DISASTER MANAGEMENT PLAN

1.0 INTRODUCTION

Disasters disrupt progress and destroy years of painstaking development efforts, thereby pushing nations back by several decades. The impacts of disasters are particularly strong in case of developing nations in terms of recovery therefore, both pre-disaster efforts in terms of preparedness, capacity building, awareness along with an efficient response mechanism, recovery and reconstruction would lessen the loss of lives and property.

The possible risks in the case of River Bed mining project are Bank Erosion, floods, accidents due to transportation.

Shri Manoj Jain has casted Disaster Management Plan to ensure that all components of Disaster Management get addressed to facilitate planning, preparedness, operational, coordination and community participation.

1.1 Aim & Objectives

The aim of the DMP is to ensure that the following components of DM are addressed to facilitate planning, preparedness, operational coordination and community participation:-

- Putting in place a streamlined and institutional techno-legal framework for the creation of an enabling regulatory environment and a compliance regime.
- Developing contemporary forecasting and early warning systems backed by responsive and fail-safe communications and Information Technology (IT) support.
- Ensuring efficient response and relief with a caring approach;
- Undertaking reconstruction as an opportunity to build disaster resilient structures and habitats.
- Undertaking recovery to bring back the community to a better and safer level than the pre-disaster stage.
- Promoting a culture of prevention and preparedness, so that DM receives the highest priority at all levels.

- Encouraging mitigation measures based on state-of-the-art technology and environmental sustainability.

The overall objectives of the Disaster Management plan are:

(a) To localize the emergency and, if possible eliminate it; and

(b) To minimize the effect of the accident on people and property.

Elimination requires well planned process/technology and its effective implementation, so that such situation should either not arises or if it comes, a pre warning is received for timely action in built or by preparedness for zeroing the effects.

Minimizing the effects may include prompt action, rescue, First aid, and evacuation, fire fighting and also passing on information promptly to people living nearby.

2.0 Hazard Vulnerability and Risk Analysis

"Hazard Assessment"

"Hazard is an event or occurrence that has the potential to cause damage to life, property and environment. Hazard assessment is the process of studying the nature of hazards determining its essential features i.e., degree of severity, duration, and the extent of the impact area."

"Risk Assessment"

Risk has been defined by the United Nations as a measure of the expected losses due to a hazard event of a particular magnitude occurring in a given area over a specific time period. The level of risk depends upon the nature of the hazard, the vulnerability of the elements that are affected and the economic value of those elements. Risk is also defined as a probability that negative consequences may arise when hazards interact with vulnerable areas, people, property, and environment.

Risk analysis is a methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property and environment on which they depend.

Therefore, Risk assessment is a function of hazard and vulnerability and is often based on an assumption and uncertainty, which contains some degree of errors.

"Vulnerability Analysis"

The vulnerability of a particular element of community is defined as the degree of loss, which it would suffer as a result of a specific hazard event. The nature of vulnerability and its assessment vary according to whether the element involved represents people and social structures, physical structures, or economic assets and activities. Therefore, the vulnerability of an area is determined by the capacity of its social, physical and economic structures to withstand and respond to hazard events.

HVRA is considered to be the first step towards Disaster Risk Reduction (DRR). Risk assessment studies have both spatial and temporal dimensions. Thus, there is a need to decide the scale at which the risk assessment is to be conducted with reference to the timeline for it. The risk maps thus need updation on regular intervals.

HVRA is essential to develop a strong and effective plan; which would focus on the preparedness, prevention, mitigation, and response and recovery measures.

2.1 Hazard Analysis & Mitigation

The possible risks in the case of River Bed mining project are floods & others such as Bank Erosion & accidents due to transportation. To deal with the above emergencies, the DM Plan has been prepared by Shri Manoj Jain. The DM Act, 2005 & several guidelines issued by National Disaster Management Authority will be followed.

2.1.1 Floods

Though most parts of Rajasthan receive scanty rainfall, the State has a history of floods and inundations. River Parbati, Parwan & Lhasi are the main river existing in the project area.

2.1.1.1 River Parwati

Parwati river originates in the northern slopes of the Vindhyan hills in MP. It enters Rajasthan near Chatarpura village in Baran District, where it forms the boundary between MP and Rajasthan for about 18 km, then flows for about 83 km in Rajasthan before again forming the boundary between MP and Rajasthan for a length of about 58 km up to Pali village in Kota District, where it joins the Chambal. The river catchment in Rajasthan is situated in Kota and Jhalawar Districts.

