

## Grand Ethiopian Renaissance Dam

### Mitigation Mechanisms for Drought, Prolonged Drought, and Prolonged Periods of Dry Years

#### I. Filling Period of the GERD

##### A. Drought

If the flow\* at the GERD is <37 bcm, the release from the GERD will be:

Flow + Additional Release according to the agreed GERD Release Rule under Drought Conditions Matrix (**Exhibit A**)

##### B. Prolonged Drought

If the average release from the GERD over the preceding 4 years is <37 bcm, the GERD will release a total of 62.5% of the storage above 603 meters over the following 4 years.\*\*

The timing of the total release over the 4 year period is at the choice of Ethiopia subject to a minimum annual release that is  $\frac{1}{4}$  of Total Release/4.

The total release from storage over the following 4 years is not dependent upon the hydrological conditions of the river in future years.

##### C. Prolonged Period of Dry Years

If the average release from the GERD over the preceding 4 years is <40 bcm, the GERD will release a total of 50% of storage above 603 meters over the following 4 years.\*\*

The timing of the total release over the 4 year period is at the choice of Ethiopia subject to a minimum annual release that is  $\frac{1}{4}$  of Total Release/4.

The total release from storage over the following 4 years is not dependent upon the hydrological conditions of the river in future years.

#### II. Long Term Operation of the GERD

##### A. Drought

If the flow at the GERD is <37 bcm (Q91)\*\*\*, the release from the GERD will be:



Flow + Additional Release according to the agreed GERD Release Rule under Drought Conditions Matrix (**Exhibit A**)

**B. Prolonged Drought**

If the average release from the GERD over the preceding **4** years is **<39 bcm (Q88)\*\*\***, the GERD will release a total of **100%** of the storage above **603** meters over the following **4** years.\*\*

The timing of the total release over the **4** year period is at the choice of Ethiopia subject to a minimum annual release that is  $\frac{1}{2}$  of Total Release/4.

The total release from storage over the following **4** years is not dependent upon the hydrological conditions of the river in future years.

**C. Prolonged Period of Dry Years**

If the average release from the GERD over the preceding **5** years is **<40 bcm (Q85)\*\*\***, the GERD will release a total of **100%** of storage above **603** meters over the following **5** years.\*\*

The timing of the total release over the **5** year period is at the choice of Ethiopia subject to a minimum annual release that is  $\frac{1}{2}$  of Total Release/5.

The total release from storage over the following **5** years is not dependent upon the hydrological conditions of the river in future years.

\*The term "flow" will be defined in the final agreement

\*If both the conditions under mitigation measures of prolonged drought and of prolonged periods of dry years are triggered in a given year, the higher release value of the two measures will be applied.

\*\*The numeric values of the quantiles will be adjusted based upon updated historical data of the hydrological conditions of the Blue Nile at the GERD site every ten years.



**Grand Ethiopian Renaissance Dam  
Drought Conditions Matrix\***  
**Total Release**  
**(Flow + Additional Release)**

**Flow of River  
BCM**

Level	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20
BCM	m																	
49.3 BCM	37	37	37	37	37	36.9	36.8	36.7	36.6	36.5	36.3	36.1	35.9	35.7	35.5	35.2	34.9	34.8
46.2 BCM	37	36.9	36.8	36.7	36.6	36.4	36.2	36	35.8	35.6	35.3	35	34.7	34.4	34.1	33.7	33.3	33.1
43.1 BCM	37	36.8	36.6	36.4	36.2	35.9	35.6	35.3	35	34.7	34.3	33.9	33.5	33.1	32.7	32.2	31.7	31.4
40.1 BCM	37	36.7	36.4	36.1	35.8	35.4	35	34.6	34.2	33.8	33.3	32.8	32.3	31.8	31.3	30.7	30.1	29.7
37 BCM	37	36.6	36.2	35.8	35.4	34.9	34.4	33.9	33.4	32.9	32.3	31.7	31.1	30.5	29.9	29.2	28.5	28
33.9 BCM	37	36.5	36	35.5	35	34.4	33.8	33.2	32.6	32	31.3	30.6	29.9	29.2	28.5	27.7	26.9	26.3
30.8 BCM	37	36.4	35.8	35.2	34.6	33.9	33.2	32.5	31.8	31.1	30.3	29.5	28.7	27.9	27.1	26.2	25.3	24.6
27.7 BCM	37	36.3	35.6	34.9	34.2	33.4	32.6	31.8	31	30.2	29.3	28.4	27.5	26.6	25.7	24.7	23.7	22.9
24.7 BCM	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20

\*This matrix will be revised to reflect 50% of the evaporation of the GERD reservoir and include an upward adjustment of 1 BCM in the Flow of River levels.



## Grand Ethiopian Renaissance Dam

## Stage I Filling

Stage I Filling (595 m level of GERD)	
Year 1	4.9 bcm
Year 2	13.5 bcm (18.4 bcm total)
Definition of Drought	31 bcm
Release Rule	Lower of 31 bcm or flow of the river
Postponement of Stage I	If the flow of the river is less than 31 bcm, Stage I will be postponed



Stage Based Filling Plan of the GERD

Stage	Target Levels of Stages in GERD (m)	Incremental Retained Water at the End of June (BCM)	Cumulative Retained Water at the End of June
1	565	4.9	4.9
	595	13.5	18.4
2	608	10.5	28.9
3	617	10.4	39.3
4	625	10.0	49.3

\*The full supply level of the GERD is 74 BCM at a level of 640 m.a.s.l.