Nos 1 to 8 in this Annexure.

(2) Zero Gauge of Dakor Road Bridge is **46.01 Meter**.

ANNEXURE-10-C-1-7 (Warning to be issued by SE, HIPC. Himmatnagar)

Statement showing the villages affected by the Floods of **Guhai River** on the basis of discharge released from the **Guhai Dam.**

Sr. No.	Discharge Released from Guhai Dam (Cum/Cus)	Name of District Taluka	Signal for Village at Sr. No.		
			White Signal	Blue Signal	Red Signal
1	2	3	4	5	6
1	2831.65	**Sabarkantha**			
	100000	Himmatnagar	1	—	—
2.	3539.57	**Sabarkantha**			
	125000	Himmatnagar	4, 6 & 7	1	—
3.	3964.32	**Sabarkantha**			
	142000	Himmatnagar	2	4, 6 & 7	1
4	5380.15	**Sabarkantha**			
	190000	Himmatnagar	5, 9, 10 & 17	2	4, 6 & 7
5.	5493.41	**Sabarkantha**			
	194000	Himmatnagar	-	5, 9, 10 & 17	2
6.	5493.41 & above	**Sabarkantha**			
	194000 & above	Himmatnagar	-	-	5, 9, 10 & 17

Note: - Refer **Annexure 10-A-5** for affected villages mentioned.

ANNEXURE 10-C-1.8 (SE,HIPC Himmatnagar)

Statement showing the villages affected by the Floods of **Mazam River** on the basis of discharge released from the **Mazam Dam**

Sr. No.	Discharge Released from Mazam Dam (Cum/Cus)	Name of District Taluka	Signal for Village at Sr. No.		
			White Signal	Blue Signal	Red Signal
1	2	3	4	5	6
1.	500	**Aravalli**			
	17657.50	Modasa Dhansura	—	—	—
2.	750	**Aravalli**			
	26486.25	Modasa Dhansura	1 & 7	—	—
3.	1000	**Aravalli**			
	35315	Modasa Dhansura	4	1 & 7	—
4	1200	**Aravalli**			
	42378	Modasa Dhansura	8, 9 &10 3, 5 & 8	4	1 & 7
5	1500	**Aravalli**			
	52972.50	Modasa Dhansura	—	8, 9 &10 3, 5 & 8	4
6.	1900	**Aravalli**			
	67098.50	Modasa Dhansura	3, 6 &14 12	—	8, 9 &10 3, 5 & 8
7.	2000	**Aravalli**			
	70630	Modasa Dhansura	13	3, 6 &14 12	—
8.	2250	**Aravalli**			
	79458.75	Modasa Dhansura	5 & 11	13	3, 6 & 14 12
9.	2500	**Aravalli**			
	88287.50	Modasa Dhansura	—	5 &11	13
10.	2850	**Aravalli**			

	100647.75	Modasa Dhansura	2	—	5 & 11
11	3000	**Aravalli**			
	105945	Modasa Dhansura	—	2	—
12	3313 & above	**Aravalli**			
	116998.6 & above	Modasa Dhansura	—	—	2

Note: Refer **Annexure 10-A-3** for affected villages mentioned in Column No. 1 & 2.

ANNEXURE 10-C-1.9 (SE,HIPC Himmatnagar)

Statement showing the villages affected by the Floods of **Harnav-II River** on the basis of discharge released from the **Harnav - II Dam**

Sr. No.	Discharge Released from Harnav-II Dam (Cum/Cus)	Name of District Taluka	Signal for Village at Sr. No.		
			White Signal	Blue Signal	Red Signal
1	2	3	4	5	6
1.	566.33	**Sabarkantha**			
	20000	Khedbrahma	3	—	—
2	1132.66	**Sabarkantha**			
	40000	Khedbrahma	1 & 2	3	—
3	1699	**Sabarkantha**			
	60000	Khedbrahma	—	1 & 2	3
		Vijaynagar	1, 2, 3, 4 & 7	—	—
4.	2123.74	**Sabarkantha**			
	75000	Khedbrahma	—	—	1 & 2
		Vijaynagar	5	1, 2, 3, 4 & 7	—
5	2406.9	**Sabarkantha**			
	85000	Vijaynagar	—	5	1, 2, 3, 4 & 7
6	2406.9 & above	**Sabarkantha**			
	85000 & above	Vijaynagar	—	—	5

Note: Refer Annexure 10-A-4 for affected villages mentioned in column 1, 2, 3, 4.

ANNEXURE - 10-A-2

List of villages likely to be affected in downstream of **Hathmati Reservoir** due to floods in **Hathmati River.**

SABARKANTHA DISTRICT							
HIMMATNAGAR TALUKA							
Sr No	Name of Village	Sr No	Name of Village	Sr No	Name of Village	Sr No	Name of Village
1. Fatepur		10. Chandarni		17. Balwantpura		23.Rajpur	
2. Khapreta		11. Khed		18. Kump		24.Keshargadh	
3. Medi Timba		12. Chaplanar		19.Surpur		25.Amrapur	
4. Naroda		13. Mor Dungra		20.Demai		26.Parthipura	
5. Mankadi		14. Ambawada		21.Pratapura		27.Himmatnagar	
6. Amidpura		15. Jambadi		22.Balochpur			
7. Motipura		16. Rabada					
8. Kadodari							
9. Vasana (Ch.)							

ANNEXURE - 10-A-3

List of villages likely to be affected in downstream of Mazam **Reservoir** due to floods in **Mazam River.**

ARAVALLI DISTRICT						KHEDA DISTRICT	
MODASA TALUKA		DHANSURA TALUKA		BAYAD TALUKA		KAPADVANJ TALUKA	
Sr No	Name of Village	Sr No	Name of Village	Sr No	Name of Village	Sr No	Name of Village
1. Volva		1. Vadagam		1. Anakhol		1. Talpora	
2. Hafsabad		2. Khilodiya		2. Land		2. Derdi-Pavthi	
3. Bajkot		3. Mahadevpura		3. Chandrej		3. Kedareshwar Mahadev	
4. Ganeshpura		4. Alva		4. Ambaliryara			
5. Pahadpur		5. Umedpura		5. Vasani			
6. Sayara		6. Navi Sinol		6. Gobrajini-muvadi			
7. Modasa Kashi Vishwaanath Temple		7. Bibipura		7. Mathasulia			
8. Sabalpur		8. Kanjoria		8. Limb			
9. Khadoda		9. Dolpur		9. Untrada			
10. Garudi		10. Jamtha		10. Amarbharti School			
11. Sitpur		11. Rampur		11. Mota Pavthi			
12. Modasa		12. Rajpur		12.Paladi			
13. Dhunavada							
14. Modasa City							

ANNEXURE - 10-A- 4

List of villages likely to be affected in downstream of **Harnav Stage - II Reservoir** due to floods in **Harnav River.**

SABARKANTHA DISTRICT							
VIJAYNAGAR TALUKA						KHEDBRAHMA TALUKA	
Sr No	Name of Village	Sr No	Name of Village	Sr No	Name of Village	Sr No	Name of Village
1. Antarsuba		4. Virpur		6. Dholivav		1. Vangha Kampa	
2. Matali		5. Abhapur		7. Antari		2. Saghara Kampa	
3. Bandhana						3. Silvad	

ANNEXURE - 10-A- 5

List of villages likely to be affected in downstream of **Guhai Reservoir** due to floods in **Guhai River.**

SABARKANTHA DISTRICT							
HIMMATNAGAR TALUKA							
Sr No	Name of Village	Sr No	Name of Village	Sr No	Name of Village	Sr No	Name of Village
1. Khandol		6. Rampur		11. Balochpur		16. Balantpura	
2. Zump		7. Karanpur (Kampur)		12. Rajpur		17. Khanusa	
3. Vasana		8. Ghorwada		13. Amarapur			
4. Bholano Math		9. Tornia Campa		14. Pruthvipura			
5. Kaniol		10. Demai		15. Nava			

ANNEXURE - 10-A- 6

List of villages likely to be affected in downstream of **Meshwo Reservoir** due to floods in **Meshwo River.**

ARAVALLI DISTRICT							
BHILODA TALUKA				MODASA TALUKA			
Sr No	Name of Village	Sr No	Name of Village	Sr No	Name of Village	Sr No	Name of Village
1. Shamlaji		6. Vajapur		1. Bamanvada		6. Gokharia	
2. Bhecarpura		7. Brahmpuri		2. Jalia		7. Rakhial	
3. Samadpura		8. Nandisan		3. Bolundra		8. Jalampur	
4. Kherancha		9. Gadadhar		4. Bharkot		9. Rajpur	
5. Vandol				5. Bakrol			

ANNEXURE - 10-A-7

List of villages likely to be affected in downstream of **Waidy Reservoir** due to floods in **Suron** River.

ARAVALLI DISTRICT					
MEGHRAJ TALUKA					
Sr No	Name of Village	Sr No	Name of Village	Sr No	Name of Village
1. Gotha		4. Varthali		7. Munshivada	
2. Jitpur		5. Vunk		8. Lalpur	
3. Khokharia		6. Narsoli			

ANNEXURE - 10-A- 8

List of villages likely to be affected in downstream of **Khedva Reservoir** due to floods in **Kosambi River (Tributory of Harnav**).

SABARKANTHA DISTRICT					
KHEDBRAHMA TALUKA					
Sr No	**Name of Village**	**Sr No**	**Name of Village**	**Sr No**	**Name of Village**
1. Basol		4. Paroya		7. Shitol	
2. Navanana		5. Rodhara		8. Boradi	
3. Bhutiya		6. Jagnnathpura		9. Vaartol	

ANNEXURE - 10-A- 9

List of villages likely to be affected in downstream of **Varansi Reservoir** due to floods in **Varansi River** (Tributory of Watrak river).

KHEDA DISTRICT					
KAPADWANJ TALUKA					
Sr No	**Name of Village**	**Sr No**	**Name of Village**	**Sr No**	**Name of Village**
1. Dolpur Timba		3. Bariana Muvada		5. Navi Thunchal	
2. Betawada		4. Thunchal		6 Sulatanpur	

ANNEXURE - 10-A- 10

List of villages likely to be affected in downstream of **Jawanpura Reservoir** due to floods in **Meshwo River.**

SABARKANTHA DISTRICT							
TALOD TALUKA							
Sr No	**Name of Village**	**Sr No**	**Name of Village**	**Sr No**	**Name of Village**	**Sr No**	**Name of Village**
1. Badodara		3. Nana		5. Gadhaval		7. Mahekal	
2. Panapur		4. Simaliya		6 Lalani Muvadi			

GANDHINAGAR DISTRICT							
DEHGAM TALUKA							
Sr No	**Name of Village**	**Sr No**	**Name of Village**	**Sr No**	**Name of Village**	**Sr No**	**Name of Village**
1. Vadol		2. Bavalani Muvadi		3. Masang		4. Khakhara	

ANNEXURE - 10-A- 11

List of villages likely to be affected in downstream of **Gorathiya Reservoir** due to floods in **Meshwo River.**

SABARKANTHA DISTRICT							
TALOD TALUKA							
Sr No	**Name of Village**	**Sr No**	**Name of Village**	**Sr No**	**Name of Village**	**Sr No**	**Name of Village**
1. Mota Chekhla		3. Antroli Pujaji		5. Panapur		7. Simaliya	
2. Antroli Doliji		4. Badodara		6 Nana		8. Gadhaval	
9. Lalani Muvadi		10. Mahekal					

GANDHINAGAR DISTRICT							
DEHGAM TALUKA							
Sr No	**Name of Village**	**Sr No**	**Name of Village**	**Sr No**	**Name of Village**	**Sr No**	**Name of Village**
1. Vadol		2. Bavalani Muvadi		3. Masang		4. Khakhara	

ANNEXURE - 10-A- 12

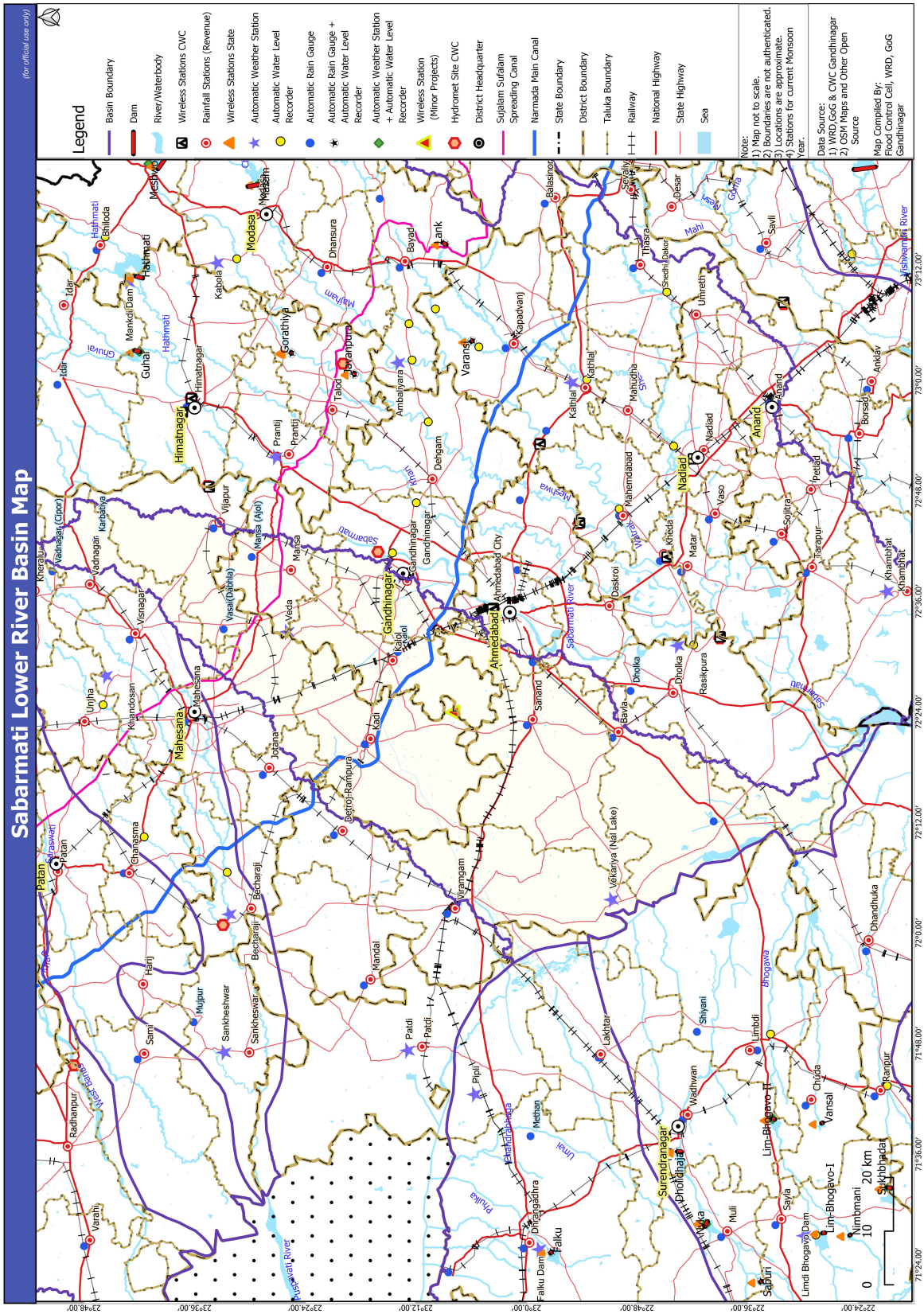
List of villages likely to be affected in downstream of **Lank Reservoir** due to floods in **Dhamani River.**

SABARKANTHA DISTRICT		
BAYAD TALUKA		
Sr No	**Name of Village**	
1. Demai		

KHEDA DISTRICT					
KAPADWANJ TALUKA					
Sr No	**Name of Village**	**Sr No**	**Name of Village**	**Sr No**	**Name of Village**
1. Mota Muwada		3. Kawath		5. Nava Lotia	
2. Vantada		4. Vasna Mota		6. Akodiana Muwada	

LIST OF EXISTING PROJECTS IN SABARMATI BASIN

Sr. No	Name of Project	River	Storage Capacity (Mm^3)		Purpose	Cost Rs. In Crores.
			Gross	Live		
	Rajasthan State					
1	Sei Dam	Sei	31.34	24.16	Diversion	—
	Gujarat State					
2	Dharoi Dam	Sabarmati	813.13	745.48	Irrigation/ Water Supply	96.00
3	Harnav-I	Harnav	—	—	Irrigation	6.500
4	Harnav-II	Harnav	21.67	19.97	Irrigation	0.510
5	Guhai	Guhai	68.75	61.22	Irrigation	6.500
6	Hathmati	Hathmati	152.84	149.32	Irrigation	5.710
7	Meshwo	Meshwo	53.13	49.97	Irrigation Flood Control	2.949
8	Mazam	Mazam	43.86	36.58	Irrigation	22.37
9	Watrak	Watrak	158.203	134.79	Irrigation	47.58
10	Waidy	Suron	9.292	8.707	Irrigation	1.806
11	Raska Weir	Meshwo	—	—	Irrigation	—
12	Moti Fatewadi	Sabarmati	—	—	Irrigation	0.749
13	Sant sarovar	Sabarmati	10.06	—	Ground Water Recharging	129.27
14	Vasana Barrage	Sabarmati	—	—	Irrigation	8.875
15	Khedva	Kosambi	7.63	6.68	Irrigation	10.23
16	Varanasi	Varanasi	3.184	2.617	Irrigation	11.86
17	Javanpura Barrage	Meshwo	2.4887	2.3435	Ground Water Recharging	8.14
18	Lakroda Weir	Sabarmati	3.75	3.75	Ground Water Recharging	14.23
19	Valasana Barrage	Sabarmati	4.58	—	Ground Water Recharging	125.09



Annexure 10-C

11.0 BANAS BASIN:

11.1 The flood forecasting for Banas River Basin is being looked after by the Executive Engineer, Mahi Division (C.W.C.) Gandhinagar under the control of the Superintending Engineer, Hydrological Observation Circle, Gandhinagar. He has established Wireless Stations locations from where he can obtain the details about rainfall and discharges in the river. The gauge and rainfall data are being communicated, through Wireless Stations located at various stations on the main river as well as on tributaries.

11.2 Name of villages / dams where wireless stations are located to report rainfall and gauge discharge are as under.

A. C.W.C's Wireless Stations and location

1.	Mount Abu	Rajasthan State
2.	Abu Road	Rajasthan State
3.	Swaroop Ganj	Rajasthan State
4.	Dantiwada	Gujarat State
5.	Sarotri	Gujarat State
6.	Palanpur	Gujarat State
7.	Chitrasani	Gujarat State
8.	Bhakudar	Gujarat State
9.	Ambaji	Gujarat State

B. State's Wireless Stations.

1.	Dantiwada (SSC-2)	Gujarat State
2.	Bhakudar (Sipu) (SSC-2)	Gujarat State
3.	Bhilada (SSC-2)	Gujarat State

11.3 Statement showing the villages affected at various signals at different levels in Banas River enclosed vide Annexure 11 (A) and 11 (B) respectively and for Sipu River Annexure 11-A-1.

11.4 The Basin Plan showing all the wireless station established together with gauge, discharge and rain gauge station is appended vide Annexure 11-C.

11.5 West Banas Bund (Swaroop Gunj) Weir is located in Rajasthan State in upstream of Dantiwada dam. Whenever release is made from West Banas Bund, water enters in upstream of Dantiwada dam.

In case of failure or breaches in West Banas Bund, Executive Engineer, Mahi Division (CWC), Gandhinagar will inform Collector, Banaskantha, Patan and Executive Engineer, Deesa Irrigation Dn., Deesa, for precautionary measures to be taken within Gujarat State for the villages Deri, Aval, Arnivada and Balundra, which are likely to be affected by floods.

Executive Engineer, Deesa Irrigation Division, Deesa will report in detail to the Focal Officer, Superintending Engineer, Palanpur Irrigation Project Circle, Palanpur, immediately. The Executive Engineer, Deesa Irrigation Division, Deesa,

will remain in touch with C.W.C. authorities when Maximum Water Level of Swaroop Gunj reaches at 1100.75 Feet or 335.50 Meter for appraisal of the situation.

11.6 Dantiwada dam is located on Banas River at Dantiwada in Gujarat State, which is moderating the flood in the river. The Executive Engineer in Deesa Irrigation Division, Deesa, should work out outflow through the spill way of Dantiwada dam on the basis of incoming flood and gauge, estimated discharge data of upstream stations received from executive Engineer, Mahi Division, CWC, Gandhinagar & discharges/releases made through Sipu dam who is in-charge of Executive Engineer, Sipu Project Divsion, Palanpur. The Flood releases should be frequently supplied to Executive Engineer, Mahi Division (C.W.C.),Gandhinagar and Superintending Engineer, Sujalam Suflam circle No. 2, Mehsana. The inflow forecast for Dantiwada Dam is to be issued for the minimum inflow of 20,000 Cusecs (566.4 Cumecs) and also for minimum inflow of 10,000 Cusecs (283.2 Cumecs) when the reservoir level comes to R.L.595.00 Ft. (181.34M).

11.6.1 The release outflow made from spillway of Sipu Dam should be intimated to the Executive Engineer, Deesa Irrigation Division, Deesa by Executive Engineer Sipu Project Division, Palanpur, so that the gate operation of Dantiwada Dam can be planned accordingly.

11.7 Action to be taken by the Executive Engineer, Mahi Division (C.W.C.), Gandhinagar.

1. Formulation and dissemination of flood forecast of Dantiwada Dam.

2. Sharing of hourly observed gauge, estimated discharge and rainfall data of site Sarotry and Chitrasani, as per data dissemination schedule (0000, 0300,0600,0800,1000, 1200,1500,1800,2100 hrs)

3. Information in case of failure or breaches in West Banas Bund.

TABLE - (11.7)

Note: - Please refer Flood Telephone Directory of the current year for telephone nos.

Name of the Officer with Telephone Nos.	Observation to be made by the Officer	Officer to whom the messages to be sent.
1	2	3
Executive Engineer, Mahi Division, (C.W.C), Gandhinagar	The Inflow forecast for DANTIWADA DAM is to be conveyed to the Officer at Sr.No.(a),(b) & (g) in Column No.3.	(a) Superintending Engineer, Sujlam Suflam Circle No.2, Kherva, Mehsana. (b) Executive Engineer, Deesa Irrigation Division, Deesa. (c) Collector, Banaskantha Dist. Palanpur. (d) District Superintendent of Police, Banaskantha, Dist. Palanpur. (e) Collector Patan Dist. (f) District Supeintendent of Police, Patan District, Patan.

(g) Flood Control Cell, Gandhinagar.

11.7 Appropriate Authority (Focal Officer)

Superintending Engineer
Sujlam Suflam Circle No.2,
Kherva, Mehsana.

Note: - Please refer Flood Telephone Directory of current Year for telephone nos.

ANNEXURE 11 (A)

List of villages likely to be affected by Floods in D/S of Dantiwada **Dam** over **Banas River.**

PATAN DISTRICT				BANASKANTHA DISTRICT			
SR. NO.	**SANTALPUR TALUKA**	**SR. NO.**	**RADHANPUR TALUKA**	**SR. NO.**	**KANKREJ TALUKA**	**SR. NO.**	**DEESA TALUKA**
1		**2**		**1**		**2**	
1.	Abiyana	1.	Dharvadi	1.	Lilapura	1.	Bhadath
2.	Unadi	2.	Jetalpura	2.	Jamana Padar	2.	Multhar Golia
3.	Gadsai	3.	Joravargadh	3.	Mali Goliya	3.	Chandaji Golia
4.	Lunichana	4.	Karshangadh	4.	Bakoli	4.	Vidi
5.	Gokhantar	5.	Agi chana	5.	Sohanpur	5.	Vasada
6.	Rajosana	6.	Pedashpura	6.	Sakaria	6.	Ranpur East
7.	Hamirpura	7.	Najupura	7.	Sudrosan	7.	Ranpur West
8.	Naliya	8.	Sabdalpura	8.	Rupapura	8.	Akhol Moti
9.	Antarnes	9.	Gochanad	9.	Shihori	9.	Akhol Nani
		10.	Masali	10.	Umri	10.	Mahadevia
Sr. No.	**SAMI TALUKA (3)**	11.	Kamalpur	11.	Dudosan	11.	Malgadh
		12.	Bismilla gunj	12.	Manpur	12.	Kupat
1.	Math	13.	Amirpura	13.	Shiya	13.	Vadaval
2.	Masel	14.	Chhaniyathara	14.	Anandpura	14.	Jabadiya
3.	Dadar	15.	Saharapura	15.	Oon	15.	Bhadramali
4.	Khakharia	16.	Gulabpura	16.	Kharia	16.	Sanath
5.	Ramnagar	17.	Madhavpura	17.	Bhadravadi	17.	Chhatrok
6.	Dundpura	18.	Dharampura	18.	Totana	18.	Bodol
7.	Adgam	19.	Shergadh	19.	Tana		
8.	Haripura	20.	Dholakada	20.	Nagot		
	DANTIWADA	21.	Sathan	21.	Mangalpura	**Sr.**	
9.	Takha	22.	Dahegam	22.	Vada	**No.**	**TALUKA (3)**
10.	Mandavi	23.	Delana	23.	Ranavada		
11.	Gajdinpura	24.	BadarPura	24.	Odna	1.	Nadotra. Thakorwas
12.	Chandrani	25.	Manpura	25.	Kasalpur		
13.	Bismillabad	26.	Kuntasari	26.	Balochpura	2.	Nodotra Brahmanwas
14.	Sherpura	**Sr.**	**SARASWATI**	27.	Belapura		
15.	Ranavada	**No.**	**TALUKA**	28.	Magarpur	3.	Sikariya
16.	Babari		**(4)**	29.	Jamipura(Juna)		
17.	Rampura			30.	Kamboi		
18.	Kodth	1.	Undra	31.	Anganvada		
19.	Bhadvada	2.	Delia Thara	32.	Abmainna		
				33.	Jampura Mota		
				34.	Jampura Nana		
				35.	Ganyapura		
				36.	Valpura		
				37.	Avaniwada		

ANNEXURE 11-A-1

List of villages likely to be affected by floods in **Sipu River** on downstream of **Sipu Dam** & up to **conflict Point of Banas River**.

SR. No.	DEESA TALUKA	REMARKS
1.	Chandaji(Golia)	White Signals @50,000 Cusecs Discharge @Banas Road Bridge, Deesa.
2.	Morthal(Golia)	
3.	Bhadath	

ANNEXURE - 11(B)

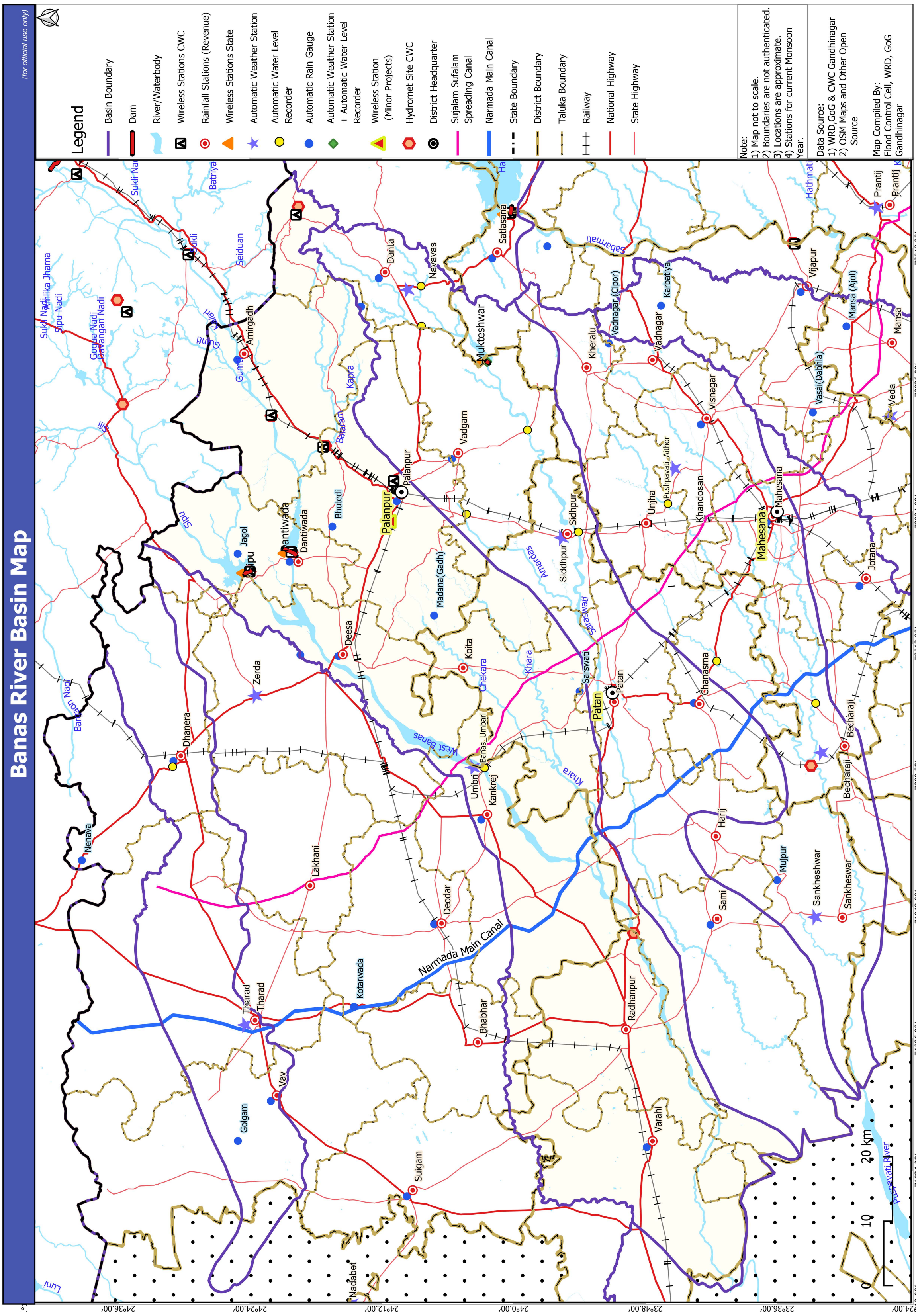
Statement showing villages affected by floods of **Banas River** on the basis of discharge available at **Deesa Road Bridge** gauge site.