Table -1

River Parwati Details

Particulars	Details
Catchment Area	5001 km^2
Longitudes	75°22' and 77°12' E
Latitudes	24°19' and 25°51' N
Tributaries	Lhasi, Berni, Bethli, Andheri, Retri, Dubraj, Bilas and Kunu.

Reference: http://waterresources.rajasthan.gov.in

2.1.1.2 River Parwan

River parwan is an important interstate river. It originates in the Malwa Plateau and after flowing for about 186 km in MP enters Rajasthan near Kharibor village in Jhalawar district. It joins river Kalisindh near Ramgarh Village in Kota District. The rajasthan portion of the catchment lies in Jhalawar & Kota districts.

Table -1

River Parwan Details

Particulars	Details
Catchment Area	2892 km^2
Longitudes	75°22' and 77°12' E
Latitudes	24°19' and 25°51' N
Tributaries	Ujar, Newaj, Ghar, Chappi and Ghorapachhar

2.1.1.3 Project Area & Vicinity Details

Proposed area is a part of River Parbati, Parwan & Lhasi. The river bed mining project of Bajri (Area-159.27 ha) is located at Villages: Kunjed, Mayta, Bichhals, Manyagan, Patna, Kawai Lolahedi, Atru, Piplod, Degni Jagir, Aaton, & Mothpur, Tehsil : Atru, District: Baran

(Rajasthan); Tehsil- Atru; District: Baran (Rajasthan). Geographical extents are 24°45'5.37"N to 24°59'33.24"N and 76°29'45.47"E to 76°44'56.13"E.

2.1.1.4 Climatic Condition

The area has semi arid zone type climate. Average rainfall remains 800 mm per year. The dry season is extreme hot during day hours and cold season is extreme cold during night hours. The sandy winds are common during the day hours in hot season.

The temperature starts rising from March and reaches maximum in the month of May/June. Hottest months are April, May & June with scorching sun always over the sky. The Temperature varies 43° to 46° in summer and 2° to 5° C in winter season. The air is generally dry except during the short period of rainy season.

Fig 1: Isohyets of average annual rainfall of Rajasthan. (Source: P. Narain, 2005)

2.1.1.5 FLOOD HAZARD ZONATION OF THE AREA

As per the "Vulnerability Atlas – 2nd Addition; Peer Group, MoH & UPA; based on digitized data of SOI, GOI; Flood Atlas, Task Force Report, C.W.C., GOI" the project site does not fall under "area liable to flood". Figure shown below depicts Flood Hazard Zones.

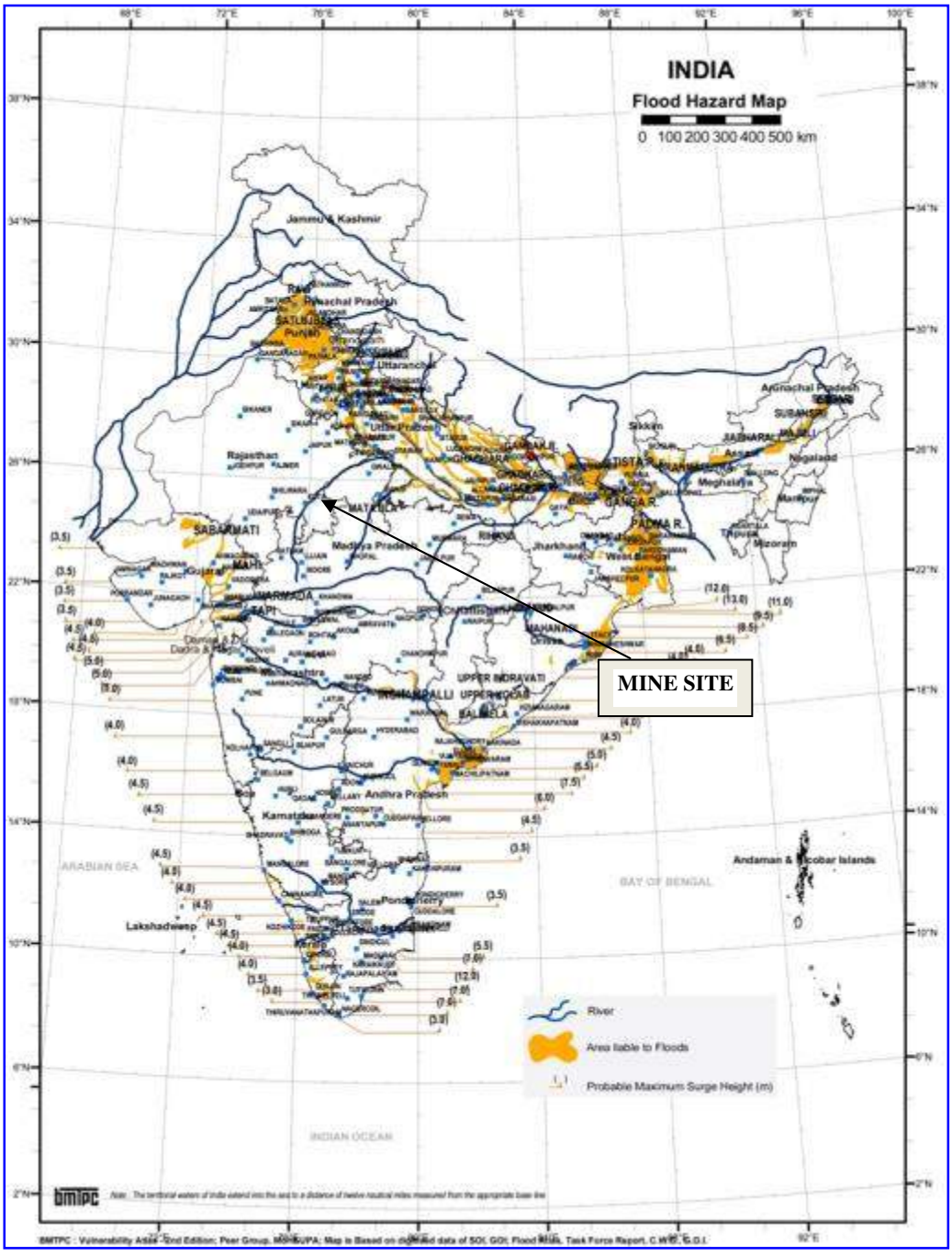

Fig 3: Flood Hazard Zonation Map as per the "Vulnerability Atlas based on digitized data of SOI, GOI.

The flood prone areas of Rajasthan include major parts of the basins and sub basins of River Luni in Barmer, Pali, Sirohi and Jalore; and the basins and sub basins of River Chambal in Baran, Kota and Bundi districts. Also, major portions of Bharatpur districts falling under the basin of River Banganga, and the basins of River Ghaggar in Sriganganagar are prone to floods.

Bundi District is categorized as "LOW" for under Flood Hazard Profiling by Government of Rajasthan. (Refer *Annexure-1*).

Fig 4: Flood Prone Areas in Rajasthan

The lower parts of the river basin are more at risk as compared to higher areas of various river basins in Rajasthan. The erratic and temporal occurrence of floods in Rajasthan adds to the difficulty of formulating a system. Documentation and analysis of flood damage and losses would be major exercise in itself cataloguing of flood prone areas.

2.1.2 Onsite Emergency Plan

The onsite emergency management of Shri Manoj Jain is given here, as the same will be applied in case of proposed riverbed mining project.

2.1.2.1 Disaster control Management system

Disaster Management Committee plays an important role in combating emergency in a systematic manner. Schematic representation of Emergency Control Team involved during emergency is shown below in the figure given below.

In addition; the implementation of an Emergency Response Plan relies on a number of response functions, which deal with different aspects of emergency, with the most important ones being:

- Communication and Co-ordination;
- Fire and Rescue (Emergency Mitigation) Emergency Control Team at Incident Site;
- Medical Services;
- Security;
- Administration (Logistics and Welfare);
- Co-ordination with external agencies;