Sr. No.	Discharge in River Banas (Cum/Cus)	Gauge Level at Deesa Bridge In Meter	Gauge in Meter Feet	Name of District Taluka	Signals for Villages at Sr. No.		
					White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
NOTE :- 1 **WHITE SIGNALS** : ALERT 2 **BLUE SIGNALS** : READY FOR EVACUATION 3 **RED SIGNALS** : IMMEDIATE EVACUATION							
1.	283.00 ——— 9994.14	122.95	1.85 ——— 6.06	**Patan** ——— 2.Radhanpur	1 to 6	—	—
2.	708.00 ——— 25003.02	123.35	2.25 ——— 7.38 2.Radhanpur	**Patan** ——— 1.Santalpur 7	1 1 to 6	— —	—
3.	1416.00 ——— 50006.04	123.75	2.65 ——— 8.69	**Patan** ——— 1.Santalpur 2.Radhanpur **Banaskatha** ——— 2.Deesa	— — 1 to 3	1 7 —	— 1 to 6 —
4.	1700.00 ——— 60035.00	123.95	2.85 ——— 9.35	**Patan** ——— 1.Santalpur 2.Radhanpur **Banaskantha** ——— 2.Deesa 4.Dantiwada	— 8 — 1 to 3	— — 1 to 3 —	1 7 — —

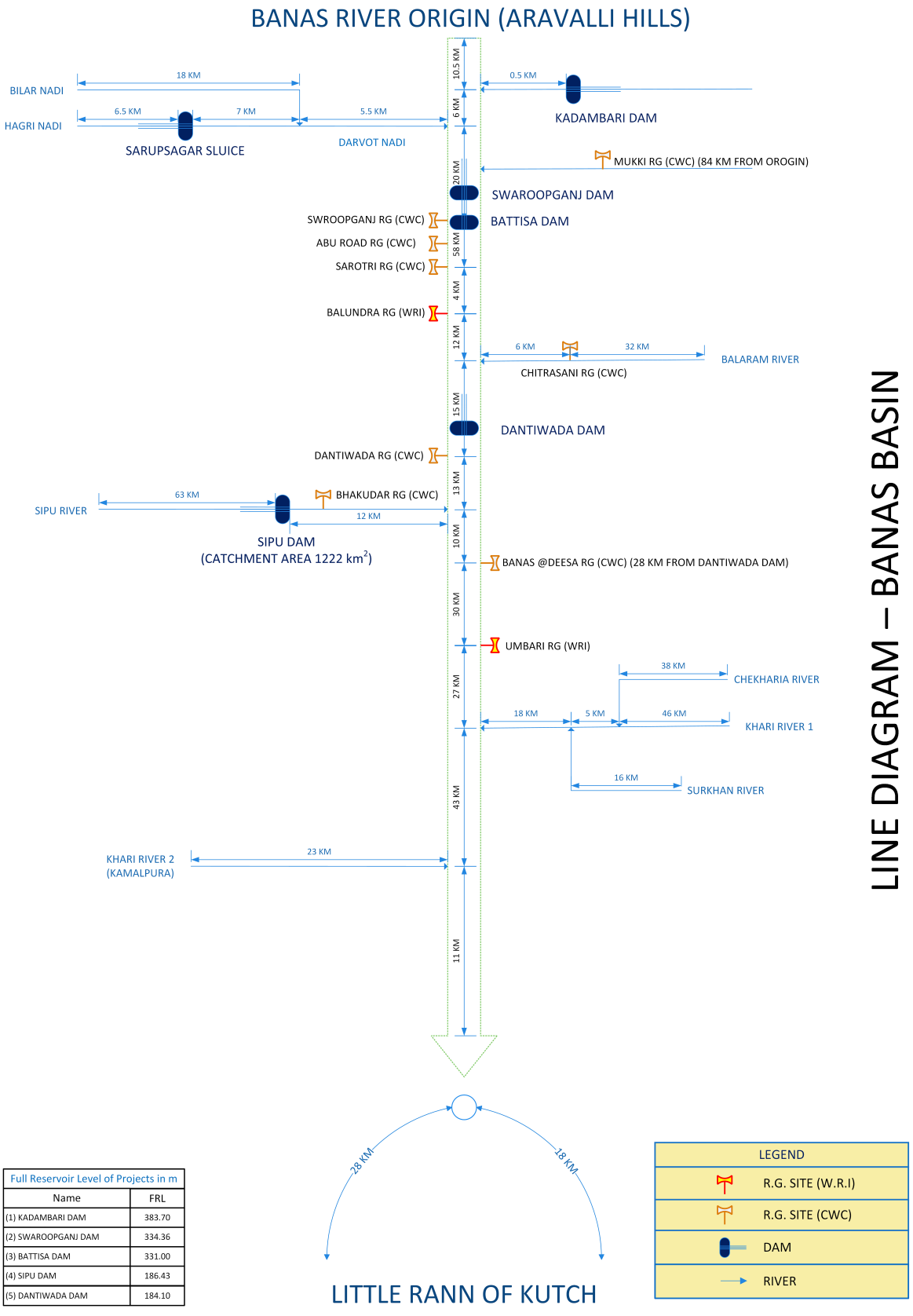
Sr. No.	Discharge in River Banas (Cum/Cus)	Gauge Level at Deesa Bridge In Meter	Gauge in Meter Feet	Name of District Taluka	Signals for Villages at Sr. No.		
					White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
5.	1982.00	124.15	3.05	**Patan**			
	69994.33		10.00	1.Santalpur	2 to 9	—	—
				2.Radhanpur	9 to 12	8	—
				Banaskantha			
				2.Deesa	—	—	1 to 3
				4.Dantiwada	—	1 to 3	—
6.	2832.00	124.45	3.35	**Patan**			
	100012.08		10.99	1.Santalpur	—	2 to 9	—
				2.Raddhanpur	—	9 to 12	8
				3.Sami	1 to 9	—	—
				Banaskantha			
				1.Kankrej	1 to 8	—	—
				4.Dantiwada	—	—	1 to 3
7.	3398.00	124.70	3.60	**Patan**			
	120000.37		11.81	1.Santalpur	—	—	2 to 9
				2.Radhanpur	13 to 26	—	9 to 12
				3.Sami	10 to 19	1 to 9	—
				Banaskantha			
				1.Kankrej	9 to 25	1 to 8	—-
8.	3682.00	124.75	3.65	**Patan**			
	130029.83		11.97	2.Radhanpur	—-	13 to 26	—
				3.Sami		10 to 19	1 to 9
			4.Saraswati	1 to 2	—	—	
				Banaskantha			
				1.Kankrej	—	9 to 25	1 to 8
9.	4248.00	124.95	3.85	**Patan**			
	150018.12		12.63	2.Radhanpur	—	—	13 to 26
				3.Sami	—	—	10 to 19
				4. Saraswati	—	1 to 2	—
				Banaskantha			
				1.Kankrej	26	—	9 to 25

Sr. No.	Discharge in River Banas (Cum/Cus)	Gauge Level at Deesa Bridge In Meter	Gauge in Meter Feet	Name of District Taluka	Signals for Villages at Sr. No.		
					White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
10.	5664.00	125.50	4.40	**Banaskantha**			
	200024.16		14.43	1.Kankrej	27 to 37	26	—
				2. Deesa	4 to 18	—	—
				Patan			
				4. Saraswati	—	—	1 to 2
11.	9912.00	126.85	5.75	**Banaskantha**			
	350042.28		18.86	1. Kankrej	—	27 to 37	26
				2. Deesa	—	4 to 18	—
12.	11328.00	127.25	6.15	**Banaskantha**			
	400048.32		20.17	1.Kankrej	—	—	27 to 37
				2. Deesa	—	—	4 to 18

Note: - Zero level of Deesa Road Bridge is **121.10 Meter.**



Annexure 11-C



Full Reservoir Level of Projects in m	
Name	FRL
(1) KADAMBARI DAM	383.70
(2) SWAROOPGANJ DAM	334.36
(3) BATTISA DAM	331.00
(4) SIPU DAM	186.43
(5) DANTIWADA DAM	184.10

LEGEND
R.G. SITE (W.R.I)
R.G. SITE (CWC)
DAM
RIVER

VISHWAMITRY AND DEO BASINS

12

12 (A) VISHWAMITRY BASIN:

12.1.1 The flood forecasting system for Vishwamitry Basin is being looked after by the Superintending Engineer, Vadodara Irrigation Circle, Vadodara. Various Wireless Stations are established at the locations upstream of Vadodara from where gauge and rainfall data & spillway discharges from various tanks are obtained by him. The gauge and rainfall data are being communicated to him through Wireless Stations.

12.1.2 Name of villages / tanks where wireless stations are located to report rainfall and gauge discharge are as under:

State's Wireless Stations.

1.	Vadodara	(VIC)	Gujarat State
2.	Central Control Station, (Vadodara Municipal Corporation)		Gujarat State
3.	Ajwa Tank	(VMC)	Gujarat State
4.	Pratappura Tank	(VMC)	Gujarat State
5.	Halol	(VIC)	Gujarat State
6.	Ghansarvav Tank	(VIC)	Gujarat State
7.	Dhanora Tank	(VIC)	Gujarat State
8.	Pilol	(VIC)	Gujarat State
9.	Bhaniara	(VIC)	Gujarat State
10.	Pavagadh Repeater	(VIC)	Gujarat State

12.1.3 Basin Map showing all the wireless stations established together with gauge, discharge and rain gauge station is appended vide Annexure 12-C.

12.1.4 The flood forecasting & flood warning arrangements for following water supply projects under Municipal Corporation will be looked after by Municipal Commissioner, Vadodara. He shall directly collect weather bulletin, H.R.W from Indian Meteorological Department, Ahmedabad or Revenue Control Room of the concerned districts & shall formulate the flood forecast & convey to the concerned Collector regarding the area likely to be affected for alerting and evacuation of the people as warranted by flood, Simultaneously, they convey the flood forecast and action taken by them to the Flood Control Cell (Irrigation) nearest to them.

TABLE-12.1.4

Sr. No.	Name of Water Scheme	Officer In Charge of Scheme	Telephone Nos.
1.	Ajwa	Municipal Commissioner, Vadodara Municipal Corporation, Vadodara	Please refer Flood Telephone Directory of current year for Telephone Nos.
2.	Pratappura		

12.1.5 Action to be taken by various Officers.

TABLE -12.1.5

Note: Please refer Flood Telephone Directory of current year for Telephone Nos.

Name of the Officer with Telephone Nos.	Observation to be made by the Officer	Officer to whom the messages to be sent.
(1)	(2)	(3)
(A) Officer In Charge Dhanora Wireless Station under Executive Engineer, Vadodara Irrigation Division, Vadodara	1. Messages about rain-fall, gauge levels, out-flow of Haripura, Vadodara and Dhanora and M.I. tanks to be conveyed to the officer at Sr. No. (A) in Col. No. 3	(a) Deputy Executive Engineer, Goma Project Sub-Division, Halol (b) Officer incharge of Ajwa Station under V.M.C., Vadodara.
(B) Deputy Executive Engineer Goma Project Sub-Division, Halol	2. Messages received from Dhanora to be conveyed to the Officers at Sr. No. (b) in Col No.3	(c) Chief Officer (Fire) Central Wireless Station, V.M.C, Vadodara
(C) Officer In Charge of Bhaniara & Pilol Wireless Stations under Executive Engineer, Irrigation Division, Vadodara.	3. Messages about rain-fall, gauge levels, and velocity of River Vadodara channel and discharge data to be conveyed to the Officer at Sr. No. (b)in Col. No.3 Corporation, Vadodara.	(d) Executive Engineer, Vadodara Irrigation Division, Vadodara.
(D) Officer In Charge of Ghansarvav Wireless station under Executive Engineer, Vadodara Irrigation Division	4. Messages about rainfall gauge levels, outflow of Ghansarvav Tank to be conveyed to the officer at Sr. No.(b) in Column No.3	
(E) Officer In Charge of Ajwa Station under V.M.C, Vadodara.	5. Messages received vide (1) to (4) about rainfall and water level of Ajwa & Pratappura to be conveyed to the officer at Sr. No. (c) in Col. No.3.	
(F) Chief Officer (Fire) Central Wireless Station, V.M.C, Vadodara.	6. Messages received from Ajwa Wireless Station as per (5) above, to be conveyed to the Officer at Sr. No. (d) and (e) in column No.3.	

12.1.6 The City Engineer, Vadodara Municipal Corporation, Vadodara, Shall also give messages about the gauge levels at City Bridge and also rainfall observed at the M.S.University Observatory, Sayaji Ganj, Vadodara. Whenever the rainfall recorded at the observatory over the previous 24 Hours exceeds 50 mm, the hourly rainfall shall also be obtained by the City Engineer and transmitted together with gauges at City Bridge to the Flood Cell of the Vadodara Irrigation Circle, Vadodara.

12.1.7 The list of villages and the water levels at the City Bridge is likely to cross the danger mark i.e., various signal stages as given vide Annexures 12(A) & 12(B). The message

shall immediately be conveyed to the Flood Control Cell of the Collector, Vadodara for taking necessary measures by the City Engineer, Vadodara Municipal Corporation, Vadodara.

12.1.8 Statement Showing the Time lag for various stations from origin to the end of river basin are as under.

Sr. No.	Name of Site	Distance of River from Vadodara		Catchment Area in Sq. Kms.	Danger Level in Meters	Time Lag in Hours	
		Origin In Kms.	In Kms.			High Flood	Low Flood
1	2	3	4	5	6	7	8
1.	AJWA SAROVAR	19.31	32.38	95.00	64.31	4	8
2.	INTER-LINKING FEEDER(VISHWAMITRI)	16.10	41.83	38.33	2.50	5	10
3.	PRATAPPURA (VISHWAMITRI)	16.10	41.83	71.59	69.69	5	10
4.	DHANORA (DISTRIBUTARY VISHWAMITRI)	25.74	37.06	32.37	62.18	3	10
5.	CITY BRIDGE	64.36	0.00	0.00	30.57	0	0

Note: W = Wireless D = Discharge F = Flood G = Gauge R = Rainfall.

12 (B) DEO BASIN

12.2.1 The Deo river is a tributary of river Dhadhar. The flood forecasting and flood warning for Deo Basin is being looked after by the Superintending Engineer, Vadodara Irrigation Circle, Vadodara. The hydro meteorological data and spillway discharges are obtained by the focal officer and the same will be communicated to the concerned officers through wireless stations.

12.2.2 Names of villages/dams where wireless stations located are as under:

State's Wireless Stations:

1. Vadodara (S.E.V.I Circle, Vadodara) (VIC)
2. Halol (VIC)
3. Shivrajpur (Rain gauge staions) (VIC)
4. Deo dam site (Nr. Kuberpura Village) (VIC)
5. Rameshra Colony (VIC)
6. Pavagadh Repeater (VIC)

12.2.3 Deputy Executive Engineer, I.P. Sub-Dn. No.23, Waghodia will communicate the necessary flood message to Flood Control Cell, Vadodara, in the Office of Superintending Engineer, Vadodara Irrigation Circle, Vadodara, Executive Engineer, Vadodara Irrigation Division, Vadodara. He will also pass the required data to the Flood Control Cell, Gandhinagar, as and when required.

12.2.4 Basin Plan showing all the wireless stations established together with gauge, discharge and rain gauge stations is appended vide Annexure 12-C.

12.2.5 Action to be taken by various Officers.

TABLE - (12.2.5)

Note: - Please refer Flood Telephone Directory of current year for Telephone Nos.

Name of the Officer with Telephone Nos.	Observation to be made by the Officer	Officer to whom the messages to be sent.
(1)	**(2)**	**(3)**
(A) Deputy Executive Engineer, I.P. Sub-Dn. No.23, Waghodia Officer in charge of Shivrajpur wireless Station & Deo Dam site near wireless station Halol	Collect the Hydro meteorological data regarding rainfall, gauge level, outflow & other necessary pertaining to flood to be conveyed to the Officer in Col.No.3 from Sr.No. (a) to (e)	(a) Executive Engineer, Vadodara Irrigation Dn., Vadodara (b) S.E.V.I.C, Vadodara. (c) Flood Cell, Vadodara. (d) Collector, Panchmahals. Godhra (e) Collector, Vadodara. (f) District Superintendent of Police (Panchmahals), Godhra (g) District Superintendent of Police, Vadodara (Rural) (h) Flood Control Cell, Gandhinagar (i) Collector, Bharuch.
B) Executive Engineer Vadodara Irrigation Dn., Vadodara	Messages as received above to be conveyed to the Officer in Col.No.3 at Sr. No. (e) to (j).	

12.2.6 The list of affected villages by floods in river **DEO** at various signal stages at different levels is appended vide Annexure 12-A-2 & 12-B-2

12.2.7 Appropriate Authority (Focal Officer)

(A) (For Vishwamitri & Deo Basin)
Superintending Engineer, Vadodara
Irrigation Circle, Kothi Building, Vadodara

(B) (For Ajwa and Pratappura Water Supply Scheme)
The Municipal Commissioner,
Vadodara Municipal Corporation, Vadodara.

Note: - Please refer Flood the Telephone Directory of current year for Telephone Nos.

ANNEXURE - 12-A-1

Statement of low lying area of **Vadodara City** and list of villages to be affected due to floods in **Vishwamitry River**.

SR. NO	SAYAJI GUNJ AREA	SR. NO.	WADI AREA	SR. NO.	BABAJIPURA AREA	SR. NO.	RAOPURA AREA
Low lying areas of Vadodara City:-							
1.	Parasaram Bhatto	1.	Low lying areas outside Pani gate	1.	Behind Nava pura Tank Khanderao	1.	North Portion of Vinoba Bhave Marg.
2.	Area of Bhimnath Mahadev	2.	Mahemad Talav Area		Mahavir Maholla		Tulsi bhai's. Chal, Bhavaman Chall, Ra bari Faliya
3.	Camp Fatehganj Harijanwas Ranchodji Mandir Kamatipura, Modikhana, Area Near Methodist Church	3.	Marial's wada Maliwas Mangal park North East Corner	2	Kumbhar wado (Parasan Society near S.R.P. Camp)	2	Low lying area of Kasamahala Moffusil
4.(i)	Chhani Road Sardar Nagar Kans, Lalpur, Ramwadi,	4.	Gujarat Housing Board Portion Behind Ranmuktesh war Barvi	3.	Sindhwai Road	3.	North portion of Societies of Karelibag.
4.(ii)	Pensionpura	5.	Road beyond Yamuna Mill	4.	Dandia Bazar	4.	Naya Dharati Area.
4.(iii)	Akota	6.	Hakim's Palace Nr. Sindwai Mata.			5.	Portion near Ajabadi mill, Taraknath Mahadev
4.(iv)	Manenagar (Munj Mohallo)	7.	Behind Godi & Navagam Mandir.			6.	Surrounding areas of Sarasia Tank and new Society's Area
		8.	From Jawahar Society to Simodwali Talawadi place near Satyadev Chemicals				

SR. NO	SAYAJI GUNJ AREA	SR. NO.	WADI AREA	SR. NO.	BABAJIPURA AREA	SR. NO.	RAOPURA AREA

9. Warsia new Colony and surrounding societies
10. Manalgesh-war area
11. Society area. Situated at Harai Marg.

Affected Villeges of Vadodara Taluka:

1.	Dumad	5.	Ambaliara	9.	Kotali	13.	Vadsar.
2.	Ganpatpura	6.	Sukalipura	10.	Vemali		
3.	Harani	7.	Dena	11.	Chapad		
4.	Sama	8.	Virod	12.	Kalali		

Note: Refer Annexure - 12-C for villages affected at different Water levels.

ANNEXURE - 12-B-1

Statement showing warning signals arrangement for low lying area of Vadodara **City** & villages affected by floods of **Vishwamitri River** on the basis of gauge levels of **Vadodara City Bridge**.

Sr. No	Gauge R.L. at Vadodara City Bridge		Name of District Taluka	Signal for Village at Sr. No.		
	In Meter	In Feet		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7
NOTE :- 1 **WHITE SIGNALS** : ALERT 2 **BLUE SIGNALS** : READY FOR EVACUATION 3 **RED SIGNALS** : IMMEDIATE EVACUATION						
LOWLYING AREA OF VADODARA CITY/VADODARA TALUKA:						
1.	29.34	96.68	1. Sayaji Gunj Area	1 to 4	—	—
			2. Wadi Area	1 to 11	—	—
			3. Babaji-Pura Area	1 to 4	—	—
			4. Rao-pura Area	1 to 6	—	—
			5. Vadodara Taluka	1 to 13	—	—
2.	29.95	98.25	1. Sayaji Gunj Area	—	1 to 4	—
			2. Wadi Area	—	1 to 11	—
			3. Babaji Pura Area	—	1 to 4	—
			4. Raopura Area	—	1 to 6	—
			5. Vadodara Taluka	—	1 to 13	—
3.	30.57	100.28	1. Sayaji Gunj Area	—	—	1 to 4
			2. Wadi Area	—	—	1 to 11
			3. Babaji Pura Area	—	—	1 to 4
			4. Raopura Area	—	—	1 to 6
			5. Vadodara Taluka	—	—	1 to 13

Remarks: The inhabitants of low lying area of Vadodara City and villages in Vadodara Taluka mentioned in Column No.4 are to be requested to alert themselves on account of floods and evacuation of their places as suggested by the Vadodara Municipal Corporation Authority and District Collector respectively.

Note: Refer Annexure - 12-A-1 for the names of villages mentioned in Column Nos. 4, 5 & 6.

ANNEXURE - 12-A-2

List of villages likely to be affected in **downstream of Deo Reservoir** due to floods in **Deo River**.

VADODARADISTRICT				PANCHMAHALS DISTRICT	
Sr. No	**VAGHODIA TALUKA**	**Sr. No.**	**DABHOI TALUKA**	**Sr. No.**	**HALOL TALUKA**
1.	Falod	1.	Banaiya	1.	Sonaviti
2.	Vejalpur	2.	Abdulpura	2.	Rasgagar
3.	Walva	3.	Kadadra	3.	Gadit
4.	Zaverpura	4.	Karali	4.	Sonipur
5.	Goraj	5.	Gojali	5.	Kuberpur
6.	Madhavpura	6.	Kadadarapura	6.	Indral
7.	Dankheda	7.	Wanadra	7.	Badharpuri
8.	Ambali				
9.	Patiyapura				
10	Muni Ashram				
11.	Muvada				
12.	Jayapura				
13.	Antoli				
14.	Wankuva				
15.	Ghodadara				
16.	Vyara				
17.	Dholar				
18.	Kagdipura				
19.	Akadiyapura				

Note: - Refer Annexure - 12-B-2 for villages affected at different Water Levels.

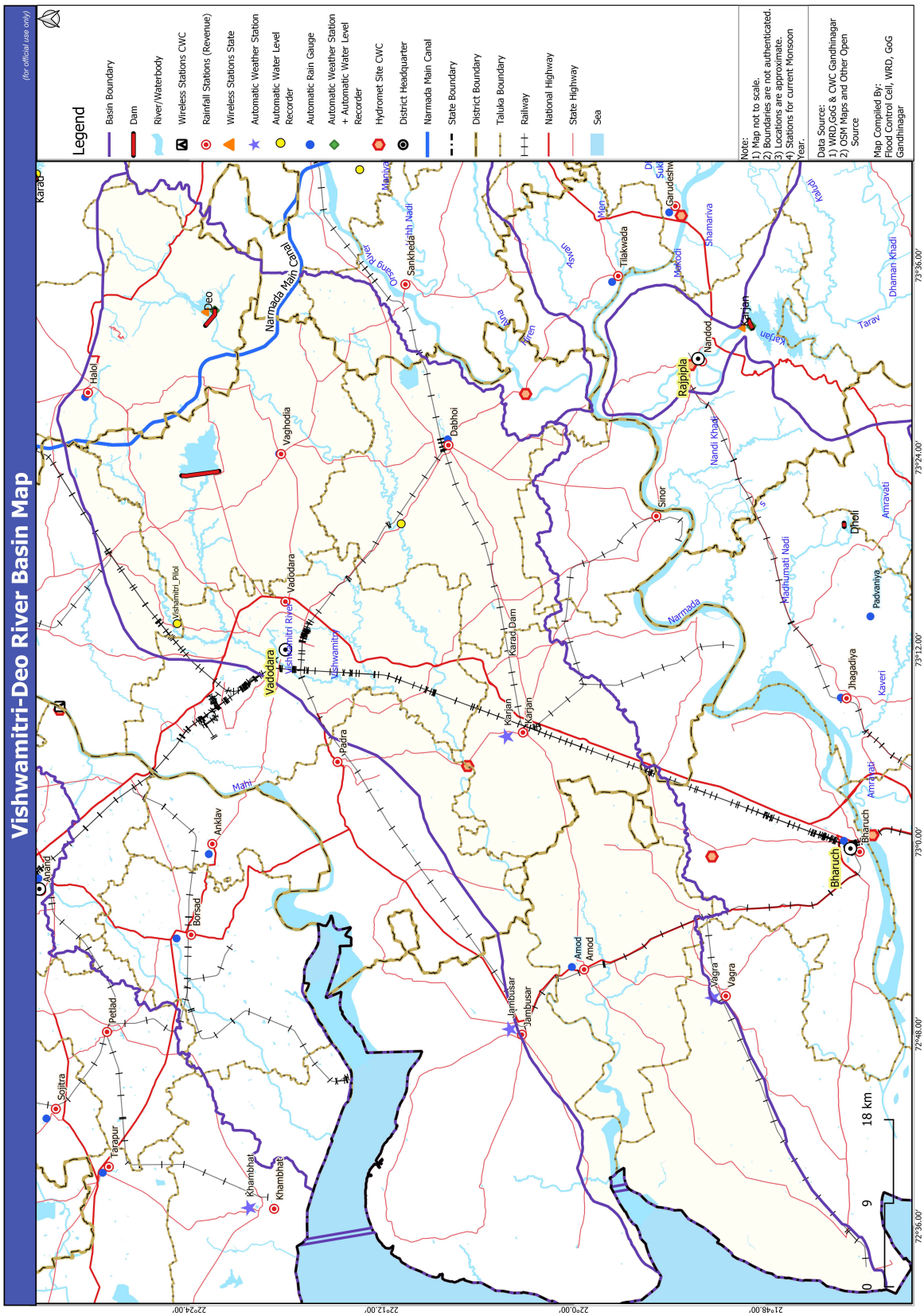
ANNEXURE - 12-B-2

Statement showing villages affected by floods of **Deo River** on the basis of Discharge released from **Deo Dam.**

Sr. No.	Discharge Released from Deo Dam (Cum/Cus)	Gauge Level at Spillway		Name of District Taluka	Signal for Village at Sr. No.		
		In Meter	In Feet		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
NOTE :- **1 WHITE SIGNALS** : ALERT **2 BLUE SIGNALS** : READY FOR EVACUATION **3 RED SIGNALS** : IMMEDIATE EVACUATION							
1.	1134.00 40047.21	83.70	274.62	**Vadodara** 1. Vaghodia	1	—	—
2.	1275.00 45026.63	83.90	275.28	**Vadodara** 1. Vaghodia	2	1	—
3.	1417.00 50041.36	84.09	275.90	**Vadodara** 1. Vaghodia 2. Dabhoi	— 1	2 —	1 —
4.	1559.90 55056.09	84.20	276.26	**Vadodara** 1. Vaghodia 2. Dabhoi **Panchmahals** 1. Halol	3 & 4 — 1	— 1 —	1 & 2 — —
5.	1700.00 60035.50	84.30	276.59	**Vadodara** 1. Vaghodia 2. Dabhoi **Panchmahals** 1. Halol	5 to 9 — —	3 & 4 — 1	1 & 2 1 —
6.	1984.00 80800.72	84.60	277.59	**Vadodara** 1. Vaghodia 2. Dabhoi **Panchmahals** 1. Halol	— 2 2	5 to 9 — —	1 to 4 1 1
7.	2288.00 80800.72	84.90	278.56	**Vadodara** 1. Vaghodia 2. Dabhoi **Panchmahals** 1. Halol	10 to 13 3 —	— 2 2	1 to 9 1 1

Sr. No.	Discharge Released from Deo Dam (Cum/Cus)	Gauge Level at Spillway		Name of District Taluka	Signal for Village at Sr. No.		
		In Meter	In Feet		White Signal	Blue Signal	Red Signal
1	2	3	4	5	6	7	8
8.	2551.00	85.20	279.54	**Vadodara**			
	90088.56			1. Vaghodia	14 to 17	10 to 13	1 to 9
				2. Dabhoi	4	3	1 & 2
				Panchmahals			
				1. Halol	—	—	1 & 2
9.	2834.00	85.50	280.53	**Vadodara**			
	100082.71			1. Vaghodia	—	14 to 17	1 to 13
				2. Dabhoi	5	4	1 to 3
				Panchmahals			
				1. Halol	—	—	1 & 2
10.	3117.00	85.80	281.51	**Vadodara**			
	110076.86			1. Vaghodia	—	—	1 to 17
				2. Dabhoi	—	5	1 to 4
				Panchmahals			
				1. Halol	3	—	1 & 2
11.	3401.00	86.00	282.17	**Vadodara**			
	120106.32			1. Vaghodia	18	—	1 to 17
				2. Dabhoi	—	—	1 to 5
				Panchmahals			
				1. Halol	4 to 6	3	1 & 2
12.	3685.00	86.30	283.15	**Vadodara**			
	130135.78			1. Vaghodia	19	18	1 to 17
				2. Dabhoi	6 & 7	—	1 to 5
				Panchmahals			
				1. Halol	7	4 to 6	1 to 3
13.	4535.00	87.00	285.45	**Vadodara**			
	160153.53			1. Vaghodia	—	19	1 to 18
				2. Dabhoi	—	6 & 7	1 to 5
				Panchmahals			
14.	4670.00	87.20	286.10	**Vadodara**			
	164921.05			1. Vaghodia	—	—	1 to 19
				2. Dabhoi	—	—	1 to 7
				Panchmahals			
				1. Halol	—	—	1 to 7
				1. Halol	—	7	1 to 6

Note: Refer **Annexure - 12-A-2** the Names of villages mentioned in col. 6, 7 & 8.



Annexure 12-C

13.0 SARASWATI BASIN:

13.1 The flood forecasting and flood warning system for Saraswati Basin is being looked after by Superintending Engineer, Sujlam Suflam Circle No.2, Mehsana through his Executive Engineer, Sipu Project Dn. Palanpur. The gauge discharge and rainfall data are being communicated through Wireless Stations located at various stations on the main river as well as on tributaries.

13.2 Name of Weir/Dams where wireless stations are located are as under:-

State's Wireless Stations.

1.	Palanpur (Irrigation Construction Sub-Dn.No.4 Palanpur)	Gujarat State
2.	Mukteshwar	Gujarat State
3.	Saraswati Barrage	Gujarat State

13.3 The villages affected in Down Stream of Mukteshwar Dam due to floods in Saraswati are given vide Annexure - 13-A.

13.4 The basin plan of the river showing wireless stations established together with gauge discharge and rain gauge stations is appended vide Annexure - 13-B.

13.5 The actual time releases from dam site will be informed by Executive Engineer, Sipu Project Dn. Palanpur, to the Executive Engineer, Deesa Irrigation Division, Deesa for taking precautionary measures for Saraswati Barrage.

13.6 Action to be taken by Executive Engineer, Sipu Project Dn. Palanpur

TABLE - (13.6)

Note: - Please refer Flood Telephone Directory of current year for Telephone Nos.

Name of the Officer with Telephone Nos.	**Observation to be made by the Officer**	**Officer to whom the messages to be sent.**	
(1)	**(2)**	**(3)**	
Executive Engineer	The Inflow forecast	(a)	Superintending Engineer
Sipu Project Dn.	for 20,000 Cusecs		Sujlam Suflam Circle No.2,
Palanpur	incoming to dam is		Kherva, Mehsana
	to be conveyed to the	(b)	Dy.Ex.Engineer,
	Officer at Sr.No. (a) &		Irrigation Construction Sub-
	(b) in Column No. 3		Dn.No.4, Palanpur (Flood Cell).
	The Outflow from the	(c)	Collector, Banaskantha Dist.
	Mukteshwar Dam is		Palanpur.
	to be intimated to the	(d)	District Superintending of
	Officers in Column		Police, Banaskantha District,
	No. 3		Palanpur.

Name of the Officer with Telephone Nos.	Observation to be made by the Officer	Officer to whom the messages to be sent.	
(1)	(2)	(3)	
		(e)	Collector, Mehsana District,
			Mehsana.
		(f)	District Superintendent of
			Police, Mehsana District.
			Mehsana
		(g)	District Collector,
			Patan District.
		(h)	District Superintending of
			Police, Patan District, Patan
		(i)	Flood Control Cell,
			Gandhinagar.
		(j)	Executive Engineer,
			Deesa Irrigation Dn.,
			Deesa

13.7 <u>Appropriate Authority</u> (Focal Officer)

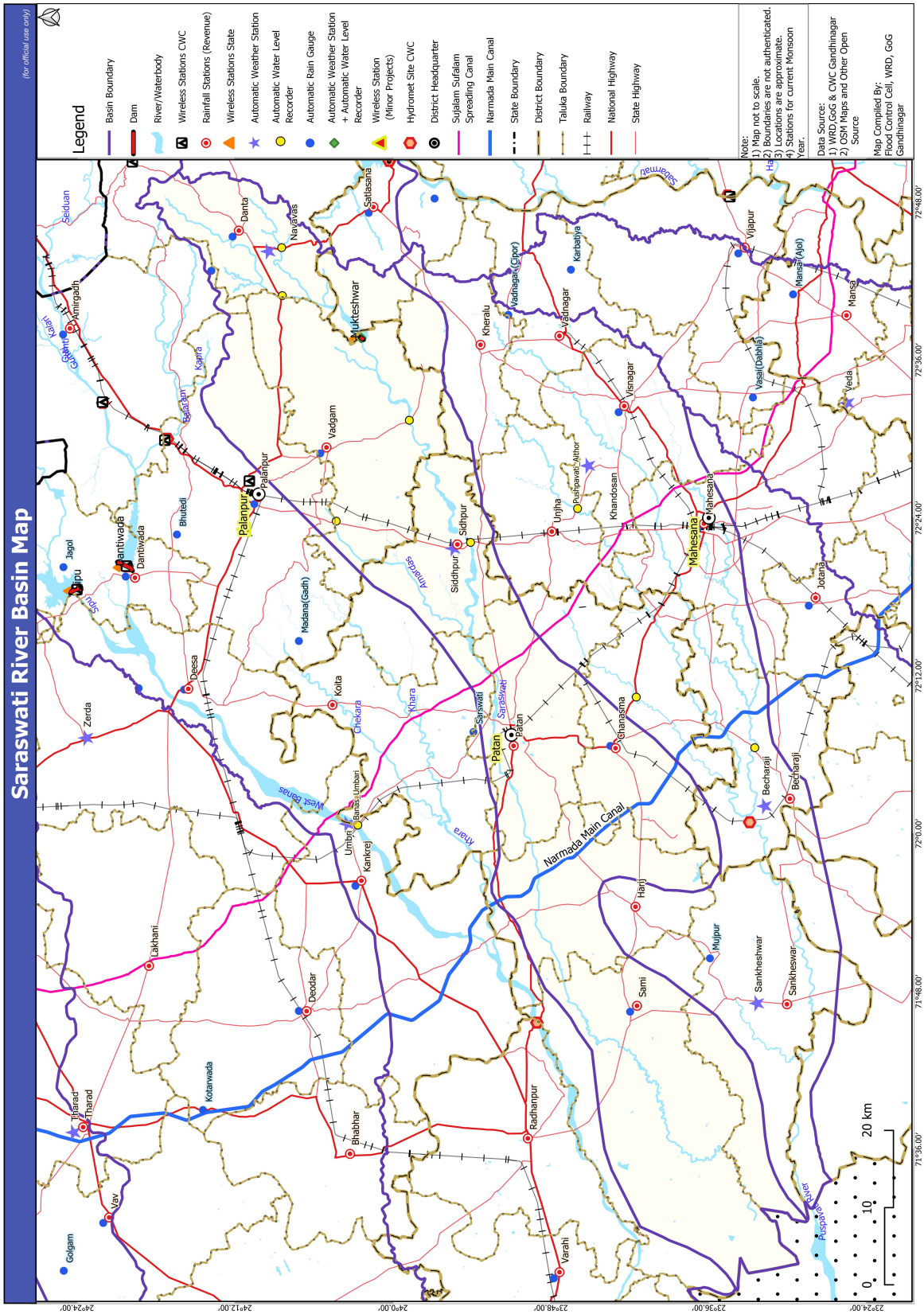
Superintending Engineer
Sujlam Suflam Circle No.2,
Kherva, Mehsana

Note:-
Please refer Flood Telephone Directory of current year for Telephone Nos.

ANNEXURE - 13 (A)

List of Villages likely to be affected by floods of Saraswati **River** on downstream of **Mukteshwar Dam**

BANASKANTHA DISTRICT		
VADGAM TALUKA		
(1) Nizampura	(2) Ikbalpura	(3) Tajpura
(4) Sherpura(Old & New)	(5) Salemkot	(6) Badarpur
(7) Mepda	(8) Nagorpura	(9) Bhukhala
(10) Pilucha	(11) Umrecha	(12) Delwana



Annexure 13-B

RIVERS OF SOUTH GUJARAT

14

14.0 RIVERS OF SOUTH GUJARAT:

14.1 Floods are being experienced in all rivers of South Gujarat viz. Auranga, Purna, Mindhola, Dhadhar etc. The time lag for the floods to reach from the catchment to its confluence point being very short, the flood waters are likely to reach earlier than the period required for the evacuation.

14.2 The flood forecasting & flood warning system for South Gujarat is being looked after by the Collector of the concerned district. The Collector shall be directly received the weather and heavy rainfall messages from the India Meteorological Centre, Colaba and necessary instructions will be issued by Collectors to Taluka Mamlatdar, Taluka Development Officer for the areas likely to be affected to take further necessary action to alert the people of villages in danger and to make necessary arrangements for evacuation and shifting as may be warranted.

14.2.1 The Executive Engineer, Ukai Left Bank Canal Investigation Division No. -2, Valod will formulate the Flood forecast for Jhuj Irr. Scheme & Kelia Irr. Scheme & convey the same to the Collector, Navsari for necessary action pertaining to flood warning arrangements.

14.3 Name of Villages/Dams where the wireless stations are located are as under:-

State's Wireless Stations.

1.	Valsad	(S.E.D.P.C. Valsad)	Valsad District
2.	Kelia dam site	(UCC)	Navsari District
3.	Khergam	(UCC)	Navsari District
4.	Surat	(S.E.S.I.C. Surat)	Surat District
5.	Doswada Dam Site	(UCC)	Surat District
6.	Tadkeshwar	(SIC)	Surat District
7.	Kathor	(SIC)	Surat District
8.	Valod	(UCC)	Tapi District
9.	Anaval	(UCC)	Surat District
10.	Kosamba	(SIC)	Surat District
11.	Bardoli	(SIC)	Surat District
12.	Mahuva	(SIC)	Surat District
13.	Vyara	(UCC)	Tapi District
14.	Jhuj Dam Site	(UCC)	Navsari District
15.	Baldeva Dam Site	(VIC)	Bharuch District
16.	Pigut Dam Site	(VIC)	Bharuch District
17.	Dholi Dam Site	(VIC)	Bharuch District
18.	Kakrapar veir	(SIC)	Surat District
19.	Lakhi Dam	(UCC)	Surat District
20.	Amli Dam	(UCC)	Surat District

14.4 The Map of the rivers showing the locations, wireless stations, established together with the gauge, discharge & rain gauge stations is appended vide Annexure 14 (B).

14.5 Due to remoteness and poor reliability of telephone system during heavy rain floods, Superintending Engineer, Ukai (Civil) Circle, Ukai is not able to communicate the flood message of the Schemes under his Circle to the Flood Cell, Gandhinagar. In that event of failure of transmission of flood data to Flood Cell, Gandhinagar, through telephone system, Superintending Engineer Ukai (Civil) Circle, Ukai, shall communicate the said data to the Superintending Engineer, Surat Irrigation Circle, Flood Cell, Surat.

In that case Superintending Engineer Surat Irrigation Circle, Surat, shall therefore collect the data from the Superintending Engineer, Ukai (Civil) Circle, Ukai, and convey the same along with the data of Scheme under his jurisdiction to the Flood Cell, Gandhinagar.

14.6 The villages likely to be affected by the floods in Valsad District, Surat District, Bharuch District, Vadodara District, Navsari District & Dangs District are given in Annexure 14 (A).

14.7 <u>Appropriate Authority</u> (Focal Officers)

(1)	Valsad District	– S.E., Damanganga Project Circle, Valsad
(2)	Surat District	– S.E., Surat Irrigation Circle, Surat
(3)	Bharuch District	– S.E., Surat Irrigation Circle, Surat
(4)	Dangs District	– S.E.Ukai (Civil) Circle, Ukai
(5)	Vadodara District	– S.E., Vadodara Irrigation Circle, Vadodara
(6)	Navsari District	– S.E., Surat Irrigation Circle, Surat

ANNEXURE - 14 (A)

List of villages likely to be affected due to floods in river of **Valsad & Navsari District**.

NAME OF RIVERS

SR. NO	DEROTHA RIVER	SR. NO	KAVERI RIVER	SR. NO.	AMBICA RIVER	SR. NO.	KHARERA RIVER
	1		2		3		4
VALSAD DISTRICT		NAVSARI DISTRICT					
UMARGAM TALUKA		VANSDA TALUKA		CHIKHALI TALUKA		VANSDA TALUKA	
1.	Boralia	1.	Nani Valzar	1.	Jogvad	1.	Kelia
2.	Karambele	2.	Moti Valzar	GANDEVI TALUKA		2.	Umarkui
3.	Nahuli	3.	Chapal Dhara	1.	Damandachha	3.	Vadichondha
4.	Eklahara	4.	Pratapnagar	2.	Kachholi	KHERGAM TALUKA	
5.	Jamburi	5.	Bhinar	3.	Davadha		
6.	Mohan	6.	Godhabari	4.	Gandevi	1.	Vad
7.	Punat	7	Vansda	5.	Torangam	CHIKHALI TALUKA	
8.	Aangam	8.	Gangpur	6.	Vegam		
9.	Sarigam	9.	Moti Bhamati	7.	Manekpore	Man	Kanbhai
10.	Bhilad	10.	Nani Bhamati	8.	Gadat	ekpo t	Ghej
		11.	Charan Vada	9.	Sonvadi	3.	Malvada
		12.	Khadakia	10.	Bilimora	4.	Sarvani
		13.	Navanagar	11.	Vaghrech	5.	Fadvel
		14.	Manpur	12.	Kalamtha	6.	Mandavkhadakk
		15.	Boriachh	13.	Morli	7.	Syada
		16.	Mindhabari	14.	Bhatha	8.	Rumla
		17.	Vasia Talav	15.	Kolva	9.	Kakadvel
		18.	Chikatia	16.	Salej	10.	Valanpur
		19.	Jamalia	17.	Ichhapore	11.	Godthal
		20.	Vanarasi	18.	Pinjra	12.	Ambach
		21.	Dubal Falia	19.	Matwad	13.	Kaliyari
		22.	Hanumanbari	20.	Khaparia	14.	Aamadhara
		23.	Rani Falia	21.	Valoti	15.	Gholar
		24.	Palgabhan	22.	Ganghor	16.	Maliyadhara
		25.	Singad	23.	Ajarai	17.	Tejlav
		26.	Rupvel	24.	Khakhawada	18	Balvada
		27.	Rajpur	25.	Devsar	19.	Mograwadi
		28.	Doldha	26.	Talodh	20.	Soldhara
		29.	Jhuj			21.	Pipalgabham
		30.	Khata Amba	VANSDA TALUKA			
		31.	Mankuniya	1.	Sindhai	SR. NO.	AMBICA RIVER
		32.	Raibor	2.	Vati		
		33.	Billmoda	3.	Unai	DANG DISTRICT	
		34.	Ambapani	4.	Chadhav	WAGHAI TALUKA	
		35.	Kapadvanj	5.	Ambabari	1.	Waghai
		36.	Vangan	6.	Chapaldhara	2.	Ambapada Waghai
		37.	Dhakmal	7.	Kavdej	3.	Kunda

		38.	Navtad	8.	Khambhala	4.	Kumarbandh
		39.	Kurelia	9.	Vadichondha	5.	Bordahad
		CHIKHALI TALUKA		10.	Raybor	6.	Dhangdi
		1.	Chikhali	11.	Vangam	7	Sadadmal
		2.	Malvada	12.	Mankunia	8.	Chikar Rambhas-saja
		3.	Talav Chora	13.	Khata Amba	9.	Sakarpatal
		4.	Hond	14.	Kelia	10.	Barkhandhiya
		5.	Vankala	15.	Doldha	11.	Ambapada Chikhli sa
		6.	Donja	16.	Hanumanbari	12.	Susarda
		7.	Harangam	17.	Ranifaliya	13.	Chikhalda
		8.	Sadakpur	18.	Godhabari	14.	Bhawadi
		9.	Khundh	19.	NaniBhamti	15.	Gira
		10.	Manekpore	20.	Jamaliya	16.	Dabdar Waghai
		11.	Sadadvel	21.	Pratapnagar	17.	Kosimpatal
		12.	Bamanvel	22.	Navtad	18.	Borigaopha Waghasiya
		13.	Kunkeri				
		14.	Ghekti	23.	Gangpur	19.	Barda Manmodisaja
		15.	Khambhada	24.	Navanagar	20.	Daguniya
SR.	**AMBICA**			25.	Boriachh	21.	Bhadarpada
NO	**RIVER**	**GANDEVI TALUKA**		26.	Motibhamti	22.	Bondarmal
DANG DISTRICT		1.	Undach-Luhar-Falia	27.	Charanwada	23.	Dokpatal
AHWA TALUKA		2.	Undach-Vahia Falia.	28.	Khadakiya	24.	Jhariya Dungarda
1.	Kutarnachiya	3.	Goyandi Bhathala	29.	Ambapani	25.	Kudkas
2.	Isdar-Borkhalsaja	4.	Khapar Wada	30.	Bansda	26.	Devipada
3.	Sunda	5.	Desara	31.	Manpur	27.	Nanapada
4.	Khapri	6.	Waghrech	32.	Vanarasi		
5.	Gaykhas			33.	Dubalfaliya		
6.	Ravchond	**SR.**	**AMBICA**	34.	Kureliya		
7.	Wangan	**NO.**	**RIVER**	35.	Singadh		
8.	Chaukiya	**TAPI DISTRICT**		36.	Rupvel		
9.	Chikhali-Samgahan_S	**DOLVAN TALUKA**		37.	Motivalzar		
10.	Chinchpada_S	1.	Pathakwadi	38.	Dhakmal		
11.	Moti_Dabhas	2.	Chunawadi	39.	Vasiya Talav		
12.	Temburgarth	3.	Dungarda	40.	Mindhabari		
13.	Umbarpada	4.	Padam-Dungari	41.	Chikatiya		
14.	Chikatiya	5.	Halmundi	42.	Umarkui		
15.	Dhulchond			43.	Zuj		
16.	Bhavandagad	**SURAT DISTRICT**		44.	Bilmoda		
17.	Wanki	**MAHUVA TALUKA**		45.	Kapadvanj		
18.	Payarpada	1.	Vaheval	46.	Palgabhan		
19.	Samgahan	2.	Haladhava	47.	Nanivalzar		

20.	Jogbari	3.	Kankariya	48.	Rajpur		
21.	Umarya	4.	Umra	49.	Bhinar		
22.	Bhapkhal	5.	Valvada	50.	Chadhav		
23.	Lahandabhas	6.	Mahuvariya				
24.	Borigaotha-	7.	Kumkotar				
25.	Bhurapani						
26.	Chinchpada						
27.	Baripada						
28.	Dhumkhal						
29.	Baradpani						
30.	Barmiawad						
31.	Gotiyamal						
32.	Humbapada						
33.	Wawanda						
34.	Sati						
35.	Davdahad						

ANNEXURE - 14 (A)

List of villages likely to be affected due to floods in river of **Valsad District**.

NAME OF RIVERS

SR. NO.	AURANGA RIVER	SR. NO.	PAR RIVER	SR. NO.	KOLAK RIVER	SR. NO.	PURNA RIVER
	5		6		7		8
VALSAD DISTRICT				NAVSARI DISTRICT			
A	VANSDA TALUKA	A	DHARAMPUR TALUKA	A	PARDI TALUKA	A	NAVSARI TALUKA
1.	Khanpur	1.	Kharedi	1.	Pandor	1.	Navsari
2.	Kavdej	2.	Vahiyal	2.	Kolak	2.	Supa
3.	Ankalach	3.	Tamachhadi	3.	Kalsar	3.	Pindsadra
4.	Khambhala			4.	Tukwada	4.	Kurala
B	VALSAD TALUKA	B	PARDI TALUKA	5.	Patigam	5.	Tarsadi
1.	Sandpur	1.	Kachval			6.	Dharagiri
2.	Tithal	2.	Umarsadi	VALSAD DISTRICT		7.	Amadpur
3.	Magarvadi			B	KAPRADA TALUKA	8.	Viraval
4.	Bhagada-	C	VALSAD TALUKA	1.	Dhodhadkuva	9.	Moldhara
5.	Khurd			2.	Sukhula	10.	Chovisi
6.	Kosamba-	1.	Haria	3.	Ambhati	11.	Kasbapar
7.	Machhivad	2.	Bhagod			12.	Amari
8.	Valsad	3.	Atul	C	PARDI TALUKA	13.	Asura
9.	Bhadeli	4.	Binvada	1.	Chival	14.	Pera
10.	Jagalala	5.	Chinchai	2.	Tukwada	15.	Vachchharvad
11.	Bhadeli Desai	6.	Kakadmati	3.	Bagwada	16	Telada
12.	Pardi	7.	Navera			17.	Kaliawadi
13.	Lilapor	8.	Kosamkuva			B	JALALPOR TALUKA
14.	Vejalpur	9.	Velvach				
15.	Dhamdachi	10.	Kachigam				
16	Pitha					1.	Sandalpor
17.	Sanragpur	D	KAPRADA			2.	Tavdi
18.	Marla		TALUKA			3.	Jalalpor
19.	Kalwada	1.	Kharedi			4.	Machhad
20.	Bhagadwada	2.	Moti vahiyal			5.	Manekpor
21.	Kanjan Ranchhod					6.	Bhinar
22.	Kanjan-Hari					7.	Delwada
23.	Ghadoi					8.	Alura
24.	Jujava					9.	Vadoli
25.	Abrama						
26.	Atak Pardi						
27.	Bandar Rd.						

ANNEXURE - 14 (A) Contd.

SR. NO.	PURNA RIVER	SR. NO.	PURNA RIVER	SR. NO.	PURNA RIVER		
DANG DISTRICT		**DANG DISTRICT**		**TAPI DISTRICT**			
AHWA TALUKA		**SUBIR TALUKA**		**DOLVAN TALUKA**			
1.	Chinchli	1.	Sajupada	1.	Dhamandevi		
2.	Waidun	2.	Burthadi	2.	Bagalpur		
3.	Gadvihir	3.	Jamnyamal	3.	Kumbhiya		
4.	Wanzttemrun	4.	Gavdahad	4.	Vankla		
5.	Taklipada Pipalaidevi	5.	Girmal	5.	Antapur		
6.	Sadadvihir	6.	Chikhli lavchali	6.	Garvan		
7.	Dhuda	7.	Chinchvihir	7.	Kamalpor		
		8.	Padalkhadi				
WAGHAI TALUKA		9.	Pandharpada				
1.	Sawarkhadi	10.	Moti jhadadar	**VALOD TALUKA**			
2.	Bhonjdya	11.	Lavchali	1.	Andhatri		
3.	Khopriamba	12.	Bijurpada	2.	Mordevi		
4.	Chikhala kalibelsaja	13.	Hindla	3.	Dumkhal		
5.	Enginpada kolbari	14.	Bokdamal	4.	Inaman		
6.	Pandharmal	15.	Dhulda	5.	Kanajod		
7.	Wankan	16	Bandhpada	6.	Valod		
8.	Kakarda	17.	Karanjda Lavchalisa	7.	Vedchhi		
9.	Khatal	18.	Sawardakasad	8.	Ambach		
10.	Patli	19.	Mahal	9.	Virpor		
11.	Divadyawan	20.	Moti kasad	10.	Buhari		
12.	Tekpada	21.	Jarsol	11.	Peladbuhari		
13.	Dardi	22.	Jogthawa				
		23.	Lahan Kasad				
		24.	Ghana				
		25.	Daher				
		26.	UgaLavchali				
		27.	Gawhan				
		28.	Pipaldahad				

ANNEXURE - 14 (A) Contd.
NAME OF RIVERS

SR. NO.	MINDHOLA RIVER	SR. NO.	VAROLI RIVER	SR. NO.	KALU RIVER	List of Villages likely to be affected due to Floods in River of Dang District.			
	9		10		11				
NAVSARI		VALSAD		VALSAD		DANG DISTRICT			
NAVSARI TALUKA		UMARGAON TALUKA		UMARGAON TALUKA		NAME OF RIVER		VILLAGES	
1.	Ranodara	1.	Sanjan	1.	Jamburi	(1)	Purna	1.	Mahal
2.	Kala Kacha	2.	Khatalwada	2.	Punat			2.	Motikasad
3.	Aasna	3.	Nargol	3.	Bhilad			3.	Savardakasad
4.	Vada	4.	Padgam	4.	Borlai			4.	Khopriamba
5.	Intarva	5.	Tembi	5.	Karambele			5.	Kasadbari
6.	Chokhad	6.	Umargaon					6.	Bhongadia
		7.	Palgam					7.	Karanjada
		8.	Bhathi			(2)	Ambica	1.	Davipada
		9.	Karambeli					2.	Dokapatal
		10.	Nahuli					3.	Dungarda
		11.	Kalai					4.	Baj
		12.	Jamburi			(3)	Khapri	1.	Kudkas
		13.	Humaran					2.	Dav Dahad
								3.	Sati
								4.	Vanvada
						(4)	Gira	1.	Bandhapada
								2.	Dhulda

ANNEXURE - 14 (A) Contd.

List of villages likely to be affected due to floods in river of **Navsari, Surat & Bharuch, Tapi Districts.**

NAME OF RIVERS

SR NO	MINDHOLA RIVER	SR NO	PURNA RIVER	SR NO	VER RIVER	SR NO	DHADHAR RIVER
	1		2		3		4
SURAT DIST.		NAVSARI DIST.		SURAT DIST.		BHARUCH DIST	
1.	Makhinga	1.	Chhitra	MANDVI TALUKA		JAMBUSAR TALUKA	
2.	Kamalchhad	2.	Miyapur	1.	Gordha	1.	Valia
3.	Syadla	3.	Sevasan	2.	Amalsadi	2.	Asaroi
4.	Karala	4.	Vedchhi	3.	Karvali	3.	Kundal
5.	Utara	5.	Ambach	4.	Kachhiya Bori	4.	Bojedara
6.	Bardoli	6.	Valod	5.	Godavadi	5.	Nada
7.	Mota Rampura	7.	Bhuvasan	6.	Gavachi	6.	Devla
8.	Lingad	8.	Kanai	7.	Godsamba	7.	Bhadhkodra
9.	Kapletha	9.	Vadia	8.	Gangapur	8.	Sigam
10.	Pardi pata	10.	Bhudhleshvar	9.	Bundha	9.	Muradpur-Neja

SR NO	MINDHOLA RIVER	SR NO	PURNA RIVER	SR NO	VER RIVER	SR NO	DHADHAR RIVER
	1		2		3		4
11.	Taraj	11.	Shakhpur	10.	Devgiri	10.	Kavi
12.	Amboli	12.	Mahuva	11.	Maldha	11.	Jantran
13.	Kanpura	13.	Ondach	12.	Limdha	12.	Medafarr-Neja
14.	Panavadi	14.	Noadch	13.	Kolkhadi	13.	Tankari
15.	Kachholi	15.	Amchak	14.	Devgadh	14.	Khanpur
16.	Popda	16.	Kavitha	15.	Andharvadi	15.	Mahapura
17.	Mohini	17.	Ranat	16.	Junvan	16.	Magnand
18.	Ten	18.	Amroli	17.	Visdaliya	17.	Jambusar
19.	Varad	19.	Bagumra	18.	Fulvadi	18.	Koteshwar
20.	Dastan	20.	Karchaka	19.	Moritha	19.	Nobar
21.	Dhamdod	21.	Babla	20.	Salaiya	20.	Uber
22.	Vyara	22.	Vankaner	21.	Valargadh	21.	Nondhana
23.	Pansora	23.	Dhat	22.	Kharoli	22.	Jafarapura
24.	Asta	24.	Bagalpur	23.	Pipariya	23.	Kopuria
25.	Kalkachha	25.	Kelkui	24.	Vareli	24.	Malpur
26.	Kansad					25.	Vad
27.	Padi	**TAPI DISTRICT**				26.	Kora
28.	Umber	**SONGADH TALUKA**		**MANDVI TALUKA**		27.	Kava
29.	Magob	1.	Kumkuva	1.	Amli	28.	Umara
30.	Samrod	2.	Khanjar	2.	Kalibel	29.	Ankhi
31.	Khajod	3.	Doswada	3.	Pardi	30.	Vahelam
32.	Abhva	4.	Kharsi				**AMOD TALUKA**
33.	Budiya	5.	Kanala			1.	Vasna
34.	Astan	6.	Chorvad			2.	Manjola
		7.	Khadka Chikhali			3.	Kankaria
						4.	Ikhar
VYARA TALUKA		**VYARA TALUKA**				5.	Danda
1.	Panwadi	1.	Vaghzari			6.	Sarbhan
2.	Vyara	2.	Chikhali			7.	Modhana
3.	Kapura	3.	Musa			8.	Dadapur
4.	Andharwadi Najik	4.	Kanpura			9.	Kobla
						10.	Amod
VALOD TALUKA						11.	Pursha
1.	Kamalchod					**VADODARA DIST.**	
2.	Syadla					1.	Nahar
						2.	Barsundh
						3.	Nodra

ANNEXURE - 14 (A) Contd.

List of villages likely to be affected due to floods in river of **Bharuch & Valsad Districts.**

NAME OF RIVERS

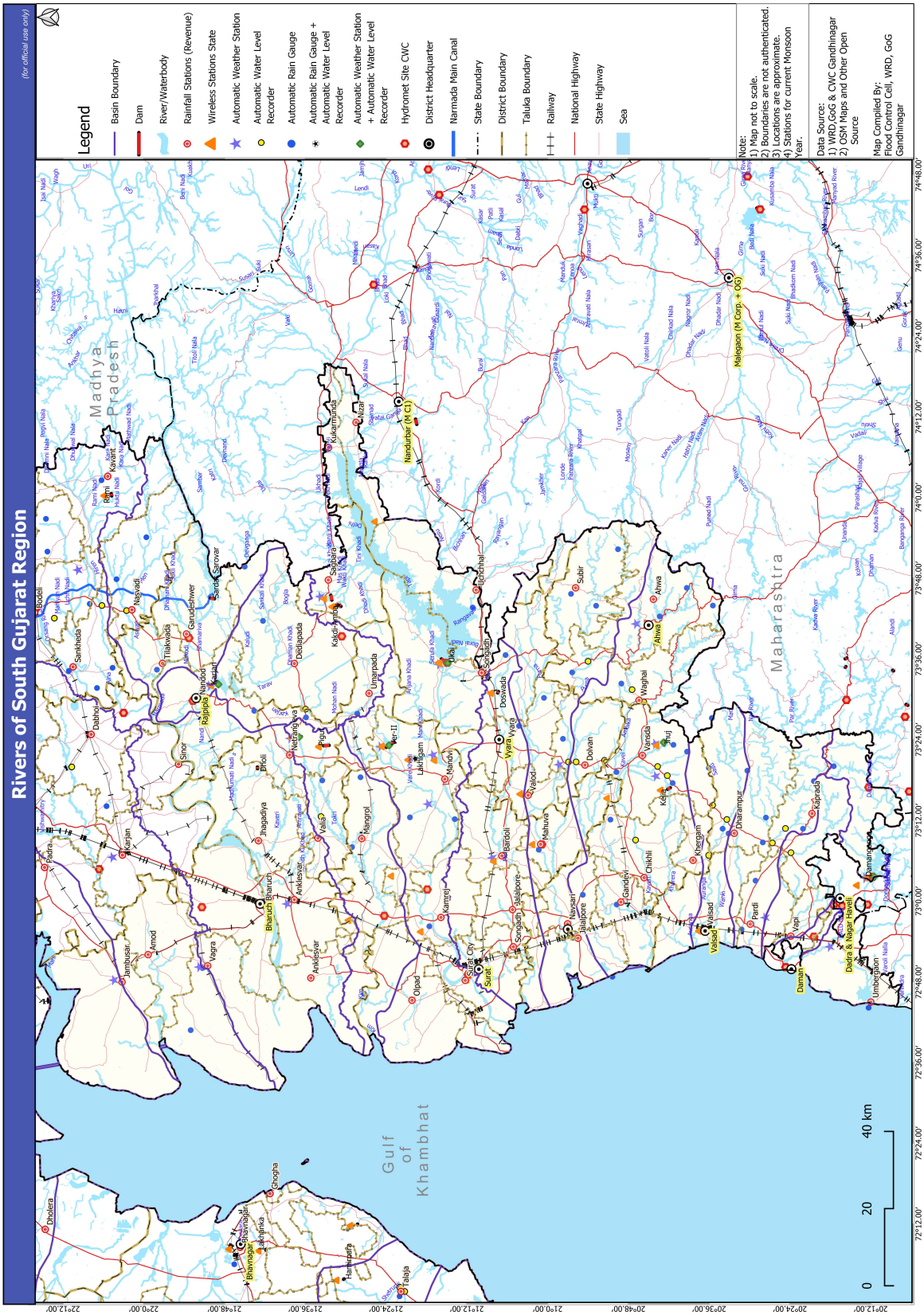
SR NO	TOKARI RIVER	SR NO	TOKARI KHADI AND TRIBUTORY OF KIM RIVER	SR NO	KALU RIVER
BHARUCH DISTRICT				**VALSAD DISTRICT**	
VALIA TALUKA		**VALIA TALUKA**		**UMARGAM TALUKA**	
1.	Mauza	1.	Baldeva	1.	Jamburi
2.	Kamalia	2.	Borkhadi	2.	Punat
3.	Chikhli	3.	Kambodi	3.	Bhilad
4.	Gundia	4.	Panchim	4.	Borlai
5.	Rajpura	5.	Zarna	5.	Karambele
6.	Jabugam	6.	Chasvad		
7.	Vandaria	7.	Sheer	**DHAKNI KHADI**	
8.	Chormca	8.	Dolatpur	**SURAT DISTRICT**	
9.	Umargam	9.	Kesargam	**MANDVI TALUKA**	
10.	Sodgam	10.	Singla	1.	Kalamkuva
11.	Sinoda	11.	Pithor	2.	Beddha
12.	Navapura	12.	Dehli	3.	Bhatkhai
		13.	Desad	4.	Sarkui
DOMAN KHADI		**WAGHATI KHADI**		5.	Makan Zar
NARMADA DISTRICT		**NARMADA DISTRICT**		6.	Rakhas Khadi
SAGBARA TALUKA		**SAGBARA TALUKA**		7.	Lakhgam
1.	Simamali	1.	Nana Kakdiamba		
2.	Bhavri saver	2.	Nana Doramba		
3.	Kel	3.	Makran		
4.	Pat	4.	Kuvdavadi		
5.	Panchpipari	5.	Rozdev	Note: - List of above villages likely to be affected due to flood in Dhakni Khadi of Surat district. (Lakhigam Dam)	
Note: - List of above villages likely to be affected due to flood in Doman Khadi of Narmada district. (Chopadvav Dam)		6.	Dattwada		
		7.	Pati		
		8.	Tavel		
		9.	Ghodmung		
		10.	Nani Devrupan		
		Note: - List of above villages likely to be affected due to flood in Waghati Khadi of Narmada district. (Kakdiamba Dam)			

ANNEXURE - 14 (A) Contd.

List of villages likely to be affected due to floods in river of **Tapi Districts.**

NAME OF RIVERS

SR NO	TAPI RIVER 1	SR NO	TAPI RIVER 2	SR NO	TAPI RIVER 3	SR NO	TAPI RIVER 4
TAPI DISTRICT		**TAPI DISTRICT**		**TAPI DISTRICT**		**TAPI DISTRICT**	
SONGADH TALUKA		**UCHCHHAL TALUKA**		**NIZAR TALUKA**		**KUKARMUNDA TALUKA**	
1.	Ghasiya medha	1.	Uchchhal	1.	Vyaval	1.	Sadagvan
2.	Sisor	2.	Jamki	2.	Kvelde	2.	Ashrava
3.	Bhanpur	3.	Vaghsepa nana	3.	Hingni digar	3.	Gorasa
4.	Jamapur	4.	Naranpur	4.	Sulvade	4.	Varpada
5.	Vaghnera	5.	Khabda	5.	Antruli	5.	Pishavar
6.	Panch pipala	6.	Sundarpur	6.	Khodada	6.	Rajpur
7.	Nindvada	7.	Bhintbudak	7.	Mubarakpur	7.	Tulse
8.	Limbi	8.	Babarghat	8.	Hathnur digar	8.	Untavad
						9.	Ubhad
9.	Bori savar	9.	Bhintkhurd	9.	Lekurvadi	10.	Kevdamoi
10.	Bhatvada	10.	Vadpada nesu	10.	Nasarpur	11.	Jhumkathi
11.	Singal khanch	11.	Karod	11.	Borthu	12.	Panibara
12.	Vadi bhensot	12.	Arkati	12.	Nevale	13.	Jajpampi alis jhampa
13.	Vekur	13.	Sakrada	13.	Kavithe	14.	Kukarmunda
14.	Singpur	14.	Kataswan	14.	Kothli Budark	15.	Patipada
		15.	Dhupi	15.	Vanka	16.	Amode tarfe satone
		16.	Dhaj	16.	Chinchoda	17.	Vesgam
		17.	Nurbad	17.	Shelu	18.	Bej
		18.	Sase			19.	Gadid
						20.	Kondraj
						21.	Pimlas
						22.	Bhamsal
						23.	Hol
						24.	Satola
						25.	Balde
						26.	Bahurupa
						27.	Hathode
						28.	Gangtha
						29.	Pati



Annexure 14-B

RIVERS OF MAHISAGAR, PANCHMAHALS & DAHOD DISTRICT

15

15.0 RIVERS OF MAHISAGAR, PANCHMAHALS & DAHOD DISTRICT

(Except Mahi & Panam Rivers)

15.1 The Flood forecasting and flood warning system for the rivers of Panchmahals and Dahod Districts are being looked after by Superintending Engineer, Panam Project Circle, Godhra, through his Executive Engineers, (1) Panam Project Division, Godhra (2) Panam Irrigation Division, Godhra (3) Dahod Irrigation Division, Dahod. The gauge, discharge and rainfall data are being communicated through wireless stations located at various stations on the main river as well as on tributaries. The Superintending Engineer, Vadodara Irrigation Circle, Vadodara should provide all necessary helps to the Superintending Engineer, Panam Project Circle, Godhra, to perform his duties as Focal Officer (for the projects under Panam Project Circle), viz.,

1. Bhadar (Panchmahals)
2. Machhanala
3. Karad
4. Umaria
5. Edalwada
6. Kabutri
7. Kali - II
8. Patadungari
9. Wankleshwer-Bhey

15.2 The rivers are having very short length and therefore for incoming floods. The time lag available will not be helpful in speedy alerting and evacuation of affected people.

15.3 Name of Weir/Dams where Wireless Stations are located are as under:-

State's Wireless stations.

1.	Godhara (Panam Colony)		Gujarat State.
2.	Bhadar	(PPC)	Gujarat State.
3.	Machhanala	(PPC)	Gujarat State.
4.	Hadaf (Gated)	(PPC)	Gujarat State.
5.	Umaria	(PPC)	Gujarat State.
6.	Edalwada	(PPC)	Gujarat State.
7.	Kabutri	(PPC)	Gujarat State.
8.	Karad(Fuse Gated)	(PPC)	Gujarat State.
9.	Pata dungri	(PPC)	Gujarat State.
10.	Wankleshwar Bhey	(PPC)	Gujarat State.
11.	Kali -II	(PPC)	Gujarat State.
12	Mataria (Bandibar)	(PPC)	Gujarat State.

15.3 The villages affected in Downstream of dams of Mahisagar, Panchmahals District are given vide Annexure 15-A

15.4 The basin plan of the rivers showing the wireless stations established together with gauge discharge and rain gauge station's is appended vide Annexure 15-B.

15.5 Action to be taken by various officers

TABLE - (15.5)

Note: Please refer Flood Telephone Directory of the current year for Telephone Nos.