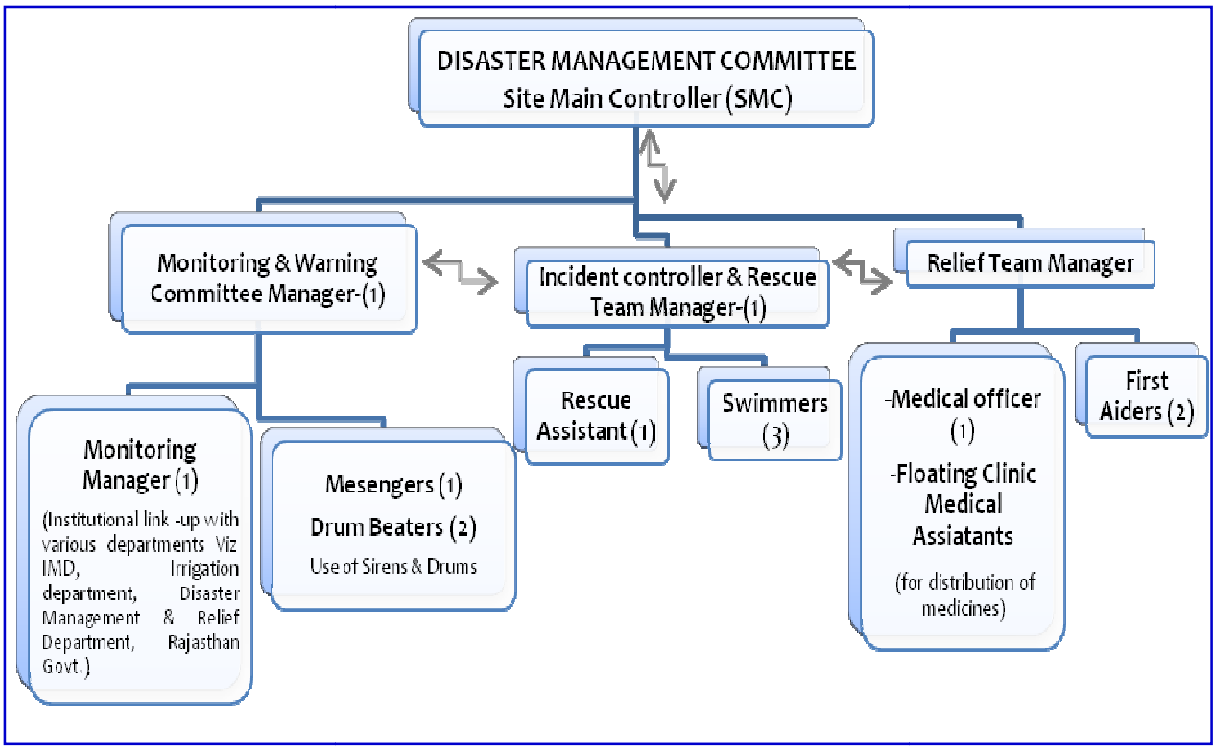

Figure 5 - : Team Involved During Emergency- Structural Representation

2.1.2.2 Emergency Control Centre (ECC)

An Emergency Control Centre (ECC) is established from which emergency operations are directed and co-ordinated. Centre will be activated as soon as on-site emergency is declared. During an emergency, the Emergency Management Staff, including the main controller will gather in the ECC.

Therefore, the ECC will be equipped with adequate communication systems in the form of mobile phones and other equipments to allow unhampered organization and other nearby facility personnel. The ECC will be located at the following three locations:- Block (A) and Block (B).

Manning of ECC during Emergency is as follows:

- Site Main Controller (SMC)
- Assistant to SMC
- Telephone Attendant
- Messengers
- Key Personals & Team (Monitoring & Warning Committee Manager, Incident controller & Rescue Team Manager, Relief Team) as per the DM Committee;

The ECC will have its own emergency lighting arrangement and electric communication systems operation. The ECC will always be ready for operation and provided with the equipment and supplies necessary during the emergency such as:

- Hazard identification chart, DM response plans;
- Area map of surrounding villages;
- Population in nearby the riverbed mine area- Upstream & Downstream;
- Internal telephone connections and External telephone connections;
- A list of key personnel, with addresses, telephone numbers, etc.;
- Connection to district collector, police control room, Hospital etc.;
- Note pads and ball pens to record message received and instructions;
- Updated copies of the On-site Disaster Management Plan
- Emergency lights
- Personal protective equipment(PPE)
- Life Vests & Jackets,
- Rescue Boards
- Rescue Tubes & Rescue Cans
- Rescue Ring Buoys & Rescue Poles

- Dive Bricks & Dive Rings
- Swim Safety Buoys & Pool Lifelines
- Spin boards & Head Immobilizers
- First Aid Kit
- Names, phone numbers, and address of external agencies and neighbouring facilities as listed below:-

2.1.2.3 Emergency Communication

Emergency Communication comprises of:

a) Built in safety measures, alarms, trips and interlocks etc.

b) Standard safe operating and maintenance procedures permit system etc.

c) Training of all the involved staff in normal and emergency operating procedures.

d) Training of all employees in safety, fire fighting and first aid.