Name of the Officer with Telephone Nos.	**Observation to be made by the Officer**	**Officer to whom the messages to be sent.**	
(1)	**(2)**		**(3)**
Officer In Charge of			
1. Bhadar Dam	The Inflow & outflow from the Dam mentioned in Column No.(1) are to be conveyed to the officer in column No.3	(a)	Superintending Engineer
2. Machhanala Dam			Panam Project Circle, Godhra.
3. Hadaf Dam		(b)	Collector, Panchmahals
4. Umaria Dam			District, Godhra.
5. Patadungri Dam Site		(c)	Collector,Dahod District,Dahod
6. Edalwada		(d)	District Superintendent of
7. Kabutri			Police, Panchmahals, Godhra.
8. Karad		(e)	District Superintendent of Police, Dahod
9. Wankleshwar-Bhey		(f)	Flood Control Cell, Godhra
10.Kali - II		(g)	Flood Control Cell, Gandhinagar
		(h)	Collector, Mahisagar Dist. Lunawada
		(i)	DSP, Mahisagar Dist., Lunawada

15.6 **<u>Appropriate Authority</u> (Focal Officer)**

The Superintending Engineer,
Panam Project Circle, Civil Lines Road
Behind Collector Office, Godhra

Note:-
Please refer Flood Telephone Directory of Current year for Telephone Nos.

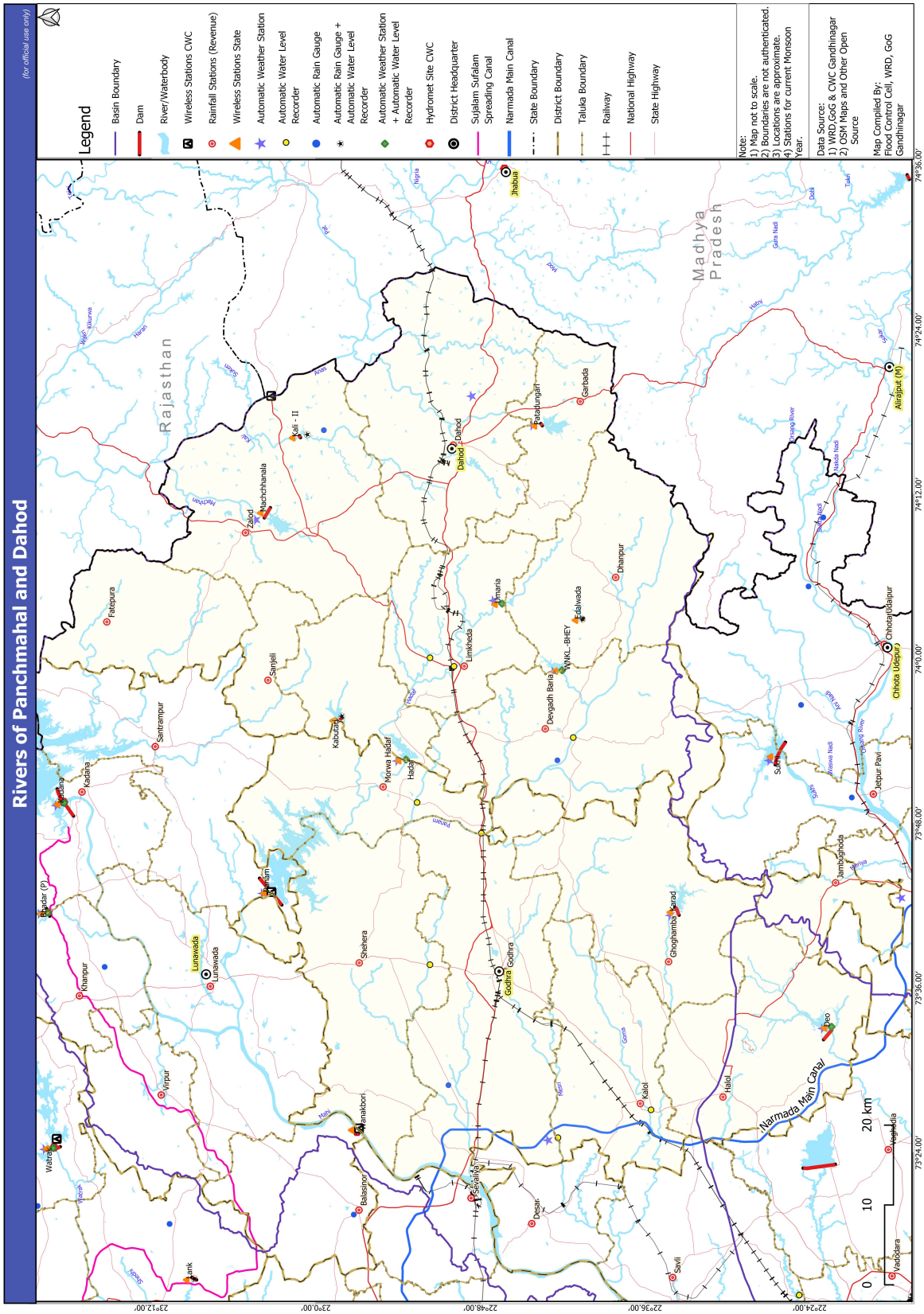
ANNEXURE - 15 (A)

List of villages likely to be affected by floods on Downstream of the Dams in **Mahisagar, Panchmahal and Dahod Districts.**

SR. NO.	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
1	Bhadar (P)	Mahisagar	Khanpur	1. Mota Khanpur
	Irrigation			2. Nana Khanpur
	Scheme			3. Khanpur
			Kadana	1. Ankalia
				2. Dariapur
				3. Rehman
2.	Hadaf	Panchmahals	Morva	1. Khanpur
			(Hadaf)	2. Morva (Hadaf)
				3. Mataria
				4. Dangaria
				5. Kadadara
3	Machhannala	Dahod	Jhalod	1. Bhanpur
	Irrigation			2. Chitrodiya
	Scheme			3. Dhavadia
				4. Mahudi
				5. Mandali Khuta
				6. Munkhosla
				7. Therka
				8. Kharsana
				9. Melaniya
				10. Nansalai
				11. Varod
4	Kabutri	Dahod	Godhra	1. Chandpur
	Irrigation			2. Vandeli
	Scheme			3. Khudra
			Limkheda	1. Chundri
				2. Vala Gota
5	Edalwada	Dahod	Limkheda	1. Bogadva
	Irrigation			2. Edalwada
	Scheme			3. Khokhbed
				4. Modhva

SR. NO.	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
				5. Rampur
				6. Ved
6	Umaria	Dahod	Limkheda	1. Agara
	Irrigation			2. Amba
	Scheme			3. Choidia
				4. Dhadhela
				5. Kundha
				6. Ninama na Khakhria
				7. Parmar na Khakhria
				8. Patwan
				9. Vislungh
7	Karad	Panchmahals	Devgadh Baria	1. Boria
	Irrigation			2. Kanbi Palli
	Scheme			3. Kumbhar Palli
				4. Navgam
				5. Vel Kotar
8.	Wanakleshwar	Dahod	Devgadh Baria	1. Kelia
	Bhey			2. Degawada
	Irrigation Scheme			3. Jhabia
				4. Wandar
			Limkheda	1. Boghadawa
9.	Kali - II Irrigation	Dahod	Jhalod	1. Sabli
	Scheme			2. Gultord
				3. Raliyali Bhura
				4. Raliyali Gurjar
				5. Bantia
				6. Tada Gola
				7. Shorda
				8. Kankrakuva
				9. Pethapur
				10. Khakharia
				11. Chakalia
10.	Patadungari	Dahod	Garbada	1. Sahada
	Irrigation Scheme			2. Garbada
				3. Gungaradi

SR. NO.	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
				4. Gangaradi
				5. Tunkivij
				6. Tunki Anop
				7. Nandva
				8. Panchvada
				9. Devdha
			Dahod	1 Varamkehda
				2. Borekheda
				3. Jalat
				4. Moti Kharaj
				5. Pusari
				6. Dahod Kashba



Annexure 15-B

RIVERS OF RAJKOT, MORBI, JAMNAGAR, DEV BHUMI DWARKA, SURENDRANAGER AND PORBANDAR DISTRICTS

16

16.0 RIVERS OF SAURASHTRA REGION:

16.1 The Flood forecasting and flood warning system for the rivers of Saurashtra Region is being looked after by the Superintending Engineer, Rajkot Irrigation Circle, Rajkot for the Rajkot, Morbi, Jamnagar, Devbhumi Dwarka, Surendranagar, Junagadh & Porbandar Districts. Also some projects of Amreli and Porbandar Districts which are under Superintending Engineer, Rajkot Irrigation Project Circle, Rajkot.

16.2 The rivers are having very short length and therefore for incoming floods in time lag available will not be helpful in speedy alerting and evacuation of affected people.

16.3 The Superintending Engineer, Rajkot Irrigation Project Circle, Rajkot should provide all the necessary data such as rainfall, gauge discharge, water levels, live storages, etc. to the focal officer for the area/district concerned under his jurisdiction and will extend all necessary help to the Focal Officer for discharging the duties by acting as Sub Focal Officers.

16.4. The flood forecasting & flood warning arrangements for following water supply projects under Municipal Corporation will be looked after by Municipal Commissioner of the concerned projects. They shall directly collect weather bulletin, H.R.W. from India Meteorological Department, Ahmedabad or Revenue Control Room of the concerned districts & shall formulate the flood forecast & convey to the concerned Collector regarding the area likely to be affected for alerting and evacuation of the people as warranted by flood, simultaneously, they shall convey the flood forecast and action taken by them to the Flood Control Cell(Irrigation) nearest to them.

TABLE - 16.4

Sr. No.	Name of Water Scheme	Officer In charge of Scheme	Telephone Nos.
1	Nyari-I	Municipal Commissioner	**Note:-** Please refer Flood Telephone Directory of the current year for telephone nos.
		Rajkot Municipal	
		Corporation, Rajkot	
2	Ranjit Sagar	Municipal Commissioner	
		Jamnagar Municipal	
		Corporation, Jamnagar.	

16.5 The plan showing the location of various wireless stations established on the dams sites, fringes is appended vide Annexure 16-B-1 to 16-B-4.

16.5.1 The Wireless Stations under the control of Superintending Engineer, Rajkot Irrigation Circle, Rajkot are as under.

State's Wireless Stations.

RAJKOT DISTRICT			
1	Rajkot (S.E.RIC,Rajkot)	2	Nyari-I
3	Nyari-II	4	Bhadar
5	Karnuki	6	Dhari
7	Kabir-Sarovar	8	Phophal
9	Chhaparvadi-II	10	Veri
11	Phadangbeti	12	Moj
13	Venu-II	14	Aji- I
15	Aji-II	16	Aji-III
17	Gondali	18	Vachhapari
19	Lalpari	20	Karmal
21	Ishwaria	22	Bhadar - II
23	Motisar	24	Survo
25	Khodapipar	26	Dondi
27	Sodvadar	28	Ghelo (s) Dam
29	Malgadh Dam	30	Sankroli
MORBI DISTRICT			
1	Demi-I	2	Demi-II
3	Machhu-I	4	Ghodadharoi
5	Bangawadi	6	Brahmini
7	Brahamani-II	8	Machhu-III
9	Machhu-II	10	Demi-III
11	Flood Control(Morbi)		
JAMNAGAR DISTRICT			
1	Jamnagar (JI Dn. Jamnagar)	2	Sasoi
3.	Fulzar-I	4	Fulzar-II
5	Umiyasagar	6	Sapada
7	Puna	8	Vijarkhi
9	Rangmati	10	Ranjit-Sagar
11	Und-I	12	Und-II
13	Kankavati	14	Ruparel
15	Phophal - II	16	Wadisang
17	Aji -IV	18	Fulzer (KB)
19	Rupavati	20	Und - III
21	Dia minsar	22	Sasoi-II
23	Wagadiya		
DEV BHUMI DWARKA DISTRICT			
1	Vartu-I	2	Ghee
3	Sani	4	Sindhani
5	Sonmati	6	Shedhabhadthari
7	Gadaki	8	Vartu-II
9	Verdi-I	10	Kabarka
11	Minsar-V	12	Veradi – II
SURENDRANAGAR DISTRICT			
1	Wadhwan Bhogavo-I	2	Wadhwan Bhogavo-II
3	Falku	4	Limdi-Bhogavo
5	Vansal	6	Morshal
7	Saburi	8	Limdi Bhogavo-II
9	Nimbhani	10	Triveni Thanga
11	Flood Control		
PORBANDAR DISTRICT			
1	Sorthi		

16.6 Whenever heavy rainfall warning is received from India Meteorological Department the officers of the respective areas shall obtain the storage level and rainfall data at very frequent interval and the same is to be communicated to the Flood Control Cell, Gandhinagar.

16.7 Action to be taken by local officer/project officer regarding dams in Saurashtra.

16.7.1 The Executive Engineer in-charge of the reservoirs shall arrange to obtain the gauge and other data from upstream of the reservoirs. The Deputy Executive Engineer/Assistant Engineer shall on the basis of this data compute the incoming flood and takes necessary steps to route the flood by operating the crest gates as per the operation manual of gates and as per instructions from the Focal Officer and concerned Superintending Engineer whenever warranted so that there would be no danger either to the head works or to the villages/area etc. downstream of the reservoir. If the routed flood is likely to be unexpectedly high enough to endanger certain areas downstream of the reservoir, the concerned revenue and Police authorities should be intimated in time, so that necessary precautionary measures in respect of alerting the people of the area likely to be affected by flood water including arranging evacuation if necessary.

16.7.2 When water level in the reservoir is likely to reach 0.3 Meter (i.e. 1.00 ft) below high flood level or even earlier in the event of rapid rising of flood water, in-charge Executive Engineer should immediately issue necessary warning and communicate the warning messages to the concerned Collector and District Superintendent of Police for taking up further necessary action. When water is likely to exceed H.F.L the warning regarding the conditions of dam should also be indicated in the warning to be issued. This flood warning messages shall be communicated to Flood Control Cell, Gandhinagar, Chief Engineer (Central Gujarat) and Additional Secretary and Chief Engineer and Additional Secretary concerned immediately without any delay.

16.7.3 The Executive Engineer of the concerned area should interpret the signals/messages received from various dams in his charge and shall arrange to intimate the flood warning signals to the collector and District Superintendent of Police of respective district in which the reservoir is located if necessary. The areas likely to be affected by floods waters are also to be intimated for taking further necessary action for alerting the people as warranted by flood levels in the reservoirs or in the rivers.

16.8 Villages affected by the flood in downstream of dams, in various are given vide **Annexure 16-A**

16.9 **<u>Appropriate Authority</u> (Focal Officer):**

(A) (<u>For Rajkot, Jamnagar, Morbi, D.B.Dwarka & Surendranagar District</u>)

Superintending Engineer
Rajkot Irrigation Circle
Opp. Hotel Mohit, Near Race Course,
Rajkot.

Note:-
Please refer Flood Telephone Directory of the current year for Telephone nos.

(B) Appropriate Authority (Focal Officer) for following Water Supply Scheme.

Sr. No.	Name of Scheme	Appropriate Authority (Focal Officer)	Telephone Nos.
1.	Nyari -I	Municipal Commissioner	Note:-
		Rajkot Municipal	Please refer Flood Telephone
		Corporation, Rajkot	Directory of current year for
2.	Ranjit Sagar	Municipal Commissioner	telephone nos.
		Jamnagar Municipal	
		Corporation, Jamnagar.	

ANNEXURE - 16 (A)

List of villages likely to be affected by floods on downstream of the Dams in Rajkot, Jamnagar, Surendranagar and some projects of Junagadh and Porbandar Districts.

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
1.	Sankroli	Amreli	Kukavav	1.Hanuman Khijadiyta
		Rajkot	Jetpur	1.Charan Samdhiyala
				2.Resanadi-Galol
				3.Thana Galol
2.	Dai-Minsar	Jamnagar	Jamjodhpur	1. Satapar
	Irrigation	Porbandar	Kutiyana	1. Baloch
	Scheme			2. Devda
			Ranavav	3. Khirasara
				4. Valotra
				5. Jambu
				6. Kandorna
				7. Rana Khijdad
				8. Mahira
				9. Nerana
				10. Bhoddar
				11. Padardi
			Porbandar	12. Erda
3.	Fulzar - I	Jamnagar	Kalavad	1. Golaniya
	Irrigation			2. Khandhera
	Scheme			3. Nagpur
				4. Vadisang
4.	Sani	Dev Bhumi Dwarka	Kalayanpur	1. Dangarvad
	Irrigation			2. Jepur
	Scheme			3. Ranparda
				4. Raval
				5. Suryavadar
				6. Chandravada
				7. Harshad
				8. Gandhavi
				9. Ashiyavadar

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
5.	Sindhani	Dev Bhumi Dwarka	Kalayanpur	1. Chachlana
	Irrigation			2. Gangadi
	Scheme			3. Devalia
				4. Harsad
				5. Gandhavi
6.	Kankavati	Jamnagar	Jamnagar	1. Falla
	Irrigation		Jodia	2. Baradi
	Scheme			3. Hadiyana
				4. Beraja
7.	Vijarkhi	Jamnagar	Jamnagar	1. Dhunvav
	Irrigation			2. Khijadia
	Scheme			3. Khimrana
				4. Thavariya
				5. Navabandar
				6. Vijarkhi
8.	Und - I	Jamnagar	Dhrol	1. Hamapar
	Irrigation			2. Jaliya Devani
	Scheme			3. Jaliya Mansar
				4 Roziya
				5. Nathuvadla
				6. Soyal
				7. Vankiya
				8. Virani Khijadya
			Jamnagar	10. Dhragda
				11. Khambhalida
				12. Ravani Khijadiya
				13. Tamachan
			Jodiya	14. Lakhtar
9.	Fulzar - II	Jamnagar	Lalpur	1. Jakhar
	Irrigation			2. Jasapar
	Scheme			3. Khatia Beraja
				4. Mota Lakhia
				5. Nana Lakhia
				6. Modpar
10.	Ghee	Dev Bhumi Dwarka	Jam-Khambhalia	1. Khambhalia
	Irrigation			2. Kabar Visotri
	Scheme			3. Kotha Visotri
				4. Salaya
				5. Sodasala
				6. Ramnagar
				7. Harshadpur
11.	Puna	Jamnagar	Lalpur	1. Derachhikari
	Irrigation			2. Kanachhikari
	Scheme			3. Navagam
			Jamnagar	4. Bed
				5. Shapar
				6. Sarmat
				7. Vasai
				8. Aamra

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
12.	Rangamati	Jamnagar	Jamnagar	1. Changa
	Irrigation			2. Chela
	Scheme			3. Dared
				4. Jamnagar
				5. Juna-Nagna
				6. Nava-Nagna
				7. Nava gam-Ghed
13.	Sapada	Jamnagar	Jamnagar	1. Aliyabada
	Irrigation			2. Dhunvav
	Scheme			3. Gangajala
				4. Khijadiya
				5. Khimrana
				6 Moda
				7. Nava Bandar
				8. Sapada
				9. Shekhpat
14.	Sasoi	Jamnagar	Lalpur	1. Dera Chikari
	Irrigation			2. Kana Chikari
	Scheme			3. Pipli
			Jamnagar	4. Amra
				5. Balambhadi
				6. Dodhiya
				7. Gaduka
				8. Sarmat
				9. Shapar
				10. Vasai
				11. Bed
15.	Sonmati	Dev Bhumi Dwarka	Bhanvad	1. Ambaliyara
	Irrigation			2. Bhenakvad
	Scheme			3. Jampar
				4. Sevak Devaliya
				5. Navagam
				6. Ranparada
				7. Rupamora
16.	Vartu - I	Dev Bhumi Dwarka	Bhanvad	1. Ambaliyara
	Irrigation			2. Bhenakvad
	Scheme			3. Morzar
				4. Navagam
				5. Ranparda
				6. Rupamora
				7. Sevak Devalia
				8. Shedhakhai
				9. Sanada
17.	Vartu - II	Dev Bhumi Dwarka	Kalayanpur	1. Gandhvi
	Irrigation Scheme			2. Gorana
				3. Harsad-Mata
				4. Raval
				5. Ranparda
		Porbandar	Porbandar	1. Bhomiyavadar

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
				2. Fatana
				3. Ishwariya
				4. Morana
				5. Miyani
				6. Parvada
				7. Shingada
				8. Sodhana
		Jamnagar	Bhanvad	1. Zarera
18.	Ranjit-Sagar	Jamnagar	Jamnagar	1. Dadiya
	Water Supply			2. Khimaliya
	Scheme			3. Low Lying Area
				of Jamnagar City
				4. Mokhana
				5. Morkanda
				6. Nava Nagar
				7. Navagam(Ghed)
				8. Shri Maharana
				Sarkarshina Farm
19.	Und - II	Jamnagar	Dhrol	1. Majoth
	Irrigation		Jodiya	2. Ananda
	Scheme			3. Badanpur
				4. Bhadra
				5. Jodiya
				6. Kunad
20.	Shedha Bhadthari	Dev Bhumi Dwarka	Kalyanpur	1. Kanpar-Sherdi
	Irrigation Scheme			2. Chapar
				3. Chur
				4. Mangaria
				5. Haripar
21.	Veradi - I	Dev Bhumi Dwarka	Bhanavad	1. Veradi
	Irrigation Scheme			2. Sai Devalia
22.	Wadisang W.R.	Jamnagar	Jamnagar	1. Dhudasiya
	Irrigation Scheme			2. Dhutarpur
				3. Sumri
23.	Und -III	Jamnagar	Kalavad	1. Rajasthali
	W.R Irrigation			2. Dedhkhijadia
	Scheme			3. Jasapar
				4. Bhayakhakharia
				5. Bavakhakharia
24.	Fulzar (KB) W.R.	Jamnagar	Jamjodhpur	1. Kotada – Bavisi
				2. Gingani
				3. Sidasar
		Rajkot	Upleta	1. Rabarika
				2. Hariyasan
				3. Charaliya
				4. Kharachia
				5. Rajapara

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
25.	Rupavati W.R.	Jamnagar	Lalpur	1. Lalpur
	Irrigation			
	Scheme			
26.	Aji - IV W.R.	Jamnagar	Jodia	1. Morana
				2. Tarana
				3. Hirapar
				4. Balambha
				5. Ranjitpara
				6 Meghpar
				7. Sampar
				8. Jamsar
				9. Manamora
				10 Bhimkata
				11.Jiragadh
				12.Dudhai
				13. Madhapar
				14. Hajamchora
				15.Kothariya
27.	Phophal - II W.R.	Jamnagar	Kalavad	1 Gunda
				2 Makhakarod
				3 Kalmeghda
		Rajkot	Gondal	1. Ambardi
28.	Demi - III Irrigation	Morbi	Morbi	1. Koyali
	Scheme			2. Dhulkot
				3. Amran
				4. Bella
				5. Rampur
				6. Jinjuda
		Jamnagar	Jodiya	1. Mavanugam
29.	Kabarka Irrigation	Dev Bhumi Dwarka	Bhanvad	1. Kabarka
	Scheme			2. Bhoria
				3. Fotadi
30.	Umiyasagar W.R.	Jamnagar	Jamjodhpur	1. Sidsar
	Scheme	Rajkot	Upleta	1. Hariyasan
				2. Chareliya
				3. Kharachia
				4. Rajapara
				5. Rabarika
31.	Gadaki W. R.	Dev Bhumi Dwarka	Jamkhambhaliya	1. Sidhpur
	Scheme		Jamkalyanpur	2. Dhumthal
32.	Ruparel W.R.	Jamnagar	Jamnagar	1. Pasaya
	Scheme			2. Beraja
33	Veradi-II W.R.	Dev Bhumi Dwarka	Bhanvad	1. Sai-Devalia
	Scheme			2. Bhanvad
34	Minsar(V) W.R.	Dev Bhumi Dwarka	Bhanvad	1. Vanavad

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
	Scheme			2. Shiva
				3. Katkola
				4. Jasapar
		Jamnagar	Jamjodhapur	1. Vansjalia
35	Sorthi	Devbhoomi Dwarka	Kalyanpur	1. Gandhavi
	Irrigation			2. Gorana
	Scheme			3. Harshad
				4. Raval
				5. Sisali
		Porbandar	Porbandar	1. Advana
				2. Bhetakdi
				3. Miyani
				4. Sodhana
36	Nyari - I	Rajkot	Khadhari	1. Ishvariya
	Water Supply		Lodhika	2. Haripar (Pal)
	Scheme			3. Vadvali Vajdi
	Paddhari			4. Khambhana
				5. Nyara
				6. Paddhari
				7. Rampur
				8. Rangpur
				9. Tardhari
			Rajkot	10. Gadhivali - Vajelli
				11. Vejagam
				12. Vejagam(Vajdi)
				13. Vajdi (Virdavali)
37	Aji - I Rajkot	Rajkot	Rajkot	1. Bedi
	Irrigation			2. Manharpur
	Scheme			3. Rajkot
				4. Rojki
				5. Thorala
38	Bangawadi	Morbi	Tankara	1. Bangawadi
	Irrigation	Jamnagar	Jodiya	1. Timbadi
	Scheme			2. Rasnal
39	Bhadar	Rajkot	Dhoraji	1. Bhukhi
	Irrigation			2. Umarkot
	Scheme			3. Vegdi
			Gondal	4. Bhandariya
				5. Khambhalida
				6. Masitala
				7. Navagam
				8. Nilakha
			Jam-Kandorana	9. Ishvariya
				10.Taravda
			Jetpur	11. Derdi
				12. Jetpur
				13. Kerali
				14. Khirasra
				15. Lunagara
				16. Lunagari

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
				17. Monpar
				18. Navagadh
				19. Panch Pipla
				20. Rabarika
				21. Sardharpur
				22. Vadasada
40	Demi - I	Morbi	Tankara	1. Bhut Kotda
	Irrigation			2. Harbetiyali
	Scheme			3. Haripur
				4. Mitana
				5. Rajavad
				6. Tankara
41	Gondali	Rajkot	Kotada Sangani	1. Panchiyavadar
	Irrigation			2. Manekwada
	Scheme			3. Kherada
				4. Kotda Sangani
				5. Rajgadh
42	Kabir-Sarovar	Rajkot	Gondal	1. Daiya
	(Chhaparwadi-I)			2. Charkhadi
	Irrigation			3. Kolithad
	Scheme			4. Lunivav
				5. Padvala
				6. Vejagam
				7. Garnala
				8. Trakuda
43	Lalpari	Rajkot	Rajkot	1. Navagam
	Irrigation Scheme			2. Bedi
44	Moj	Rajkot	Upleta	1. Gadhala
	Irrigation			2. Kerala
	Scheme			3. Khakhi-Jaliya
				4. Mojira
				5. Navapara
				6. Sevantra
				7. Upleta
				8. Vadla
45	Phophal	Rajkot	Dhoraji	1. Vegli
	Irrigation		Jam-Kandorana	2. Dudhivadar
	Scheme			3. Ishvariya
				4. Tarvada
46	Vachhapari	Rajkot	Kotada Sangani	1. Panchiyavadar
	Irrigation Scheme			2. Khareda
				3. Kotda Sangani
47	Veri	Rajkot	Gondal	1. Gondal
	Irrigation			2. Kantoliya
	Scheme			3. Vora kotda
48	Chhaparwadi - II	Rajkot	Jetpur	1. Lunagara

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
	Irrigation			2. Jambudi
	Scheme			3. Kerali
				4. Mevasa
				5. Premgadh
				6. Rabarika
				7. Lungari
49	Dhari	Rajkot	Vichhiya	1. Mota Hadmatiya
	Irrigation			2. Mota Lakhavad
	Scheme			3. Mota Matra
		Surendranagar	Sayala	4. Gangajal
				5. Nana Matra
				6. Shekhadod
50	Godhadharoi	Morbi	Morbi	1. Chakampar
	Irrigation			2. Zikiyari
	Scheme			3. Jivapar
				4. Jetpur (Machchhu)
				5. Rapar
			Malia (Miyana)	6. Sapar
				7. Sultanpur
				8. Manaba
				9. Chikhali
51	Ishwaria	Rajkot	Jasdan	1. Ishwaria
	Irrigation		Kotda Sangani	2. Detadiya
	Scheme			3. Karmal Kotda
52	Karmal	Rajkot	Kotda Sangani	1. Bagdadiya
	Irrigation			2. Karmal Kotda
	Scheme			3. Pipalyia
				4. Vadipara
				5. Detadia
53	Machhu - I	Morbi	Morbi	1. Adepur
	Irrigation			2. Lakhadirnagar
	Scheme			3. Lilapar
				4. Makansar
			Wankaner	5. Dhamalpur
				6. Dhuva
				7. Gariya
				8. Holmadh
				9. Jalsika
				10. Kerala
				11. Lunasaria
				12. Mahika
				13. Pajpanj
				14. Panchasar
				15. Panchasia
				16. Ranakpur
				17. Rasikgadh
				18. Rati Devdi
				19. Sobhala
				20. Vaghasia
				21. Vankaner

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
				22. Vankia
				23. Jodhpar
				24. Hasanpar
54	Motisar	Rajkot	Gondal	1. Hadmatala
	Irrigation			2. Kolithad
	Scheme			3. Patiyali
55	Nyari - II	Rajkot	Paddhari	1. Govindpar
	Irrigation			2. Khamta
	Scheme			3. Rampar
				4. Targhadi
				5. Vanpari
56	Venu - II	Rajkot	Upleta	1. Gadgethad
	Irrigation			2. Varjang Jalia
	Scheme			3. Mekha-timbi
				4. Nagvadar
				5. Nilakha
57	Aji - II	Rajkot	Paddhari	1. Adbalka
	Irrigation			2. Baghi
	Scheme			3. Dahisarda
				4. Dungarka
				5. Gadhada
				6. Haripar
				7. Khandheri
				8. Naranka
				9. Sakhapar
				10. Ukarda
58	Machhu - II	Morbi	Morbi	1. Amreli
	Irrigation			2. Bhadiad
	Scheme			3. Dharampur
				4. Gorkhijadia
				5. Gungan
				6. Jodhpur
				7. Juna -Saduraka
				8. Lilapar
				9. Mansar
				10. Morbi
				11. Naranka
				12. Nava Sadurka
				13 Ravapar-Nadi
				14. Ravapar
				15. Timbadi
				16. Vanalia
				17. Vejepar
			Malia (Miyana)	18. Bahadurgadh
				19. Derala
				20. Fatshar
				21. Haripar
				22.. Juna-Nagadavas
				23. Mahendragadh
				24. Malia Miyana

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
				25. Meghapur
				26. Navagam
				27. Nava Nagadavas
				28. Rasangpur
				29. Sokhda
				30. Virvadarkar
				31 Fatepur
				32. Amaranagar
59	Aji -III	Rajkot	Paddhari	1. Khajurdi
	irrigation			2. Thoriyali
	Scheme			3. Khijadi-Mota
			Tankara	4. Khakhara
		Jamnagar	Jodia	5. Bodaka
				6. Jasapar
				7. Jiragadh
				8. Meghpar
				9. Pithad
				10. Rasnal
				11. Timbadi
			Dhrol	12. Modpar
				13. Dharampur
				14. Sagadiya
				15. Sadhadhuna
				16. Dedakdad
60	Phadangbeti	Rajkot	Rajkot	1. Bedala
	Irrigation			2. Jamgadh
	Scheme			3. Lamba-Kotadi
				4. Phad-Dang
				5. Rafala
				6. Rampara
				7. Magharvada
				8. Parevala
61	Demi - II	Morbi	Morbi	1. Amran
	Irrigation Scheme			2. Bela
				3. Dulkot
				4. Koyali
				5. Chanchapar
				6. Khanpar
				7. Mota-Rampar
		Morbi	Tankara	8. Nana-Rampar
				9. Nastipur
		Jamnagar	Jodiya	1. Mavanugam
62.	Khodapipar	Rajkot	Paddhari	1. Khodapipar
	Irrigation			2. Thoriali
	Scheme	Morbi	Tankara	1. Khakhara
63.	Bhadar - II	Rajkot	Dhoraji	1. Bhola
	Irrigation Scheme			2. Bhol gamda
				3. Chhadavavadar
				4. Supedi
			Upleta	5. Dumiyani