Internal Mobile phone systems will be provided at work place including Walkie Talkie for immediate communication to all concerned.

2.1.2.4 Preventive measures for Flood & river bank protection.

The details of preventive measures to be taken for Flood & river bank protection are given as below:

(i) No mining will be done during monsoon season.

(ii) Mining will be stopped well before the time before warning stage.

(iii) Mine Facilities & manpower will be made available for evacuation & warning purposes.

(iv) No mining will be done across the river channel.

(v) Adequate width as safety margin will be left on both sides of river banks during bajri collection.

(vi) Mining will proceed along the river in the direction from downstream to upstream in each block.

(vii) Markers showing water level will be provided on the site.

(viii) In order to make adequate replenishment, blocks will be mined in alternate year, so that one block is kept idle/ non-working while the other is being worked.

(ix) Access roads/ramps to river bed will be breached before onset of monsoon to permit unhindered flow of river.

(x) The mineral will be mined out in a uniform way so that the river flow/course shall not get disturbed in its uniformity.

(xi) Unused material including bajri will not be stocked on the banks as it will hinder the flow of river in monsoon season.

2.1.2.5 Flood Control Mitigation Measures – On –Site

Disaster management committee of Shri Manoj Jain headed by Site Main Controller (SMC) has been formed in such a way to execute timely management the three stages:

- **Stage-1**- Alert and Warning Stage;
- **Stage-2**- Disaster Stage;
- **Stage-3**- Response and Rehabilitation Stage.

DM Committee comprises of Monitoring & Warning Committee (stage-1 coordination), Incident Controller & Rescue Team Manager (stage-2 coordination), and Relief Team (stage3 coordination) to ensure efficient implementation & DM Plan & disaster risk reduction. Stage wise Flood Control Mitigation Measures for river bed mine are as follows:-

I. AT ALERT AND WARNING STAGE:-

1. No mining will be done during monsoon season.
2. Mining will be stopped well before the time before warning stage.
3. Mine Facilities & manpower will be made available for evacuation & warning purposes.
4. **Timely warnings upstream & downstream:-**
   - Direct communication will be done through Drum beating & sirens for passage of Warnings.
   - Timely warnings will be given to the peoples in surrounding villages in upstream;

- Passing of warnings in downstream areas in sufficient time before river flow for evacuation of villagers;
- During monsoon/ heavy rains, carry out inspections of dams/ reservoirs on a daily basis
- Check the water level for issuance of alerts and warnings to locals.

5. **Rainfall data Updation, documentation & Interpretation**
   - Rainfall data will be kept updated on daily basis so as to have sufficient time before the water from rainfall could reach upstream areas.
   - Updated documents will be kept readily available at ECC.
   - Interpretation of rainfall data that whether or not rainfall is above the normal level & to forecast disastrous implications, if any.
6. **CWC National Flood Forecasting Network & Institutional tie-ups:-**
   - Ensure coordinated movement of all departments, officials and agencies for combating the disaster;
   - Link-up & Coordination with CWC & IMD for effective & timely forecast by means of real time data communication network from the forecasting stations
7. **Co-operation at all government levels**
   - To implement the basic principles and approaches, co-operation to all government levels,
   - Follow sectoral policies regarding environmental protection, physical planning, agriculture, transport and social development.
8. **Arrange regular meetings** for updating the apex body of DM Committee on a daily basis.
9. **Use knowledge** innovation and education to build a culture of safety and resilience at all levels.
10. **Document the experiences** and best practices.
11. Separate fund for flood control mitigation measures & financial assistance will be provided.

II. <u>AT DISASTER STAGE:-</u>

- Assist & coordinate with Govt. Organizations & departments. DM committee of Shri Manoj Jain will ensure to follow instructions passed by the government.

- Volunteer's Assistance will be provided to Government DM authority for emergency response, as necessary;
- Swimmers will be there to help the victims, as necessary.

III. <u>AT RESPONSE AND REHABILITATION STAGE</u> :-

- Floating clinics with medical practitioners, doctors & first aiders will roam around the affected villages for treatment & distribution of medicines;
- Assist local administration in rescue and relief operation as required;
- Assistance of police for searching the lost persons, if any;
- Food packets, cloths & shelter arrangement will be provided;
- First aiders & Swimmers will be there to help the victims;
- Training awareness;
- Regardless of the precautions taken, the flood event always creates deep psychological trauma suffered by the victims. Victim assistance and rescue will systematically include psychological support, whose activity will be extended throughout several months subsequent to the event.

- **Post Disaster Analysis and Evaluation:-**

  When the emergency is over, the team will carry out a detailed analysis hazard, evaluate the influence of various factors and find out the procedures to minimize them in future. At the same time adequacy of disaster management plan shall be evaluated and shortcomings shall be rectified to improve the plan.

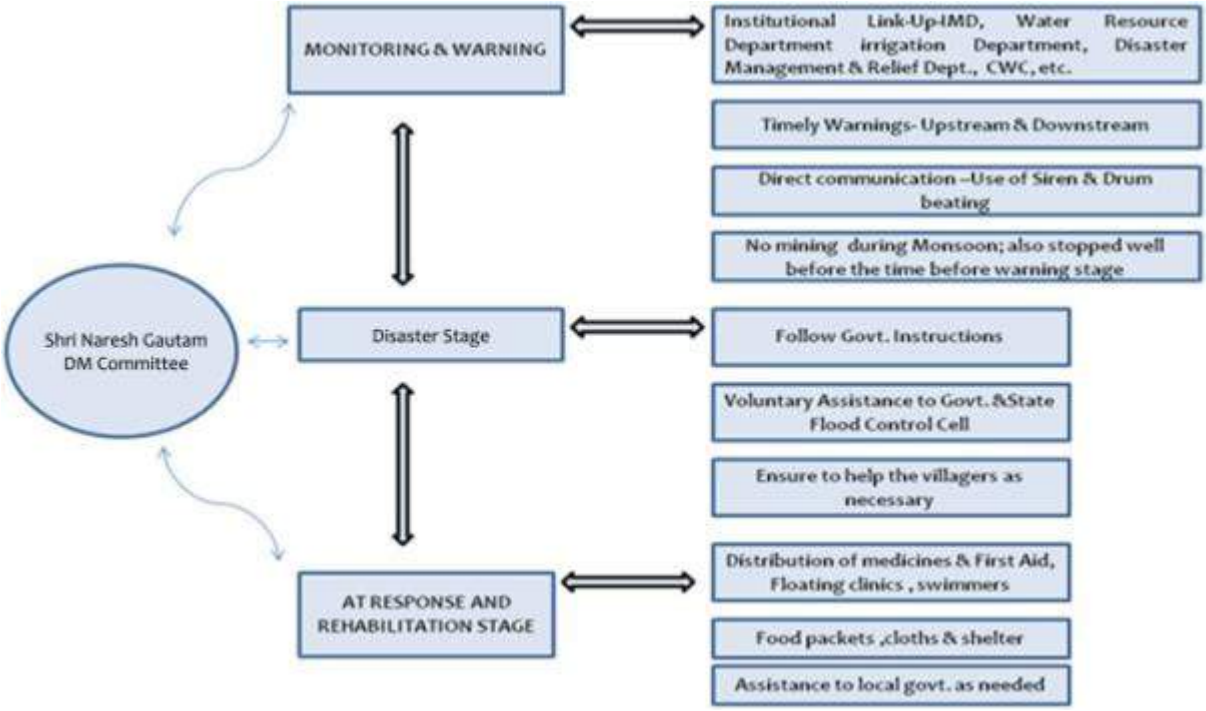

Fig 6: - Schematic representation for flood control mitigation measures

2.1.3 OFF-SITE EMERGENCY PLANNING

The off-site emergency plan is an integral part of any hazard control system. It is based on those accidents identified by the works management, which could affect people and the environment outside the works. Thus, the off-site plan follows logically from the analysis that took place to provide the basis for the on-site plan and the two plans therefore complement each other.