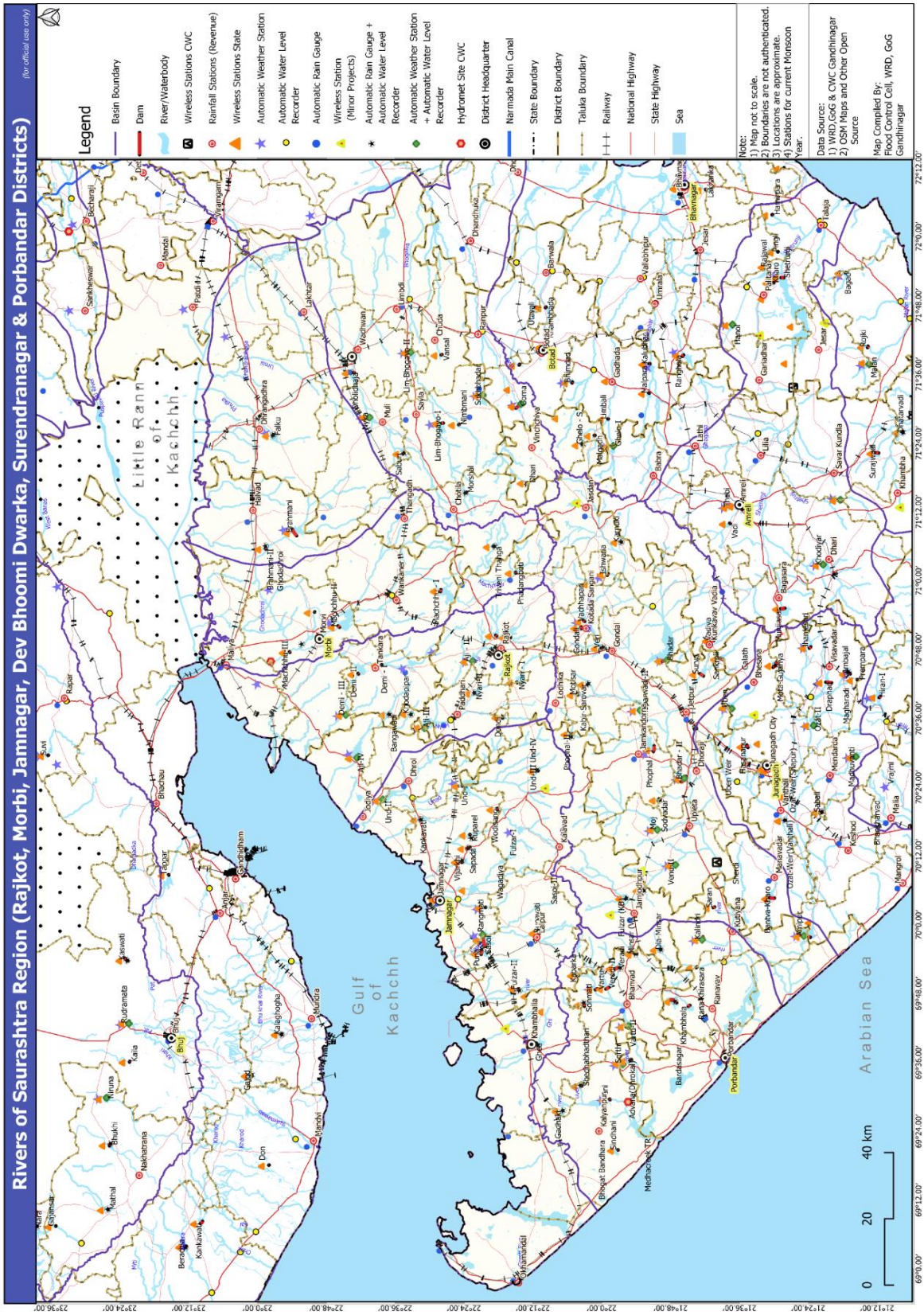
SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
				6. Chikhalia
				7. Samadhiyala
				8. Ganod
				9. Bhimora
				10. Gadha
				11. Gandod
				12. Hadfodi
				13. Isra
				14. Kundhech
				15. Lath
				16. Meli (Majethi)
				17. Nilakha
				18. Talagana
				19. Upleta
		Porbandar	Kutiyana	1. Bhogsar
				2. Bildi
				3. Chauta
				4. Chhatrava
				5. Katvana
				6. Kutiyana
				7. Mandva
				8. Pasvari
				9. Roghda
				10. Segras
				11. Thapda
			Manavadar	12. Chilodara
				13. Roghda
				14. Vadasada
				15. Vekri
			Porbandar	16. Chikasa
				17. Garej
				18. Mitrala
				19. Navi Bandar
64.	Dondi Irrigation	Rajkot	Paddahari	1. Pambhar Itala
	Scheme			2. Nana Itala
				3. Lakshmi Itala
				4. Hidad
65.	Survo Irrigation scheme	Rajkot	Jetpur	1. Thana Galol
				2. Khirasara
				3. Khajuri Gundala
66.	Sodvadar	Rajkot	Dhoraji	1. Zanzmer
	Irrigation Scheme			2. Supedi
67.	Karnuki	Rajkot	Jasdan	1. Jivapar
	W.R.Scheme			2. Juna Pipalia
				3. Pratapura
				4. Kanpar
68.	Brahmani	Morbi	Halvad	1. Ajitgadh
	Irrigation			2. Chadadhara
	Scheme			3. Dhanala

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
				4. Golasan
				5. Kedariya
				6. Khod
				7. Mangadh
				8. Mayurnagar
				9. Merupar
				10. Miyani
				11. Panda Tirath
				12. Raisangpur
				13. Ranjitgadh
				14. Shiroi
				15. Sundargadh
				16. Susvav
				17. Tikar
69.	Dholidhaja	Surendranagar	Wadhvan	1. Bhadiyad
	Irrigation Scheme			2. Joravarnagar
	(Wadhvan Bhogavo-II)			3. Khamisana Dam
				4. Mamka
				5. Nana Kerala
				6. Ratanpur
				7. Sankli
				8. Wadhvan
				9. Surendranagar
			Limbidi	10. Siyani
				11. Natavar gadh
				12. Dolatpar
70.	Limdi Bhogavo - I	Surendranagar	Sayala	1. Thoriyali
	(Thoriyali)			2. Mota Kerala
	Irrigation Scheme			3. Vadia
				4. Juna Jaspar
				5. Nava Jaspar
			Chuda	6. Samadhiyala
				7. Juni Morvad
				8. Navi-Morvad
			Wadhwan	9. Vastadi
				10. Nana Madhad
				11.Mota Madhad
71.	Nayka	Surendranagar	Muli	1. Gautamgadh
	Irrigation Scheme			2. Godavari
	(Wadhvan Bhogavo-I)			3. Kukda
				4. Shekhapar
				5. U/s of Muli Dam
72.	Falku	Surendranagar	Dhrangadhra	1. Dhrangadhra
	Irrigation Scheme			2. Ishdra
				3. Wawdi
				4. Moti Malavan
73.	Morsal	Surendranagar	Chotila	1. Habiyasara
	Irrigation			2. Nani-Morsal
	Scheme		Sayla	3. Mangalkui
				4. Moti-Morsal

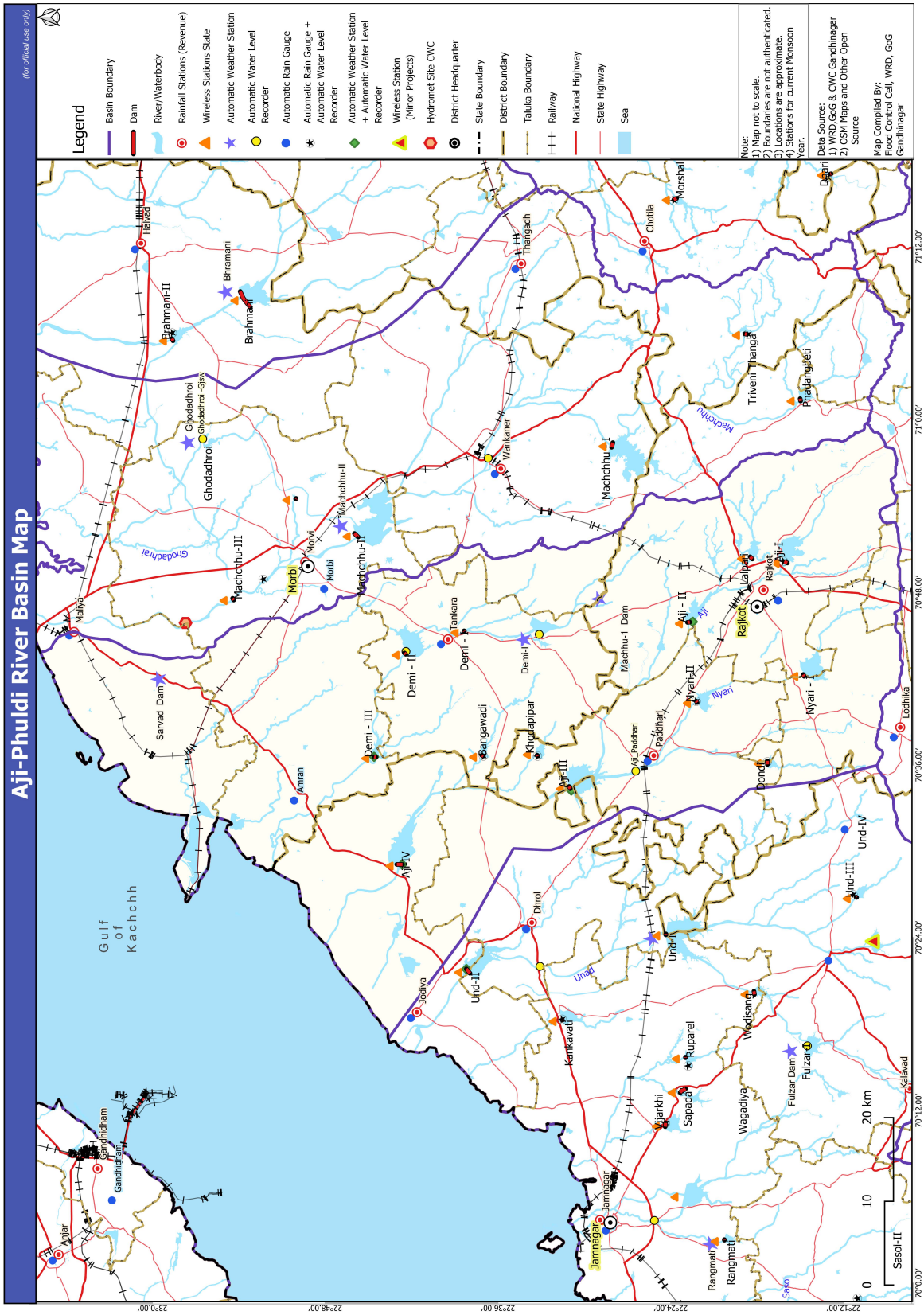
SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
				5. Sakhapar
				6. Sejakpar
				7. Tidoda
74.	Sabhuri W.R.	Surendranagar	Muli	1. Dharmendragadh
	Scheme.			2. Umarda
				3. Tidana
				4. Gadhad
				5. Muli
75	Nimbhani W.R.	Surendranagar	Sayla	1. Vantavachh
	Scheme			2. Sudamda
				3. Nathupura
				4. Vadiya
				5. Amarapar
				6. Samdhiyada
			Wadhvan	7. Moti Morwad
				8. Nani Morwad
				9. Vastadi
76	Limbdi Bhogavo II	Surendrangar	Limbadi	1 Ughal
	(Vadod) W.R.			2. Liyad
	Scheme			3. Bodiya
				4. Sauka
				5. Limbdi
				6. Untadi
				7. Choki
				8. Jakhan
				9. Charaniya
				10. Khanbhalav
				11. Panshina
				12. Kanpar
				13. Bhojpara
				14. Devpara
77	Triveni Thanga	Surendranagar	Chotila	1. Rampara
	Scheme			2. Khatadi
				3. Shekhalia
				4. Mevasa
				5. Lama Kotadi
78	Vansal	Surendranagar	Chuda	1. Chuda
	Irrigation Scheme			2. Gokharwada
79	Brahmani-II	Morbi	Halvad	1. Susvav
				2. Tikar
				3. Miyani
				4. Mayurnagar
				5. Mangadh
				6. Khod
				7. Kedariya
				8. Chadadhara
				9. Ajitgadh
				10.Dhanala
				11.Raisangpur

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
80.	Machhu-III	Morbi	Morbi	1. Gorkhijadiya
				2. Vanaliya
				3. Sadulka
				4. Mansar
				5. Ravapar(Nadi)
				6. Amarnagar
				7. Gungan
				8. Nagdavas
				9. Bahudurgadh
				10.Sokhada
			Maliya(M)	1. Derala
				2. Mahendragadh
				3. Meghpar
				4. Navagam
				5. Rasangpar
				6. Virvidarka
				7. Fatepar
				8. Maliya(M)
				9. Haripar
81.	Sasoi-II	Jamnagar	Lalpur	1. Vavdi
				2.Mota Khadba
				3.Vallabhpur
82.	Ghelo (S)	Rajkot	Jasdan	1. Somalpur
	Irrigation			2. Bhadali
	Scheme	Botad	Gadhada	1. Rampara
				2. Mandavdhar
				3. Kerala
				4. Gadhada
				5. Adatala
				6. Pipal
				7. Tatan
				8. lakhanaka
				9. Ishvariya
		Bhavnagar	Vallabhupur	1. Dared
				2. Melana
				3. Loliyana
				4. Hadmatia
				5 Pachhegam
				6 Khetatimba
				7 Vallabhupur
83.	Malgadh	Rajkot	Jasdan	1. Bhadli
	Irrigation	Botad	Gadhada	1. Rampara
	Scheme			2 Mandavdhar
				3 Kerala
				4 Gadhada
				5 Adatala
				6 Pipal
				7 Tatan
				8 lakhanaka
				9 Ishvariya
		Bhavnagar	Vallabhupur	1. Dared

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
				2. Melana
				3. Loliyana
				4. Hadmatia
				5 Pachhegam
				6 Khetatimba
				7 Vallabhupur
84	Wagadia	Jamnagar	Jamnagar	1. Moti Bhalsan
				2.Sumri
				3.Konza



Annexure 16-B-1



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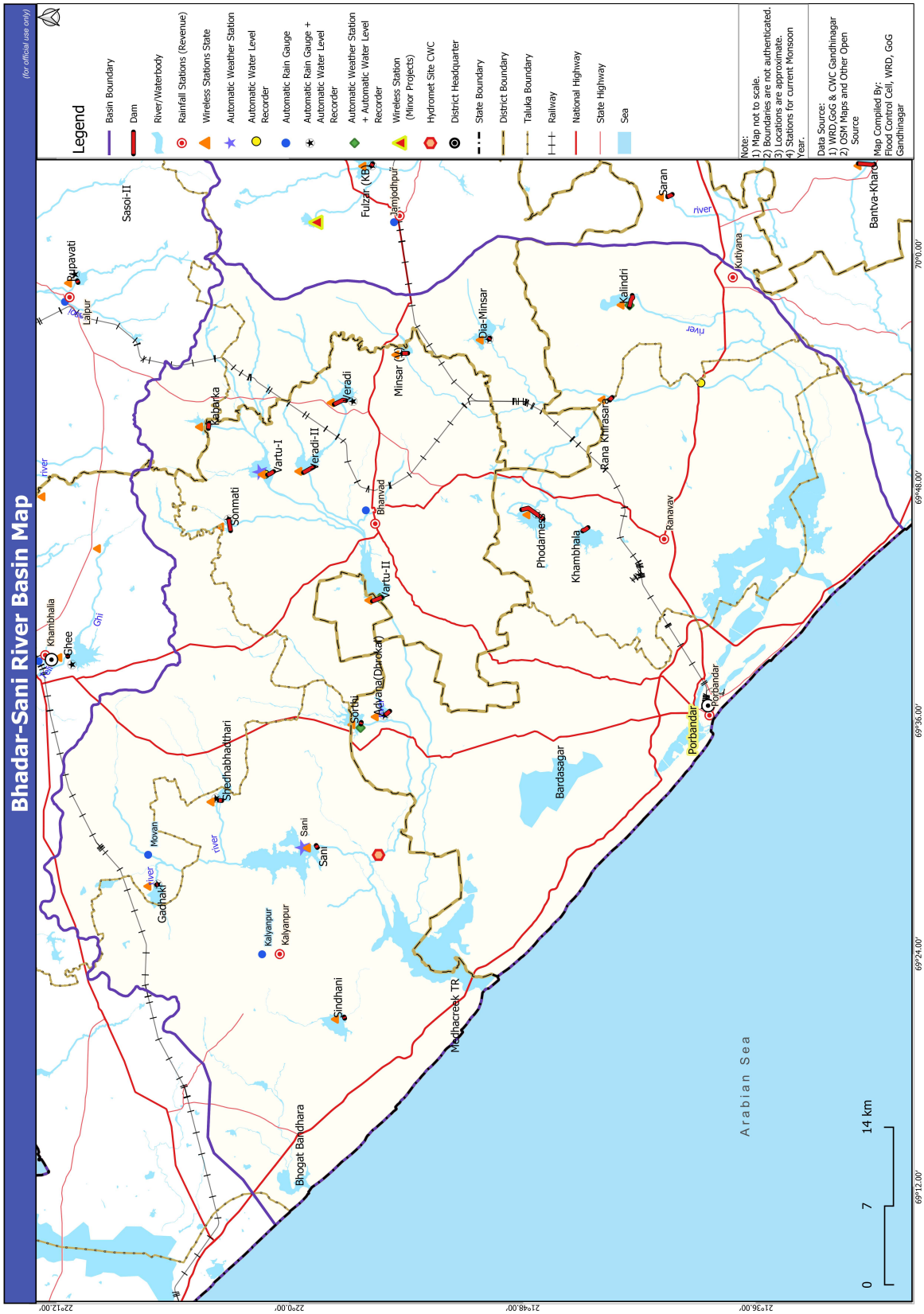

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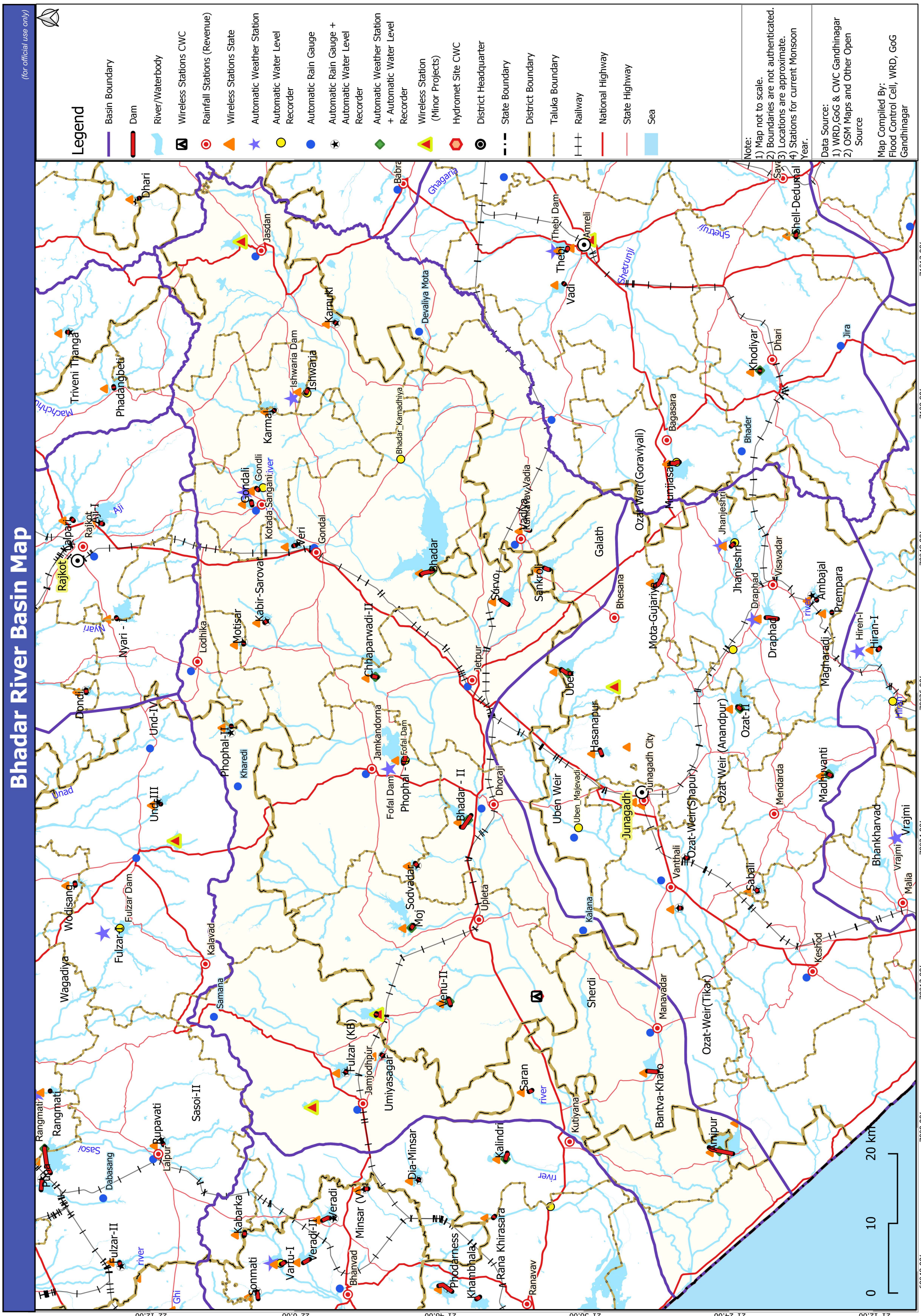


Annexure 16-B-4

RIVERS OF BHAVNAGAR, AMRELI, PORBANDAR, JUNAGADH, BOTAD AND GIR SOMNATH DISTRICTS

17

17.0 RIVERS OF SAURASHTRA REGION (BHAVNAGAR, AMRELI, PORBANDAR, JUNAGADH, BOTAD AND GIR SOMNATH):-

17.1 The Flood Forecasting and Flood Warning system for the rivers of Saurashtra Region is being looked after by Superintending Engineer, Bhavanagar Irrigation Project Circle, Bhavanagar for Bhavanagar, Amreli, Porbandar & Junagadh Districts. Some projects of Junagadh Districts which are under the Superintending Engineer, Rajkot Irrigation Project Circle are being looked after by the Superintending Engineer, Rajkot Irrigation Circle, Rajkot.

17.2 The rivers are having very short length and therefore for incoming floods the time lag available will not be helpful in speedy alerting and evacuation of affected people.

17.3 The Superintending Engineer, Bhavanagar Irrigation Project Circle, Bhavanagar, Superintending Engineer, Salinity Ingress Prevention Circle, Rajkot should provide all the necessary data such as rainfall, guage discharge, water levels, live storages, etc. to the Focal Officer for the area/district concerned under the jurisdiction and will extend all necessary help to the Focal Officer for discharging the duties by acting as Sub Focal Officers.

17.4 The flood forecasting & flood warning arrangements for the following water supply projects under Gujarat Water Supply & Sewerage Board will be looked after by the Superintending Engineer of the concerned projects. They shall directly collect weather bulletin, H.R.W. from India Meteorological Department, Ahmedabad or Revenue Control Room of the concerned districts & shall formulate the flood forecast & convey to the concerned Collector regarding the area likely to be affected for alerting and evacuation of the people as warranted by flood, simultaneously, they shall convey the flood forecast and action taken by them to the Flood Control Cell (Irrigation) nearest to them.

TABLE 17.4

Sr No.	Name of Water Scheme	Officer In charge of Scheme	Telephone No.
1	2	3	4
1.	Hasnapur	Municipal Commissioner Municipa Corporation, Junagadh	Note :- Please refer Flood Telephone Directory of the current year for
2.	Khambhada	S.E, Public Health Circle,	Telephone Nos.
3.	Phodarness	Porbandar	

17.5 The Map showing the location of various Wireless Stations established on the dam sites, fringes is appended vide Annexure 17-B.

17.5.1 The Wireless Stations under the control of Superintending Engineer, Bhavnagar Irrigation Project Circle, Bhavnagar are as under:

State's Wireless Stations.

BHAVNAGAR DISTRICT			
1.	Bhavnagar (BIPC, Bhavnagar)	2.	Rajawal
3.	Kharo	4.	Bagad
5.	Shetrunji	6.	Shetrunji Fringe
7.	Rojki	8.	Malan
9.	Ranghola	10	Hamirpura
11.	Lakhanka	12.	Pingali
13.	Palitana	14.	Hastgiri Repeater
15.	Mahuva	16.	Jaspar-Mandva
17.	Hanol		
BOTAD DISTRICT			
1.	Botad Irrigation Dn. Botad	2.	Malpara
3.	Goma	4.	Bhimdad
5.	Kalubhar	6.	Kaniyad
7.	Sukhbhadar	8.	Khambhada
9.	Limbali	10.	Utavali (Gunda)
AMRELI DISTRICT			
1.	Amreli (Irr. Sub-Dn.)	2.	Khodiar
3.	Dhatarwadi - II	4.	Surajwadi
5.	Munjiasar	6.	Dhatarwadi
7.	Shell-Dedumal	8.	Raidy
9.	Ghelo-I	10.	Vadia
11.	Thebi	12.	Vadi
JUNAGADH DISTRICT			
1.	Hasanapur	2.	J.I. Dn., Junagadh
3.	Madhuvanti	4.	Uben
5.	Jhanjhesri	6.	Ambajal
7.	Ozat Weir (Shahpur)	8.	Vrajami
9.	Ozat Weir (Vanthli)	10.	Girnar Repeater
11.	Dhrafad	12.	Ozat - II
13.	Motagujariya	14.	Bantawa-Kharo
15.	Sabli	16.	Disaster Control
GIR SOMNATH DISTRICT			
1.	Raval	2.	Machhundri
3.	Hiran-I	4.	Hiran – II
5.	Shingoda		
PORBANDAR DISTRICT			
1.	Phodarness	2.	Khambala
3.	Amipur	4.	Kalindri
5.	Porbandar	6.	Advana
7.	Saran	8.	Rana Khirasra
SURENDRANAGAR DISTRICT			
1.	Sukhbhadar		

17.6 Whenever heavy rainfall warning is received from India Meteorological Department the officers of the respective areas shall obtain the storage level and rainfall data at very frequent interval and the same is to be communicated to the Flood Control Cell, Gandhinagar.

17.7 Action to be taken by Local / Project Officer regarding dams in Saurashtra.

17.7.1 The Executive Engineer - in – charge of the reservoirs shall arrange to obtain the gauge and other data from upstream of the reservoirs. The Deputy Executive

Engineer / Assistant Engineer shall on the basis of this data compute the incoming flood and takes necessary steps to route the flood by operating the crest gates as per the operation manual of gates and as per instructions from the Focal Officer and concerned Superintending Engineer whenever warranted so that there would be no danger either to the head works or to the villages / area etc. downstream of the reservoir. If the routed flood is likely to be unexpectedly high enough to endanger certain areas downstream of the reservoir, the concerned Downstream Dam Authority, revenue and Police Department should be intimated in time, so that necessary precautionary measures in respect of alerting the people of the area likely to be affected by flood water including arranging for evacuation necessary.

17.7.2 When water level in the reservoir is likely to reach 0.3 Meter (i.e. 1.00 ft) below high flood level or even earlier in the event of rapid rising of water, he (in charge Executive Engineer) should immediately issue necessary warning and communicate the warning message to the concerned Collector and District Superintendent of Police for taking up further necessary action When water is likely to exceed H.F.L the warning regarding the conditions of dam should also be indicated in the warning to be issued . This flood warning messages shall be communicated to Flood Control Cell, Gandhinagar, Chief Engineer (Central Gujarat) and Addl. Secretary and Chief Engineer and Addl. Secretary concerned immediately without any delay.

17.7.3 The Executive Engineer of the concerned area should interpret the signals / messages received from the various dams in his charge and shall arrange to intimate the flood warning signals , to the Collector and District Superintendent of Police of respective district in which the reservoir is located if necessary. The areas likely to be affected by flood waters are also to be intimated for taking further necessary action for alerting the people as warranted by flood levels in the reservoirs or in the rivers.

17.8 Villages affected due the flood in various rivers in downstream of dams are given as Annexure 17-B

17.9 In case of Padolia River, the Executive Engineer, Botad Irrigation Division, Botad under Superintending Engineer, Bhavnagar Irrigation Project Circle, Bhavnagar shall obtain weather and rainfall forecast from India Meteorological Center, Ahmedabad. He shall interpret the weather data and if found affecting area, the warning messages will be communicated to the Collector of District and District Superintendent of Police of Botad district, under intimation to the Focal Officer and Flood Control Cell, Gandhinagar.

17.10 The villages likely to be affected in Padolia River are given below.

BHAVNAGAR DISTRICT		
1. Muldharai	2. Rajgadh	
BOTAD DISTRICT		
1. Dhanbhari	5. Sagavadar	9. Dhorinda
2. Janada	6. Rohishala	10. Moti
3. Pati	7. Lakheni	11. Dharki
4. Zinjhavadar	8. Sarval	

17.11 Appropriate Authority (Focal Officer)

(A) (For Bhavnagar, Amreli , Botad, Porbandar, Gir Somnath & Junagadh District)

Superintending Engineer,
Bhavnagar Project Irrigation Circle,
S-3, Jila Seva Sadan-2, Bhavnagar

Note:-
Please refer Flood Telephone Directory of the current year For Telephone Nos.

(B) Appropriate Authority (Focal officer) for following Water Supply Scheme.

Sr No.	Name of Scheme	Appropriate Authority	Telephone No.
1	2	3	4
1.	Hasnapur	Municipal Commissioner,	Note:- Please refer Flood Telephone Directory of current year Telephone Nos.
		Municipal Corporation,Junagadh	
2.	Khambala	Superintending Engineer	
3.	Phodarness	Public Health Circle,Porbandar.	

ANNEXURE - 17 (A)

List of villages likely to be affected by floods on downstream of the Dams in Bhavnagar, Amreli, Botad, Porbandar, Junagadh and Gir Somnath District.