The responsibility for the off-site plan will be likely to rest either with the works management or with the local authority. Schematic representation of various organisation involved during emergency is shown below in **Figure - 6**

Monitoring Manager (emergency coordinating officer) will take overall command of the off-site activities & related co-ordinations. As with the on-site plan, an emergency control center will be required within which the emergency coordinating officer can operate.

2.1.3.1 Organization

Details of warning systems, implementation procedures, emergency control centers, name and appointments of incident controller, site main controller, their deputies and other key personnel

Figure -7: Schematic Representation of Various Organizations- Institutional Approach

2.1.3.2 Communications

Identification of personnel involved, communication center, call signs, network, displaying the list of telephone numbers.

Table-2

List of Contact No.

S. No.	Particulars	Telephone No.
1.	Regional Flood Cell Flood Control Room, Baran	07453- 230049
2.	**Police Control Room**	**100**
3.	**Fire Brigade**	**101**
4.	**Ambulance**	**102**
5.	**Emergency Services**	**108**
6.	**Indian Meteorological Department-regional Office, Jaipur**	**0141-2790194, 2173733**
7.	**POLICE CONTROL ROOM (BARAN)**	**07453230383**
8.	**Department of medical, health and family**	**07453-230451,**

S. No.	Particulars	Telephone No.
	welfare	**0747-2447496**
9.	**Raj panchayat**	**0141-2227847**
10.	Municipal Corporation Office, Kota, Rajasthan	**+(91)-744-2505405**
11.	**Secretary, Relief Department, Rajasthan**	01412227014
12.	**Public work department SE**	**0747-2446978** **94140-96844**
13.	**Public Work Department EE-Baran**	**07453-237052**
14.	**Director, Doordarshan Kendra, Jhalana Doongari, Jaipur**	**2711519, 2710628, PBX 2711696 Ext.203, 2710697**

2.1.3.3 Special Emergency Equipments

Details of availability and location of Emergency Equipments as listed above in Item No. 2.1.2.2

2.1.3.4 Institutions & Voluntary Organizations

Details of organizations, telephone numbers, resources, etc. as listed above in table.

2.1.3.5 Meteorological information

Arrangements for obtaining details of weather conditions prevailing at the time and weather forecasts will be made.

2.1.3.6 Humanitarian Arrangements

Transport, evacuation centers, emergency feeding, floating clinics for distribution of medicines & first aid treatment, ambulances.

2.1.3.7 Public Information

Arrangements for: -

- Dealing with the media-press office
- Informing relatives, etc.

2.1.3.8 Assessment

Arrangements for: -

(i) Collecting information on the causes of the emergency

(ii) Reviewing the efficiency and effectiveness of all aspects of the emergency plan.

2.1.3.9 Role of local authority

Local Authorities like Panchayat, Sabha, Samity, municipalities can help in combating emergency situation after assessing the impact scenario in rescue phase.

2.1.3.10 ROLE OF THE POLICE

The police normally assume the overall control of an emergency, with a senior officer designated as emergency coordinating officer.

Formal duties of the police during an emergency include protecting life and property and controlling traffic movements.

The functions include controlling bystanders, evacuating the public, identifying the dead and dealing with casualties and informing relatives of dead or injured.

2.1.3.11 Role Of The Fire Authorities

The control of a fire is normally the responsibility of the senior fire brigade officer who would take over the handling of the fire from the site incident controller on arrival at the site. The senior fire brigade officer may also have a similar responsibility for other events. Fire authorities having major hazard works in their area should have familiarized themselves with the location on site.

2.1.3.12 Role of The Health Authorities

Health authorities, including doctors, surgeons, hospitals, ambulances and so on, have a vital part to play following a major accident and they should form an integral part of any emergency plan.

For major fires, injuries will be the result of the effects of thermal radiation to a varying degree and the knowledge and experience to handle this in all, but extreme cases may be generally available in most hospitals.

2.1.3.13 ROLES OF THE GOVERNMENT SAFETY AUTHORITY

The Inspectors of Director General of Mines Safety would like to satisfy themselves that the organization responsible for safety & risk management including the off-site plan has made adequate arrangements for handling emergencies of all types including major emergencies.

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