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
1	Khambhada	Botad	Baravala	1. Khambhada
	Irrigation			2. Bela
	Scheme			3. Timbla
				4. Kundal
				5. Barvala
				6. Khamidana
				7. Juna Navda
				8. Nava Navda
				9. Wadhela
2.	Utavali Water	Botad	Ranpur	1. Gunda
	Resources Scheme		Barvala	2. Bela
				3. Timbla
				4. Kundal
				5. Barvala
				6. Khamidana
				7. Juna Navda
				8. Nava Navda
				9. Wadhela
3	Dhatarwadi	Amreli	Jafrabad	1. Lothpur
	Irrigation		Rajula	2. Chhatadia
	Scheme			3. Dharanoness
				4. Dhareshwar
				5. Hindorma
				6. Jhampodar
				7. Juni Mandardi
				8. Khakhhbai
				9. Navi Mandardi
				10. Rampara
				11. Uchariya
				12. Vad

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
4	Ghelo (I)	Botad	Gadhda	1. Gadhda
	Irrigation		(Swamina)	2. Itaria
	Scheme			3. Kerala
				4. Mandavadhar
				5. Rampura
				6. Adatala
				7. Pipal
				8. Tatana
				9. Lakhanaka
				10.Ishvariya
				11. Limbali
		Bhavnagar	Vallabhupur	1. Dared
				2. Melana
				3. Loliyana
				4. Hadmatia
				5. Pachhegam
				6. Khetatimba
				7. Vallabhupur
5	Khodiar	Amreli	Amreli	1. Babpur
	Irrigation			2. Gavadka
	Scheme			3. Gorkhavala Mota
				4. Gorkhavala Nana
				5. Mandavade Nana
				6. Medi
				7. Pithvajal
				8. Travada
				9. Vankia
				10. Vithalpur
			Dhari	11. Ambardi
				12. Bhath
				13. Dhari
				14. Halaria
				15. Hularia
				16. Padargadh
				17. Paldi
			Gariyadhar	18. Sarambhada
				19. Gujarda Juna
				20. Manaji
				21. Ranigam
				22. Satapara
				23. Thansa
			Liliya	24. Amba
				25. Bavada
				26. Bavadi
				27. Ingorala
				28. Kankot
				29. Krankach
				30. Shedhavadar
				31. Lonka
				32. Lonki
			Savarkundla	33. Ambolda

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
				34. Borala
				35. Ghoba
				36. Fifad
				37. Juna Savar
				38. Khabpura
				39. Mekada
		Bhavnagar	Palitana	40. Chok
				41. Dungarpur
				42. Hathasani
				43. Jalirya (Manaji)
				44. Jiwapur
				45. Ranparda
				46. Rohishala
6	Munjiasar	Amreli	Amreli	1. Babapur
	Irrigation			2. Mandava
	Scheme			3. Timbla
				4. Gavadaka
				5. Paniya
			Bagasara	6. Jamka
				7. Sanalia
				8. Jethiyavadar
				9. Bagasara
7	Singoda	Gir Somnath	Kodinar	1. Chhachhar
	Irrigation			2. Dudana
	Scheme			3. Ghatwad
				4. Govindpur (Bhandaria)
				5. Kodinar
				6. Mul-Dwarka
				7. Nana Ichvad
				8. Ronaj
				9. Sugala
				10. Chohan Ni Khan
		Gir Somnath	Gir-Gadhada	11. Jamwala
				12. Kansariya
				13. Jagatiya
				14. Bhandariya
				15. Panadar
8	Raidy	Amreli	Jafrabad	1. Mithapur
	Irrigation			2. Nageshri
	Scheme		Rajula	3. Chotra
				4. Mota-Barman
				5. Nana-Barman
9	Vadia	Rajkot	Jetpur	1. Chharania
	Irrigation			2. Charan
	Scheme			3. Thana-Galol
		Amreli	Vadia	4. Vadia
10.	Vadi	Amreli	Amreli	1. Amreli
	W.R. Scheme			2. Fatehpur
				3. Champathal

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
				4. Mangavapal
				5. Varudi
11.	Shell - Dedumal	Amreli	Savar-Kundla	1. Hathasani
				2. Khambhalia
				3. Ditals
				4. Nana-Samadhiyala
				5. Nesadi
				6. Karajala
				7. Simaran
				8. Jira
12.	Thebi	Amreli	Amreli	1. Amreli
	Irrigation			2. Fatepur
	scheme			3. Champathal.
13.	Dhatarwadi - II	Amreli	Rajula	1. Nani Khakhabai
	W.R. Project			2. Khakhabai
				3. Hindorna
				4. Chhatadia
				5. Vad
				6. Dharness
				7. Uchaiya
				8. Lothpur
				9. Rampara
14.	Shetrunji	Bhavnagar	Palitana	1. Nani-Rajasthali
	Irrigation Scheme			2. Lapalia
				3. Lakhavad
				4. Mahidhar
			Talaja	5. Medha
				6. Bhegali
				7. Datrad
				8. Pingli
				9. Timana
				10. Shevalia
				11. Royal
				12. Makhaniya
				13. Talaja
				14. Gorkhi
				15. Lilivav
				16. Tarasara
				17. Sartanpar
15	Bagad	Bhavnagar	Talaja	1. Khardi
	Irrigation			2. Padargadh
	Scheme			3. Bordi
				4. Pratappara
			Mahuva	4. Moti-Jagadhar
				5. Lilvan
				6. Nani-Jagadhar
			Talaja	7. Datha
				8. Valar
16	Bhimdad	Botad	Gadhda	1. Bhimdad

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
	Irrigation		(Swamina)	2. Goradka
	Scheme			3. Meghavadiya
				4. Ningala
				5. Sakhpar
				6. Surka
17	Goma	Botad	Botad	1. Alampur
	Irrigation			2. Babarkot
	Scheme			3. Bodi
				4. Nana-Paliyad
				5. Paliyad
				6. Pipardi
				7. Ranpur
				8. Sankali
				9. Umrala
18	Hamirpura	Bhavnagar	Talaja	1. Hamirpura
	Irrigation			2. Dihor
	Scheme			3. Samadhiyala
				4. Nesia
				5. Nani-Babriat
				6. Moti-Babriat
				7. Hubak Vad
19	Kharo	Bhavnagar	Palitana	1. Bhutia
	Irrigation			2. Moti-Paniali
	Scheme			3. Nani-Paniali
				4. Palitana
20	Malan	Bhavnagar	Mahuva	1. Mota Khuntawad
	Irrigation			2. Goras
	Scheme			3. Sangania
				4. Lakhupura
				5. Kumbhan
				6. Nana Jadra
				7. Tavida
				8. Mahuva
				9. Katapar
21	Rajawal	Bhavnagar	Palitana	1. Anida
	Irrigation			2. Lakhavad
	Scheme			3. Mandavada
22	Ranghola	Bhavnagar	Shihor	1. Bhangadh
	Irrigation		Umarala	2. Chogath
	Scheme			3. Devalia
				4. Dhambhalia
				5. Dharuka
				6. Jhanjhmer
				7. Langala
				8. Malpara
				9. Piprali
				10. Ranghola
23	Rojki	Bhavnagar	Mahuva	1. Goras

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
	Irrigation			2. Jarda-Nana
	Scheme			3. Kumbhan
				4. Lakhupura
				5. Mahuva
				6. Sangania
				7. Tavida
				8. Umania-Vadar
24	Surajvadi	Amreli	Savarkundla	1. Dolti
	Irrigation			2. Ghandula
	Scheme			
25	Kalubhar	Botad	Gadhda	1. Gadhali
	Irrigation Scheme			2. Rajpipla
		Bhavnagar	Umrala	3. Bhojavadar
				4. Hadmatala
				5. Ratanpur
				6. Samadhiyala
				7. Tarapala
				8. Umrala
				9. Vangadhara
				10.Chogath
			Vallabhipur	11. Rajasthali
26	Lakhanka	Bhavnagar	Bhavnagar	1. Adhevada
	Irrigation			2. Akvada
	Scheme			3. Malanka
				4. Tarsamia
27	Limbali	Bhavnagar	Gadhda	1. Adatala
	Irrigation			2. Gadhda
	Scheme			3. Manavadar
				4. Rampura
				5. Kerala
				6. Pipal
				7. Tatana
			Vallabhupur	1. Dared
				2. Melana
				3. Loliyana
				4. Hadmatia
				5 Pachhegam
				6 Khetatimba
				7 Vallabhupur
28	Malpara	Botad	Gadhda	1. Malpara
	Irrigation			2. Ghogadh-Samdi
	Scheme			3. Ankadia
29	Hanol - W.R.	Bhavnagar	Palitana	1. Hanol
	Project			2. Jalia (Ankolali)
				3. Akolali
				4. Juna Loichhada
				5. Nava Loichhada
				6. Senjadia
				7. Khijadia (Mokhadaka)

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
				8. Mokhadaka
				9. Randola
				10. Bhudarkha
				11 Sagapara
				12 Piparadi 1 & 2
				13 Bhadavav
30.	Kaniyad	Botad	Botad	1. Kaniyad
			Ranpur	2. Kundali
				3. Panvi
				4. Khas
				5. Chacharia
				6. Alav
31.	Pingali	Bhavnagar	Talaja	1. Pingli
32	Jaspar-Mandva	Bhavnagar	Talaja	1. Mandva
				2. Sosiya
				3. Manar
33	Hasnapur (WS)	Junagadh	Junagadh	1. Bamangam
	Irrigation			2. Dervan
	Scheme			3. Galiyavada
				4. Sabalpur
				5. Saragvada
				6. Virpur
34	Vrajami	Junagadh	Malia-Hatina	1. Dudhala
	Salinity			2. Itala
	Ingress			3. Old Vandarvad
	Prevention			4. Kadaya
	Scheme			5. Sarkadia
				6. Vadia
				7. Vandarvad
35	Ambajal	Junagadh	Visavadar	1. Jambudi
	Irrigation			2. Mota chaparda
	Scheme			3. Navi chavand
				4. Khijadiya
36	Hiran - I	Gir Somnath	Talala	1. Kamleshwar Ness
	Irrigation			2. Dajiya Ness
	Scheme			3. Chitravad
				4. Chitrod
				5. Gidariya
				6. Khirdhar
				7. Borvav
				8. Ramrechi
				9. Sangodra
				10. Ghusiya
				11. Talala
		Junagadh	Mendarada	12. Sasan
				13. Bhalchhel
37	Hiran - II	Gir Somnath	Talala	1. Maljinjva

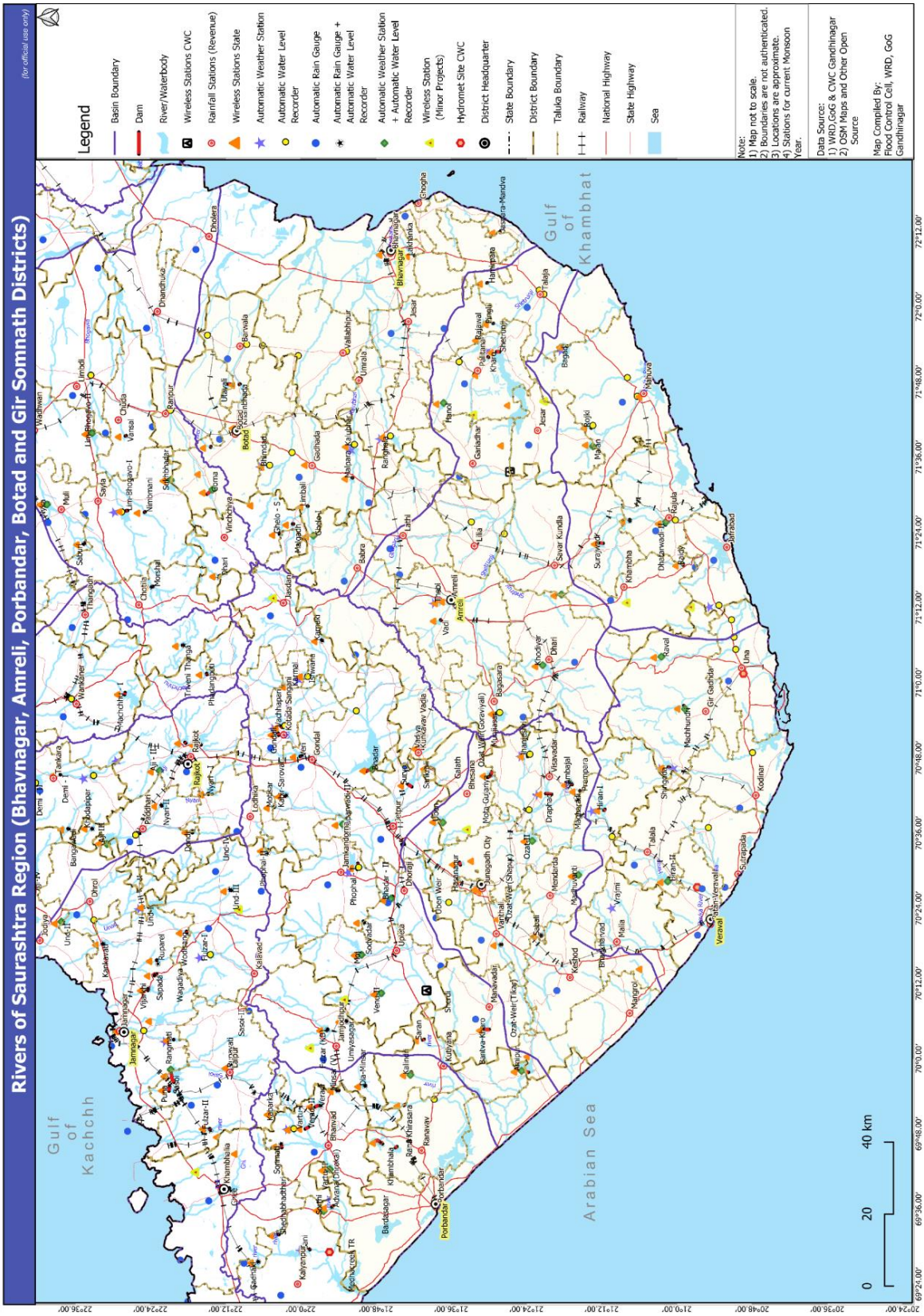
SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
	Irrigation			2. Umrethi
	Scheme		Veraval	3. Badalpara
				4. Bherala
				5. Indroi
				6. Ishwariya
				7. Kajali
				8. Mandor
				9. Mithapur
				10. Navadra
				11. Prabhas Patan
				12. Savani
				13. Sonariya
38	Jhanjeshri	Junagadh	Visavadar	1. Mahuda
	Irrigation			2. Mahudi
	Scheme			3. Dhebar
				4. Desai Vadala
				5. Sukhpara
				6. Rupavati
				7. Ishwariya
				8. Vajadi
				9. Khambhaliya
				10. Khijadiya
39	Madhuvanti	Junagadh	Mendarda	1. Kenedipur
	Irrigation			2. Babartirath
	Scheme			3. Amargadh
				4. Mendarda
				5. Alindhra
				6. Mithapur
				7. Nani Khodiyar
			Vanthali	8. Bhandhada
				9. Bhatiya
				10. Bodka
				11. Gadoi
				12. Konjadi
				13. Mota Kajaliyala
				14. Tinmas
				15. Waspada
40	Uben	Junagadh	Junagadh	1. Bhiyal
	Irrigation			2. Chowki (Sorath)
	Scheme			3. Jalansar
				4. Kerala
				5. Majevadi
				6. Taliadhar
				7. Vadhvi
				8. Vala Simdi
				9. Vanandia
			Vanthali	10. Balot
				11. Dhandhusar
				12. Vanthali
		Rajkot	Jetpur	13. Arab Timbadi
				14. Bava Pipalva
				15. Pipalva

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
41	Machhundri	Gir Somnath	Gir Gadhada	1. Kodia
	Irrigation			2. Itwaya
	Scheme		Una	3. Gundala
				4. Men
				5. Chachakvad
				6. Una
				7. Delwada
				8. Rampara
				9. Rajpara
				10. Kalapan
				11. Jhankharvada
				12. Nava Bander
				13. Rasulpara
				14. Dron
				15. Fatsar
				16. Judvadali
				17. Naliya Mandavi
				18. Rajput-Rajpara
42	Raval	Gir Somnath	Gir Gadhada	1. Chikhalkuva
	Irrigation			2. Dhokadva
	Scheme			3. Mohabatpura
				4. Jasadhar
			Una	5. Kandhi
				6. Kanek Barda
				7. Manekpur
				8. Garal
				9. Mota Samdhiyala
				10. Motha
				11. Padapadar
				12. Patapar
				13. Rameshwar
				14. Samter
				15. Sanjavapur
				16. Umej
				17. Sankhada
				18. Khatrivada
				19. Vadli
				20. Nitli
				21. Motisar
43	Mota Gujaria	Junagadh	Bhesan	1. Mota Gujaria
				2. Kotda
44	Ozat Weir	Junagadh	Vanthli	1. Vanthli
	(Shahpur)			2 Shahpur
				3. Nana Kajaliyali
45	Bantwa – Kharo	Junagadh	Manavadar	1. Bhalgam
	W.R.Project			2. Kodvav
				3. Aklera
				4. Samega
		Porbandar	Kutiyana	1. Revdra

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
				2. Gadavana
				3. Dharsen
				4. Tarkhal
46	Ozat – II	Junagadh	Junagadh	1. Bela
				2. Rameshwar
				3. Mevasa (Bava)
				4. Badalpur
				5. Anandpur
			Vanthali	6. Raipur
				7. Sukhpur
				8. Vanthali
				9. Kanza
			Mendarda	10. Nagalpur
47	Ozat Weir (Vanthli)	Junagadh	Vanthali	1. Kanza
				2. Tikar
				3. Piplana
				4. Vanthali
				5. Akha
		Porbandar	Kutiyana	6. Amipur
			Porbandar	7. Maiyari
				8. Balej
				9. Ratia
				10. Nevibandar
				11. Chikasa
48	Sabali	Junagadh	Vanthali	1. Khorasa
				2. Sendarda
			Keshod	1. Dervan
				2. Magharvada
				3. Manekwada
49	Khambhala (WS)	Probandar	Jamjodhpur	1. Adhipat Nes
	Irrigation			2. Amiyari
	Scheme			3. Barapat Nes
				4. Bhod
				5. Bileshwar
				6. Dolatgadh
				7. Hanuman Gadh
				8. Javara Nes
		Porbandar	Jamjodhpur	9. Khambhala
				10. Pipaliya
				11. Ramgadh
				12. Rana Bordi
				13. Tarsat
				14. Vadvala
50	Phodarness (WS)	Porbandar	Jamjodhpur	1. Sakhpau
	Irrigation			2. Torsat
	Scheme		Ranavav	3. Bileshwar
				4. Gandiyavad Nes
				5. Hanuman Gadh
				6. Jambu
				7. Jarera Nes

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
				8. Kandorana
				9. Kandorana(Rana)
				10. Khandipat Nes
				11. Khijdad
				12. Khirsara
				13. Sajanvada Nes
				14. Samavadar Nes
				15. Thoyana
				16. Undariya
				17. Valotra
51	Adwana W.R.P.	Porbandar	Porbandar	1. Sodhana
				2. Adwana
52	Sukhbhadar	Ahmedabad	Dhandhuka	1. Adval
	Irrigation			2. Dhandhuka
	Scheme			3. Galsana
				4. Gunjar
				5. Jaliya
				6. Morasiya
				7. Vagad
				8. Vasana
				9. Rangpur
				10. Kotada
				11. Dholi
		Botad	Ranpur	12. Derdi
				13. Devalia
				14. Sarangpur
				15. Gadhadiya
				16. Hansalpur
				17. Kinara
				18. Patna
				19. Ranpur
				20. Baraniya
				21. Nagnesh
			Botad	22. Nana Bhadla
				23. Limboda
			Sayla	24. Mota Bhadla
				25. Chhorvira
				26. Loya
53	Dhrafad	Junagadh	Visavadar	1. Sarsai
	Irrigation			2. Mota chaparda
	Scheme			3. Navi chavand
				4. Khijadiya
54	Saran.	Porbandar	Kutiyana	1. Gokharan
				2. Khunpur
				3. Chautta
				4. Teri
55	Rana Khirasra	Porbandar	Ranavav	1. Rana Khirasra
				2. Valotra
				3. Rana Kandorana
			Kutiyana	1. Amar

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
56	Bhal Area	Bhavnagar	Bhavnagar	1. Jasvantpur
				2. Kotda
				3. Ganeshgadh
				4. Sanes
				5. Khetakhatli
				6. Narbad
				7. Kala talav
				8. Nava Madhiya
				9. Juna Madhiya
				10. Devaliya
				11. Paliyad
57	Alansagar MI	Rajkot	Jasdan	1. Jasdan
				2. Bhakhalvad



Annexure 17-B

18.0 RIVERS OF KACHCHH REGION

18.1 The flood forecasting & flood warning system for the rivers of Kachchh District is being looked after by the Superintending Engineer, Kachchh Irrigation Circle, Bhuj through his Executive Engineer (1) Kachchh Irrigation Dn, Bhuj (2) Kachchh Irrigation Construction Dn, Bhuj. (3) Salinity Control Dn, Bhuj (4) Water Resources Investigation Dn, Bhuj. The gauge, discharge & rainfall data are being communicated through wireless stations located at various stations on the main rivers as well as tributaries except Water Supply Schemes.

18.2 The flood forecasting & flood warning arrangements for Tappar water supply project under Gujarat Water Supply & Sewerage Board will be looked after by Superintending Engineer of the concerned projects. They shall directly collect weather bulletin, H.R.W from India Meteorological Department, Ahmedabad or Revenue Control Room (E.R.C.) of the concerned districts & shall formulate the flood forecast & convey to the concerned Collector regarding the area likely to be affected for alerting and evacuation of the people as warranted by flood. Simultaneously, they shall convey the flood, forecast and action taken by them to the Flood Control Cell (Irrigation) nearest to them.

TABLE - 18.2

Sr No.	Name of Scheme	Officer In charge	Telephone No.
1	2	3	4
1.	Tappar	Superintending Engineer Kachchh Irrigation Circle, Bhuj	Note:- Kindly refer Flood Telephone Directory of current year for Telephone Nos.

18.3 This region lies in the North West of Gujarat. It is scantily rainfall area with dry atmosphere and shallow flashy rivers. Overall there are 20 Irrigation Schemes (Including Tappar Water Supply scheme). The time lag for flood to reach the desert or sea from the catchment is very short. The flood waters are likely to reach earlier than the period required for evacuation.

18.4 The name of Dams/ Weir where Wireless Stations are located as under:-

1	Bhuj(KIC)	2	Kalaghogha
3	Niruna	4	Godhatad
5	Suvi	6	Gajod
7	Kaila	8	Sanandro
9	Fategadh	10	Kankavati
11	Nara	12	Rudramata
13	Kasvati	14	Tapper
15	Bhukhi	16	Berachia
17	Don	18	Mathal
19	Jangadia	20	Mitti

18.4 Basin Map showing the locations of Wireless Stations established are appended vide **Annexure 18-B**

18.5 The Collector shall directly receive the weather and heavy rainfall messages from **I.M.D., Ahmedabad / Revenue Department (Emergency Relief Cell), Gandhinagar.** Necessary instruction will be issued by the Collector to warn / alert the people through the Local Officer i.e. Taluka Mamlatdar or Taluka Development Officer of the areas likely to be affected.

18.6 The villages likely to be affected in downstream of **Dams of Kachchh District** are given vide **Annexure 18-A**.

18.7 Appropriate Authority (Focal Officer)

(A) For Kachchh District

Superintending Engineer
Kachchh Irrigation Circle,
Sinchai Sadan, Bhuj.(Kachchh)

Note:-
Kindly refer Flood Telephone Directory of current year for Telephone Nos

(B) Appropriate Authority (Focal Officer) for Water Supply Scheme.

Superintending Engineer
Kachchh Irrigation Circle,
Bhuj.

Note:-
Kindly refer Flood Telephone Directory of current year for Telephone Nos

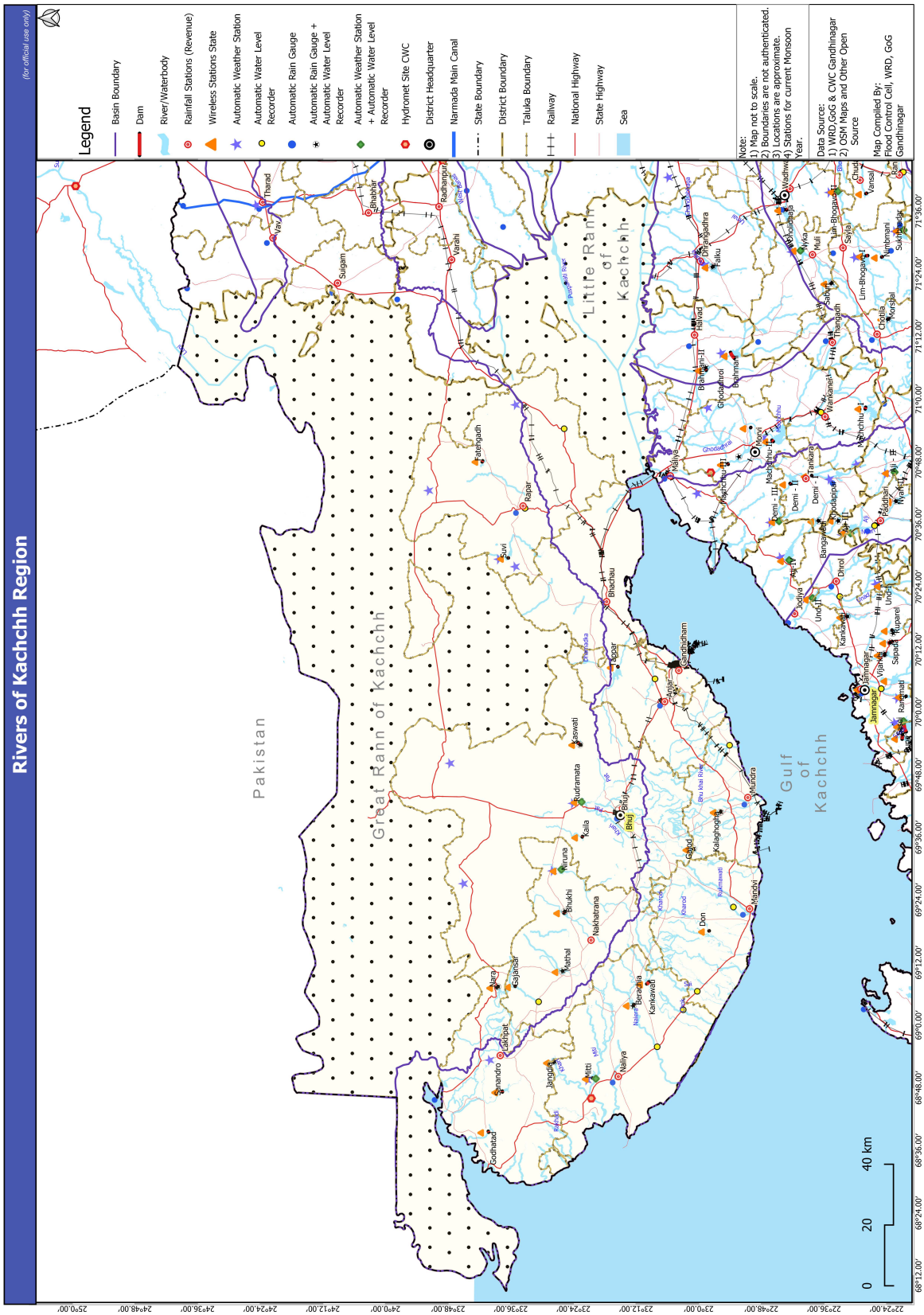
ANNEXURE - 18 (A)

List of villages likely to be affected by floods on downstream of the Dams in

KACHCHH REGION

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
KACHCHH DISTRICT :-				
1	Fatehgadh	Kachchh	Rapar	1. Gedi
	Irrigation			2. Fatehgadh
	Scheme			
2	Gajod	Kachchh	Mundra	1. Beraja
	Irrigation			2. Bhujpur
	Scheme			3. Gelad
				4. Ramania
				5. Tumbadi
3.	Godhatad	Kachchh	Lakhpat	1. Kapurashi
	Irrigation			2. Koriyani
	Scheme			
4.	Kaila	Kachchh	Bhuj	1. Zura
	Irrigation			
	Scheme			
5	Kalaghogha	Kachchh	Mundra	1. Somaghogha
	Irrigation			
	Scheme			
6	Kankawati	Kachchh	Abdasa	1. Hajapur
	Irrigation			2. Miyani
	Scheme			3. Nundhatad
				4. Vinzan

SR NO	NAME OF SCHEME	NAME OF DISTRICT	NAME OF TALUKA	NAME OF VILLAGES
1	2	3	4	5
				5. Khirsara (V.)
7	Kaswati	Kachchh	Bhuj	1. Khengarpur
	Irrigation			2. Lodia
	Scheme			3. Umedpur
8	Nara-Gajansar	Kachchh	Lakhpat	1. Gajansar
	Irrigation			2. Hajipur
	Scheme			3. Nara
				4. Uthangadi
				5. Zumara
9	Niruna	Kachchh	Nakhatrana	1. Niruna
	Irrigation			
	Scheme			
10	Rudramata	Kachchh	Bhuj	1. Dhori
	Irrigation			2. Kunaria
	Scheme			3. Sumarasar
11	Sanandro	Kachchh	Lakhpat	1. Mindhiyari
	Irrigation			2. Panandhro
	Scheme (Sanandro)			3. Subhaspur
12	Suvi	Kachchh	Rapar	1. Gauripur
	Irrigation			2. Suvi
	Scheme			
13	Tappar (W.S.)	Kachchh	Anjar	1. Bhimsar
	Irrigation			2. Tappar
	Scheme			
14	Bhukhi	Kachchh	Nakhatrana	1. Bhimsar
	Irrigation			2. Dador
	Scheme			3. Godhiyar
				4. Hirapur
				5. Karodia
				6. Wang
15	Berachiya	Kachchh	Abdasa	1. Bitiyari
	Irrigation			2. Bhachunda
	Scheme			3. Berachiya
				4. Rava
16	Don	Kachchh	Mandvi	1. Don
	Irrigation			2. Rajada
	Scheme			
17	Jangadia	Kachchh	Abdasa	1. Aida
	Irrigation			2. Butta
	Scheme			3. Jangadia
				4. Liyari
18	Mathal	Kachchh	Nakhatrana	1. Deshalpar
	Irrigation			2. Dhamay
	Scheme			3. Guntali
				4. Jinjay
				5. Nura
				6. Umarapar
19.	Mitti	Kachchh	Abdasa	1. Trambo
				2. Rampar
				3. Chhasara
				4. Vadasara
				5. Korwali-Wandh



Annexure 18-B

A. MINOR IRRIGATION PROJECTS
B. RIVER GAUGING AND RAIN GAUGING SITES UNDER NWRWS & KALPASAR DEPTT

19

19-A - MINOR IRRIGATION PROJECTS

19. A.0 The Flood Forecasting and Flood warnings system for the Minor Irrigation in Gujarat State is being looked after by

(1) The Superintending Engineer, Gandhinagar Panchayat Irrigation Circle, Gandhinagar.

(2) The Superintending Engineer, Vadodara Panchayat Irrigation Circle, Vadodara

(3) The Superintending Engineer, Rajkot Panchayat Irrigation Circle, Rajkot.

(4) The Superintending Engineer, Kachchh Irrigation Circle, Bhuj.

19. A.1 The construction of new Minor Irrigation Works and maintenance of existing Minor Irrigation Works are carried out by various District Panchayat Irrigation Division under three of the Panchayat Irrigation Circle and Kachchh Irrigation Circle, Bhuj. The administrative Head of this District Panchayats is District Development Officer.

19. A.2 The Superintending Engineer, Gandhinagar Panchayat Irrigation Circle, Gandhinagar is looking after the Minor Irrigation Schemes of (1) Gandhinagar, (2) Mehasana,(3) Patan, (4)Banaskantha, (5) Ahmedabad, (6) Kheda, (7) Anand, (8) Sabarkantha and (9) Aravalli

The Superintending Engineer, Vadodara Panchayat Irrigation Circle, Vadodara is looking after the Minor Irrigation Schemes of Vadodara, Bharuch, Surat, Valsad, Dangs, Panchmahals, Dahod, Navasari, Narmada, Mahisagar, Chhotaudepur, and Tapi Districts.

The Superintending Engineer, Rajkot Panchayat Irrigation Circle, Rajkot is looking after the Minor Irrigation Schemes of Amreli, Bhavnagar, Botad, Jamnagar, Dev Bhumi Dwarka, Rajkot, Junagadh, Gir Somnath, Porbandar, Morbi and Surendranagar Districts.

The Superintending Engineer, Kachchh Irrigation Circle, Bhuj is looking after the Minor Irrigation schemes of Kachchh District.

9.A.3 The above four Superintending Engineer shall act as a Focal Officer and shall provide all the necessary data such as rainfall, gauge, discharge, water levels, live storages etc. for the district concerned under his jurisdiction and will extend all necessary help as and when asked by the Flood Control Cell, State Water Data Centre, Gandhinagar. The Executive Engineer, incharge of the Minor Irrigation Works shall function as a Sub Focal Officer and shall have to take the necessary action and make efforts to control the situation.

The sub focal officer incharge of the Minor Irrigation schemes has to intimate his higher authorities and revenue authorities like Mamlatdar, Prant Officer, Collectors, Police Authorities, Home Guard Authorities regarding the situation.They shall directly collect weather bulletin, H.R.W from India Meteorological Department, Ahmedabad or Revenue Control Room (E.R.C.) of the concerned districts. All

authorities are requested to extend the help required by the sub focal officer to overcome the situation.

19.A.4 At present there are M.I. Schemes, check dams, percolation tanks, safe stages works and lift Irrigation Schemes are existing in 33 districts of Gujarat State. For better control and immediate information and instructions to the field officer for precautionary steps are necessary. The phone numbers of all the Executive Engineers of Panchayat Irrigation Divisions and Irrigation Circles are shown in Flood Telephone Directory of current year.

19.A.5 For Flood Warning Arrangements the information regarding the Flood situation and its communications to higher authority, wireless systems at the important places of M.I. Works is shown in table 5.6 (Chapter-5), are suggested by the Chief Engineer (Panchayat) and Add. Secretary Sachivalaya, Gandhinagar.

19. A.6 Appropriate Authority (Focal Officer) for Panchayat Irrigation Scheme:

(A)	For (1) Gandhinagar, (2) Mehasana,(3) Patan, (4) Banaskantha, (5) Ahmedabad, (6) Kheda,. (7) Anand, (8) Sabarkantha and (9)Aravalli District	The Superintending Engineer, Gandhinagar Panchayat Irrigation Circle, Sector - 16, Gandhinagar .
(B)	For Amreli, Bhavnagar, Botad, Jamnagar, Porbandar, Dev Bhumi Dwarka, Junagadh, Gir Somnath, Rajkot, Morbi and Surendranagar Districts.	The Superintending Engineer, Rajkot Panchayat Irrigation Circle, M.S.Building, Race Course, Rajkot.
(C)	For Panchmahals, Vadodara, Narmada, Navsari, Bharuch, Valsad, Dahod, Surat,Dangs, Mahisagar, Chhotaudepur, and Tapi districts.	The Superintending Engineer, Vadodara Panchayat Irrigation Circle, Room No.512,513 5th Floor, Kuber Bhavan Kothi Char Rasta, Vadodara
(D)	For Kachchh District.	The Superintending Engineer, Kachchh Irrigation Circle, "Sinchai Sadan" Jubilee Ground, Bhuj,Kachchh

19-B River gauging and Rain gauging Sites under NWRWS and Kalpasar Department.

19. B.0 The works of measuring discharge and gauge of almost all rivers of the Gujarat is being done by Narmada, Water Resources, Water Supply and Kalpasar Department, Gandhinagar since long back. The department has also made the facility to measure the rainfall, temperature, humidity, evaporation and quality of Water. All these activities were being carried out by the technical staff up to year 2020, in year 2021 RTDAS system has established and all the data is now captured by ARG, AWS & AWLR under the Superintending Engineer, State Water Data Centre, Gandhinagar.

19. B.1 In RTDAS real time data of weather stations and water level stations measured hourly automatically. Communication of data from site is being carried out by mobile

facilities during monsoon. The data collected by W. R. I. Division, Ahmedabad and its six sub divisions do not give any flood forecast but it helps considerably in monsoon particularly where heavy rainfall occurs.

19. B.2 The following set up is working under the Executive Engineer, W. R. I. Division, Ahmedabad for almost all district of the state. It is monitored by the Superintending Engineer, State Water Data Centre, Gandhinagar.

The river gauging, Rainfall stations covering Banaskantha, Sabarkantha, Arvalli, Gandhinagar, Mehsana, Patan, Ahmedabad and Kheda District is being done by Dy. Ex. Engineer, W. R. I. Sub Division No.1, Ahmedabad

The river gauging, Rainfall stations covering Vadodara, Panchmahal, Dahod, Bharuch, Narmada, Chhotaudepur, Anand District is being done by Dy. Ex. Engineer, R. G. Sub Division, Vadodara.

The River gauging, Rainfall stations covering Dang, Navsari, Surat, Valsad, Tapi District is being done by Dy. Ex. Engineer, R.G.Sub Division, Navsari.

The River gauging, Rainfall stations covering Jamnagar, Rajkot, Junagadh, Porbandar, Surendranagar, Devbhumi Dwarka, District is being done by Dy. Ex. Engineer, R.G.Sub Division, Rajkot.

The River gauging, Rainfall stations covering Botad, Bhavnagar, Amreli, Gir Somnath District is being done by Dy. Ex. Engineer, R.G.Sub Division, Bhavnagar.

The River gauging, Rainfall stations data covering Kutch District is being done by Dy. Ex. Engineer, R.G.Sub Division, Bhuj.

19. B.3 The list of Automatic Water Level Recorder (River Gauging stations) site of the Department incl. Local River, Station Name, District, Taluka are appended in Annexure-19. A.3.1

The list of the Automatic Weather Stations of the Department incl. Station Name, District, Taluka are appended in Annexure-19. A.3.2

The list of the Automatic Weather Stations and Automatic Water Level Recorder of the Department incl. Local River, Station Name, District, Taluka are appended in Annexure-19. A.3.3

The list of the Automatic Rain Gauge of the Department incl. Station Name, District, Taluka are appended in Annexure-19. A.3.4

The list of the Automatic Rain Gauge and Automatic Water Level Recorder of the Department incl. Station Name, District, Taluka are appended in Annexure-19. A.3.5

Index map of AWLR, AWS, AWS+AWLR, ARG, ARG+AWLR (Total nos.568) are appended in Annexure-19. B.3.4

19. B.4 The phone numbers of Superintending Engineer, Executive Engineer, W.R.I.Dn., A ‘bad and Sub Dn. Offices of State Water Data Centre, Gandhinagar are shown in Flood Telephone Directory of current year.

19. B.5 The Collector shall directly receive the weather and heavy rainfall messages from I.M.D., Ahmedabad/Revenue Department (Emergency Relief Cell), Gandhinagar. Necessary instruction will be issued by the Collector to warn/alert the people through the Local officer i.e. taluka mamlatdar or talukas Development officer of the areas likely to be affected.

19. B.6 The Villages likely to be affected in downstream or up stream of dams or River Banks in all District are given in the concerned river basin (i.e. Annexure-B of Chapter 6 to 18 of this flood memorandum)

19. B.7 <u>Appropriate Authority</u> (Focal Officer) (Sub Focal Officer)

(A) The Superintending Engineer
State Water data Centre
Sector -8, WALMI Campus,
Gandhinagar

The Executive Engineer
Water Resources Investigation Division,
C/9, Multistoried Bldg., Lal Darwaja,
Ahmedabad.

District	AWLR	AWS	AWS+AWLR	ARG	ARG+AWLR
Ahmedabad	1	1	-	13	-
Amreli	5	2	4	12	1
Anand	-	1	-	6	-
Arvalli	6	2	3	7	1
Banaskantha	9	5	1	21	-
Bharuch	1	3	1	7	-
Bhavnagar	10	3	2	8	-
Botad	7	2	1	5	-
Chhota udepur	5	2	-	2	-
Dahod	5	3	3	10	3
Dang	2	1	-	5	-
Devbhumi Dwarka	1	2	1	1	6
Gandhinagar	3	2	-	3	-
Gir Somnath	5	2	3	-	-
Jamnagar	3	3	3	11	11
Junagadh	4	4	3	4	5
Kachchh	8	7	3	13	8
Kheda	6	2	-	10	1
Mahesana	3	2	-	11	-
Mahisagar	1	-	3	6	1
Morbi	4	5	1	6	3
Narmada	1	1	1	2	1
Navsari	6	1	1	10	-
Panchmahal	6	2	1	9	-
Patan	2	2	-	8	-
Porbandar	1	-	3	-	3
Rajkot	5	4	7	9	13
Sabarkantha	1	3	2	6	3
Surat	1	3	1	10	1

District	AWLR	AWS	AWS+AWLR	ARG	ARG+AWLR
Surendranagar	2	4	3	12	5
Tapi	4	1	1	7	-
Vadodara	2	1	-	6	-
Valsad	5	2	1	6	-
Total	**125**	**78**	**53**	**246**	**66**

AWLR - Automatic Water Level Recorder
AWS - Automatic Weather Station
ARG - Automatic Rain Gauge

Annexure-19.A.3.1

Statement showing AWLR under NWRWS&KD				
Sr. No.	**Local River**	**Station Name**	**District**	**Taluka**
1	Ghuvai	Machhannala dam	Dahod	Jhalod
2	Majam	Karad dam	Panchmahal	Ghoghamba
3	Harna Nadi	Lilka_Bhimnath	Botad	Barwala
4	Mitti Nadi	Rupen_Timbi	Amreli	Jafrabad
5	Lilka	Gagario_Sanaliyo	Amreli	Lilia
6	Rupen Nadi	Dhatarwadi_Hindorana	Amreli	Rajula
7	Gagadiya Nadi	Shetrunji_Junasavar	Amreli	Lilia
8	Dhantarvadi Nadi	Mazam_Ambaliyra	Arvalli	Bayad
9	Shetrunji	Watrak_Dabha	Arvalli	Bayad
10	Majam	Hathmati_Bhiloda	Arvalli	Bhiloda
11	Watrak	Watrak_Meghraj	Arvalli	Meghraj
12	Hathmati	Mazam_Rellawada	Arvalli	Meghraj
13	Watrak	Meshwo_Kabola	Arvalli	Modasa
14	Majhara	Siri_Ganapipali	Banaskantha	Danta
15	Meshwa	Arjuni_Motasada	Banaskantha	Vadgam
16	Kidi	Kuvarika_Navavas	Banaskantha	Danta
17	Arjuni Nadi	Rel_Dhanera	Banaskantha	Dhanera
18	Kuarka Nadi	Banas_Umbari	Banaskantha	Shihori
19	Sukal Nadi	Umardasi_Kanodar	Banaskantha	Palanpur
20	Banas	Saraswati_Pilucha	Banaskantha	Vadgam
21	Umardasi Nadi	Karjan_Thava	Narmada	Valia
22	Saraswati River	Kim_Dehli	Bharuch	Valia
23	Karjan River	Bhadrodi_Bhadrod	Bhavnagar	Mahuva
24	Kim	Malan_Mahuva	Bhavnagar	Mahuva
25	Bharodi	Rajaval_Mokhadka	Bhavnagar	Palitana
26	Malan	Shetrunji_Talaja	Bhavnagar	Talaja
27		Talaji_Talaja	Bhavnagar	Talaja
28	Shetrunji	Kalubhar_Umarala	Bhavnagar	Umrala
29	Talaji Nadi	Padalio_Muldharai	Bhavnagar	Vallabhipur
30	Kalubhar	Ghelo_Vallabhipur	Bhavnagar	Vallabhipur
31	Padalio	Utavali_Barwala	Botad	Barwala
32	Ghelo	Khalkhalio_Keria	Botad	Barwala
33	Utavli Nadi	Keri_Goradka	Botad	Gadhada
34	Khalkahana Nadi	Sukhbhadar_Ranpur	Botad	Ranpur
35		Unch_Khoria	Chhota udepur	Sankheda
36	Bhadar	Heran_Wasna	Chhota udepur	Sankheda
37		Orsang_Chhotaudepur	Chhota udepur	Chhota Udaipur
38	Heran Nadi	Panam_Devgadhbaria	Dahod	Devgadbaria
39	Orsang River	Hadaf_Limkheda	Dahod	Limkheda
40	Panam	Wankadi_Wankadi	Dahod	Limkheda
41	Wandki	Khapri_Kudkus	Dang	Ahwa

Statement showing AWLR under NWRWS&KD				
Sr. No.	**Local River**	**Station Name**	**District**	**Taluka**
42	Purna	Ambika_Waghai	Dang	Bansda
43	Khapri	Ozat_Khambhaliya	Junagadh	Visavadar
44	Ambika	Sabarmati_Gandhinagar	Gandhinagar	Gandhinagar
45	Ojat	Khari_Magodi	Gandhinagar	Gandhinagar
46	Sabarmati	Malan-II_Gangada	Gir Somnath	Una
47	Khari	Shahi_Nathej	Gir Somnath	Una
48	Malan	Raval_Samter	Gir Somnath	Una
49	Chasi	Sangawadi_Malgam	Gir Somnath	Kodinar
50	Rawal Nadi	Hiran_Sasan-Gir	Junagadh	Talala
51		Saraswati_Pranchi	Gir Somnath	Sutrapada
52	Harna Nadi	Meshwo_Mitha na muvada	Gandhinagar	Dehgam
53		Und_Soyal	Jamnagar	Dhrol
54	Meshwa	Rangmati_Jamnagar	Jamnagar	Jamnagar
55	Und River	Uben_Majevadi	Junagadh	Junagadh
56	Rangmati	Shedhi_Dakor	Kheda	Thasra
57	Uben Nadi	Varasi_Betawada	Kheda	Kapadvanj
58	Shedhi	Mahor_Kathlal	Kheda	Kathlal
59	Varansi	Varanshi_Nani- jher	Kheda	Kapadvanj
60	Mahor	Sabarmati_Rasikpura	Ahmedabad	Dholka
61	Varansi	Watrak_Mahemdabad	Kheda	Mehmedabad
62	Sabarmati	Shedhi_Bilodra	Kheda	Nadiad
63	Watrak	Nareda_Kothara	Kachchh	Naliya
64	Shedhi	Sai_Sambharai	Kachchh	Mandvi
65	Chok Nadi	Chock_Dumra	Kachchh	Naliya
66	Khokhara	Rukmavati_Kodai	Kachchh	Mandvi
67	Chok Nadi	Surkhan_Bhadreshwar	Kachchh	Mundra
68	Rukmawati	Gajansar_Ravapar	Kachchh	Nakhatrana
69	Surkhan	Bhang_Mangadh	Kachchh	Rapar
70	Gajansar	Falku_Rapar	Kachchh	Rapar
71	Paydiyawari	Bhadar_Undava	Mahisagar	Khanpur
72	Falku	Rupen_Delwada	Mahesana	Becharaji
73	Bhadar	Pushpavati_Aithor	Mahesana	Unjha
74	Rupen Nadi	Machhu_Wankaner	Morbi	Wankaner
75	Puspavati Nadi	Men_Amroli	Chhota udepur	Nasvadi
76	Machhu	Ashwin_Haripura	Chhota udepur	Nasvadi
77	Men Nadi	Auranga_Bhervi	Navsari	Dharampur
78	Aswan Nadi	Kaveri_Harangam	Navsari	Chikhli
79	Auranga	Kharera_Kavdej	Navsari	Bansda
80	Kaveri	Kaveri_Mindhabari	Navsari	Bansda
81	Khareda	Goma_Kalol	Panchmahal	Kalol
82	Kaveri	Mesri_Sansoli	Panchmahal	Godhra

Statement showing AWLR under NWRWS&KD				
Sr. No.	**Local River**	**Station Name**	**District**	**Taluka**
83	Goma	Koliari_Rampur	Panchmahal	Morwa (Hadaf)
84	Mesari	Panam_Santroad	Panchmahal	Godhra
85	Kolari	Kun_KHANDIA	Panchmahal	Shehera
86	Panam	Khari_Ziliya	Patan	Chanasma
87	Kun	Saraswati_Sidhpur	Patan	Sidhpur
88	Khari	Minsar_Rana-Kandorana	Porbandar	Ranavav
89	Saraswati River	Bhadar_Kamadhiya	Rajkot	Gondal
90	Minsar Nadi	Aji_Paddhari	Rajkot	Paddhari
91		Harnav_Khedbrahma	Sabarkantha	Khedbrahma
92	Dondi Nadi	Mindhola_Bardoli	Surat	Bardoli
93	Harnav	L.Bhogavo_Limbdi	Surendranagar	Limbdi
94	Mindhola	Purna_Wankla	Tapi	Vyara
95	Bhogava	Walan_Wankla	Tapi	Vyara
96	Purna	Vishamitri_Pilol	Vadodara	Savli
97	Olan	Tan_Amba	Valsad	Dharampur
98	Vishwamitri	Man_Asura	Valsad	Dharampur
99	Sasui	Dholdo_Khuntli	Valsad	Kaprada
100	Man	Kolak_Nana-Pondha	Valsad	Kaprada
101	Dholdo	Par_Nani-Vahiyal	Valsad	Kaprada
102	Kolak	Dhadhar _ bhilapur	Vadodara	Dabhoi
103	Par	Ambica _ Unai	Tapi	Vyara
104	Dhadhar	Zankhari _ Valod	Tapi	Valod
105	Ambika	Ranghola	Bhavnagar	Umrala
106	Jankhri	Bhimdad	Botad	Gadhada
107	Rangholi Nadi	Demi-I	Morbi	Tankara
108	Madhu	Gondli	Rajkot	Kotda Sangani
109	Demi Nadi	Jhanjeshri	Junagadh	Visavadar
110	Gondli Nadi	Fulzar dam	Jamnagar	Kalavad
111	Jhanjeshri	Vartu dam	Devbhumi Dwarka	Bhanvad
112	Phophal Nadi	Fofal dam	Rajkot	Jamkandorna
113	Kalubhar	Kalubhar dam	Botad	Gadhada
114	Limdi Bhogavo	Limdi Bhogavo dam	Surendranagar	Sayla
115	Rojki Nadi	Rojki	Bhavnagar	Mahuva
116	Demi Nadi	Demi-ll	Morbi	Tankara
117	Banas	Dantiwada	Banaskantha	Dantiwada
118	Sabarmati	Dharoi	Mahesana	Kheralu
119	Sipu River	Sipu	Banaskantha	Dantiwada
120	Chatli Nadi	Munjiasar	Amreli	Bagasara
121	Khareda	Kelia	Navsari	Bansda
122	Khan	Patadungri	Dahod	Garbada
123		Ghodadhroi -GJSW	Morbi	Morbi

Statement showing AWLR under NWRWS&KD				
Sr. No.	**Local River**	**Station Name**	**District**	**Taluka**
124		Chopadvav dam	Navsari	Vansda
125		Ishwariya dam	Rajkot	Jasdan

Annexure-19.A.3.2

Statement showing AWS under NWRWS&KD			
Sr. No.	**Station Name**	**District**	**Taluka**
1	Aadhav	Kachchh	Bhuj
2	Adesar	Kachchh	Rapar
3	Ahwa	Dang	Ahwa
4	Ambaliyara	Arvalli	Bayad
5	Ankleshwar	Bharuch	Anklesvar
6	Bagad dam	Bhavnagar	Mahuva
7	Bardoli	Surat	Bardoli
8	Becharaji	Mahesana	Becharaji
9	Bhilad	Valsad	Umbergaon
10	Bhimdad	Botad	Gadhada
11	Bhramani	Morbi	Halvad
12	Chalamli	Chhota udepur	Jetpur Pavi
13	Chopadvav	Narmada	Sagbara
14	Dayapar	Kachchh	Dayapar
15	Demi-I	Morbi	Tankara
16	Draphad	Junagadh	Visavadar
17	Falku dam	Surendranagar	Dhrangadhra
18	Fofal dam	Rajkot	Jamkandorna
19	Fulzar dam	Jamnagar	Kalavad
20	Gamla	Dahod	Dohad
21	Gandhinagar	Gandhinagar	Gandhinagar
22	Ghodadhroi	Morbi	Morvi
23	Godsambha	Surat	Mandvi
24	Gondli	Rajkot	Kotda Sangani
25	Ishwaria dam	Rajkot	Jasdan
26	Jambusar	Bharuch	Jambusar
27	Jamwala-Gir	Gir Somnath	Una
28	Jatawada	Kachchh	Rapar
29	Jesda	Kachchh	Rapar
30	Jhanjeshri	Junagadh	Visavadar
31	Kabola	Arvalli	Modasa
32	Kakarapar	Surat	Mandvi
33	Kalubhar dam	Botad	Gadhada
34	Karad dam	Panchmahal	Ghoghamba
35	Karjan	Vadodara	Karjan
36	Kathlal	Kheda	Kathlal
37	Kavdej	Navsari	Bansda
38	Khambhat	Anand	Khambhat
39	Khandosan	Mahesana	Visnagar
40	Khedbrahma	Sabarkantha	Khedbrahma
41	Limdi Bhogavo dam	Surendranagar	Sayla
42	Machchhu-II	Morbi	Morvi
43	Machhannala dam	Dahod	Jhalod
44	Machhu-1 dam	Rajkot	Rajkot

Statement showing AWS under NWRWS&KD			
Sr. No.	**Station Name**	**District**	**Taluka**
45	Mankdi dam	Sabarkantha	Bhiloda
46	Mithdi	Kachchh	Bhuj
47	Nadabet	Banaskantha	Vav
48	Navavas	Banaskantha	Danta
49	Paria Colony	Valsad	Pardi
50	Patdi	Surendranagar	Patdi
51	Pipli	Surendranagar	Patdi
52	Prantij	Sabarkantha	Prantij
53	Ranghola	Bhavnagar	Umrala
54	Rangmati	Jamnagar	Jamnagar
55	Rasikpura	Kheda	Nadiad
56	Sankheshwar	Patan	Sami
57	Sarvad dam	Morbi	Maliya
58	Shetrunji dam	Bhavnagar	Palitana
59	Shingoda	Gir Somnath	Una
60	Siddhpur	Patan	Sidhpur
61	Sukhi	Chhota udepur	Jetpur Pavi
62	Suvi	Kachchh	Rapar
63	Tharad	Banaskantha	Tharad
64	Thebi dam	Amreli	Amreli
65	Timbi dam	Amreli	Jafrabad
66	Umbri	Banaskantha	Shihori
67	Und-1 dam	Jamnagar	Dhrol
68	Vagra	Bharuch	Vagra
69	Vartu dam	Devbhumi Dwarka	Bhanvad
70	Veda	Gandhinagar	Kalol
71	Vekariya (Nal Lake)	Ahmedabad	Viramgam
72	Venganpur	Panchmahal	Godhra
73	Vrajmi	Junagadh	Malia
74	Wankla	Tapi	Vyara
75	Zerda	Banaskantha	Deesa
76	Hiren-I	Junagadh	Talala
77	Sani	Devbhumi Dwarka	Kalyanpur
78	Patadungri	Dahod	Garbada

Annexure-19.A.3.3

Statement showing AWS + AWLR under NWRWS&KD				
Sr. No.	**Local River**	**Station Name**	**District**	**Taluka**
1	Tapi	Aji-2 dam	Rajkot	Rajkot
2	Karad	Aji-3 dam	Rajkot	Paddhari
3	Aji	Aji-IV	Jamnagar	Jodiya
4		Amipur	Porbandar	Mangrol
5	Kim	Baldeva	Bharuch	Valia
6	Dev	Bhadar dam	Mahisagar	Khanpur
7	Aji	Bhadar dam	Rajkot	Gondal
8		Bhadar-II	Rajkot	Dhoraji
9	Falku	Bhempoda	Arvalli	Malpur
10	Champarwadi Nadi	Chhaparvadi	Rajkot	Jetpur
11	Demi Nadi	Demi-III	Morbi	Jodiya
12	Machhan	Dev dam	Panchmahal	Halol
13	Ghana	Dhatarvadi	Amreli	Rajula
14	Ghelo	Ghelo-I	Amreli	Babra
15	Goma	Goma	Botad	Botad
16	Hadap	Hadaf	Dahod	Morwa (Hadaf)
17	Rajwal	Hanol	Bhavnagar	Palitana
18	Meshwa	Hiran-2 dam	Gir Somnath	Talala
19	Kaveri	Jhuj	Navsari	Bansda
20	Mahi	Kadana	Mahisagar	Kadana
21	Kalindri	Kalindri	Porbandar	Kutiyana
22	Karjan River	Karjan Dam	Narmada	Rajpipla
23		Khandiol (Guhai) dam	Sabarkantha	Idar
24	Shetrunji	Khodiyar	Amreli	Dhari
25	Bhogava	Limdi Bhogavo-II	Surendranagar	Wadhwan
26	Machundri River	Machhundri	Gir Somnath	Una
27	Damanganga	Madhuban Dam	Valsad	Silvassa
28	Madwati Nadi	Madhuvanti	Junagadh	Mendarda
29	Malan	Malan	Bhavnagar	Mahuva
30	Nirona	Mitti dam	Kachchh	Naliya
31	Moj Nadi	Moj	Rajkot	Upleta
32	Saraswati River	Mukteshwar	Banaskantha	Kheralu
33	Bhogava	Nayka	Surendranagar	Muli
34	Und River	Niruna dam	Kachchh	Nakhatrana
35	Ojat	Ozat-II	Junagadh	Junagadh
36	Harnav	Panam dam	Mahisagar	Shehera
37	Rawal Nadi	Raval	Gir Somnath	Una
38	Harna Nadi	Rudramata dam	Kachchh	Bhuj
39	Sasoi	Sasoi	Jamnagar	Jamnagar
40	Aji	Shamlaji dam	Arvalli	Bhiloda
41	Dedumal	Shell Dedumal	Amreli	Savar Kundla

Statement showing AWS + AWLR under NWRWS&KD				
Sr. No.	**Local River**	**Station Name**	**District**	**Taluka**
42	Vartu	Sorthi dam	Porbandar	Porbandar
43	Bhadar	Sukhbhadar	Surendranagar	Sayla
44	Moti Phuljar Nadi	Uben dam	Junagadh	Bhesan
45	Bhadar	Ukai dam	Tapi	Songadh
46	Hadap	Umaria	Dahod	Limkheda
47		Und-2 dam	Jamnagar	Jodiya
48		Vanaj dam	Sabarkantha	Vijaynagar
49	Vartu	Vartu-II	Devbhumi Dwarka	Bhanvad
50	Phuljar	Venu-II (Nagvadar)	Rajkot	Upleta
51	Vare	Ver-II	Surat	Mandvi
52	Panam	Volvo	Arvalli	Modasa
53		Wankleshwar Bhey	Dahod	Dhanpur

Annexure-19.A.3.4

Statement showing ARG under NWRWS&KD			
Sr. No	**Station Name**	**District**	**Taluka**
1	Petlad	Anand	Petlad
2	Bhabhar	Banaskantha	Bhabhar
3	Lakhani	Banaskantha	Deesa
4	Fatepura	Dahod	Dahod
5	Sanjeli	Dahod	Dahod
6	Dhanpur	Dahod	Dhanpur
7	Dehgam	Gandhinagar	Dehgam
8	Mahudha	Kheda	Mahudha
9	Galteshwar	Kheda	Thasra
10	Kheralu	Mahesana	Kheralu
11	Khergam	Navsari	Gandevi
12	Lunawada	Panchmahal	Lunawada
13	Santrampur	Panchmahal	Santrampur
14	Harij	Patan	Harij
15	Vagdod	Patan	Patan
16	Radhanpur	Patan	Radhanpur
17	Talod	Sabarkantha	Talod
18	Vadali	Sabarkantha	Vadali
19	Choryasi	Surat	Chorasi
20	Palsana	Surat	Palsana
21	Nizar	Tapi	Nizar
22	Valod	Tapi	Valod
23	Padra	Vadodara	Padra
24	Desar	Vadodara	Savli
25	Sinor	Vadodara	Sinor
26	Ahmedabad city	Ahmedabad	Ahmedabad city
27	Bavla	Ahmedabad	Bavla
28	Bagodara	Ahmedabad	Bavla
29	Dascroi	Ahmedabad	Dascroi
30	Hadala bhal	Ahmedabad	Dhandhuka
31	Sanand	Ahmedabad	Sanand
32	Bayad	Aravalli	Bayad
33	Danta	Banaskantha	Danta
34	Kheda	Kheda	Kheda
35	Kapadvanj	Kheda	Kapadvanj
36	Mahemdavad	Kheda	Mahemdavad
37	Matar	Kheda	Matar
38	Nadiad	Kheda	Nadiad
39	Vaso	Kheda	Vaso
40	Pithai	Kheda	Kathalal
41	Jotana	Mahesana	Jotana

Statement showing ARG under NWRWS&KD			
Sr. No	**Station Name**	**District**	**Taluka**
42	Kadi	Mahesana	Kadi
43	Mahesana	Mahesana	Mahesana
44	Satlasana	Mahesana	Satlasana
45	Hadol	Mahesana	Satlasana
46	Vadnagar (cipor)	Mahesana	Vadnagar
47	Karbatiya	Mahesana	Vadnagar
48	Vijapur	Mahesana	Vijapur
49	Visnagar	Mahesana	Visnagar
50	Kuha	Ahmedabad	Dascroi
51	Dhandhuka	Ahmedabad	Dhandhuka
52	Detroj	Ahmedabad	Detroj
53	Dholera	Ahmedabad	Dholera
54	Viramgam	Ahmedabad	Viramgam
55	Davas	Banaskantha	Deesa
56	Kankrej	Banaskantha	Kankrej
57	Palanpur	Banaskantha	Palanpur
58	Vadgam	Banaskantha	Vadgam
59	Chanasma	Patan	Chanasma
60	Sarswati	Patan	Sarswati
61	Dhanera	Banaskantha	Dhanera
62	Nenava	Banaskantha	Dhanera
63	Santalpur	Patan	Santalpur
64	Deesa	Banaskantha	Deesa
65	Sami	Patan	Sami
66	Dantiwada	Banaskantha	Dantiwada
67	Mujpur	Patan	Shankheshwar
68	Jagol	Banaskantha	Dantiwada
69	Bhutedi	Banaskantha	Palanpur
70	Amirgadh	Banaskantha	Amirgadh
71	Kansa	Banaskantha	Danta
72	Mansa	Gandhinagar	Mansa
73	Madana(gadh)	Banaskantha	Palanpur
74	Deodar	Banaskantha	Deodar
75	Kotarwada	Banaskantha	Deodar
76	Wav	Banaskantha	Wav
77	Suigam	Banaskantha	Suigam
78	Gabat	Aravalli	Bayad
79	Malpur	Aravalli	Malpur
80	Dhansura	Aravalli	Dhansura
81	Sojitra	Anand	Sojitra
82	Anklav	Anand	Anklav
83	Borsad	Anand	Borsad

Statement showing ARG under NWRWS&KD			
Sr. No	**Station Name**	**District**	**Taluka**
84	Anand	Anand	Anand
85	Tarapur	Anand	Tarapur
86	Jetpurpavi	Chhota Udaipur	Jetpurpavi
87	Naswadi	Chhota Udaipur	Naswadi
88	Dahod	Dahod	Dahod
89	Devgadh baria	Dahod	Devgadh baria
90	Dabhva	Dahod	Devgadh Baria
91	Garbada	Dahod	Garbada
92	Jhalod	Dahod	Jhalod
93	Limkheda	Dahod	Limkheda
94	Singvad	Dahod	Singvad
95	Tilakwada	Narmada	Tilakwada
96	Garudeshwar	Narmada	Garudeshwar
97	Godhra	Panchmahal	Godhra
98	Halol	Panchmahal	Halol
99	Jambughoda	Panchmahal	Jambughoda
100	Kalol	Panchmahal	Kalol
101	Morva hadaf	Panchmahal	Morva hadaf
102	Shahera	Panchmahal	Shahera
103	Morva	Panchmahal	Shahera
104	Dabhoi	Vadodara	Dabhoi
105	Savli	Vadodara	Savli
106	Waghodia	Vadodara	Waghodia
107	Saputara	Dang	Ahwa
108	Galkund	Dang	Ahwa
109	Nagdhara	Navsari	Navsari
110	Vansda	Navsari	Vansda
111	Mahuva	Surat	Mahuva
112	Abdasa	Kachchh	Abdasa
113	Jakhau	Kachchh	Abdasa
114	Anjar	Kachchh	Anjar
115	Bhimasar	Kachchh	Anjar
116	Bhuj	Kachchh	Bhuj
117	Gandhidham	Kachchh	Gandhidham
118	Lakhpat	Kachchh	Lakhpat
119	Narayan sarovar	Kachchh	Lakhpat
120	Mandvi	Kachchh	Mandvi
121	Mundra	Kachchh	Mundra
122	Nakhatrana	Kachchh	Nakhatrana
123	Rapar	Kachchh	Rapar
124	Bhachau	Kachchh	Bhachau
125	Kukeri	Navsari	Chikhli

Statement showing ARG under NWRWS&KD			
Sr. No	**Station Name**	**District**	**Taluka**
126	Songadh	Tapi	Songadh
127	Uchchhal	Tapi	Uchchhal
128	Vyara	Tapi	Vyara
129	Dharampur	Valsad	Dharampur
130	Kaprada	Valsad	Kaprada
131	Umergam	Valsad	Umergam
132	Balasinor	Mahisagar	Balasinor
133	Janod	Mahisagar	Balasinor
134	Kharol	Mahisagar	Lunawada
135	Subir	Dangs	Subir
136	Waghai	Dangs	Waghai
137	Kalibel	Dangs	Waghai
138	Chikhli	Navsari	Chikhli
139	Vapi	Valsad	Vapi
140	Pardi	Valsad	Pardi
141	Valsad	Valsad	Valsad
142	Amthani	Mahisagar	Kadana
143	Bakor (khanpur)	Mahisagar	Khanpur
144	Virpur	Mahisagar	Virpur
145	Gandevi	Navsari	Gandevi
146	Gadhat (salej)	Navsari	Gandevi
147	Jalalpor	Navsari	Jalalpor
148	Navsari (dharagri)	Navsari	Navsari
149	Dolvan	Tapi	Dolvan
150	Karanjkhed	Tapi	Dolvan
151	Modasa	Aravalli	Modasa
152	Meghraj	Aravalli	Meghraj
153	Posina (govt. Iti)	Sabarkantha	Posina
154	Vijaynagar	Sabarkantha	Vijaynagar
155	Idar	Sabarkantha	Idar
156	Himatanagar	Sabarkantha	Himatanagar
157	Ghogha	Bhavnagar	Ghogha
158	Shihor	Bhavnagar	Shihor
159	Gariadhar	Bhavnagar	Gariadhar
160	Tana	Bhavnagar	Shihor
161	Talaja	Bhavnagar	Talaja
162	Mahuva	Bhavnagar	Mahuva
163	Jesar	Bhavnagar	Jesar
164	Palitana	Bhavnagar	Palitana
165	Jira	Amreli	Dhari
166	Khambha	Amreli	Khambha
167	Nageshree	Amreli	Jafrabad

Statement showing ARG under NWRWS&KD			
Sr. No	**Station Name**	**District**	**Taluka**
168	Jafrabad	Amreli	Jafrabad
169	Rajula	Amreli	Rajula
170	Devaliya mota	Amreli	Babra
171	Babra	Amreli	Babra
172	Bhader	Amreli	Dhari
173	Kunkavav moti	Amreli	Vadia
174	Lathi	Amreli	Lathi
175	Dhasa	Botad	Gadhda
176	Gadhda	Botad	Gadhda
177	Botad	Botad	Botad
178	Barvala	Botad	Barvala
179	Jodia	Jamnagar	Jodia
180	Jamnagar	Jamnagar	Jamnagar
181	Sikka	Jamnagar	Jamnagar
182	Manavadar	Junagadh	Manavadar
183	Kalana	Rajkot	Dhoraji
184	Jetpur	Rajkot	Jetpur
185	Dholka	Ahmedabad	Dholka
186	Mandal	Ahmedabad	Mandal
187	Bhiloda	Aravalli	Bhiloda
188	Golgam	Banas Kantha	Wav
189	Kalol	Gandhinagar	Kalol
190	Thasra	Kheda	Thasra
191	Vasai(dabhla)	Mahesana	Vijapur
192	Jarkhiya	Amreli	Lathi
193	Vadia	Amreli	Vadia
194	Ranpur	Botad	Ranpur
195	Kharedi	Jamnagar	Kalavad
196	Nikava	Jamnagar	Kalavad
197	Halvad	Morbi	Halvad
198	Tikar	Morbi	Halvad
199	Wankaner	Morbi	Wankaner
200	Gondal	Rajkot	Gondal
201	Paddhari	Rajkot	Paddhari
202	Chotila	Surendranagar	Chotila
203	Krushnapur	Navsari	Jalalpor
204	Kamrej	Surat	Kamrej
205	Kathor	Surat	Kamrej
206	Mandvi	Surat	Mandvi
207	Mangrol	Surat	Mangrol
208	Olpad	Surat	Olpad
209	Surat city	Surat	Surat city

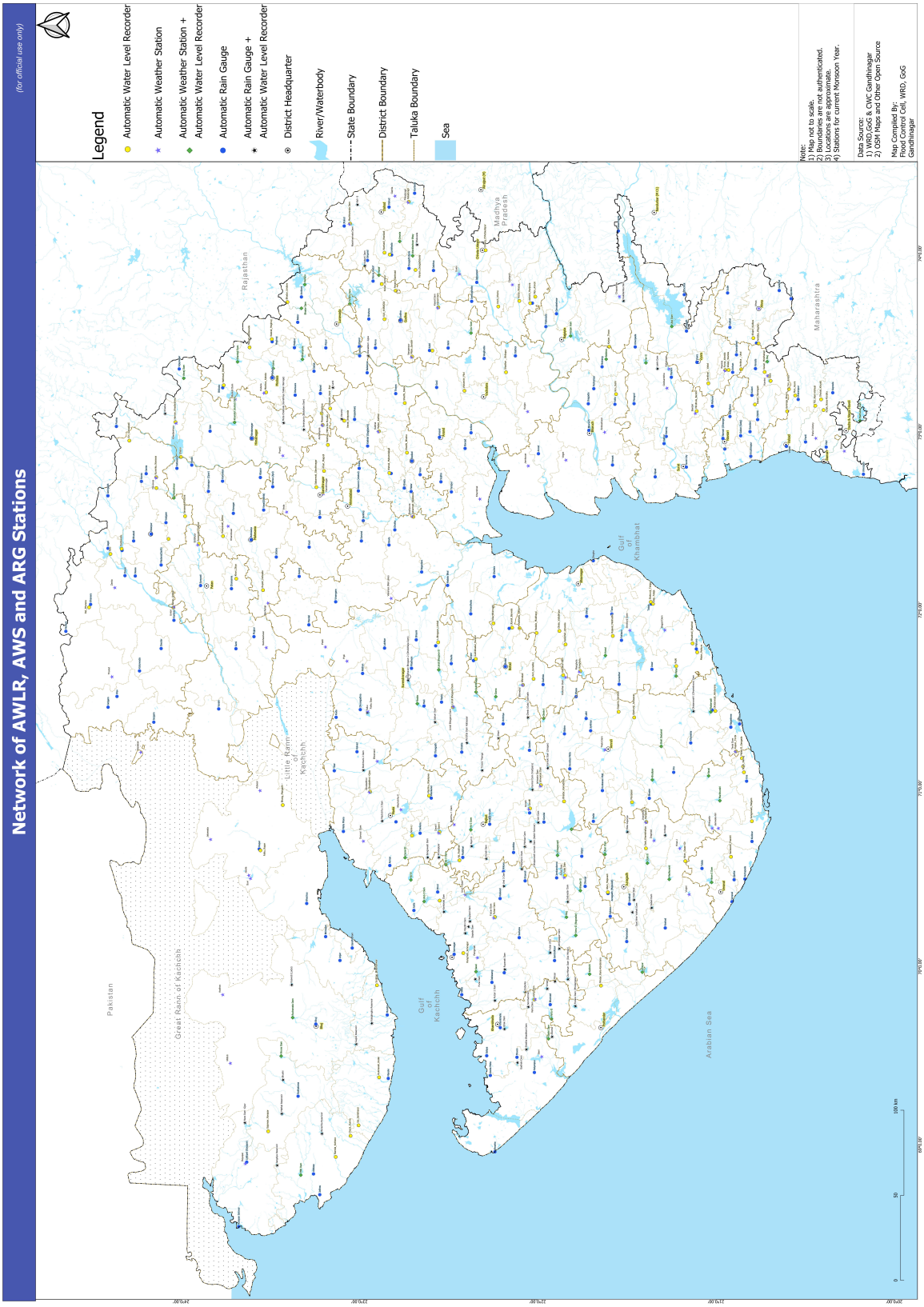
Statement showing ARG under NWRWS&KD			
Sr. No	**Station Name**	**District**	**Taluka**
210	Umerpada	Surat	Umerpada
211	Jasdan	Rajkot	Jasdan
212	Kotdasangani	Rajkot	Kotdasangani
213	Vichhiya	Rajkot	Vichhiya
214	Chuda	Surendranagar	Chuda
215	Dhrangadhra	Surendranagar	Dhrangadhra
216	Kuda	Surendranagar	Dhrangadhra
217	Methan	Surendranagar	Dhrangadhra
218	Lakhtar	Surendranagar	Lakhtar
219	Limbdi	Surendranagar	Limbdi
220	Shiyani	Surendranagar	Limbdi
221	Muli	Surendranagar	Muli
222	Sayla	Surendranagar	Sayla
223	Thangadh	Surendranagar	Thangadh
224	Wadhvan	Surendranagar	Wadhvan
225	Amod	Bharuch	Amod
226	Hansot	Bharuch	Hansot
227	Jhagadia	Bharuch	Jhagadia
228	Padvaniya PHC	Bharuch	Jhagadia
229	Netrang	Bharuch	Netrang
230	Valia	Bharuch	Valia
231	Bharuch	Bharuch	Bharuch
232	Dwarka	Devbhumi Dwarka	Dwarka
233	Dhrol	Jamnagar	Dhrol
234	Jamjodhpur	Jamnagar	Jamjodhpur
235	Samana	Jamnagar	Jamjodhpur
236	Kalavad	Jamnagar	Kalavad
237	Lalpur	Jamnagar	Lalpur
238	Dabasang	Jamnagar	Lalpur
239	Junagadh	Junagadh	Junagadh
240	Keshod	Junagadh	Keshod
241	Vanthali	Junagadh	Vanthali
242	Maliamiana	Morbi	Maliamiana
243	Morbi	Morbi	Morbi
244	Amran	Morbi	Morbi
245	Lodhika	Rajkot	Lodhika
246	Rajkot	Rajkot	Rajkot

Annexure-19.A.3.5

Statement showing ARG+AWLR under NWRWS&KD				
Sr.No	**WIMS Code**	**Station Name**	**District**	**Taluka**
1	GUJSW005	Dhatarwadi-i (dhareshwar) dam	Amreli	Rajula
2	WQ-032	Lank	Arvalli	
3	WQ-063	Edalwada	Dahod	Dhanpur
4	WQ-064	Kali -ii	Dahod	Jhalod
5	WQ-062	Kabutri dam	Dahod	Limkheda
6	WQ-073	Kabarka	Devbhumi dwarka	Bhanvad
7	WQ-070	Sonmati dam	Devbhumi dwarka	Bhanvad
8	WQ-074	Veradi	Devbhumi dwarka	Bhanvad
9	WQ-071	Shedha bhadthari dam	Devbhumi dwarka	Kalyanpur
10	WQ-069	Gadhaki dam	Devbhumi dwarka	Khambhaliya
11	Ghee	Ghee dam	Devbhumi dwarka	Khambhaliya
12	WQ-091	Fulzar (kb)	Jamnagar	Jamjodhpur
13	WQ-087	Umiyasagar dam	Jamnagar	Jamjodhpur
14	WQ-089	Kankavati dam	Jamnagar	Jamnagar
15	WQ-088	Ruparel dam	Jamnagar	Jamnagar
16	Sapda	Sapada dam	Jamnagar	Jamnagar
17	Vijarkhi	Vijarkhi dam	Jamnagar	Jamnagar
18	WQ-084	Dia-minsar dam (dai minsar)	Jamnagar	Jodiya
19	WQ-096	Und 3 dam	Jamnagar	Kalavad
20	Fulzar-II	Fulzar 2 dam	Jamnagar	Lalpur
21	WQ-086	Puna dam	Jamnagar	Lalpur
22	WQ-095	Rupavati dam	Jamnagar	Lalpur
23	WQ-111	Mota gujariya	Junagadh	Bhesan
24	WQ-475	Ozat weir vathali dam	Junagadh	Vanthali
25	WQ-109	Ozat-weir	Junagadh	Vanthali
26	Sabli	Sabali dam	Junagadh	Vanthali
27	Ambajal	Ambajal	Junagadh	Visavadar
28	WQ-130	Berachia reservoir	Kachchh	Abdasa
29	WQ-128	Jangdiya reservoir	Kachchh	Abdasa
30	WQ-127	Gajod reservoir	Kachchh	Bhuj
31	Kasvati	Kaswati (lodai)	Kachchh	Bhuj
32	NARA	Nara dam -gjsw	Kachchh	Lakhpat
33	WQ-132	Kalaghogha reservoir	Kachchh	Mundra
34	WQ-121	Bhukhi	Kachchh	Nakhatrana
35	MATHAL	Mathal reservoir	Kachchh	Nakhatrana
36	WQ-134	Varansi	Kheda	Kapadvanj
37	WANAK BORI	Wanakbori -gjsw	Mahisagar	Balasinor
38	WQ-142	Brahmani 2 dam	Morbi	Halvad
39	WQ-143	Machchhu 3 dam	Morbi	Morbi

Statement showing ARG+AWLR under NWRWS&KD				
Sr.No	**WIMS Code**	**Station Name**	**District**	**Taluka**
40	WQ-141	Bangawadi dam	Morbi	Tankara
41	WQ-144	Kakdiamba dam	Narmada	Sagbara
42	WQ-156	Advana	Porbandar	Porbandar
43	Fodarnes IS	Fodara dam (phodarness)	Porbandar	Ranavav
44	GUJSW081	Minsar	Porbandar	Ranavav
45	GheloSomnath	Ghelo (galo) somnath	Rajkot	Dhoraji
46	WQ-178	Sodvadar dam	Rajkot	Dhoraji
47	GUJSW103	Chhaparvadi lunivav dam (kabir sarovar)	Rajkot	Gondal
48	GUJSW104	Dhari	Rajkot	Gondal
49	WQ-175	Motisar dam	Rajkot	Gondal
50	Veri	Veri dam	Rajkot	Gondal
51	WQ-171	Karnuki dam (jivapar)	Rajkot	Jasdan
52	WQ-169	Karmal dam (vadipara)	Rajkot	Kotada sangani
53	WQ-159	Phophal-2 dam	Rajkot	Kotada sangani
54	WQ-177	Dondi dam	Rajkot	Lodhika
55	WQ-176	Khodapipar	Rajkot	Paddhari
56	Nyari-II	Nyari ii	Rajkot	Paddhari
57	Aji-I	Aji 1	Rajkot	Rajkot
58	GJSW2NHP107	Khedva	Sabarkantha	Khedbrahma
59	GUJSW106	Javanpura (badodara dam)	Sabarkantha	Talod
60	GJSW2NHP108	Mota chekhala (gorathiya takkar barrage)	Sabarkantha	Talod
61	GJSW2NHP109	Lakhi dam	Surat	Mandvi
62	WQ-202	Morshal dam habiyasar	Surendranagar	Chotila
63	WQ-203	Triveni thanga	Surendranagar	Chotila
64	GJSW0065	Falku	Surendranagar	Dhrangadhra
65	WQ-197	Saburi dam	Surendranagar	Muli
66	W.Bhogavo-II	Wadhavan bhogavo 2 (dholidhaja dam)	Surendranagar	Wadhwan

Note: The data of these stations is available only WIMS portal which is handled by NPMU Delhi



Annexure-19. B.3.4

DISASTER RISK REDUCTION STRATEGY FOR PREVENTION & MITIGATION (SHORT TERM/MEDIUM TERM/LONG TERM

20

Understanding Disaster Risk

Flood	**Understanding Disaster Risk**				
S. No.	**Sub – Thematic Area for DRR**	**State / District Agencies and their Responsibilities**			
		State	**Responsibility – state**	**District**	**Responsibility - District**
1.	Observation Networks, Information Systems, Monitoring, Research, Forecasting & Early Warning	1. CWC 2. IMD 3. WRD 4. CoR 5. GSDMA	**Regular/ Recurring** • Assessment, Monitoring, and Scientific studies **Short term** • Assist districts in the identification of priority flood protection and drainage improvement works. • Monitoring of flood preparedness, river basin and reservoir management plans. **Medium Term** • Specialized efforts for different types of floods and causes of flooding, including cloudburst. • Studies and monitoring of rivers flowing from neighboring states.	1. DM & Collector 2. DDO 3. ULBs 4. GPs	**Regular/ Recurring** • Support and cooperate with state agencies • Support local efforts for flood management • Support local information systems and update data for better flood management **Short Term (T1)** • Implementing and monitoring of flood preparedness, river basin and reservoir management plans including updating rule curves, improve system of water release from reservoirs • Identification of priority flood protection and drainage improvement **Medium Term (T2)**

			Long Term • Developing/ improving/ updating forecasting methods and models for quantification of inflows and storage of dams		• Studies on land use and hydrological changes relevant to flood management in river basins and reservoir command areas of district. **Long Term (T3)** • Execution of flood protection and drainage improvement schemes
2.	Zoning, mapping, and classification flood prone areas	1. WRD 2. ISRO 3. BISAG	**Short Term (T1)** • Preparation of large-scale hazard maps of flood prone areas identifying areas of high vulnerability	1. DM & Collector 2. NGOs 3. CSOs	**Recurring/ Regular (RR)** • Support and cooperate with state agencies • Sponsor district-specific efforts; support local efforts
3.	Research and Development	1. WRD 2. ISRO 3. R&B 4. GSDMA 5. GIDM 6. SIRD 7. WASMO	**Short Term (T1)** • Studies on support systems for people living in flood prone areas • Evolving designs of shelters in flood prone areas • Socio-economic impacts of flood **Medium Term (T2)** • River basin studies • Studies on flood related problems such as soil losses caused by flooding of rivers,	1. DM & Collector 2. DDO 3. NGOs 4. CSOs 5. WASMO	**Recurring/ Regular (RR)** • Support and cooperate with State agencies • Sponsor/ carry out district-specific efforts in all these areas; support local efforts

			sediment transport, river course changes, and appropriate use of embankments **Long Term (T3)** • Hydrological and morphological studies before undertaking major flood control or prevention measures		

Investing in DRR-Structural measures

S. No.	Sub – Thematic Area for DRR	State / District Agencies and their Responsibilities			
		State	Responsibility – state	District	Responsibility – District
1.	Flood control measures such as construction of embankments and levees	1. WRD 2. R&B 3. SSNNL	**Recurring/ Regular (RR)** • Technical support and studies	1. DM & Collector 2. DDO 3. Municipal Commissioner 4. PRI 5. ULB	**Short Term (T1)** • Immediate repairs of embankments **Medium Term (T2)** • Proper monitoring and maintenance of embankments / Construction of bank protection works.

2	Water ways and drainage systems for roads, high ways, and express ways	1. R&B 2. WRD 3. NHAI	**Recurring/ Regular (RR)** • Proper alignment and design	1. DM & Collector 2. DDO	**Recurring/ Regular (RR)** • Coordination and cooperation with the state agencies and ensure proper alignment and design in all district projects
3	Enhancing the safety of dams and reservoirs	1. WRD 2. SSNNL	**Recurring/ Regular (RR)** • Issuing Advisories and guidance	1. DM & Collector 2. DDO 3. DEOC	**Recurring/ Regular (RR)** • Carry out measures to increase safety, reduce risks from flooding • Undertake pre- and post-monsoon inspections of dams and reservoirs Monitor the implementation of safety enhancements in accordance with norms
4	Hazard resistant construction, strengthening, and retro fitting of all lifeline structures and critical infrastructure	1. R&B 2. WRD 3. UDD	**Recurring/ Regular (RR)** • Guidance and implementation	1.DM & Collector	**Recurring/ Regular (RR)** • Collaboration with technical agencies and implementation

Investing in DRR-Non Structural Measures

S. No.	Sub – Thematic Area for DRR	State / District Agencies and their Responsibilities			
		State	Responsibility – state	District	Responsibility – District
1.	Regulation and enforcement of laws, norms, regulations, guidelines including • Regulation for reservoir management • Integrated Water Resources Management (IWRM)	1. WRD 2. SSNNL	**Recurring/ Regular (RR)** • Guidance and Support • Oversight and monitoring of compliance with coastal zone laws • Promote institutional mechanisms for sharing forecasts, warnings, data, and information **Short Term (T1)** • Adoption of revised reservoir operation manuals • Regulatory framework for flood plain zoning and flood inundation management **Medium Term (T2)** • Norms/ regulations applicable to buildings in flood-prone areas **Long Term (T3)**	1. DM & Collector 2. DDO 3. PRI 4. ULB	**Recurring/ Regular (RR)** • Implementing land-use regulation for low lying areas as per flood control norms • Regulation of inhabitation of low-lying areas along the rivers, nallas and drains • Implementing flood management action plan • Support and cooperate with state agencies **Short Term (T1)** • Enforcing building codes and regulations • Review and modification of operation manuals for all major dams/ reservoirs • Prevention and removal of encroachment into the water ways and natural drainage systems **Medium Term (T2)** • Implementing regulatory framework for flood plain zoning and flood inundation management • Implementing flood plain zoning regulations

			• Facilitate the implementation of IWRM in major river basins and their sub- basins		**Long Term (T3)** • Implementation of IWRM in major river basins and their sub-basins

Capacity Development

S. No.	Sub – Thematic Area for DRR	State / District Agencies and their Responsibilities			
		State	**Responsibility – state**	**District**	**Responsibility – District**
1.	Training	1. GIDM 2. GSDMA	**Recurring/ Regular (RR)** • Training and orientation programs for state govt. staff, SDRF, community, and volunteers	1. Police 2. Civil Defense	**Recurring/ Regular (RR)** • Training and orientation programs for district govt. staff, SDRF, community, and volunteers
			Recurring/ Regular (RR) • Incorporating disaster response, search and rescue in the training programs of youth such as NCC, NYKS, Scouts and Guides, NSS, SDRF, CDEF, Community, Volunteers		**Recurring/ Regular (RR)** • Incorporating disaster response, search and rescue in the training programs of youth such as village volunteers, and for protection of disaster-affected animals • Training for CDEF, Community, Volunteers

UNITS		
cusec	=	Cubic feet per second
cumec	=	Cubic meter per second
Mcm = Mm^3	=	million cubic meter
Mcft = Mft^3	=	million cubic feet
Lac cusecs Hour	=	1 lac cusec flow for 1 hour
cumec day	=	1 cubic meter per second flow for 1 day (24 hours)
MAF	=	Million Acre Feet
TMC	=	Thousand Million Cubic Feet

CONVERSION FACTORS

CONVERT		FACTOR
FROM	TO	
LAC CUSEC HOUR	Mm^3	10.19
Mm^3	LAC CUSEC HOUR	0.098
CUMEC DAY	Mm^3	0.086
Mm^3	CUMEC DAY	11.57
MAF	Mm^3	1233.5
TMC	Mm^3	28.317

e.g….*5* lac cusec of water is expected for *6* hr then expected volume of inflow to reach in reservoir = 5 lac cusec * 6 hr* 10.19 = 305.7 Mm^3

e.g….*123.0* Mm^3 of water is expected to reach in reservoir in *6* hr then expected mean inflow

$$= \frac{123 \times 0.098}{6} = 2.0 \text{ lac cusec}$$

FORMAT AND EXAMPLE FOR ESTIMATION OF TIME

(Format for guidance only)
Details shall be project specific

Name of Project :- **F.R.L. : m** **Gross storage :**
Crest R.L. : m
M.W.L.: m

Sr. No.	Item	Date	06/02/2007
		Hour	12.00
1	Initial Level in reservoir		m
2	Initial Storage in reservoir	1000	Mm^3
3	Level targeted		m
4	Storage Targeted	1400	Mm^3
5	Expected inflow	1.0	Lac Cusecs
6	Expected outflow	0.5	Lac Cusecs
7	Expected time interval for targeted level	**79**	Hours
8	i.e. Targeted Level will be after	3 Days	7 Hours
9	i.e. Targeted Level will be on	09/02/2007	19 Hours

Procedure to be followed.

1 Give date and time in 24 hours format for initial storage

2 Put the initial storage in reservoir for Item No. 2.
3 Put the initial level in reservoir according to storage for Item No. 1.
4 Put the targeted storage in reservoir for Item No. 4.
5 Put the targeted level in reservoir according to storage for Item No. 3.
6 Put Expected Inflow and Outflow in Item No. 5 & 6
7 Item No.7 = $\frac{\text{(Item 4 - Item 2)}}{\text{(Item 5 - Item 6)} * 10.19}$
8 Item No. 8 & 9 to be calculated according to answer of Item No. 7.

FORMAT AND EXAMPLE FOR ESTIMATION OF LEVEL

(Format for guidance only)
Details shall be project specific

Name of Project :- **F.R.L. :** **m** **Gross storage :**
Crest R.L. : **m**
M.W.L.: **m**

Sr. No.	Item	Date	06/02/2007
		Hour	12.00
1	Initial Level in reservoir	**54.87**	m
2	Initial Storage in reservoir	258.06	Mm3
3	Expected inflow	4.0	Lac Cusecs
4	Expected outflow	2.0	Lac Cusecs
5	For Duration	6.0	Hours
6	Expected volume of Inflow	122	Hours
7	Total Volume of Water	1022	Mm3
8	Level of Reservoir after 6.0 Hours	**56.46**	m

Example Data

Storage	Level
54.87	258.06
54.92	261.78
56.43	377.692
56.48	382.016

Procedure to be followed.

1. Give date and time in 24 hours format for initial storage
2. Put the initial storage in reservoir for Item No. 2.
3. Put the initial level in reservoir according to storage for Item No. 1.
4. Put Expected Inflow and Outflow in Item No. 3 & 4
5. Put the duration in Item No. 5.
6. Item No. 6 = (Item 3 - Item 4) * Item 5 * 10.19
7. Item No. 7 = Item No. 2 + Item No. 6
8. Put the corresponding level in reservoir according to storage for Item No. 7.

List of Codes/Guidelines for Safety of Building/Structures

As these codes and guidelines are being updated from time to time by different Institutions/organizations therefore the latest updated version shall be referred at the time of conceiving a project. List has been attemptedwhich may not be complete.

I. General Structural Safety

1. BIS National Building Code 2005
2. IS: 456:2000 "Code of Practice for Plain and Reinforced Concrete
3. IS: 800-1984 "Code of Practice for General construction in Steel
4. IS: 801-1975 "Code of Practice for Use of Cold Formal Light Gauge Steel Structural Members in GeneralBuilding Construction
5. IS 875 (Part 2) : 1987 Design Loads (other than earthquake) for buildings and structures part 2Imposed Loads
6. IS 875 (Part 4) : 1987 Design Loads (other than earthquake) for buildings and structures part 4 SnowLoads
7. IS 875 (Part 5) : 1987 Design Loads (other than earthquake) for buildings and structures part 5special load and load combination
8. IS: 883:1966 "Code of Practice for Design of Structural Timber in Buildings
9. IS: 1904:1987 "Code of Practice for Structural Safety of Buildings: Foundation's
10. IS:1905:1987 "Code of Practice for Structural Safety of Buildings: Masonry Walls
11. IS 2911 (Part 1): Section 1: 1979 "Code of Practice for Design and Construction of Pile FoundationSection 1

    Part 1: Section 2 Based Cast-in-situ Piles

    Part 1: Section 3 Driven Precast Concrete Piles Part 1: Section 4 Based precast Concrete Piles Part 2: Timber Piles

    Part 3: Under Reamed PilesPart 4: Load Test on Piles

II. Protection from Cyclones / Windstorms

1. IS 875 (3) -1987 "Code of Practice for Design Loads (Other than Earthquake) for Buildings and Structures, Part 3, Wind Loads"
2. IS: 15498 - 2004 "Guidelines for construction of cyclone shelters."
3. IS: 15498 - 2004 "Guidelines for improving the cyclonic resistance of low-rise houses & other building/structures.
4. Guidelines (Based on IS 875 (3)-1987) for improving the Cyclone Resistance of Low-rise houses and other building.

III. Earthquake Protection

1. IS: 1893-2002 "Criteria for Earthquake Resistant Design of Structures (Fifth Revision)"
2. IS: 13920-1993 "Ductile Detailing of Reinforced Concrete Structures subjected to Seismic Forces - Code Practice"
3. IS:4326-1993 "Earthquake Resistant Design and Construction of Buildings - Code of Practice (Second Revision)"
4. IS:13828-1993 "Improving Earthquake Resistance of Low Strength Masonry Buildings - Guidelines"
5. IS:13827-1993 "Improving Earthquake Resistance of Earthen Buildings - Guidelines"
6. IS:13935-1993 "Repair and Seismic Strengthening of Buildings - Guidelines"

IV. Flood Management / River Valley Projects

1. IS: 4189-1985 "Guide for preparation of project report for river valley projects."
2. IS: 4410 (Part 3): 1988 "Glossary of terms relating to river valley project part 3 River and river training."
3. IS: 4410 (Part 11): Sec 5-1977 "Glossary of terms relation to river valley projects: Part 11 HydrologySection 5 Floods."
4. IS: 4410 (Part 21): 1987 "Glossary of terms relating to river valley projects: Part 21 Flood control."
5. IS:11532-1995 "Construction and maintenance of river embankments

(levees) -Guidelines"

6. IS: 12094 - 2000 "Guidelines for planning and Design of River Embankments (Levees)"
7. IS: 14262 - 1995 "Planning and design of revetments - Guidelines".
8. IS: 5477 (Part 4) : 1971 "Methods for Fixing the capacities or reservoirs: part 4 Flood storage"
9. IS: 7323 - 1994 " Operation of Reservoirs - Guidelines".
10. IS: 8408 - 1994 "Planning and design of groynes in alluvial river - Guidelines".
11. IS: 14815 - 2000 "Design Flood for River Diversion Works - Guidelines".

V. Landslide Hazard

1. IS: 14458 (Part 1): 1998 Guidelines for retaining wall for hill area: Part 1 Selection of type of wall.
2. IS: 14458 (Part 2): 1997 Guidelines for retaining wall for hill area: Part 2 Design of retaining? Breast walls.
3. IS: 14458 (Part 3): 1998 Guidelines for retaining wall for hill area: Part 3 Construction of dry stone walls.
4. IS: 14496 (Part 2): 1998 Guidelines for preparation of landslide - Hazard Zonation maps in mountainous terrains: Part 2 Macro-Zonation.
5. IS: 14680: 1999 Guidelines for land slide control.
6. IS: 14948: Code of practice for Reinforcement of Rock Slopes with plain edge of failure
7. BIS 12023: Code of practice for Field Monitoring and Movement of Structures using Tape Extensometer.
8. BIS: 14804: Guidelines for Sitting, Designing and selection of materials for Residential Building in Hilly Areas.

VI. For Protection of Saline Embankments and Coastal Canals

1. IS: 8835 - 1978 "Feasibility study and preparation of preliminary project report".
2. IS: 10635 - 1993 (reaffirmed 2003) "Freeboard requirements in embankments and dams".

3. IS: 12169 - 1987 - "Criteria for design of small embankment dams."
4. IS: 8835- 1978: Feasibility study, preparation of
5. IS: 12094 - 1978: Preliminary Project Report
6. IS: 10635 - 1993 (reaffirmed 2003): Freeboard requirements in embankments in embankments and dams.
7. IS: 11532 - 1995 (reaffirmed 2005): Construction and maintenance of river embankments
8. IS: 12094 - 2000 (reaffirmed 2005): Planning and design of river embankment
9. IS: 12169 - 1987: Criteria for design of small embankments dams.

VII. Railway Codes & Manuals - RDSO Publications

1. RBF - 20: "Estimation of design discharge based on regional flood frequency approach for sub-zones 3(a), 3(b), 3(c), 3(e)".
2. RBF - 22: "50-year 24 hours set of is pluvial maps of India maps of short duration ratios".
3. RBF - 23: "Validation of flood estimation report No.UTN-7-1983 for sub-zone-3 (f)".
4. RBF - 24: "Validation of flood estimation report No.3/1980 for sub-zone-3 (f)".
5. RBF - 25: "Estimation of design discharge based on regional flood frequency approach for sub-zone-3 (f)".
6. RBF - 26: "Validation of flood estimation report No.UGP-9-1984 for sub-zone-1 (e)".
7. RBF - 27: "Validation of design discharge based on regional flood frequency approach for sub-zone-3 (e)".
8. RBF - 28: "Estimation of design discharge based on regional flood frequency approach for sub-zone-3 (i)".
9. RBF - 29: "Estimation of design discharge based on regional flood frequency approach of sub-zone-3 (b)".
10. RBF - 32: "Validation of flood estimation report no. S/16/1988 subzone - 1 (b) (Chambal basin)".

11. RBF - 33: "Estimation of design discharge based on regional flood frequency approach for sub-zone-1(d) (sone basin)".
12. RBF - 34: "Validation of flood estimation report no. S/15/1987 sub-zone-1 (d) (sone basin)".

GE - 1: "Guidelines - Erosion control on slopes of banks and cuttings".

GE - 6: "Guidelines for earthwork in conversion projects".

VIII. Indian Road Congress (IRC) Codes/Manuals

1. IRC: 5 -1998 (Seventh Revision) - "Standard specifications and codes of practice for Road, Bridges Section 1 - General features of Design".
2. IRC: 10-1961 - "Recommended Practice for Borrow pits for Road Embankments constructed by Manual Operation".
3. IRC: 34-1970 - "Recommendations for Road Construction in Waterlogged Area".
4. IRC: 36-1970 - "Recommendations Practice for the construction of Earth Embankments for Road Works".
5. IRC: 45-1972 - "Recommendations for Estimating the Resistance of Soil Below the Maximum Scour Level in the Design of well foundations of Bridges".
6. IRC: 52-2001 (Second Revision) - "Recommendations about the Alignment Survey and Geometric Design of Hill Roads."
7. IRC: 56-1974 - "Recommendations Practice for treatment of Embankment Slopes for Erosion Control."
8. IRC: 75-1979 - "Guidelines for the Design of High Embankments."
9. IRC: 78-2000 (Second Revision) - "Standard specifications and Code of practice for road, bridges, section VII - Foundations and substructure.
10. IRC: 89-1997 (First Revision) - "Guidelines for Design and Construction of River Training and Control Works for Road Bridges".
11. IRC: 104-1988 - "Guidelines for Environmental Impact Assessment of Highway Projects".
12. IRC: SP: 13-2004 (First Revision) - "Guidelines for the Design of Small Bridges and Culverts."

13. IRC: SP: 35-1990 - "Guidelines for Inspection and Maintenance of Bridges".
14. IRC: SP: 42-1994 - "Guidelines on Road Drainage".
15. IRC: SP: 50-1999 - "Guidelines of Urban Drainage".
16. IRC: SP: 54 -2000 - " Project preparation Manual for Bridges".
17. IRC: 6 - 2000 - "Standard specifications and code of practice for road bridges - section II Loads & Stresses".
18. IRC: SP: 57 -2001 - "Guidelines for quality systems for road construction."
19. IRC: 28 - 1967 - "Recommendation of road construction in water logged areas".
20. IRC: SP: 26 1984 - "Project preparation manual for bridges".
21. IRC: 87 - 1984 - "Guidelines for design and erection."
22. IRC: 21 - 2000 - "Standard specification and codes for roads and bridges."
23. IRC: SP: 20 - 2002 - "Rural Roads."
24. MORT & H Pocket Book for Highway Engineers, 2002 (Second Revision)

IRC: SP33: 1989 Guidelines on supplemental Measures for Design, Detailing & Durability of Important Bridge Structures.

Websites for Weather Forecast/Storm Prediction	
https://mausam.imd.gov.in	
https://mausam.imd.gov.in/ ahmedabad	
https://www.mosdac.gov.in	
http://en.allmetsat.com/images/asia.php	
http://en.allmetsat.com/images/met5_cimss_irc.php	
https://tropic.ssec.wisc.edu/real-time/windmain.php?&basin=indian&sat=wm5&prod=wvir&zoom=&time=	

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Forecasting Stations under Mahi Tapi Basin Organization, C.W.C.

Sr. No.	Basin/River	Forecasting Station
1	Tapi river basin	Inflow forecast for Ukai Dam
2	Tapi river basin	Inflow forecast for Hathnur Dam
3	Tapi river basin	Level forecast for Surat city
4	Lower Narmada river basin	Level forecast for Garudeshwar
5	Lower Narmada river basin	Level forecast for Bharuch
6	Lower Narmada river basin	Inflow forecast for Sardar Sarovar Dam
7	Damanganga river basin	Inflow forecast for Madhuban Dam
8	Damanganga river basin	Level forecast for Vapi
9	Damanganga river basin	Level forecast for Daman
10	Mahi river	Level forecast for Wanakbori Weir
11	Mahi river	Inflow forecast for Kadana Dam
12	Mahi Basin	Inflow forecast for Mahi-Bajaj-sagar Dam
13	Mahi Basin	Inflow forecast for Som Kamla Amba Dam
14	Mahi Basin	Inflow forecast for Panam Dam
15	Sabarmati river	Level forecast for Subhash Bridge
16	Sabarmati river	Inflow forecast for Dharoi Dam
17	Banas river	Inflow forecast for Dantiwada Dam
18	Banas Basin	Level forecast - Abu road

Note: - Inflow Forecast is issued on basis of Advisory.

Contact details of Focal Officers for Interstate basins (Out of Gujarat)				
Sr. No.	**Basin**	**Name and designation of Focal Officer**	**Name of Office**	**Contact Nos.**
1	Tapi	Shri J.D.Borkar Chief Engineer	Tapi Irrigation Development Corporation, Jalgaon	09422286001(M) 0257-2221290 0257-2217169 0257-2221605 (Fax)
2	Damanganga	Shri P. B. Misal, Chief Engineer	North Maharashtra Region, Nasik, Dist. Nasik	08888807650 (M) 0253-2575667
3	Mahi	Shri Dheeraj Johari Additional Chief Engineer	Water resources Zone, Banswara	9414444097 (M) 8003390165 (M)
		Shri R.C.Meena Superintending Engineer	Construction Circle, Mahi Project, Banswara	9414287750 (M) 02962-243238(O)
4	Sabarmati (Sei Dam)	Shri Sandeep Mathur (I/C) Chief Engineer	Water resources Zone, Jodhpur	8107297425 (M) 0291-2570681 (O)
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		Shri Dharmesh Singhvi Executive Engineer	Water Resources Division, Sirohi	9413972455 (M) 02972-222336 (O)

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Efficiency
Sustainability
WRD

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H-35-1000-04-2024

Processed & Printed by Government Central Press, Gandhinagar